Report No. 21754

ORTECH
a Kontrol Energy Company

Report:

Covanta Durham York Renewable Energy Limited Partnership
Durham York Energy Centre
May 2017 Voluntary Compliance Emission Testing Program

Date: August 15, 2017



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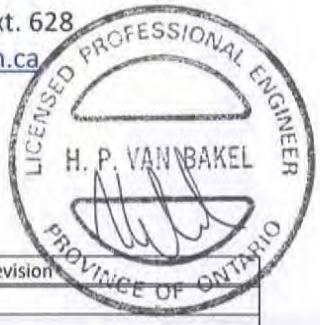

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Revision History

Version	Date	Summary Changes/Purpose of Revision
1	June 15, 2017	None
2	August 15, 2017	Inclusion of Golder modelling results

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EXECUTIVE SUMMARY

ORTECH Consulting Inc. (ORTECH) completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between May 23 and May 26, 2017. The emission testing program was performed to satisfy the agreement the facility has with the Regions of Durham and York to conduct emission testing twice per year.

Ontario Ministry of the Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX Section 7(1) 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 fourth comprehensive Schedule E source testing program conducted at the facility; the initial source testing program was conducted in September/October 2015, a voluntary compliance test program was conducted in May 2016, and a compliance test program was conducted in October/November 2016.

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. Although not a requirement of the ECA, at the request of Covanta and per the Pre-Test Plan letter submitted to the MOECC by the Durham and York Regions, additional dioxin and furan testing was conducted at the Quench Inlet to the air pollution control (APC) system concurrently with the dioxin and furan tests performed at the Baghouse Outlet on each unit.

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 dioxins, furans and dioxin-like PCBs 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
Aldehydes	CARB Method 430 with Ashland Modification
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 performed in the Fall of 2016 demonstrated that the DYEC CEMS met the performance parameters detailed in Schedule F of the ECA, 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 was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH between May 23 and May 24, 2017 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 MOECC 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 MOECC "Summary of Standards and Guidelines to Support Ontario Regulation 419/05 – Air Pollution – Local Air Quality", dated April 2012, provides 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", published on January 4, 2017, 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)*	-	-	-	385	-
Average Combustion Zone Temp. (°C)*	-	-	-	1171	-
Steam (tonnes/day)*	-	-	-	801	-
MSW Combusted (tonnes/day)*	-	-	-	217	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	1205	-
Carbon Injection (kg/day)*	-	-	-	125	-
Lime Injection (kg/day)*	-	-	-	4233	-
Filterable Particulate (mg/Rm^3) (1)	1.32	0.83	0.94	1.03	9
PM_{10} with Condensable (mg/Rm^3) (1)	<6.73	<6.86	<7.29	<6.96	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<6.65	<6.72	<6.89	<6.75	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.14	<0.12	<0.13	<0.13	-
Ammonia (mg/Rm^3) (1)	1.11	0.89	0.94	0.98	-
Cadmium (µg/Rm^3) (1)	0.11	0.17	0.074	0.12	7
Lead (µg/Rm^3) (1)	0.30	0.32	0.22	0.28	50
Mercury (µg/Rm^3) (1)	0.16	0.15	0.16	0.16	15
Antimony (µg/Rm^3) (1)	0.057	0.073	<0.044	<0.058	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.044	<0.044	<0.044	-
Barium (µg/Rm^3) (1)	2.27	2.85	2.84	2.65	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.044	<0.044	<0.044	-
Chromium (µg/Rm^3) (1)	1.04	1.31	0.70	1.02	-
Cobalt (µg/Rm^3) (1)	0.15	0.24	0.18	0.19	-
Copper (µg/Rm^3) (1)	1.38	1.55	0.64	1.19	-
Molybdenum (µg/Rm^3) (1)	4.04	4.46	4.10	4.20	-
Nickel (µg/Rm^3) (1)	1.43	1.71	0.93	1.36	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.22	<0.22	-
Silver (µg/Rm^3) (1)	<0.044	<0.044	<0.044	<0.044	-
Thallium (µg/Rm^3) (1)	0.044	<0.044	<0.044	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.022	<0.022	<0.022	-
Zinc (µg/Rm^3) (1)	4.09	4.16	3.73	4.00	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<5.17	<4.93	<5.85	<5.32	60
Total Chlorobenzenes (ng/Rm^3)(1)	<476	<392	<492	<454	-
Total Chlorophenols (ng/Rm^3)(1)	<175	<144	<155	<158	-
Total PAHs (ng/Rm^3)(1)	<230	<265	<274	<256	-
Total VOCs (µg/Rm^3) (1)(4)	<50.3	<42.4	<46.6	<46.4	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	1702	2067	2204	1991	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	1.4	0.9	0.8	1.0	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)*	-	-	-	385	-
Average Combustion Zone Temp. (°C)*	-	-	-	1209	-
Steam (tonnes/day)*	-	-	-	798	-
MSW Combusted (tonnes/day)*	-	-	-	215	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	682	-
Carbon Injection (kg/day)*	-	-	-	125	-
Lime Injection (kg/day)*	-	-	-	4287	-
Filterable Particulate (mg/Rm^3) (1)	1.35	1.33	0.84	1.17	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.34	<1.78	<1.75	<2.28	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.28	<1.64	<1.69	<2.19	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.13	<0.12	<0.14	<0.13	-
Ammonia (mg/Rm^3) (1)	0.82	0.65	0.72	0.73	-
Cadmium (µg/Rm^3) (1)	0.068	0.070	0.070	0.069	7
Lead (µg/Rm^3) (1)	0.17	0.33	0.33	0.28	50
Mercury (µg/Rm^3) (1)	0.10	0.10	0.099	0.099	15
Antimony (µg/Rm^3) (1)	<0.044	0.10	0.059	<0.068	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Barium (µg/Rm^3) (1)	2.58	2.50	2.26	2.45	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Chromium (µg/Rm^3) (1)	1.00	1.03	0.92	0.99	-
Cobalt (µg/Rm^3) (1)	0.14	0.16	0.17	0.16	-
Copper (µg/Rm^3) (1)	1.03	0.55	0.50	0.69	-
Molybdenum (µg/Rm^3) (1)	4.25	4.00	3.92	4.06	-
Nickel (µg/Rm^3) (1)	1.21	1.52	1.26	1.33	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.21	<0.22	-
Silver (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Thallium (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.022	<0.021	<0.022	-
Zinc (µg/Rm^3) (1)	2.77	4.78	2.03	3.19	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<7.52	<7.01	<8.47	<7.67	60
Total Chlorobenzenes (ng/Rm^3)(1)	<452	<571	<420	<481	-
Total Chlorophenols (ng/Rm^3)(1)	<156	<144	<137	<146	-
Total PAHs (ng/Rm^3)(1)	<390	<242	<278	<303	-
Total VOCs (µg/Rm^3) (1) (4)	<44.4	<38.0	<50.4	<47.4	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	1792	2090	1639	1841	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	0.6	0.9	0.9	0.8	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. The aldehyde sample for Test No. 2 was broken after the samples were delivered to the analytical laboratory. Results displayed are from the Volatile Organic Sampling Train only (i.e. excludes acetaldehyde, formaldehyde and acrolein). Test No. 2 was excluded from the average results.

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)	9.3	12.9	17.0	40
	Hydrogen Chloride (mg/Rm^3)(2)	2.0	2.1	2.5	9
	Nitrogen Oxides (mg/Rm^3)(2)	108	110	110	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0	0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3)(1)	9.8	15.8	22.8	40
	Hydrogen Chloride (mg/Rm^3)(2)	0.5	3.1	4.5	9
	Nitrogen Oxides (mg/Rm^3)(2)	111	112	113	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0	0	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.

The CALPUFF dispersion modelling (using Version 6.263 as requested by the MOECC) for the May 2017 emission testing program was performed by Golder Associates. A summary of the results are provided in the tables appended to this report (Appendix 29) based on calculated ground level point of impingement concentrations for the average total Main Stack emissions. As shown in the tables, the calculated impingement concentrations were well below the allowable impingement concentrations for all of the contaminants.

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 796 tonnes of steam per day for each Boiler (approximately 98.6% 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).

- 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 (Schedule 3) under the Ontario Environmental Protection Act and other MOECC criteria including guidelines and upper risk thresholds.

Tables referenced in this report for the tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 1 and Appendix 2, respectively. Tables for the additional testing conducted at the Boiler No. 1 Quench Inlet and Boiler No. 2 Quench Inlet are provided in Appendix 3 and Appendix 4, respectively.

1. INTRODUCTION

ORTECH Consulting Inc. (ORTECH) completed a voluntary compliance emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between May 23 and May 26, 2017. The emission testing program was performed to satisfy the agreement the facility has with the Regions of Durham and York to conduct emission testing twice per year.

Ontario Ministry of the Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX Section 7(1) 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 fourth comprehensive Schedule E source testing program conducted at the facility; the initial source testing program was conducted in September/October 2015, a voluntary compliance test program was conducted in May 2016, and a compliance test program was conducted in October/November 2016.

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. Although not a requirement of the ECA, at the request of Covanta and per the Pre-Test Plan letter submitted to the MOECC by the Durham and York Regions, additional dioxin and furan testing was conducted at the Quench Inlet to the air pollution control (APC) system concurrently with the dioxin and furan tests performed at the Baghouse Outlet on each unit.

Prior to commencing the test program, the Durham and York Regions submitted a Pre-Test Plan letter to the MOECC stating that the May voluntary sampling program would follow the procedures detailed in ORTECH Pre-Test Plan No. 21698, "Covanta Durham York Renewable Energy Limited Partnership Compliance Emission Testing in Accordance with the Abatement Plan and the Amended Environmental Compliance Approval (Air) No. 7306-8FDKNX", dated August 16, 2016. Provided in Appendix 5 is a copy of the Pre-Test Plan letter sent by the Regions, dated March 31, 2017. A copy of the Amended Environmental Compliance Approval, including amendment notices, is also provided in Appendix 5.

Triplicate emission tests were completed for each of the test parameters listed in Schedule D of the ECA between May 23 and May 26, 2017.

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. 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
					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
					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 all isokinetic 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 dioxins, furans and dioxin-like PCBs 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
Aldehydes	CARB Method 430 with Ashland Modification
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 performed in the Fall of 2016 demonstrated that the DYEC CEMS met the performance parameters detailed in Schedule F of the ECA, 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 was used to determine the minimum, average and maximum concentrations of the combustion gases listed in the ECA. Concentration data measured by ORTECH between May 23 and May 24, 2017 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 and second impingers were initially empty to collect moisture
- The third and fourth impingers initially contained 100 mL each of 5% nitric acid/10% hydrogen peroxide solution to collect metals
- The fifth impinger was initially empty
- The sixth and seventh impingers initially contained 100 mL each of 4% potassium permanganate/10% sulphuric acid solution to collect mercury
- The eighth 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 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 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 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 7.

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. Sampling for dioxins, furans and dioxin-like PCBs was also conducted at the Quench Inlet of each Boiler. 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. The glassware was rinsed and a proof sample taken where train components were reused during the test program (i.e. nozzle and probe liner assemblies).

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.

Each test for semi-volatile organic compounds at the Quench Inlet 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 seven and a half minutes for a total actual sampling time of one hundred and eighty minutes. Each test at the Quench Inlet locations required a total of two filters, one filter per traverse.

At five minute time increments at the BH Outlet and 2.5 minute time increments at the Quench Inlet 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 8.

At the start and finish of sampling each traverse, and before and after each filter change during the Quench Inlet tests, 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

Each test for acid gases involved the collection of stack gas sampled isokinetically at a single point in the duct for sixty minutes.

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 9.

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. 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, three twenty minute runs were completed at an approximate flowrate of 1 L/min. A fourth run was also conducted during each test and the tube pair was archived in case a sample was lost during desorption or analysis. Analyses from the three runs performed were combined and used to calculate test average results.

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 10.

Blank tube samples analyzed for the program included three 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 CARB Method 430 with the Ashland Modification.

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 0.05% 2,4-dinitrophenylhydrazine (DNPH) in 2N HCl with 2 ml of toluene
- The fourth impinger was initially empty
- The fifth 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 11.

4.8 Combustion Gases

In Fall 2016, 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. Covanta informed ORTECH that the 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 May 23 at 06:00 to May 26, 2017 at 18:00, was used to assess against the in-stack emission limit stated in the ECA for each Boiler.

The data provided was adjusted to 11% oxygen using the oxygen measured by the CEMs for each clock hour. 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 May 23 and May 24, 2017. 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 12.

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 13.

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 five 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 sixth and seventh 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 sixth and seventh 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). It should be noted that the metals sampling and analysis procedures (US EPA Method 29) are validated for only 17 metals including Sb, As, Ba, Be, Cd, Co, Cr, Cu, Pb, Mn, Hg, Ni, P, Se, Ag, Tl and Zn. However, the method was used for all metals included in the program.

The inorganic analytical reports are provided in Appendix 14.

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 15.

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 14.

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 16.

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 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.

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.

Due to the design of ORTECH's glassware, the filter bottom, filter bottom u-tube and trap inlet stem were not soaked for five minutes in each of acetone and hexane. Instead, these pieces of glassware were given extra rinses with each of the solvents. Also, since ORTECH uses a one piece trap and condenser, the five minute soak of this component was performed by the analytical laboratory.

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 ALS 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.

The SVOC analytical reports are provided in Appendix 17.

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 18. The acid gases analytical results are presented with inorganic analytical reports in Appendix 14.

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 ALS 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 reports are provided in Appendix 19.

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 the ORTECH sample recovery trailer. 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 DNPH followed by a small amount of toluene 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 HPLC. The sample recovery data sheets are provided in Appendix 20 and the analytical results are presented in Appendix 21.

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 combined 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 22.

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 23.

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 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

It should be noted that due to the design of ORTECH's semi-volatile organic sampling train glassware, the filter bottom, filter bottom u-tube and trap inlet stems are not soaked with each of the required solvents (acetone and hexane) during test train recovery. Instead, these components of the test train were given additional rinses with each of the required solvents. Also, because ORTECH uses a one piece condenser and XAD-2 trap, 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 MOECC.

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 5.9% 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 88-108%. The acceptable limit is 85-115% 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 82-107%. 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.

Molybdenum and nickel observed by the analytical laboratory in the method blank at levels greater than three times the limit of reporting. Molybdenum was also observed by the analytical laboratory in the reagent blank at levels greater than three times 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. The relative percent difference was less than 3.8% well within the acceptable limit of less than ±20%, for fractions 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 94-96% 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 87-100% 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 Iom 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 8.7%, 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 98% for hydrogen chloride, 101% for hydrogen fluoride and 107% 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 97% for hydrogen chloride, 99% for hydrogen fluoride and 106% for ammonia, within the acceptable range of 80-120%.

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 Liquid Chromatography (LC). Laboratory control samples and a spike sample were analyzed with the test samples. The spike sample was spiked with 2 µg each of acetaldehyde, formaldehyde and acrolein by the laboratory. The recoveries for the travel spike were 24% for acrolein, 43% for formaldehyde and 35% for acetaldehyde. The spike did not contain toluene, as required by the Ashland Modification to the method, and this may have contributed to the low spike recovery for acrolein.

The concentration of acrolein detected in the blank samples was similar to, and in some cases greater than, the concentrations detected in the test samples. The test results for acrolein may be elevated due to the high blank results.

The sample for Test No. 2 at the Boiler No. 2 BH Outlet was broken after the samples were delivered by ORTECH to the ALS Burlington laboratory and before the samples were analyzed by the ALS laboratory in Cincinnati, Ohio. The emission data for the Boiler No. 2 BH Outlet was calculated using the results for Test No. 1 and Test No. 3 only.

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 and dioxin-like PCBs field spike standards were between 84-113% which indicates good extraction efficiency and provides a high degree of confidence in the results obtained from the dioxin and furan test trains.

The analytical laboratory report identifies responses in the chlorinated diphenylether channel that elute at similar retention times to 1,2,3,7,8,9-hexachlorodibenzofuran, 1,2,3,6,7,8-hexachlorodibenzofuran and octachlorodibenzofuran isomer for some of the test results. This response may produce a positive bias on these isomers and has been identified in previous test programs conducted at the facility. This response was not seen in the blank train samples or in the laboratory blank which indicates that it is not an artifact in the solvents, glassware, XAD-2 or the instrument used for analysis. The analytical laboratory indicates that the impact of chlorinated diphenylether on the test results is minimal and does not impact data quality.

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.

Three 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 50-137%.

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.

Although not a requirement of the ECA, at the request of Covanta and per the Pre-Test Plan submitted to and approved by the MOECC additional dioxin and furan testing was conducted at the Quench Inlet to the air pollution control (APC) system concurrently with the dioxin and furan tests performed at the Baghouse Outlet on each unit.

Combustion gases, including hydrochloric acid, sulphur dioxide, nitrogen oxides and carbon monoxide were measured during the emission testing program by the DYEC CEMS. Total hydrocarbon concentrations were also measured by ORTECH on May 23 and May 24, 2017.

Tables referenced in this report for the tests conducted at Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet are provided in Appendix 1 and Appendix 2, respectively. Tables for the additional testing conducted at the Boiler No. 1 Quench Inlet and Boiler No. 2 Quench Inlet are provided in Appendix 3 and Appendix 4, respectively.

Detailed test schedules are provided in Table 1 and Table 2 of Appendix 1 and Appendix 2 for Boiler No. 1 BH Outlet and Boiler No. 2 BH Outlet, respectively. Detailed test schedules are provided in Table 1 of Appendix 3 and Appendix 4 for Boiler No. 1 Quench Inlet and Boiler No. 2 Quench Inlet, 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 24 to Appendix 27, respectively.

Stack gas sampling parameters for the tests conducted at each location are summarized in Table 3 for the BH Outlet (Appendix 1 and Appendix 2) and Table 2 for the Quench Inlet (Appendix 3 and Appendix 4). 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 location are presented in Table 4 for the BH Outlet (Appendix 1 and Appendix 2) and Table 3 for the Quench Inlet (Appendix 3 and Appendix 4). The average values from the isokinetic tests at each site are summarized below:

Stack Gas Parameter	Boiler No. 1 Quench Inlet	Boiler No. 1 BH Outlet*	Boiler No. 2 Quench Inlet	Boiler No. 2 BH Outlet*
Gas Temperature (°C)	167	142	167	139
Moisture by Volume (%)	14.8	15.6	15.3	16.0
Velocity (m/s)	18.9	18.4	17.7	17.6
Static Pressure (kPa)	-0.66	-2.68	-0.61	-2.31
Absolute Pressure (kPa)	98.6	97.2	98.7	97.3
Carbon Dioxide by Volume (%)**	10.5	10.5	10.8	10.9
Oxygen by Volume (%)**	8.26	8.56	7.91	8.12

* Excludes Acid Gases tests as testing was conducted at a single point in the duct
** dry basis, measured by DYEC CEMS

7.3 Volumetric Flowrate Data

Stack gas volumetric flowrates for the tests conducted at each location are presented in Table 5 for the BH Outlet (Appendix 1 and Appendix 2) and Table 4 for the Quench Inlet (Appendix 3 and Appendix 4). The average flowrate values from the tests at each site are summarized below:

Volumetric Flowrate	Boiler No. 1 Quench Inlet	Boiler No. 1 BH Outlet*	Boiler No. 2 Quench Inlet	Boiler No. 2 BH Outlet*
Actual Flowrate (m^3/s)	27.9	27.1	26.2	26.0
Dry Reference Flowrate (Rm^3/s)**	15.6	15.7	14.6	15.2
Dry Adjusted Flowrate (Rm^3/s)***	20.0	19.6	19.2	19.6
Wet Reference Flowrate (Rm^3/s)**	18.4	18.6	17.3	18.0

* Excludes Acid Gases tests as testing was conducted at a single point in 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)	0.75	0.88
Dry Reference Conc. (mg/Rm^3)*	1.29	1.51
Dry Adjusted Conc. (mg/Rm^3)**	1.03	1.17
Wet Reference Conc. (mg/Rm^3)*	1.08	1.27
Emission Rate (mg/s)	19.8	22.7

* 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 particulate dry adjusted concentration at the Boiler No. 1 BH Outlet (1.03 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (1.17 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 <0.1 mg and 2.8 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 0.1 mg and 2.7 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)	<0.42	<0.30	<0.27	<0.23
Dry Reference Conc. (mg/Rm^3)*	<0.72	<0.51	<0.46	<0.39
Dry Adjusted Conc. (mg/Rm^3)**	<0.58	<0.39	<0.37	<0.30
Wet Reference Conc. (mg/Rm^3)*	<0.61	<0.42	<0.39	<0.33
Emission Rate (mg/s)	<11.6	<7.89	<7.44	<6.13

* 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)	3.85	<0.49	0.75	0.95
Dry Reference Conc. (mg/Rm^3)*	6.66	<0.84	1.30	1.63
Dry Adjusted Conc. (mg/Rm^3)**	5.34	<0.64	1.04	1.25
Wet Reference Conc. (mg/Rm^3)*	5.60	<0.70	1.09	1.36
Emission Rate (mg/s)	108	<13.1	21.0	25.4

* 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 2.9 mg for the inorganic fraction and 0.4 mg for the organic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 2.4 mg for the inorganic fraction and 0.6 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)	<5.02	<1.74	<4.87	<1.67
Dry Reference Conc. (mg/Rm^3)*	<8.68	<2.98	<8.42	<2.86
Dry Adjusted Conc. (mg/Rm^3)**	<6.96	<2.28	<6.75	<2.19
Wet Reference Conc. (mg/Rm^3)*	<7.30	<2.48	<7.08	<2.39
Emission Rate (mg/s)	<141	<46.4	<136	<44.6

* 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 each of the test samples collected.

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)	3.18	2.61	<0.095	<0.098	0.71	0.55
Dry Reference Conc. (mg/Rm^3)*	5.49	4.47	<0.16	<0.17	1.23	0.93
Dry Adjusted Conc. (mg/Rm^3)**	4.37	3.49	<0.13	<0.13	0.98	0.73
Wet Reference Conc. (mg/Rm^3)*	4.60	3.77	<0.14	<0.14	1.03	0.79
Emission Rate (mg/s)	84.6	67.6	<2.53	<2.53	19.0	14.1
Dry Adjusted Conc. (ppm)**	2.93	2.34	<0.16	<0.16	1.41	1.05

* 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. Carbon monoxide and oxygen were 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 May 23 at 06:00 to May 26, 2017 at 18:00 for each Boiler. 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)	-	9.37	9.37
	Carbon Dioxide (kg/Rm^3, 1-hr)**	-	0.20	0.21
	Carbon Monoxide (mg/Rm^3, 4-hr)*	40	17.0	22.8
	Sulphur Dioxide (mg/Rm^3, 24-hr)*	35	0	0
	Nitrogen Oxides (mg/Rm^3, 24-hr)*	121	110	113
	Hydrogen Chloride (mg/Rm^3, 24-hr)*	9	2.5	4.5
	Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	0	0
Quench Inlet	Oxygen (%, 1-hr)	-	9	9

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

Total hydrocarbon concentration data was measured by ORTECH on May 23 and May 24, 2017 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) for the BH Outlet sampling locations and in Table 5 (Appendix 3 and Appendix 4) for the Quench Inlet sampling locations. 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)*	-	1.1	1.7
	Total Hydrocarbons (10-minute)**	-	1.1	1.7
Quench Inlet	Total Hydrocarbons (1-minute)*	-	1.1	0.8
	Total Hydrocarbons (10-minute)**	50	1.0	0.8

* 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 28.

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 (Appendix 1 and Appendix 2) 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 (Appendix 1 and Appendix 2), respectively. Table 22 (Appendix 1 and Appendix 2) summarizes the average metal emission data for the tests performed.

Table 23 (Appendix 1 and Appendix 2) 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)	0.087	0.052
Dry Reference Conc. (µg/Rm^3)*	0.15	0.089
Dry Adjusted Conc. (µg/Rm^3)**	0.12	0.069
Wet Reference Conc. (µg/Rm^3)*	0.13	0.075
Emission Rate (mg/s)	0.0023	0.0013

* 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)	0.20	0.21
Dry Reference Conc. (µg/Rm^3)*	0.35	0.36
Dry Adjusted Conc. (µg/Rm^3)**	0.28	0.28
Wet Reference Conc. (µg/Rm^3)*	0.29	0.30
Emission Rate (mg/s)	0.0053	0.0054

* 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 detected in samples from each test, specifically in the impinger sample analysis, 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)	0.11	0.075
Dry Reference Conc. (µg/Rm^3)*	0.19	0.13
Dry Adjusted Conc. (µg/Rm^3)**	0.16	0.099
Wet Reference Conc. (µg/Rm^3)*	0.16	0.11
Emission Rate (mg/s)	0.0030	0.0019

* 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, for and dioxins, furans and dioxin-like PCBs at the Quench Inlet 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 MOECC 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 MOECC to use only specific isomers in the higher congener groups to compare emission data with the MOECC 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). Dioxin and furan congener group analytical results and emission data for the tests performed at the Quench Inlet of each Boiler are given in Table 6 to Table 14 (Appendix 3 and Appendix 4). The results are shown as congener groups from T4CDF to O8CDF and T4CDD to O8CDD, as normally required by the MOECC.

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

Dioxin Congener Emission Parameter	Boiler No. 1		Boiler No. 2	
	Quench Inlet	BH Outlet	Quench Inlet	BH Outlet
Actual Conc. (ng/m^3)	7.78	0.43	8.17	1.39
Dry Reference Conc. (ng/Rm^3)*	13.8	0.74	14.6	2.38
Dry Adjusted Conc. (ng/Rm^3)**	10.9	0.60	11.2	1.85
Wet Reference Conc. (ng/Rm^3)*	11.8	0.63	12.4	2.01
Emission Rate (ng/s)	217	11.5	214	35.5

* 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		Boiler No. 2	
	Quench Inlet	BH Outlet	Quench Inlet	BH Outlet
Actual Conc. (ng/m^3)	61.2	<0.065	56.4	<0.093
Dry Reference Conc. (ng/Rm^3)*	109	<0.11	101	<0.16
Dry Adjusted Conc. (ng/Rm^3)**	85.3	<0.090	77.0	<0.12
Wet Reference Conc. (ng/Rm^3)*	92.7	<0.095	85.5	<0.13
Emission Rate (ng/s)	1702	<1.74	1479	<2.38

* 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 (Appendix 1 and Appendix 2) for the BH Outlet and Table 15 (Appendix 3 and Appendix 4) for the Quench Inlet. 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 and Table 16 to Table 24 (Appendix 3 and Appendix 4) for the Quench Inlets. 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 (Appendix 1 and Appendix 2) for the BH Outlet and Table 25 (Appendix 3 and Appendix 4) for the Quench Inlet. 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 method preferred by the MOECC, which uses International Toxicity Equivalency Factors (I-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.

Dioxin and furan TEQ emission data is given in Table 44 to Table 49 (Appendix 1 and Appendix 2) for the BH Outlet and Table 26 to Table 31 (Appendix 3 and Appendix 4) for the Quench Inlet.

The MOECC "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", published on January 4, 2017, however the dioxin and furan toxicity equivalent calculation methodology remains the same.

Tables 44 to 49 (Appendix 1 and Appendix 2) for the BH Outlet and Tables 26 to 31 (Appendix 3 and Appendix 4) for the Quench Inlet 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 (Appendix 1 and Appendix 2) for the BH Outlet and Table 32 (Appendix 3 and Appendix 4) for the Quench Inlet 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 is summarized below. As per the MOECC 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.

Dioxin and Furan Isomer Emission Parameter	Boiler No. 1 Quench Inlet	Boiler No. 1 BH Outlet	Boiler No. 2 Quench Inlet	Boiler No. 2 BH Outlet
Actual Conc. (pg TEQ/m^3)	1352	3.83	1281	5.22
Dry Reference Conc. (pg TEQ/Rm^3)*	2402	6.59	2292	8.94
Dry Adjusted Conc. (pg TEQ/Rm^3)**	1884	5.31	1748	6.96
Wet Reference Conc. (pg TEQ/Rm^3)*	2049	5.59	1943	7.54
Emission Rate (ng TEQ/s)	37.6	0.10	33.6	0.13

* 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, and Table 28B in Appendix 3 and Appendix 4) 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 Quench Inlet	Boiler No. 1 BH Outlet	Boiler No. 2 Quench Inlet	Boiler No. 2 BH Outlet
Dry Adjusted Conc. (pg TEQ/Rm^3)*	1991	<5.32	1841	<7.67

* 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 (Appendix 1 and Appendix 2) 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)	<327	<360
Dry Reference Conc. (ng/Rm^3)*	<562	<617
Dry Adjusted Conc. (ng/Rm^3)**	<454	<481
Wet Reference Conc. (ng/Rm^3)*	<477	<521
Emission Rate (µg/s)	<8.77	<9.17

* 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 (Appendix 1 and Appendix 2). 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 (Appendix 1 and Appendix 2) 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).

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)	<114	<109
Dry Reference Conc. (ng/Rm^3)*	<196	<187
Dry Adjusted Conc. (ng/Rm^3)**	<158	<146
Wet Reference Conc. (ng/Rm^3)*	<166	<158
Emission Rate (µg/s)	<3.05	<2.78

* 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 (Appendix 1 and Appendix 2). All of the blank analyses, for both the blank train and the laboratory blank, were below the detection limits. 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 (Appendix 1 and Appendix 2) 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 (Appendix 1 and Appendix 2), respectively. A summary of the average emission data is given in Table 79 (Appendix 1 and Appendix 2).

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)	<185	<227
Dry Reference Conc. (ng/Rm^3)*	<317	<389
Dry Adjusted Conc. (ng/Rm^3)**	<256	<303
Wet Reference Conc. (ng/Rm^3)*	<270	<328
Emission Rate (µg/s)	<4.95	<5.79

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

Table 80 (Appendix 1 and Appendix 2) 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 (Appendix 1 and Appendix 2).

The sample for Test No. 2 at the Boiler No. 2 BH Outlet was broken after the samples were delivered by ORTECH to the ALS Burlington laboratory and before the samples were analyzed by the ALS laboratory in Cincinnati, Ohio. The emission data for the Boiler No. 2 BH Outlet was calculated using the results for Test No. 1 and Test No. 3 only.

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)	<0.99	<0.86	<3.30	<4.22	3.11	2.72
Dry Reference Conc. (µg/Rm^3)*	<1.70	<1.49	<5.68	<7.27	5.34	4.68
Dry Adjusted Conc. (µg/Rm^3)**	<1.38	<1.14	<4.59	<5.57	4.32	3.59
Wet Reference Conc. (µg/Rm^3)*	<1.44	<1.25	<4.82	<6.10	4.53	3.93
Emission Rate (mg/s)	<0.027	<0.022	<0.089	<0.11	0.084	0.071

* at 25°C and 1 atmosphere

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

Acrolein was detected in the blank samples in quantities similar to those found in the test samples. The blank analysis was not subtracted from the test sample analyses during calculation of the emission data.

7.11 Volatile Organic Emission Data

Three twenty minute runs were completed for each test at the BH Outlet of each Boiler at an approximate flowrate of one liter per minute for 20 minutes for volatile organic compounds. One backup pair of tubes was collected for each test and archived in case a sample was lost during the extraction process by the analytical laboratory.

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. These tables indicate the total amount of each compound collected in the combined adsorbent tube samples from each volatile organics sampling train run. Emission data for the tests performed are provided in Table 85, 86 and 87 (Appendix 1 and Appendix 2) for Test No. 1, Test No. 2 and Test No. 3, respectively. 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 88 to 92 (Appendix 1 and Appendix 2), respectively. The average volatile organic emission data is summarized in Table 93 (Appendix 1 and Appendix 2).

For the purpose of determining average and total analytical results for the VOC compounds, any analyte that was not detected was assigned a value equal to the detection limit for calculation purposes.

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)	<26.1	<27.9
Dry Reference Conc. (µg/Rm^3)*	<44.9	<47.6
Dry Adjusted Conc. (µg/Rm^3)**	<36.1	<37.4
Wet Reference Conc. (µg/Rm^3)*	<38.1	<40.3
Emission Rate (mg/s)	<0.70	<0.70

* 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)*	<57.6	<61.0
Dry Adjusted Conc. (µg/Rm^3)**	<46.4	<47.7
Emission Rate (mg/s)	<0.90	<0.90

* 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 94 (Appendix 1 and Appendix 2). 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. The blank adsorbent tube results were below the detection limit for all target compounds. 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 MOECC guideline.

Dispersion modelling was completed using the CALPUFF model (using Version 6.263 as requested by the MOECC) by Golder Associates. The dispersion modelling results are detailed in Appendix 29. Golder Associates can provide the dispersion modelling zip files upon request.

The predicted POI concentrations, calculated based on the average total emission rate, for each contaminant included in the May 2017 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 (21% of the standard), all other contaminants were less than 1% of the relevant standard.

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)
- Carbon Dioxide (kg/Rm^3)
- 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 May 23 at 06:00 to May 26, 2017 at 18:00 for each Boiler. 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 30.

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.

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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
23-May-17	387	0	0	1161	1214	799	799	218	220	1130	681	124	124	4191	4251
24-May-17	382	0	0	1178	1229	803	796	222	214	1176	701	125	126	4208	4212
25-May-17	384	0	0	1173	1217	802	797	210	210	1282	701	125	124	4249	4371
26-May-17	388	0	0	1172	1176	800	801	216	215	1233	645	125	126	4280	4315
Average	385	0	0	1171	1209	801	798	217	215	1205	682	125	125	4233	4287

***** Gross turbine output

\- Indicates that no testing was performed on the Boiler on that day

10. CONCLUSIONS

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

- During the stack test periods the facility was maintained within the operational parameters defined by the amended ECA that constitutes normal operation. Testing was conducted at a steam production rate of greater than 796 tonnes of steam per day for each Boiler. 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).

- 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 6.263 as requested by the MOECC), 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 MOECC 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.

In Fall 2016 relative accuracy and system bias testing was conducted on the Continuous Emission Monitoring Systems (CEMS) installed at the Scrubber Inlet and BH Outlet of each Boiler. Covanta informed ORTECH that the 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. Note the DYEC CEMS data for the isokinetic test days at each unit 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 May 23 and May 24, 2017 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)*	-	-	-	385	-
Average Combustion Zone Temp. (°C)*	-	-	-	1171	-
Steam (tonnes/day)*	-	-	-	801	-
MSW Combusted (tonnes/day)*	-	-	-	217	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	1205	-
Carbon Injection (kg/day)*	-	-	-	125	-
Lime Injection (kg/day)*	-	-	-	4233	-
Filterable Particulate (mg/Rm^3) (1)	1.32	0.83	0.94	1.03	9
PM_{10} with Condensable (mg/Rm^3) (1)	<6.73	<6.86	<7.29	<6.96	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<6.65	<6.72	<6.89	<6.75	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.14	<0.12	<0.13	<0.13	-
Ammonia (mg/Rm^3) (1)	1.11	0.89	0.94	0.98	-
Cadmium ($\mu g/Rm^3$) (1)	0.11	0.17	0.074	0.12	7
Lead ($\mu g/Rm^3$) (1)	0.30	0.32	0.22	0.28	50
Mercury ($\mu g/Rm^3$) (1)	0.16	0.15	0.16	0.16	15
Antimony ($\mu g/Rm^3$) (1)	0.057	0.073	<0.044	<0.058	-
Arsenic ($\mu g/Rm^3$) (1)	<0.044	<0.044	<0.044	<0.044	-
Barium ($\mu g/Rm^3$) (1)	2.27	2.85	2.84	2.65	-
Beryllium ($\mu g/Rm^3$) (1)	<0.044	<0.044	<0.044	<0.044	-
Chromium ($\mu g/Rm^3$) (1)	1.04	1.31	0.70	1.02	-
Cobalt ($\mu g/Rm^3$) (1)	0.15	0.24	0.18	0.19	-
Copper ($\mu g/Rm^3$) (1)	1.38	1.55	0.64	1.19	-
Molybdenum ($\mu g/Rm^3$) (1)	4.04	4.46	4.10	4.20	-
Nickel ($\mu g/Rm^3$) (1)	1.43	1.71	0.93	1.36	-
Selenium ($\mu g/Rm^3$) (1)	<0.22	<0.22	<0.22	<0.22	-
Silver ($\mu g/Rm^3$) (1)	<0.044	<0.044	<0.044	<0.044	-
Thallium ($\mu g/Rm^3$) (1)	0.044	<0.044	<0.044	<0.044	-
Vanadium ($\mu g/Rm^3$) (1)	<0.022	<0.022	<0.022	<0.022	-
Zinc ($\mu g/Rm^3$) (1)	4.09	4.16	3.73	4.00	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<5.17	<4.93	<5.85	<5.32	60
Total Chlorobenzenes (ng/Rm^3)(1)	<476	<392	<492	<454	-
Total Chlorophenols (ng/Rm^3)(1)	<175	<144	<155	<158	-
Total PAHs (ng/Rm^3)(1)	<230	<265	<274	<256	-
Total VOCs ($\mu g/Rm^3$) (1) (4)	<50.3	<42.4	<46.6	<46.4	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	1702	2067	2204	1991	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	1.4	0.9	0.8	1.0	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)*	-	-	-	385	-
Average Combustion Zone Temp. (°C)*	-	-	-	1209	-
Steam (tonnes/day)*	-	-	-	798	-
MSW Combusted (tonnes/day)*	-	-	-	215	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	682	-
Carbon Injection (kg/day)*	-	-	-	125	-
Lime Injection (kg/day)*	-	-	-	4287	-
Filterable Particulate (mg/Rm^3) (1)	1.35	1.33	0.84	1.17	9
PM_{10} with Condensable (mg/Rm^3) (1)	<3.34	<1.78	<1.75	<2.28	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<3.28	<1.64	<1.69	<2.19	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.13	<0.12	<0.14	<0.13	-
Ammonia (mg/Rm^3) (1)	0.82	0.65	0.72	0.73	-
Cadmium (µg/Rm^3) (1)	0.068	0.070	0.070	0.069	7
Lead (µg/Rm^3) (1)	0.17	0.33	0.33	0.28	50
Mercury (µg/Rm^3) (1)	0.10	0.10	0.099	0.099	15
Antimony (µg/Rm^3) (1)	<0.044	0.10	0.059	<0.068	-
Arsenic (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Barium (µg/Rm^3) (1)	2.58	2.50	2.26	2.45	-
Beryllium (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Chromium (µg/Rm^3) (1)	1.00	1.03	0.92	0.99	-
Cobalt (µg/Rm^3) (1)	0.14	0.16	0.17	0.16	-
Copper (µg/Rm^3) (1)	1.03	0.55	0.50	0.69	-
Molybdenum (µg/Rm^3) (1)	4.25	4.00	3.92	4.06	-
Nickel (µg/Rm^3) (1)	1.21	1.52	1.26	1.33	-
Selenium (µg/Rm^3) (1)	<0.22	<0.22	<0.21	<0.22	-
Silver (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Thallium (µg/Rm^3) (1)	<0.044	<0.044	<0.043	<0.044	-
Vanadium (µg/Rm^3) (1)	<0.022	<0.022	<0.021	<0.022	-
Zinc (µg/Rm^3) (1)	2.77	4.78	2.03	3.19	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<7.52	<7.01	<8.47	<7.67	60
Total Chlorobenzenes (ng/Rm^3)(1)	<452	<571	<420	<481	-
Total Chlorophenols (ng/Rm^3)(1)	<156	<144	<137	<146	-
Total PAHs (ng/Rm^3)(1)	<390	<242	<278	<303	-
Total VOCs (µg/Rm^3) (1) (4)	<44.4	<38.0	<50.4	<47.4	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	1792	2090	1639	1841	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	0.6	0.9	0.9	0.8	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. The aldehyde sample for Test No. 2 was broken after the samples were delivered to the analytical laboratory. Results displayed are from the Volatile Organic Sampling Train only (i.e. excludes acetaldehyde, formaldehyde and acrolein). Test No. 2 was excluded from the average results.

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)	9.3	12.9	17.0	40
	Hydrogen Chloride (mg/Rm^3)(2)	2.0	2.1	2.5	9
	Nitrogen Oxides (mg/Rm^3)(2)	108	110	110	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0	0	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3)(1)	9.8	15.8	22.8	40
	Hydrogen Chloride (mg/Rm^3)(2)	0.5	3.1	4.5	9
	Nitrogen Oxides (mg/Rm^3)(2)	111	112	113	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0	0	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
(96 pages)

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 23, 2017	10:32	13:39	180
2	May 23, 2017	14:30	17:41	180
3	May 25, 2017	9:01	12:56	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 24, 2017	8:18	10:21	120.1
2	May 24, 2017	11:38	13:41	119.9
3	May 24, 2017	15:06	17:09	120

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 23, 2017	10:33	11:33	60
2	May 23, 2017	12:17	13:17	60
3	May 23, 2017	14:22	15:22	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 25, 2017	9:06	13:33	240
2	May 25, 2017	15:01	19:38	240
3	May 26, 2017	8:15	12:33	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	May 26, 2017	8:17	9:17	60
2	May 26, 2017	9:27	10:27	60
3	May 26, 2017	10:54	11:54	60

Volatile Organic Compounds Trains

Test Number	Tube Pair	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	1	May 25, 2017	9:20	9:40	20
	2	May 25, 2017	9:56	10:16	20
	3	May 25, 2017	10:26	10:46	20
	4	May 25, 2017	10:57	11:17	20
2	1	May 25, 2017	11:39	11:59	20
	2	May 25, 2017	12:07	12:27	20
	3	May 25, 2017	13:00	13:20	20
	4	May 25, 2017	15:02	15:22	20
3	1	May 25, 2017	15:33	15:53	20
	2	May 25, 2017	16:04	16:24	20
	3	May 25, 2017	16:34	16:54	20
	4	May 25, 2017	17:01	17:21	20

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	May 24, 2017	11:42	12:42	60
2	May 24, 2017	12:51	13:51	60
3	May 24, 2017	13:58	14:58	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	0.844	0.978	6.42	3.638	99.7
2	0.844	0.978	6.42	3.637	99.4
3	0.844	0.978	6.48	3.698	99.7

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	0.840	0.978	4.50	1.142	88.8
2	0.840	0.978	4.50	1.152	91.1
3	0.840	0.978	4.50	1.172	93.7

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.849	0.986	5.93	0.989	97.7
2	0.849	0.986	5.93	1.029	99.9
3	0.849	0.986	5.93	0.986	100.6

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	0.986	6.42	4.876	99.6
2	0.844	0.986	6.42	4.864	99.1
3	0.844	0.986	6.42	4.928	99.7

* 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	142	16.3	18.0	-2.66	97.5	10.7	8.48
2	142	15.7	18.0	-2.66	97.3	10.6	8.49
3	142	15.5	18.0	-2.69	96.6	10.4	8.62
Average	142	15.8	18.0	-2.67	97.2	10.6	8.53

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	142	16.3	19.4	-2.74	96.9	10.5	8.54
2	142	15.5	18.9	-2.74	96.9	10.4	8.60
3	142	15.6	18.7	-2.74	99.5	10.5	8.50
Average	142	15.8	19.0	-2.74	97.8	10.5	8.55

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	16.3	17.6	-2.66	97.6	10.8	8.47
2	142	15.8	17.8	-2.66	97.5	10.6	8.66
3	142	15.8	17.0	-2.66	97.4	10.6	8.60
Average	142	16.0	17.4	-2.66	97.5	10.6	8.58

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	141	15.1	18.0	-2.69	96.6	10.5	8.56
2	142	15.1	18.1	-2.69	96.3	10.4	8.59
3	142	15.5	18.3	-2.55	97.0	10.5	8.62
Average	142	15.2	18.1	-2.64	96.6	10.5	8.59

* Dry basis, measured by the DYEC CEMS

** Sampling was conducted isokinetically at a single point 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	26.6	15.4	19.3	18.4
2	26.6	15.5	19.4	18.3
3	26.5	15.4	19.1	18.2
Average	26.6	15.4	19.3	18.3

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	28.5	16.4	20.5	19.6
2	27.9	16.2	20.1	19.2
3	27.5	15.9	19.9	18.9
Average	28.0	16.2	20.2	19.2

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	15.0	18.9	18.0
2	26.3	15.3	18.9	18.2
3	25.1	14.6	18.1	17.3
Average	25.8	15.0	18.6	17.8

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	26.6	15.5	19.3	18.3
2	26.8	15.6	19.3	18.3
3	27.0	15.7	19.4	18.5
Average	26.8	15.6	19.4	18.4

* At 25°C and 1 atmosphere

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

*** Sampling was conducted isokinetically at a single point 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	Particulate Concentration				Particulate
	Probe Rinse	Main Filter	Total	Volume Sampled	Actual	Dry Reference	Dry Adjusted	Wet Reference	Emission Rate
	mg	mg	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	2.7	3.3	6.0	3.638	0.96	1.65	1.32	1.38	25.4
2	2.1	1.7	3.8	3.637	0.61	1.05	0.83	0.88	16.1
3	2.2	2.1	4.3	3.698	0.67	1.16	0.94	0.98	17.9
Average					0.75	1.29	1.03	1.08	19.8
Blank	2.8	<0.1	<2.9						

* 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. 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	<0.2	1.142	<0.10	<0.18	<0.14	<0.15	<2.87
2	<0.9	1.152	<0.45	<0.78	<0.63	<0.66	<12.7
3	<0.5	1.172	<0.25	<0.43	<0.34	<0.36	<6.78
Average			<0.27	<0.46	<0.37	<0.39	<7.44
Blank	<0.2						

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	1.142	<0.15	<0.26	<0.21	<0.22	<4.31
2	<1.1	1.152	<0.55	<0.95	<0.77	<0.81	<15.5
3	<1.1	1.172	<0.54	<0.94	<0.75	<0.79	<14.9
Average			<0.42	<0.72	<0.58	<0.61	<11.6
Blank	<0.5						

* 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 in at least one of the fractions, and the value of the detection limit was used to calculate the emission data.

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	7.7	1.142	3.88	6.74	5.39	5.64	111
2	7.3	1.152	3.68	6.34	5.11	5.35	103
3	8.1	1.172	4.00	6.91	5.52	5.81	110
Average			3.85	6.66	5.34	5.60	108
Blank	2.9						

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	1.6	1.142	0.81	1.40	1.12	1.17	23.0
2	1.4	1.152	0.71	1.22	0.98	1.03	19.7
3	1.5	1.172	0.74	1.28	1.02	1.08	20.3
Average			0.75	1.30	1.04	1.09	21.0
Blank	0.4						

* 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*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	5.36	0.989	3.14	5.42	4.32	4.54	83.5
2	5.64	1.029	3.17	5.48	4.37	4.59	84.5
3	5.48	0.986	3.23	5.56	4.43	4.68	85.9
Average			3.18	5.49	4.37	4.60	84.6
Blank	<0.689						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Fluoride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.174	0.989	<0.10	<0.18	<0.14	<0.15	<2.71
2	<0.156	1.029	<0.088	<0.15	<0.12	<0.13	<2.34
3	<0.163	0.986	<0.096	<0.17	<0.13	<0.14	<2.55
Average			<0.095	<0.16	<0.13	<0.14	<2.53
Blank	<0.117						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	1.38	0.989	0.81	1.40	1.11	1.17	21.5
2	1.15	1.029	0.65	1.12	0.89	0.94	17.2
3	1.16	0.986	0.68	1.18	0.94	0.99	18.2
Average			0.71	1.23	0.98	1.03	19.0
Blank	<0.297						

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 May 23 to May 26, 2017

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.69	8.54	9.37
BH Outlet	Carbon Dioxide (kg/Rm^3, 1 hr Avg) *	0.18	0.19	0.20
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	8	13	21
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	9.3	12.9	17.0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0	0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0	0
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	92	109	133
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	108	110	110
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	2	2	3
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	2.0	2.1	2.5
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	8	8	9

Data measured by the ORTECH CEMS on May 24, 2017

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0.7	1.2	1.8
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0.8	1.1	1.4
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0.5	1.0	1.3
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.1	

* 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	0.26	<0.1	0.26
Arsenic	<1	<0.2	<0.20
Barium	9.64	0.74	10.4
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.24	0.27	0.51
Chromium	4.06	0.70	4.76
Cobalt	0.68	<0.1	0.68
Copper	1.87	4.45	6.32
Lead	0.96	0.40	1.36
Manganese	1.82	0.70	2.52
Mercury *	0.041	0.69	0.73
Molybdenum	18.2	0.23	18.4
Nickel	5.08	1.44	6.52
Selenium	<2	<1	<1.00
Silver	<0.2	<0.1	<0.20
Thallium	0.20	<0.05	0.20
Vanadium	<1	<0.1	<0.10
Zinc	13.8	4.89	18.7
Total			<73.1

* 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 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	0.33	<0.1	0.33
Arsenic	<1	<0.2	<0.20
Barium	11.9	1.08	13.0
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.70	0.089	0.79
Chromium	5.04	0.93	5.97
Cobalt	1.10	<0.1	1.10
Copper	1.49	5.57	7.06
Lead	0.90	0.55	1.44
Manganese	1.53	1.10	2.63
Mercury *	0.039	0.63	0.67
Molybdenum	19.9	0.43	20.3
Nickel	6.51	1.31	7.82
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	12.0	6.99	19.0
Total			<82.0

* 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 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	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	11.8	1.25	13.1
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.34	<0.05	0.34
Chromium	2.73	0.47	3.20
Cobalt	0.83	<0.1	0.83
Copper	1.99	0.97	2.96
Lead	0.78	0.23	1.00
Manganese	1.24	1.38	2.62
Mercury *	0.030	0.70	0.73
Molybdenum	18.8	<0.1	18.8
Nickel	3.94	0.34	4.28
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	12.9	4.23	17.1
Total			<67.0

* 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 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	0.26	0.041	0.071	0.057	0.059	0.0011
Arsenic	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Barium	10.4	1.65	2.85	2.27	2.39	0.044
Beryllium	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Cadmium	0.51	0.081	0.14	0.11	0.12	0.0022
Chromium	4.76	0.76	1.31	1.04	1.09	0.020
Cobalt	0.68	0.11	0.19	0.15	0.16	0.0029
Copper	6.32	1.01	1.74	1.38	1.45	0.027
Lead	1.36	0.22	0.37	0.30	0.31	0.0058
Manganese	2.52	0.40	0.69	0.55	0.58	0.011
Mercury	0.73	0.12	0.20	0.16	0.17	0.0031
Molybdenum	18.4	2.93	5.07	4.04	4.24	0.078
Nickel	6.52	1.04	1.79	1.43	1.50	0.028
Selenium	<1.00	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Thallium	0.20	0.032	0.055	0.044	0.046	0.00085
Vanadium	<0.10	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	18.7	2.97	5.14	4.09	4.30	0.079
Total	<73.1	<11.6	<20.1	<16.0	<16.8	<0.31

Dry Gas Volume Sampled (Rm^3*) :	3.638
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.4

* 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	0.33	0.053	0.092	0.073	0.077	0.0014
Arsenic	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Barium	13.0	2.08	3.57	2.85	3.01	0.055
Beryllium	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Cadmium	0.79	0.13	0.22	0.17	0.18	0.0034
Chromium	5.97	0.95	1.64	1.31	1.38	0.025
Cobalt	1.10	0.18	0.30	0.24	0.25	0.0047
Copper	7.06	1.13	1.94	1.55	1.64	0.030
Lead	1.44	0.23	0.40	0.32	0.33	0.0061
Manganese	2.63	0.42	0.72	0.58	0.61	0.011
Mercury	0.67	0.11	0.18	0.15	0.16	0.0028
Molybdenum	20.3	3.25	5.59	4.46	4.71	0.086
Nickel	7.82	1.25	2.15	1.71	1.81	0.033
Selenium	<1.00	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Thallium	<0.20	<0.032	<0.055	<0.044	<0.046	<0.00085
Vanadium	<0.10	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	19.0	3.04	5.22	4.16	4.40	0.081
Total	<82.0	<13.1	<22.6	<18.0	<19.0	<0.35

Dry Gas Volume Sampled (Rm^3*) :	3.637
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
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 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	<0.20	<0.031	<0.054	<0.044	<0.046	<0.00083
Arsenic	<0.20	<0.031	<0.054	<0.044	<0.046	<0.00083
Barium	13.1	2.04	3.53	2.84	2.98	0.054
Beryllium	<0.20	<0.031	<0.054	<0.044	<0.046	<0.00083
Cadmium	0.34	0.053	0.092	0.074	0.077	0.0014
Chromium	3.20	0.50	0.87	0.70	0.73	0.013
Cobalt	0.83	0.13	0.23	0.18	0.19	0.0035
Copper	2.96	0.46	0.80	0.64	0.68	0.012
Lead	1.00	0.16	0.27	0.22	0.23	0.0042
Manganese	2.62	0.41	0.71	0.57	0.60	0.011
Mercury	0.73	0.11	0.20	0.16	0.17	0.0030
Molybdenum	18.8	2.94	5.08	4.10	4.29	0.078
Nickel	4.28	0.67	1.16	0.93	0.98	0.018
Selenium	<1.00	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.20	<0.031	<0.054	<0.044	<0.046	<0.00083
Thallium	<0.20	<0.031	<0.054	<0.044	<0.046	<0.00083
Vanadium	<0.10	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	17.1	2.68	4.63	3.73	3.91	0.071
Total	<67.0	<10.5	<18.1	<14.6	<15.3	<0.28

Dry Gas Volume Sampled (Rm^3*) :	3.698
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	18.2

* 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	0.041	0.053	<0.031	<0.042	26.4
Arsenic	<0.032	<0.032	<0.031	<0.032	1.1
Barium	1.65	2.08	2.04	1.92	12.3
Beryllium	<0.032	<0.032	<0.031	<0.032	1.1
Cadmium	0.081	0.13	0.053	0.087	42.7
Chromium	0.76	0.95	0.50	0.74	30.9
Cobalt	0.11	0.18	0.13	0.14	24.9
Copper	1.01	1.13	0.46	0.87	41.0
Lead	0.22	0.23	0.16	0.20	19.4
Manganese	0.40	0.42	0.41	0.41	2.4
Mercury	0.12	0.11	0.11	0.11	4.2
Molybdenum	2.93	3.25	2.94	3.04	6.0
Nickel	1.04	1.25	0.67	0.99	29.8
Selenium	<0.16	<0.16	<0.16	<0.16	1.1
Silver	<0.032	<0.032	<0.031	<0.032	1.1
Thallium	0.032	<0.032	<0.031	<0.032	1.2
Vanadium	<0.016	<0.016	<0.016	<0.016	1.1
Zinc	2.97	3.04	2.68	2.90	6.6
Total	<11.6	<13.1	<10.5	<11.7	11.2

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	0.071	0.092	<0.054	<0.072	26.2
Arsenic	<0.055	<0.055	<0.054	<0.055	0.9
Barium	2.85	3.57	3.53	3.32	12.1
Beryllium	<0.055	<0.055	<0.054	<0.055	0.9
Cadmium	0.14	0.22	0.092	0.15	42.4
Chromium	1.31	1.64	0.87	1.27	30.6
Cobalt	0.19	0.30	0.23	0.24	24.6
Copper	1.74	1.94	0.80	1.49	40.8
Lead	0.37	0.40	0.27	0.35	19.2
Manganese	0.69	0.72	0.71	0.71	2.2
Mercury	0.20	0.18	0.20	0.19	4.5
Molybdenum	5.07	5.59	5.08	5.25	5.7
Nickel	1.79	2.15	1.16	1.70	29.5
Selenium	<0.27	<0.27	<0.27	<0.27	0.9
Silver	<0.055	<0.055	<0.054	<0.055	0.9
Thallium	0.055	<0.055	<0.054	<0.055	1.1
Vanadium	<0.027	<0.027	<0.027	<0.027	0.9
Zinc	5.14	5.22	4.63	5.00	6.4
Total	<20.1	<22.6	<18.1	<20.3	10.9

* 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	0.057	0.073	<0.044	<0.058	25.7
Arsenic	<0.044	<0.044	<0.044	<0.044	0.3
Barium	2.27	2.85	2.84	2.65	12.5
Beryllium	<0.044	<0.044	<0.044	<0.044	0.3
Cadmium	0.11	0.17	0.074	0.12	42.0
Chromium	1.04	1.31	0.70	1.02	30.2
Cobalt	0.15	0.24	0.18	0.19	24.5
Copper	1.38	1.55	0.64	1.19	40.4
Lead	0.30	0.32	0.22	0.28	18.7
Manganese	0.55	0.58	0.57	0.57	2.3
Mercury	0.16	0.15	0.16	0.16	4.7
Molybdenum	4.04	4.46	4.10	4.20	5.4
Nickel	1.43	1.71	0.93	1.36	29.1
Selenium	<0.22	<0.22	<0.22	<0.22	0.3
Silver	<0.044	<0.044	<0.044	<0.044	0.3
Thallium	0.044	<0.044	<0.044	<0.044	0.5
Vanadium	<0.022	<0.022	<0.022	<0.022	0.3
Zinc	4.09	4.16	3.73	4.00	5.8
Total	<16.0	<18.0	<14.6	<16.2	10.5

** 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	0.059	0.077	<0.046	<0.061	26.2
Arsenic	<0.046	<0.046	<0.046	<0.046	0.7
Barium	2.39	3.01	2.98	2.79	12.6
Beryllium	<0.046	<0.046	<0.046	<0.046	0.7
Cadmium	0.12	0.18	0.077	0.13	42.4
Chromium	1.09	1.38	0.73	1.07	30.6
Cobalt	0.16	0.25	0.19	0.20	24.9
Copper	1.45	1.64	0.68	1.26	40.7
Lead	0.31	0.33	0.23	0.29	19.0
Manganese	0.58	0.61	0.60	0.60	2.6
Mercury	0.17	0.16	0.17	0.16	4.3
Molybdenum	4.24	4.71	4.29	4.42	5.8
Nickel	1.50	1.81	0.98	1.43	29.5
Selenium	<0.23	<0.23	<0.23	<0.23	0.7
Silver	<0.046	<0.046	<0.046	<0.046	0.7
Thallium	0.046	<0.046	<0.046	<0.046	0.8
Vanadium	<0.023	<0.023	<0.023	<0.023	0.7
Zinc	4.30	4.40	3.91	4.20	6.1
Total	<16.8	<19.0	<15.3	<17.0	10.9

* 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	0.0011	0.0014	<0.00083	<0.0011	26.5
Arsenic	<0.00085	<0.00085	<0.00083	<0.00084	1.3
Barium	0.044	0.055	0.054	0.051	12.1
Beryllium	<0.00085	<0.00085	<0.00083	<0.00084	1.3
Cadmium	0.0022	0.0034	0.0014	0.0023	42.7
Chromium	0.020	0.025	0.013	0.020	30.9
Cobalt	0.0029	0.0047	0.0035	0.0037	24.9
Copper	0.027	0.030	0.012	0.023	41.0
Lead	0.0058	0.0061	0.0042	0.0053	19.5
Manganese	0.011	0.011	0.011	0.011	2.3
Mercury	0.0031	0.0028	0.0030	0.0030	4.3
Molybdenum	0.078	0.086	0.078	0.081	5.9
Nickel	0.028	0.033	0.018	0.026	29.8
Selenium	<0.0042	<0.0042	<0.0042	<0.0042	1.3
Silver	<0.00085	<0.00085	<0.00083	<0.00084	1.3
Thallium	0.00085	<0.00085	<0.00083	<0.00084	1.4
Vanadium	<0.00042	<0.00042	<0.00042	<0.00042	1.3
Zinc	0.079	0.081	0.071	0.077	6.7
Total	<0.31	<0.35	<0.28	<0.31	11.3

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

Metal	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.042	<0.072	<0.058	<0.061	<0.0011
Arsenic	<0.032	<0.055	<0.044	<0.046	<0.00084
Barium	1.92	3.32	2.65	2.79	0.051
Beryllium	<0.032	<0.055	<0.044	<0.046	<0.00084
Cadmium	0.087	0.15	0.12	0.13	0.0023
Chromium	0.74	1.27	1.02	1.07	0.020
Cobalt	0.14	0.24	0.19	0.20	0.0037
Copper	0.87	1.49	1.19	1.26	0.023
Lead	0.20	0.35	0.28	0.29	0.0053
Manganese	0.41	0.71	0.57	0.60	0.011
Mercury	0.11	0.19	0.16	0.16	0.0030
Molybdenum	3.04	5.25	4.20	4.42	0.081
Nickel	0.99	1.70	1.36	1.43	0.026
Selenium	<0.16	<0.27	<0.22	<0.23	<0.0042
Silver	<0.032	<0.055	<0.044	<0.046	<0.00084
Thallium	<0.032	<0.055	<0.044	<0.046	<0.00084
Vanadium	<0.016	<0.027	<0.022	<0.023	<0.00042
Zinc	2.90	5.00	4.00	4.20	0.077
Total	<11.7	<20.3	<16.2	<17.0	<0.31

* 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	10.3	<0.5	10.3
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.13	0.34	2.47
Cobalt	0.88	<0.1	0.88
Copper	<1	2.80	2.80
Lead	<0.5	0.15	0.15
Manganese	<0.5	0.23	0.23
Mercury *	0.032	0.16	0.19
Molybdenum	17.6	0.14	17.7
Nickel	3.14	0.19	3.33
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			<46.3

* 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. 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	191	0.023	0.039	0.031	0.033	0.61
Pentachlorodibenzo-p-dioxins	321	0.038	0.066	0.053	0.056	1.02
Hexachlorodibenzo-p-dioxins	611	0.073	0.13	0.10	0.11	1.94
Heptachlorodibenzo-p-dioxins	1110	0.13	0.23	0.18	0.19	3.53
Octachlorodibenzo-p-dioxin	1240	0.15	0.25	0.20	0.22	3.94
Total	3473	0.42	0.71	0.57	0.60	11.0

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	107	0.013	0.022	0.018	0.019	0.34
Pentachlorodibenzofurans	112	0.013	0.023	0.018	0.019	0.36
Hexachlorodibenzofurans	111	0.013	0.023	0.018	0.019	0.35
Heptachlorodibenzofurans	157	0.019	0.032	0.026	0.027	0.50
Octachlorodibenzofuran	<86	<0.010	<0.018	<0.014	<0.015	<0.27
Total	<573	<0.068	<0.12	<0.094	<0.10	<1.82

Dry Gas Volume Sampled (Rm^3*) :	4.876
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
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

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	173	0.021	0.036	0.029	0.030	0.55
Pentachlorodibenzo-p-dioxins	300	0.036	0.062	0.050	0.053	0.96
Hexachlorodibenzo-p-dioxins	743	0.089	0.15	0.12	0.13	2.38
Heptachlorodibenzo-p-dioxins	1060	0.13	0.22	0.18	0.19	3.40
Octachlorodibenzo-p-dioxin	1270	0.15	0.26	0.21	0.22	4.07
Total	3546	0.42	0.73	0.59	0.62	11.4

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	96.7	0.012	0.020	0.016	0.017	0.31
Pentachlorodibenzofurans	78.3	0.0094	0.016	0.013	0.014	0.25
Hexachlorodibenzofurans	106	0.013	0.022	0.018	0.019	0.34
Heptachlorodibenzofurans	147	0.018	0.030	0.024	0.026	0.47
Octachlorodibenzofuran	<86	<0.010	<0.018	<0.014	<0.015	<0.28
Total	<514	<0.062	<0.11	<0.085	<0.090	<1.65

Dry Gas Volume Sampled (Rm^3*) :	4.864
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.6
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

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	192	0.023	0.039	0.032	0.033	0.61
Pentachlorodibenzo-p-dioxins	331	0.039	0.067	0.054	0.057	1.05
Hexachlorodibenzo-p-dioxins	698	0.082	0.14	0.11	0.12	2.22
Heptachlorodibenzo-p-dioxins	1240	0.15	0.25	0.20	0.21	3.95
Octachlorodibenzo-p-dioxin	1370	0.16	0.28	0.22	0.24	4.36
Total	3831	0.45	0.78	0.63	0.66	12.2

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	109	0.013	0.022	0.018	0.019	0.35
Pentachlorodibenzofurans	136	0.016	0.028	0.022	0.023	0.43
Hexachlorodibenzofurans	73.9	0.0087	0.015	0.012	0.013	0.24
Heptachlorodibenzofurans	143	0.017	0.029	0.023	0.025	0.46
Octachlorodibenzofuran	<89	<0.011	<0.018	<0.015	<0.015	<0.28
Total	<551	<0.065	<0.11	<0.090	<0.095	<1.76

Dry Gas Volume Sampled (Rm^3*) :	4.928
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* 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	0.023	0.021	0.023	0.022	5.3
Pentachlorodibenzo-p-dioxins	0.038	0.036	0.039	0.038	4.4
Hexachlorodibenzo-p-dioxins	0.073	0.089	0.082	0.081	9.8
Heptachlorodibenzo-p-dioxins	0.13	0.13	0.15	0.14	7.4
Octachlorodibenzo-p-dioxin	0.15	0.15	0.16	0.15	4.5
Total	0.42	0.42	0.45	0.43	4.5

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	0.013	0.012	0.013	0.012	5.8
Pentachlorodibenzofurans	0.013	0.0094	0.016	0.013	26.0
Hexachlorodibenzofurans	0.013	0.013	0.0087	0.012	21.4
Heptachlorodibenzofurans	0.019	0.018	0.017	0.018	5.4
Octachlorodibenzofuran	<0.010	<0.010	<0.011	<0.010	1.2
Total	<0.068	<0.062	<0.065	<0.065	5.4

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	0.039	0.036	0.039	0.038	5.3
Pentachlorodibenzo-p-dioxins	0.066	0.062	0.067	0.065	4.4
Hexachlorodibenzo-p-dioxins	0.13	0.15	0.14	0.14	9.9
Heptachlorodibenzo-p-dioxins	0.23	0.22	0.25	0.23	7.5
Octachlorodibenzo-p-dioxin	0.25	0.26	0.28	0.26	4.6
Total	0.71	0.73	0.78	0.74	4.6

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	0.022	0.020	0.022	0.021	5.8
Pentachlorodibenzofurans	0.023	0.016	0.028	0.022	26.0
Hexachlorodibenzofurans	0.023	0.022	0.015	0.020	21.3
Heptachlorodibenzofurans	0.032	0.030	0.029	0.030	5.3
Octachlorodibenzofuran	<0.018	<0.018	<0.018	<0.018	1.3
Total	<0.12	<0.11	<0.11	<0.11	5.3

* 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	0.031	0.029	0.032	0.031	5.2
Pentachlorodibenzo-p-dioxins	0.053	0.050	0.054	0.052	4.4
Hexachlorodibenzo-p-dioxins	0.10	0.12	0.11	0.11	10.2
Heptachlorodibenzo-p-dioxins	0.18	0.18	0.20	0.19	7.6
Octachlorodibenzo-p-dioxin	0.20	0.21	0.22	0.21	5.0
Total	0.57	0.59	0.63	0.60	4.9

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	0.018	0.016	0.018	0.017	5.7
Pentachlorodibenzofurans	0.018	0.013	0.022	0.018	26.1
Hexachlorodibenzofurans	0.018	0.018	0.012	0.016	21.1
Heptachlorodibenzofurans	0.026	0.024	0.023	0.025	4.9
Octachlorodibenzofuran	<0.014	<0.014	<0.015	<0.014	1.6
Total	<0.094	<0.085	<0.090	<0.090	5.0

* 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	0.033	0.030	0.033	0.032	5.0
Pentachlorodibenzo-p-dioxins	0.056	0.053	0.057	0.055	4.1
Hexachlorodibenzo-p-dioxins	0.11	0.13	0.12	0.12	10.2
Heptachlorodibenzo-p-dioxins	0.19	0.19	0.21	0.20	7.3
Octachlorodibenzo-p-dioxin	0.22	0.22	0.24	0.22	4.6
Total	0.60	0.62	0.66	0.63	4.6

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	0.019	0.017	0.019	0.018	5.5
Pentachlorodibenzofurans	0.019	0.014	0.023	0.019	25.8
Hexachlorodibenzofurans	0.019	0.019	0.013	0.017	21.3
Heptachlorodibenzofurans	0.027	0.026	0.025	0.026	5.1
Octachlorodibenzofuran	<0.015	<0.015	<0.015	<0.015	1.3
Total	<0.10	<0.090	<0.095	<0.095	5.0

* 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	0.61	0.55	0.61	0.59	5.3
Pentachlorodibenzo-p-dioxins	1.02	0.96	1.05	1.01	4.6
Hexachlorodibenzo-p-dioxins	1.94	2.38	2.22	2.18	10.2
Heptachlorodibenzo-p-dioxins	3.53	3.40	3.95	3.63	7.9
Octachlorodibenzo-p-dioxin	3.94	4.07	4.36	4.13	5.2
Total	11.0	11.4	12.2	11.5	5.2

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	0.34	0.31	0.35	0.33	5.9
Pentachlorodibenzofurans	0.36	0.25	0.43	0.35	26.4
Hexachlorodibenzofurans	0.35	0.34	0.24	0.31	20.8
Heptachlorodibenzofurans	0.50	0.47	0.46	0.48	4.6
Octachlorodibenzofuran	<0.27	<0.28	<0.28	<0.28	1.9
Total	<1.82	<1.65	<1.76	<1.74	5.0

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	0.022	0.038	0.031	0.032	0.59
Pentachlorodibenzo-p-dioxins	0.038	0.065	0.052	0.055	1.01
Hexachlorodibenzo-p-dioxins	0.081	0.14	0.11	0.12	2.18
Heptachlorodibenzo-p-dioxins	0.14	0.23	0.19	0.20	3.63
Octachlorodibenzo-p-dioxin	0.15	0.26	0.21	0.22	4.13
Total	0.43	0.74	0.60	0.63	11.5

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	0.012	0.021	0.017	0.018	0.33
Pentachlorodibenzofurans	0.013	0.022	0.018	0.019	0.35
Hexachlorodibenzofurans	0.012	0.020	0.016	0.017	0.31
Heptachlorodibenzofurans	0.018	0.030	0.025	0.026	0.48
Octachlorodibenzofuran	<0.010	<0.018	<0.014	<0.015	<0.28
Total	<0.065	<0.11	<0.090	<0.095	<1.74

* 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	Laboratory Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<1.9	<0.66
Pentachlorodibenzo-p-dioxins	<1.2	<1.1
Hexachlorodibenzo-p-dioxins	<1.2	<0.83
Heptachlorodibenzo-p-dioxins	2.06	<1.3
Octachlorodibenzo-p-dioxin	<2.6	<9.1
Total	<8.96	<13.0

Furans

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	<1.9	2.36
Pentachlorodibenzofurans	<1.2	<0.7
Hexachlorodibenzofurans	2.02	<0.7
Heptachlorodibenzofurans	<0.54	0.85
Octachlorodibenzofuran	1.38	1.61
Total	<7.04	<6.19

"<" 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	2.35	0.28	0.48	0.39	0.41	0.0075
12378-pentachlorodibenzo-p-dioxin	7.16	0.86	1.47	1.18	1.24	0.023
123478-hexachlorodibenzo-p-dioxin	12.5	1.49	2.56	2.06	2.17	0.040
123678-hexachlorodibenzo-p-dioxin	31.9	3.81	6.54	5.25	5.54	0.10
123789-hexachlorodibenzo-p-dioxin	21.3	2.55	4.37	3.51	3.70	0.068
1234678-heptachlorodibenzo-p-dioxin	467	55.8	95.8	76.9	81.1	1.48
Octachlorodibenzo-p-dioxin	1240	148	254	204	215	3.94
2378-tetrachlorodibenzofuran	10.4	1.24	2.13	1.71	1.81	0.033
12378-pentachlorodibenzofuran	<3.6	<0.43	<0.74	<0.59	<0.63	<0.011
23478-pentachlorodibenzofuran	12.4	1.48	2.54	2.04	2.15	0.039
123478-hexachlorodibenzofuran	<11	<1.31	<2.26	<1.81	<1.91	<0.035
123678-hexachlorodibenzofuran	<10	<1.20	<2.05	<1.65	<1.74	<0.032
234678-hexachlorodibenzofuran	19.3	2.31	3.96	3.18	3.35	0.061
123789-hexachlorodibenzofuran	4.79	0.57	0.98	0.79	0.83	0.015
1234678-heptachlorodibenzofuran	84.5	10.1	17.3	13.9	14.7	0.27
1234789-heptachlorodibenzofuran	14.0	1.67	2.87	2.31	2.43	0.045
Octachlorodibenzofuran	<86	<10.3	<17.6	<14.2	<14.9	<0.27
PCB 81	136	16.3	27.9	22.4	23.6	0.43
PCB 77	135	16.1	27.7	22.2	23.5	0.43
PCB 123	<58	<6.93	<11.9	<9.55	<10.1	<0.18
PCB 118	3060	366	628	504	532	9.73
PCB 114	141	16.9	28.9	23.2	24.5	0.45
PCB 105	1210	145	248	199	210	3.85
PCB 126	<60	<7.17	<12.3	<9.88	<10.4	<0.19
PCB 167	<21	<2.51	<4.31	<3.46	<3.65	<0.067
PCB 156	<99	<11.8	<20.3	<16.3	<17.2	<0.31
PCB 157	<22	<2.63	<4.51	<3.62	<3.82	<0.070
PCB 169	<23	<2.75	<4.72	<3.79	<4.00	<0.073
PCB 189	<8.8	<1.05	<1.80	<1.45	<1.53	<0.028
Total Dioxins & Furans Only	<2038	<244	<418	<336	<354	<6.48
Total PCBs Only	<4974	<594	<1020	<819	<864	<15.8
Total Dioxins & Furans and PCBs	<7012	<838	<1438	<1155	<1218	<22.3

Dry Gas Volume Sampled (Rm³*) :	4.876
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.3
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 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	<2.1	<0.25	<0.43	<0.35	<0.37	<0.0067
12378-pentachlorodibenzo-p-dioxin	6.04	0.72	1.24	1.00	1.06	0.019
123478-hexachlorodibenzo-p-dioxin	13.9	1.66	2.86	2.31	2.44	0.045
123678-hexachlorodibenzo-p-dioxin	32.9	3.94	6.76	5.47	5.77	0.11
123789-hexachlorodibenzo-p-dioxin	20.7	2.48	4.26	3.44	3.63	0.066
1234678-heptachlorodibenzo-p-dioxin	451	54.0	92.7	74.9	79.0	1.45
Octachlorodibenzo-p-dioxin	1270	152	261	211	223	4.07
2378-tetrachlorodibenzofuran	<2.7	<0.32	<0.56	<0.45	<0.47	<0.0087
12378-pentachlorodibenzofuran	6.30	0.75	1.30	1.05	1.10	0.020
23478-pentachlorodibenzofuran	<11	<1.32	<2.26	<1.83	<1.93	<0.035
123478-hexachlorodibenzofuran	<9.8	<1.17	<2.01	<1.63	<1.72	<0.031
123678-hexachlorodibenzofuran	<12	<1.44	<2.47	<1.99	<2.10	<0.038
234678-hexachlorodibenzofuran	19.5	2.33	4.01	3.24	3.42	0.063
123789-hexachlorodibenzofuran	7.91	0.95	1.63	1.31	1.39	0.025
1234678-heptachlorodibenzofuran	78.7	9.42	16.2	13.1	13.8	0.25
1234789-heptachlorodibenzofuran	12.2	1.46	2.51	2.03	2.14	0.039
Octachlorodibenzofuran	<86	<10.3	<17.7	<14.3	<15.1	<0.28
PCB 81	<92	<11.0	<18.9	<15.3	<16.1	<0.30
PCB 77	123	14.7	25.3	20.4	21.6	0.39
PCB 123	<390	<46.7	<80.2	<64.8	<68.4	<1.25
PCB 118	2830	339	582	470	496	9.08
PCB 114	120	14.4	24.7	19.9	21.0	0.38
PCB 105	<990	<118	<204	<165	<174	<3.18
PCB 126	<66	<7.90	<13.6	<11.0	<11.6	<0.21
PCB 167	<45	<5.39	<9.25	<7.48	<7.89	<0.14
PCB 156	91.4	10.9	18.8	15.2	16.0	0.29
PCB 157	<13	<1.56	<2.67	<2.16	<2.28	<0.042
PCB 169	<14	<1.68	<2.88	<2.33	<2.45	<0.045
PCB 189	<9.7	<1.16	<1.99	<1.61	<1.70	<0.031
Total Dioxins & Furans Only	<2043	<244	<420	<339	<358	<6.55
Total PCBs Only	<4784	<573	<984	<795	<838	<15.3
Total Dioxins & Furans and PCBs	<6827	<817	<1404	<1134	<1196	<21.9

Dry Gas Volume Sampled (Rm³*) :	4.864
Actual Flowrate (m³/s) :	26.8
Dry Reference Flowrate (Rm³/s*) :	15.6
Dry Adjusted Flowrate (Rm³/s**) :	19.3
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 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	<2.9	<0.34	<0.59	<0.48	<0.50	<0.0092
12378-pentachlorodibenzo-p-dioxin	6.73	0.79	1.37	1.11	1.16	0.021
123478-hexachlorodibenzo-p-dioxin	<16	<1.89	<3.25	<2.63	<2.76	<0.051
123678-hexachlorodibenzo-p-dioxin	36.5	4.31	7.41	5.99	6.29	0.12
123789-hexachlorodibenzo-p-dioxin	22.1	2.61	4.48	3.63	3.81	0.070
1234678-heptachlorodibenzo-p-dioxin	529	62.4	107	86.9	91.1	1.69
Octachlorodibenzo-p-dioxin	1370	162	278	225	236	4.36
2378-tetrachlorodibenzofuran	<3.1	<0.37	<0.63	<0.51	<0.53	<0.0099
12378-pentachlorodibenzofuran	6.51	0.77	1.32	1.07	1.12	0.021
23478-pentachlorodibenzofuran	15.1	1.78	3.06	2.48	2.60	0.048
123478-hexachlorodibenzofuran	<13	<1.53	<2.64	<2.13	<2.24	<0.041
123678-hexachlorodibenzofuran	<14	<1.65	<2.84	<2.30	<2.41	<0.045
234678-hexachlorodibenzofuran	23.0	2.71	4.67	3.78	3.96	0.073
123789-hexachlorodibenzofuran	<9.1	<1.07	<1.85	<1.49	<1.57	<0.029
1234678-heptachlorodibenzofuran	92.4	10.9	18.8	15.2	15.9	0.29
1234789-heptachlorodibenzofuran	15.1	1.78	3.06	2.48	2.60	0.048
Octachlorodibenzofuran	<89	<10.5	<18.1	<14.6	<15.3	<0.28
PCB 81	<59	<6.96	<12.0	<9.69	<10.2	<0.19
PCB 77	<65	<7.67	<13.2	<10.7	<11.2	<0.21
PCB 123	<80	<9.44	<16.2	<13.1	<13.8	<0.25
PCB 118	888	105	180	146	153	2.83
PCB 114	<48	<5.66	<9.74	<7.88	<8.27	<0.15
PCB 105	356	42.0	72.2	58.5	61.3	1.13
PCB 126	<54	<6.37	<11.0	<8.87	<9.30	<0.17
PCB 167	<22	<2.60	<4.46	<3.61	<3.79	<0.070
PCB 156	<15	<1.77	<3.04	<2.46	<2.58	<0.048
PCB 157	<16	<1.89	<3.25	<2.63	<2.76	<0.051
PCB 169	<15	<1.77	<3.04	<2.46	<2.58	<0.048
PCB 189	<8.5	<1.00	<1.72	<1.40	<1.46	<0.027
Total Dioxins & Furans Only	<2264	<267	<459	<372	<390	<7.21
Total PCBs Only	<1627	<192	<330	<267	<280	<5.18
Total Dioxins & Furans and PCBs	<3890	<459	<789	<639	<670	<12.4

Dry Gas Volume Sampled (Rm³*) :	4.928
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.5

* 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	0.28	<0.25	<0.34	<0.29	15.9
12378-pentachlorodibenzo-p-dioxin	0.86	0.72	0.79	0.79	8.4
123478-hexachlorodibenzo-p-dioxin	1.49	1.66	<1.89	<1.68	11.8
123678-hexachlorodibenzo-p-dioxin	3.81	3.94	4.31	4.02	6.4
123789-hexachlorodibenzo-p-dioxin	2.55	2.48	2.61	2.54	2.6
1234678-heptachlorodibenzo-p-dioxin	55.8	54.0	62.4	57.4	7.7
Octachlorodibenzo-p-dioxin	148	152	162	154	4.5
2378-tetrachlorodibenzofuran	1.24	<0.32	<0.37	<0.64	80.6
12378-pentachlorodibenzofuran	<0.43	0.75	0.77	<0.65	29.4
23478-pentachlorodibenzofuran	1.48	<1.32	1.78	<1.53	15.5
123478-hexachlorodibenzofuran	<1.31	<1.17	<1.53	<1.34	13.6
123678-hexachlorodibenzofuran	<1.20	<1.44	<1.65	<1.43	16.0
234678-hexachlorodibenzofuran	2.31	2.33	2.71	2.45	9.3
123789-hexachlorodibenzofuran	0.57	0.95	<1.07	<0.86	30.2
1234678-heptachlorodibenzofuran	10.1	9.42	10.9	10.1	7.3
1234789-heptachlorodibenzofuran	1.67	1.46	1.78	1.64	10.0
Octachlorodibenzofuran	<10.3	<10.3	<10.5	<10.4	1.2
PCB 81	16.3	<11.0	<6.96	<11.4	40.8
PCB 77	16.1	14.7	<7.67	<12.8	35.3
PCB 123	<6.93	<46.7	<9.44	<21.0	106
PCB 118	366	339	105	270	53.2
PCB 114	16.9	14.4	<5.66	<12.3	47.8
PCB 105	145	<118	42.0	<102	52.4
PCB 126	<7.17	<7.90	<6.37	<7.15	10.7
PCB 167	<2.51	<5.39	<2.60	<3.50	46.8
PCB 156	<11.8	10.9	<1.77	<8.18	68.1
PCB 157	<2.63	<1.56	<1.89	<2.02	27.1
PCB 169	<2.75	<1.68	<1.77	<2.06	28.8
PCB 189	<1.05	<1.16	<1.00	<1.07	7.5
Total Dioxins & Furans Only	<244	<244	<267	<252	5.3
Total PCBs Only	<594	<573	<192	<453	50.0
Total Dioxins & Furans and PCBs	<838	<817	<459	<705	30.2

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	0.48	<0.43	<0.59	<0.50	16.0
12378-pentachlorodibenzo-p-dioxin	1.47	1.24	1.37	1.36	8.4
123478-hexachlorodibenzo-p-dioxin	2.56	2.86	<3.25	<2.89	11.9
123678-hexachlorodibenzo-p-dioxin	6.54	6.76	7.41	6.90	6.5
123789-hexachlorodibenzo-p-dioxin	4.37	4.26	4.48	4.37	2.6
1234678-heptachlorodibenzo-p-dioxin	95.8	92.7	107	98.6	7.8
Octachlorodibenzo-p-dioxin	254	261	278	264	4.6
2378-tetrachlorodibenzofuran	2.13	<0.56	<0.63	<1.11	80.5
12378-pentachlorodibenzofuran	<0.74	1.30	1.32	<1.12	29.4
23478-pentachlorodibenzofuran	2.54	<2.26	3.06	<2.62	15.5
123478-hexachlorodibenzofuran	<2.26	<2.01	<2.64	<2.30	13.6
123678-hexachlorodibenzofuran	<2.05	<2.47	<2.84	<2.45	16.1
234678-hexachlorodibenzofuran	3.96	4.01	4.67	4.21	9.4
123789-hexachlorodibenzofuran	0.98	1.63	<1.85	<1.49	30.2
1234678-heptachlorodibenzofuran	17.3	16.2	18.8	17.4	7.4
1234789-heptachlorodibenzofuran	2.87	2.51	3.06	2.81	10.0
Octachlorodibenzofuran	<17.6	<17.7	<18.1	<17.8	1.3
PCB 81	27.9	<18.9	<12.0	<19.6	40.7
PCB 77	27.7	25.3	<13.2	<22.1	35.2
PCB 123	<11.9	<80.2	<16.2	<36.1	106
PCB 118	628	582	180	463	53.1
PCB 114	28.9	24.7	<9.74	<21.1	47.7
PCB 105	248	<204	72.2	<175	52.4
PCB 126	<12.3	<13.6	<11.0	<12.3	10.6
PCB 167	<4.31	<9.25	<4.46	<6.01	46.8
PCB 156	<20.3	18.8	<3.04	<14.05	68.0
PCB 157	<4.51	<2.67	<3.25	<3.48	27.1
PCB 169	<4.72	<2.88	<3.04	<3.55	28.7
PCB 189	<1.80	<1.99	<1.72	<1.84	7.5
Total Dioxins & Furans Only	<418	<420	<459	<432	5.4
Total PCBs Only	<1020	<984	<330	<778	49.9
Total Dioxins & Furans and PCBs	<1438	<1404	<789	<1210	30.2

* 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. 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	<0.35	<0.48	<0.40	16.2
12378-pentachlorodibenzo-p-dioxin	1.18	1.00	1.11	1.10	8.0
123478-hexachlorodibenzo-p-dioxin	2.06	2.31	<2.63	<2.33	12.2
123678-hexachlorodibenzo-p-dioxin	5.25	5.47	5.99	5.57	6.8
123789-hexachlorodibenzo-p-dioxin	3.51	3.44	3.63	3.53	2.7
1234678-heptachlorodibenzo-p-dioxin	76.9	74.9	86.9	79.6	8.0
Octachlorodibenzo-p-dioxin	204	211	225	213	5.0
2378-tetrachlorodibenzofuran	1.71	<0.45	<0.51	<0.89	80.1
12378-pentachlorodibenzofuran	<0.59	1.05	1.07	<0.90	29.8
23478-pentachlorodibenzofuran	2.04	<1.83	2.48	<2.12	15.7
123478-hexachlorodibenzofuran	<1.81	<1.63	<2.13	<1.86	13.8
123678-hexachlorodibenzofuran	<1.65	<1.99	<2.30	<1.98	16.5
234678-hexachlorodibenzofuran	3.18	3.24	3.78	3.40	9.7
123789-hexachlorodibenzofuran	0.79	1.31	<1.49	<1.20	30.6
1234678-heptachlorodibenzofuran	13.9	13.1	15.2	14.1	7.5
1234789-heptachlorodibenzofuran	2.31	2.03	2.48	2.27	10.0
Octachlorodibenzofuran	<14.2	<14.3	<14.6	<14.4	1.6
PCB 81	22.4	<15.3	<9.69	<15.8	40.3
PCB 77	22.2	20.4	<10.7	<17.8	35.0
PCB 123	<9.55	<64.8	<13.1	<29.2	106
PCB 118	504	470	146	373	53.0
PCB 114	23.2	19.9	<7.88	<17.0	47.5
PCB 105	199	<165	58.5	<141	52.1
PCB 126	<9.88	<11.0	<8.87	<9.91	10.6
PCB 167	<3.46	<7.48	<3.61	<4.85	47.0
PCB 156	<16.3	15.2	<2.46	<11.3	67.9
PCB 157	<3.62	<2.16	<2.63	<2.80	26.7
PCB 169	<3.79	<2.33	<2.46	<2.86	28.2
PCB 189	<1.45	<1.61	<1.40	<1.49	7.6
Total Dioxins & Furans Only	<336	<339	<372	<349	5.7
Total PCBs Only	<819	<795	<267	<627	49.8
Total Dioxins & Furans and PCBs	<1155	<1134	<639	<976	29.9

* 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	<0.37	<0.50	<0.43	15.8
12378-pentachlorodibenzo-p-dioxin	1.24	1.06	1.16	1.15	8.0
123478-hexachlorodibenzo-p-dioxin	2.17	2.44	<2.76	<2.45	11.9
123678-hexachlorodibenzo-p-dioxin	5.54	5.77	6.29	5.86	6.5
123789-hexachlorodibenzo-p-dioxin	3.70	3.63	3.81	3.71	2.4
1234678-heptachlorodibenzo-p-dioxin	81.1	79.0	91.1	83.8	7.7
Octachlorodibenzo-p-dioxin	215	223	236	225	4.6
2378-tetrachlorodibenzofuran	1.81	<0.47	<0.53	<0.94	80.3
12378-pentachlorodibenzofuran	<0.63	1.10	1.12	<0.95	29.6
23478-pentachlorodibenzofuran	2.15	<1.93	2.60	<2.23	15.4
123478-hexachlorodibenzofuran	<1.91	<1.72	<2.24	<1.96	13.5
123678-hexachlorodibenzofuran	<1.74	<2.10	<2.41	<2.08	16.2
234678-hexachlorodibenzofuran	3.35	3.42	3.96	3.58	9.3
123789-hexachlorodibenzofuran	0.83	1.39	<1.57	<1.26	30.4
1234678-heptachlorodibenzofuran	14.7	13.8	15.9	14.8	7.2
1234789-heptachlorodibenzofuran	2.43	2.14	2.60	2.39	9.8
Octachlorodibenzofuran	<14.9	<15.1	<15.3	<15.1	1.3
PCB 81	23.6	<16.1	<10.2	<16.6	40.6
PCB 77	23.5	21.6	<11.2	<18.7	35.2
PCB 123	<10.1	<68.4	<13.8	<30.7	106
PCB 118	532	496	153	393	53.1
PCB 114	24.5	21.0	<8.27	<17.9	47.7
PCB 105	210	<174	61.3	<148	52.3
PCB 126	<10.4	<11.6	<9.30	<10.4	10.9
PCB 167	<3.65	<7.89	<3.79	<5.11	47.1
PCB 156	<17.2	16.0	<2.58	<11.9	68.0
PCB 157	<3.82	<2.28	<2.76	<2.95	26.8
PCB 169	<4.00	<2.45	<2.58	<3.01	28.4
PCB 189	<1.53	<1.70	<1.46	<1.56	7.8
Total Dioxins & Furans Only	<354	<358	<390	<367	5.3
Total PCBs Only	<864	<838	<280	<661	49.9
Total Dioxins & Furans and PCBs	<1218	<1196	<670	<1028	30.2

* 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 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	0.0075	<0.0067	<0.0092	<0.0078	16.5
12378-pentachlorodibenzo-p-dioxin	0.023	0.019	0.021	0.021	8.1
123478-hexachlorodibenzo-p-dioxin	0.040	0.045	<0.051	<0.045	12.5
123678-hexachlorodibenzo-p-dioxin	0.10	0.11	0.12	0.11	7.1
123789-hexachlorodibenzo-p-dioxin	0.068	0.066	0.070	0.068	3.0
1234678-heptachlorodibenzo-p-dioxin	1.48	1.45	1.69	1.54	8.3
Octachlorodibenzo-p-dioxin	3.94	4.07	4.36	4.13	5.2
2378-tetrachlorodibenzofuran	0.033	<0.0087	<0.0099	<0.017	79.9
12378-pentachlorodibenzofuran	<0.011	0.020	0.021	<0.017	29.9
23478-pentachlorodibenzofuran	0.039	<0.035	0.048	<0.041	16.0
123478-hexachlorodibenzofuran	<0.035	<0.031	<0.041	<0.036	14.1
123678-hexachlorodibenzofuran	<0.032	<0.038	<0.045	<0.038	16.7
234678-hexachlorodibenzofuran	0.061	0.063	0.073	0.066	10.0
123789-hexachlorodibenzofuran	0.015	0.025	<0.029	<0.023	30.8
1234678-heptachlorodibenzofuran	0.27	0.25	0.29	0.27	7.8
1234789-heptachlorodibenzofuran	0.045	0.039	0.048	0.044	10.3
Octachlorodibenzofuran	<0.27	<0.28	<0.28	<0.28	1.9
PCB 81	0.43	<0.30	<0.19	<0.31	40.1
PCB 77	0.43	0.39	<0.21	<0.34	34.8
PCB 123	<0.18	<1.25	<0.25	<0.56	106
PCB 118	9.73	9.08	2.83	7.21	52.8
PCB 114	0.45	0.38	<0.15	<0.33	47.3
PCB 105	3.85	<3.18	1.13	<2.72	52.0
PCB 126	<0.19	<0.21	<0.17	<0.19	10.4
PCB 167	<0.067	<0.14	<0.070	<0.094	46.8
PCB 156	<0.31	0.29	<0.048	<0.22	67.8
PCB 157	<0.070	<0.042	<0.051	<0.054	26.6
PCB 169	<0.073	<0.045	<0.048	<0.055	28.1
PCB 189	<0.028	<0.031	<0.027	<0.029	7.4
Total Dioxins & Furans Only	<6.48	<6.55	<7.21	<6.75	6.0
Total PCBs Only	<15.8	<15.3	<5.18	<12.1	49.6
Total Dioxins & Furans and PCBs	<22.3	<21.9	<12.4	<18.9	29.7

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. 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	<0.29	<0.50	<0.40	<0.43	<0.0078
12378-pentachlorodibenzo-p-dioxin	0.79	1.36	1.10	1.15	0.021
123478-hexachlorodibenzo-p-dioxin	<1.68	<2.89	<2.33	<2.45	<0.045
123678-hexachlorodibenzo-p-dioxin	4.02	6.90	5.57	5.86	0.11
123789-hexachlorodibenzo-p-dioxin	2.54	4.37	3.53	3.71	0.068
1234678-heptachlorodibenzo-p-dioxin	57.4	98.6	79.6	83.8	1.54
Octachlorodibenzo-p-dioxin	154	264	213	225	4.13
2378-tetrachlorodibenzofuran	<0.64	<1.11	<0.89	<0.94	<0.017
12378-pentachlorodibenzofuran	<0.65	<1.12	<0.90	<0.95	<0.017
23478-pentachlorodibenzofuran	<1.53	<2.62	<2.12	<2.23	<0.041
123478-hexachlorodibenzofuran	<1.34	<2.30	<1.86	<1.96	<0.036
123678-hexachlorodibenzofuran	<1.43	<2.45	<1.98	<2.08	<0.038
234678-hexachlorodibenzofuran	2.45	4.21	3.40	3.58	0.066
123789-hexachlorodibenzofuran	<0.86	<1.49	<1.20	<1.26	<0.023
1234678-heptachlorodibenzofuran	10.1	17.4	14.1	14.8	0.27
1234789-heptachlorodibenzofuran	1.64	2.81	2.27	2.39	0.044
Octachlorodibenzofuran	<10.4	<17.8	<14.4	<15.1	<0.28
PCB 81	<11.4	<19.6	<15.8	<16.6	<0.31
PCB 77	<12.8	<22.1	<17.8	<18.7	<0.34
PCB 123	<21.0	<36.1	<29.2	<30.7	<0.56
PCB 118	270	463	373	393	7.21
PCB 114	<12.3	<21.1	<17.0	<17.9	<0.33
PCB 105	<102	<175	<141	<148	<2.72
PCB 126	<7.15	<12.3	<9.91	<10.4	<0.19
PCB 167	<3.50	<6.01	<4.85	<5.11	<0.094
PCB 156	<8.18	<14.0	<11.3	<11.9	<0.22
PCB 157	<2.02	<3.48	<2.80	<2.95	<0.054
PCB 169	<2.06	<3.55	<2.86	<3.01	<0.055
PCB 189	<1.07	<1.84	<1.49	<1.56	<0.029
Total Dioxins & Furans Only	<252	<432	<349	<367	<6.75
Total PCBs Only	<453	<778	<627	<661	<12.1
Total Dioxins & Furans and PCBs	<705	<1210	<976	<1028	<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 43
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<1.9	<0.66
12378-pentachlorodibenzo-p-dioxin	<1.2	<1.1
123478-hexachlorodibenzo-p-dioxin	<1.2	<0.83
123678-hexachlorodibenzo-p-dioxin	<0.95	<0.67
123789-hexachlorodibenzo-p-dioxin	<1.0	<0.92
1234678-heptachlorodibenzo-p-dioxin	2.06	<3.0
Octachlorodibenzo-p-dioxin	<2.6	<9.1
2378-tetrachlorodibenzofuran	<1.9	<1.1
12378-pentachlorodibenzofuran	<1.3	<1.7
23478-pentachlorodibenzofuran	<1.2	<0.70
123478-hexachlorodibenzofuran	<0.90	<0.56
123678-hexachlorodibenzofuran	<0.77	<0.56
234678-hexachlorodibenzofuran	<0.87	<0.54
123789-hexachlorodibenzofuran	1.41	<1.7
1234678-heptachlorodibenzofuran	<0.52	0.85
1234789-heptachlorodibenzofuran	<0.54	<0.63
Octachlorodibenzofuran	1.38	1.61
PCB 81	<36	<7.4
PCB 77	<38	23.2
PCB 123	<15	<17
PCB 118	133	<14
PCB 114	<14	<15
PCB 105	<47	<15
PCB 126	<15	<16
PCB 167	<14	<8.9
PCB 156	<14	<9.7
PCB 157	<16	<9.3
PCB 169	<17	<12
PCB 189	<5.6	<2.4
Total Dioxins & Furans Only	<21.7	<26.2
Total PCBs Only	<365	<150
Total Dioxins & Furans and PCBs	<386	<176

"<" 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	1.000	0.28	<0.25	<0.34	<0.29
12378-pentachlorodibenzo-p-dioxin	1.000	0.86	0.72	0.79	0.79
123478-hexachlorodibenzo-p-dioxin	0.100	0.15	0.17	<0.19	<0.17
123678-hexachlorodibenzo-p-dioxin	0.100	0.38	0.39	0.43	0.40
123789-hexachlorodibenzo-p-dioxin	0.100	0.25	0.25	0.26	0.25
1234678-heptachlorodibenzo-p-dioxin	0.010	0.56	0.54	0.62	0.57
Octachlorodibenzo-p-dioxin	0.0003	0.044	0.046	0.048	0.046
2378-tetrachlorodibenzofuran	0.100	0.12	<0.032	<0.037	<0.064
12378-pentachlorodibenzofuran	0.030	<0.013	0.023	0.023	<0.020
23478-pentachlorodibenzofuran	0.300	0.44	<0.39	0.53	<0.46
123478-hexachlorodibenzofuran	0.100	<0.13	<0.12	<0.15	<0.13
123678-hexachlorodibenzofuran	0.100	<0.12	<0.14	<0.17	<0.14
234678-hexachlorodibenzofuran	0.100	0.23	0.23	0.27	0.25
123789-hexachlorodibenzofuran	0.100	0.057	0.095	<0.11	<0.086
1234678-heptachlorodibenzofuran	0.010	0.10	0.094	0.11	0.10
1234789-heptachlorodibenzofuran	0.010	0.017	0.015	0.018	0.016
Octachlorodibenzofuran	0.0003	<0.0031	<0.0031	<0.0032	<0.0031
PCB 81	0.0003	0.0049	<0.0033	<0.0021	<0.0034
PCB 77	0.0001	0.0016	0.0015	<0.00077	<0.0013
PCB 123	0.00003	<0.00021	<0.0014	<0.00028	<0.00063
PCB 118	0.00003	0.011	0.010	0.0031	0.0081
PCB 114	0.00003	0.00051	0.00043	<0.00017	<0.00037
PCB 105	0.00003	0.0043	<0.0036	0.0013	<0.0031
PCB 126	0.100	<0.72	<0.79	<0.64	<0.71
PCB 167	0.00003	<0.000075	<0.00016	<0.000078	<0.00010
PCB 156	0.00003	<0.00035	0.00033	<0.000053	<0.00025
PCB 157	0.00003	<0.000079	<0.000047	<0.000057	<0.000061
PCB 169	0.030	<0.082	<0.050	<0.053	<0.062
PCB 189	0.00003	<0.000032	<0.000035	<0.000030	<0.000032
Total Dioxins & Furans Only		<3.77	<3.52	<4.11	<3.80
Total PCBs Only		<0.82	<0.86	<0.70	<0.79
Total Dioxins & Furans and PCBs		<4.59	<4.38	<4.81	<4.59

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	1.000	0.48	<0.43	<0.59	<0.50
12378-pentachlorodibenzo-p-dioxin	1.000	1.47	1.24	1.37	1.36
123478-hexachlorodibenzo-p-dioxin	0.100	0.26	0.29	<0.32	<0.29
123678-hexachlorodibenzo-p-dioxin	0.100	0.65	0.68	0.74	0.69
123789-hexachlorodibenzo-p-dioxin	0.100	0.44	0.43	0.45	0.44
1234678-heptachlorodibenzo-p-dioxin	0.010	0.96	0.93	1.07	0.99
Octachlorodibenzo-p-dioxin	0.0003	0.076	0.078	0.083	0.079
2378-tetrachlorodibenzofuran	0.100	0.21	<0.056	<0.063	<0.11
12378-pentachlorodibenzofuran	0.030	<0.022	0.039	0.040	<0.034
23478-pentachlorodibenzofuran	0.300	0.76	<0.68	0.92	<0.79
123478-hexachlorodibenzofuran	0.100	<0.23	<0.20	<0.26	<0.23
123678-hexachlorodibenzofuran	0.100	<0.21	<0.25	<0.28	<0.25
234678-hexachlorodibenzofuran	0.100	0.40	0.40	0.47	0.42
123789-hexachlorodibenzofuran	0.100	0.098	0.16	<0.18	<0.15
1234678-heptachlorodibenzofuran	0.010	0.17	0.16	0.19	0.17
1234789-heptachlorodibenzofuran	0.010	0.029	0.025	0.031	0.028
Octachlorodibenzofuran	0.0003	<0.0053	<0.0053	<0.0054	<0.0053
PCB 81	0.0003	0.0084	<0.0057	<0.0036	<0.0059
PCB 77	0.0001	0.0028	0.0025	<0.0013	<0.0022
PCB 123	0.00003	<0.00036	<0.0024	<0.00049	<0.0011
PCB 118	0.00003	0.019	0.017	0.0054	0.014
PCB 114	0.00003	0.00087	0.00074	<0.00029	<0.00063
PCB 105	0.00003	0.0074	<0.0061	0.0022	<0.0052
PCB 126	0.100	<1.23	<1.36	<1.10	<1.23
PCB 167	0.00003	<0.00013	<0.00028	<0.00013	<0.00018
PCB 156	0.00003	<0.00061	0.00056	<0.000091	<0.00042
PCB 157	0.00003	<0.00014	<0.000080	<0.000097	<0.00010
PCB 169	0.030	<0.14	<0.086	<0.091	<0.11
PCB 189	0.00003	<0.000054	<0.000060	<0.000052	<0.000055
Total Dioxins & Furans Only		<6.46	<6.04	<7.07	<6.53
Total PCBs Only		<1.41	<1.48	<1.20	<1.36
Total Dioxins & Furans and PCBs		<7.87	<7.52	<8.27	<7.89

* 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	1.000	0.39	<0.35	<0.48	<0.40
12378-pentachlorodibenzo-p-dioxin	1.000	1.18	1.00	1.11	1.10
123478-hexachlorodibenzo-p-dioxin	0.100	0.21	0.23	<0.26	<0.23
123678-hexachlorodibenzo-p-dioxin	0.100	0.53	0.55	0.60	0.56
123789-hexachlorodibenzo-p-dioxin	0.100	0.35	0.34	0.36	0.35
1234678-heptachlorodibenzo-p-dioxin	0.010	0.77	0.75	0.87	0.80
Octachlorodibenzo-p-dioxin	0.0003	0.061	0.063	0.067	0.064
2378-tetrachlorodibenzofuran	0.100	0.17	<0.045	<0.051	<0.089
12378-pentachlorodibenzofuran	0.030	<0.018	0.031	0.032	<0.027
23478-pentachlorodibenzofuran	0.300	0.61	<0.55	0.74	<0.64
123478-hexachlorodibenzofuran	0.100	<0.18	<0.16	<0.21	<0.19
123678-hexachlorodibenzofuran	0.100	<0.16	<0.20	<0.23	<0.20
234678-hexachlorodibenzofuran	0.100	0.32	0.32	0.38	0.34
123789-hexachlorodibenzofuran	0.100	0.079	0.13	<0.15	<0.12
1234678-heptachlorodibenzofuran	0.010	0.14	0.13	0.15	0.14
1234789-heptachlorodibenzofuran	0.010	0.023	0.020	0.025	0.023
Octachlorodibenzofuran	0.0003	<0.0042	<0.0043	<0.0044	<0.0043
PCB 81	0.0003	0.0067	<0.0046	<0.0029	<0.0047
PCB 77	0.0001	0.0022	0.0020	<0.0011	<0.0018
PCB 123	0.00003	<0.00029	<0.0019	<0.00039	<0.00088
PCB 118	0.00003	0.015	0.014	0.0044	0.011
PCB 114	0.00003	0.00070	0.00060	<0.00024	<0.00051
PCB 105	0.00003	0.0060	<0.0049	0.0018	<0.0042
PCB 126	0.100	<0.99	<1.10	<0.89	<0.99
PCB 167	0.00003	<0.00010	<0.00022	<0.00011	<0.00015
PCB 156	0.00003	<0.00049	0.00046	<0.000074	<0.00034
PCB 157	0.00003	<0.00011	<0.000065	<0.000079	<0.000084
PCB 169	0.030	<0.11	<0.070	<0.074	<0.086
PCB 189	0.00003	<0.000043	<0.000048	<0.000042	<0.000045
Total Dioxins & Furans Only		<5.19	<4.88	<5.72	<5.27
Total PCBs Only		<1.13	<1.20	<0.97	<1.10
Total Dioxins & Furans and PCBs		<6.32	<6.08	<6.69	<6.37

* 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	1.000	0.39	0.17	0.24	0.27
12378-pentachlorodibenzo-p-dioxin	1.000	1.18	1.00	1.11	1.10
123478-hexachlorodibenzo-p-dioxin	0.100	0.21	0.23	0.13	0.19
123678-hexachlorodibenzo-p-dioxin	0.100	0.53	0.55	0.60	0.56
123789-hexachlorodibenzo-p-dioxin	0.100	0.35	0.34	0.36	0.35
1234678-heptachlorodibenzo-p-dioxin	0.010	0.77	0.75	0.87	0.80
Octachlorodibenzo-p-dioxin	0.0003	0.061	0.063	0.067	0.064
2378-tetrachlorodibenzofuran	0.100	0.17	0.022	0.025	0.073
12378-pentachlorodibenzofuran	0.030	0.0089	0.031	0.032	0.024
23478-pentachlorodibenzofuran	0.300	0.61	0.27	0.74	0.54
123478-hexachlorodibenzofuran	0.100	0.091	0.081	0.11	0.093
123678-hexachlorodibenzofuran	0.100	0.082	0.10	0.11	0.099
234678-hexachlorodibenzofuran	0.100	0.32	0.32	0.38	0.34
123789-hexachlorodibenzofuran	0.100	0.079	0.13	0.075	0.095
1234678-heptachlorodibenzofuran	0.010	0.14	0.13	0.15	0.14
1234789-heptachlorodibenzofuran	0.010	0.023	0.020	0.025	0.023
Octachlorodibenzofuran	0.0003	0.0021	0.0021	0.0022	0.0022
PCB 81	0.0003	0.0067	0.0023	0.0015	0.0035
PCB 77	0.0001	0.0022	0.0020	0.00053	0.0016
PCB 123	0.00003	0.00014	0.00097	0.00020	0.00044
PCB 118	0.00003	0.015	0.014	0.0044	0.011
PCB 114	0.00003	0.00070	0.00060	0.00012	0.00047
PCB 105	0.00003	0.0060	0.0025	0.0018	0.0034
PCB 126	0.100	0.49	0.55	0.44	0.50
PCB 167	0.00003	0.000052	0.00011	0.000054	0.000073
PCB 156	0.00003	0.00024	0.00046	0.000037	0.00025
PCB 157	0.00003	0.000054	0.000032	0.000039	0.000042
PCB 169	0.030	0.057	0.035	0.037	0.043
PCB 189	0.00003	0.000022	0.000024	0.000021	0.000022
Total Dioxins & Furans Only		5.01	4.23	5.03	4.75
Total PCBs Only		0.58	0.61	0.49	0.56
Total Dioxins & Furans and PCBs		5.59	4.84	5.52	5.31

* 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	<0.35	<0.48	<0.40
12378-pentachlorodibenzo-p-dioxin	0.500	0.59	0.50	0.55	0.55
123478-hexachlorodibenzo-p-dioxin	0.100	0.21	0.23	<0.26	<0.23
123678-hexachlorodibenzo-p-dioxin	0.100	0.53	0.55	0.60	0.56
123789-hexachlorodibenzo-p-dioxin	0.100	0.35	0.34	0.36	0.35
1234678-heptachlorodibenzo-p-dioxin	0.010	0.77	0.75	0.87	0.80
Octachlorodibenzo-p-dioxin	0.001	0.20	0.21	0.22	0.21
2378-tetrachlorodibenzofuran	0.100	0.17	<0.045	<0.051	<0.089
12378-pentachlorodibenzofuran	0.050	<0.030	0.052	0.053	<0.045
23478-pentachlorodibenzofuran	0.500	1.02	<0.91	1.24	<1.06
123478-hexachlorodibenzofuran	0.100	<0.18	<0.16	<0.21	<0.19
123678-hexachlorodibenzofuran	0.100	<0.16	<0.20	<0.23	<0.20
234678-hexachlorodibenzofuran	0.100	0.32	0.32	0.38	0.34
123789-hexachlorodibenzofuran	0.100	0.079	0.13	<0.15	<0.12
1234678-heptachlorodibenzofuran	0.010	0.14	0.13	0.15	0.14
1234789-heptachlorodibenzofuran	0.010	0.023	0.020	0.025	0.023
Octachlorodibenzofuran	0.001	<0.014	<0.014	<0.015	<0.014
Total Dioxins & Furans		<5.17	<4.93	<5.85	<5.32
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	1.000	0.41	<0.37	<0.50	<0.43
12378-pentachlorodibenzo-p-dioxin	1.000	1.24	1.06	1.16	1.15
123478-hexachlorodibenzo-p-dioxin	0.100	0.22	0.24	<0.28	<0.25
123678-hexachlorodibenzo-p-dioxin	0.100	0.55	0.58	0.63	0.59
123789-hexachlorodibenzo-p-dioxin	0.100	0.37	0.36	0.38	0.37
1234678-heptachlorodibenzo-p-dioxin	0.010	0.81	0.79	0.91	0.84
Octachlorodibenzo-p-dioxin	0.0003	0.065	0.067	0.071	0.067
2378-tetrachlorodibenzofuran	0.100	0.18	<0.047	<0.053	<0.094
12378-pentachlorodibenzofuran	0.030	<0.019	0.033	0.034	<0.029
23478-pentachlorodibenzofuran	0.300	0.65	<0.58	0.78	<0.67
123478-hexachlorodibenzofuran	0.100	<0.19	<0.17	<0.22	<0.20
123678-hexachlorodibenzofuran	0.100	<0.17	<0.21	<0.24	<0.21
234678-hexachlorodibenzofuran	0.100	0.34	0.34	0.40	0.36
123789-hexachlorodibenzofuran	0.100	0.083	0.14	<0.16	<0.13
1234678-heptachlorodibenzofuran	0.010	0.15	0.14	0.16	0.15
1234789-heptachlorodibenzofuran	0.010	0.024	0.021	0.026	0.024
Octachlorodibenzofuran	0.0003	<0.0045	<0.0045	<0.0046	<0.0045
PCB 81	0.0003	0.0071	<0.0048	<0.0030	<0.0050
PCB 77	0.0001	0.0023	0.0022	<0.0011	<0.0019
PCB 123	0.00003	<0.00030	<0.0021	<0.00041	<0.00092
PCB 118	0.00003	0.016	0.015	0.0046	0.012
PCB 114	0.00003	0.00073	0.00063	<0.00025	<0.00054
PCB 105	0.00003	0.0063	<0.0052	0.0018	<0.0044
PCB 126	0.100	<1.04	<1.16	<0.93	<1.04
PCB 167	0.00003	<0.00011	<0.00024	<0.00011	<0.00015
PCB 156	0.00003	<0.00052	0.00048	<0.000077	<0.00036
PCB 157	0.00003	<0.00011	<0.000068	<0.000083	<0.000089
PCB 169	0.030	<0.12	<0.074	<0.077	<0.090
PCB 189	0.00003	<0.000046	<0.000051	<0.000044	<0.000047
Total Dioxins & Furans Only		<5.47	<5.15	<6.00	<5.54
Total PCBs Only		<1.20	<1.26	<1.02	<1.16
Total Dioxins & Furans and PCBs		<6.67	<6.41	<7.02	<6.70

* 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	1.000	0.0075	<0.0067	<0.0092	<0.0078
12378-pentachlorodibenzo-p-dioxin	1.000	0.023	0.019	0.021	0.021
123478-hexachlorodibenzo-p-dioxin	0.100	0.0040	0.0045	<0.0051	<0.0045
123678-hexachlorodibenzo-p-dioxin	0.100	0.010	0.011	0.012	0.011
123789-hexachlorodibenzo-p-dioxin	0.100	0.0068	0.0066	0.0070	0.0068
1234678-heptachlorodibenzo-p-dioxin	0.010	0.015	0.014	0.017	0.015
Octachlorodibenzo-p-dioxin	0.0003	0.0012	0.0012	0.0013	0.0012
2378-tetrachlorodibenzofuran	0.100	0.0033	<0.00087	<0.00099	<0.0017
12378-pentachlorodibenzofuran	0.030	<0.00034	0.00061	0.00062	<0.00052
23478-pentachlorodibenzofuran	0.300	0.012	<0.011	0.014	<0.012
123478-hexachlorodibenzofuran	0.100	<0.0035	<0.0031	<0.0041	<0.0036
123678-hexachlorodibenzofuran	0.100	<0.0032	<0.0038	<0.0045	<0.0038
234678-hexachlorodibenzofuran	0.100	0.0061	0.0063	0.0073	0.0066
123789-hexachlorodibenzofuran	0.100	0.0015	0.0025	<0.0029	<0.0023
1234678-heptachlorodibenzofuran	0.010	0.0027	0.0025	0.0029	0.0027
1234789-heptachlorodibenzofuran	0.010	0.00045	0.00039	0.00048	0.00044
Octachlorodibenzofuran	0.0003	<0.000082	<0.000083	<0.000085	<0.000083
PCB 81	0.0003	0.00013	<0.000089	<0.000056	<0.000092
PCB 77	0.0001	0.000043	0.000039	<0.000021	<0.000034
PCB 123	0.00003	<0.0000055	<0.000038	<0.0000076	<0.000017
PCB 118	0.00003	0.00029	0.00027	0.000085	0.00022
PCB 114	0.00003	0.000013	0.000012	<0.0000046	<0.0000099
PCB 105	0.00003	0.00012	<0.000095	0.000034	<0.000082
PCB 126	0.100	<0.019	<0.021	<0.017	<0.019
PCB 167	0.00003	<0.0000020	<0.0000043	<0.0000021	<0.0000028
PCB 156	0.00003	<0.0000094	0.0000088	<0.0000014	<0.0000066
PCB 157	0.00003	<0.0000021	<0.0000013	<0.0000015	<0.0000016
PCB 169	0.030	<0.0022	<0.0013	<0.0014	<0.0017
PCB 189	0.00003	<0.00000084	<0.00000093	<0.00000081	<0.00000086
Total Dioxins & Furans Only		<0.10	<0.094	<0.11	<0.10
Total PCBs Only		<0.022	<0.023	<0.019	<0.021
Total Dioxins & Furans and PCBs		<0.12	<0.12	<0.13	<0.12

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	<0.29	<0.50	<0.40	<0.43	<0.0078
12378-pentachlorodibenzo-p-dioxin	0.79	1.36	1.10	1.15	0.021
123478-hexachlorodibenzo-p-dioxin	<0.17	<0.29	<0.23	<0.25	<0.0045
123678-hexachlorodibenzo-p-dioxin	0.40	0.69	0.56	0.59	0.011
123789-hexachlorodibenzo-p-dioxin	0.25	0.44	0.35	0.37	0.0068
1234678-heptachlorodibenzo-p-dioxin	0.57	0.99	0.80	0.84	0.015
Octachlorodibenzo-p-dioxin	0.046	0.079	0.064	0.067	0.0012
2378-tetrachlorodibenzofuran	<0.064	<0.11	<0.089	<0.094	<0.0017
12378-pentachlorodibenzofuran	<0.020	<0.034	<0.027	<0.029	<0.00052
23478-pentachlorodibenzofuran	<0.46	<0.79	<0.64	<0.67	<0.012
123478-hexachlorodibenzofuran	<0.13	<0.23	<0.19	<0.20	<0.0036
123678-hexachlorodibenzofuran	<0.14	<0.25	<0.20	<0.21	<0.0038
234678-hexachlorodibenzofuran	0.25	0.42	0.34	0.36	0.0066
123789-hexachlorodibenzofuran	<0.086	<0.15	<0.12	<0.13	<0.0023
1234678-heptachlorodibenzofuran	0.10	0.17	0.14	0.15	0.0027
1234789-heptachlorodibenzofuran	0.016	0.028	0.023	0.024	0.00044
Octachlorodibenzofuran	<0.0031	<0.0053	<0.0043	<0.0045	<0.000083
PCB 81	<0.0034	<0.0059	<0.0047	<0.0050	<0.000092
PCB 77	<0.0013	<0.0022	<0.0018	<0.0019	<0.000034
PCB 123	<0.00063	<0.0011	<0.00088	<0.00092	<0.000017
PCB 118	0.0081	0.014	0.011	0.012	0.00022
PCB 114	<0.00037	<0.00063	<0.00051	<0.00054	<0.0000099
PCB 105	<0.0031	<0.0052	<0.0042	<0.0044	<0.000082
PCB 126	<0.71	<1.23	<0.99	<1.04	<0.019
PCB 167	<0.00010	<0.00018	<0.00015	<0.00015	<0.0000028
PCB 156	<0.00025	<0.00042	<0.00034	<0.00036	<0.0000066
PCB 157	<0.000061	<0.00010	<0.000084	<0.000089	<0.0000016
PCB 169	<0.062	<0.11	<0.086	<0.090	<0.0017
PCB 189	<0.000032	<0.000055	<0.000045	<0.000047	<0.00000086
Total Dioxins & Furans Only	<3.80	<6.53	<5.27	<5.54	<0.10
Total PCBs Only	<0.79	<1.36	<1.10	<1.16	<0.021
Total Dioxins & Furans and PCBs	<4.59	<7.89	<6.37	<6.70	<0.12

* 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	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	0.19	0.33	0.27	0.28	0.0052
12378-pentachlorodibenzo-p-dioxin	0.79	1.36	1.10	1.15	0.021
123478-hexachlorodibenzo-p-dioxin	0.14	0.23	0.19	0.20	0.0037
123678-hexachlorodibenzo-p-dioxin	0.40	0.69	0.56	0.59	0.011
123789-hexachlorodibenzo-p-dioxin	0.25	0.44	0.35	0.37	0.0068
1234678-heptachlorodibenzo-p-dioxin	0.57	0.99	0.80	0.84	0.015
Octachlorodibenzo-p-dioxin	0.046	0.079	0.064	0.067	0.0012
2378-tetrachlorodibenzofuran	0.053	0.091	0.073	0.077	0.0014
12378-pentachlorodibenzofuran	0.017	0.030	0.024	0.025	0.00047
23478-pentachlorodibenzofuran	0.39	0.67	0.54	0.57	0.011
123478-hexachlorodibenzofuran	0.067	0.12	0.093	0.098	0.0018
123678-hexachlorodibenzofuran	0.071	0.12	0.099	0.10	0.0019
234678-hexachlorodibenzofuran	0.25	0.42	0.34	0.36	0.0066
123789-hexachlorodibenzofuran	0.069	0.12	0.095	0.10	0.0018
1234678-heptachlorodibenzofuran	0.10	0.17	0.14	0.15	0.0027
1234789-heptachlorodibenzofuran	0.016	0.028	0.023	0.024	0.00044
Octachlorodibenzofuran	0.0016	0.0027	0.0022	0.0023	0.000042
PCB 81	0.0025	0.0043	0.0035	0.0037	0.000067
PCB 77	0.0012	0.0020	0.0016	0.0017	0.000031
PCB 123	0.00032	0.00054	0.00044	0.00046	0.0000085
PCB 118	0.0081	0.014	0.011	0.012	0.00022
PCB 114	0.00034	0.00058	0.00047	0.00050	0.0000091
PCB 105	0.0025	0.0042	0.0034	0.0036	0.000066
PCB 126	0.36	0.61	0.50	0.52	0.0096
PCB 167	0.000052	0.000090	0.000073	0.000077	0.0000014
PCB 156	0.00018	0.00030	0.00025	0.00026	0.0000047
PCB 157	0.000030	0.000052	0.000042	0.000044	0.00000081
PCB 169	0.031	0.053	0.043	0.045	0.00083
PCB 189	0.000016	0.000028	0.000022	0.000023	0.00000043
Total Dioxins & Furans Only	3.43	5.89	4.75	5.00	0.092
Total PCBs Only	0.40	0.69	0.56	0.59	0.011
Total Dioxins & Furans and PCBs	3.83	6.59	5.31	5.59	0.10

* 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	2200	263	451	362	382	6.99
1,3-Dichlorobenzene	264	31.5	54.1	43.5	45.9	0.84
1,4-Dichlorobenzene	133	15.9	27.3	21.9	23.1	0.42
1,2-Dichlorobenzene	152	18.2	31.2	25.0	26.4	0.48
Total Dichlorobenzene	549	65.6	113	90.4	95.4	1.75
1,3,5-trichlorobenzene	30.8	3.68	6.32	5.07	5.35	0.098
1,2,4-trichlorobenzene	43.4	5.19	8.90	7.15	7.54	0.14
1,2,3-trichlorobenzene	16.8	2.01	3.45	2.77	2.92	0.053
Total Trichlorobenzene	91.0	10.9	18.7	15.0	15.8	0.29
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	18.3	2.19	3.75	3.01	3.18	0.058
1,2,3,4-tetrachlorobenzene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Total Tetrachlorobenzene	<28.3	<3.38	<5.80	<4.66	<4.92	<0.090
Pentachlorobenzene	12.2	1.46	2.50	2.01	2.12	0.039
Hexachlorobenzene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Total Chlorobenzenes	<2891	<345	<593	<476	<502	<9.19

Dry Gas Volume Sampled (Rm^3*) :	4.876
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
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

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	1540	184	317	256	270	4.94
1,3-Dichlorobenzene	322	38.5	66.2	53.5	56.4	1.03
1,4-Dichlorobenzene	145	17.4	29.8	24.1	25.4	0.47
1,2-Dichlorobenzene	163	19.5	33.5	27.1	28.6	0.52
Total Dichlorobenzene	630	75.4	130	105	110	2.02
1,3,5-trichlorobenzene	42.7	5.11	8.78	7.10	7.48	0.14
1,2,4-trichlorobenzene	70.9	8.48	14.6	11.8	12.4	0.23
1,2,3-trichlorobenzene	22.6	2.70	4.65	3.76	3.96	0.072
Total Trichlorobenzene	136	16.3	28.0	22.6	23.9	0.44
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	18.9	2.26	3.89	3.14	3.31	0.061
1,2,3,4-tetrachlorobenzene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Total Tetrachlorobenzene	<28.9	<3.46	<5.94	<4.80	<5.06	<0.093
Pentachlorobenzene	15.3	1.83	3.15	2.54	2.68	0.049
Hexachlorobenzene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Total Chlorobenzenes	<2360	<282	<485	<392	<414	<7.57

Dry Gas Volume Sampled (Rm^3*) :	4.864
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.6
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

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	1830	216	371	301	315	5.83
1,3-Dichlorobenzene	465	54.9	94.4	76.4	80.1	1.48
1,4-Dichlorobenzene	205	24.2	41.6	33.7	35.3	0.65
1,2-Dichlorobenzene	270	31.9	54.8	44.3	46.5	0.86
Total Dichlorobenzene	940	111	191	154	162	2.99
1,3,5-trichlorobenzene	45.7	5.39	9.27	7.50	7.87	0.15
1,2,4-trichlorobenzene	90.3	10.7	18.3	14.8	15.6	0.29
1,2,3-trichlorobenzene	31.6	3.73	6.41	5.19	5.44	0.10
Total Trichlorobenzene	168	19.8	34.0	27.5	28.9	0.53
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	27.6	3.26	5.60	4.53	4.75	0.088
1,2,3,4-tetrachlorobenzene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Total Tetrachlorobenzene	<37.6	<4.44	<7.63	<6.17	<6.48	<0.12
Pentachlorobenzene	12.9	1.52	2.62	2.12	2.22	0.041
Hexachlorobenzene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Total Chlorobenzenes	<2998	<354	<608	<492	<516	<9.55

Dry Gas Volume Sampled (Rm^3*) :	4.928
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* 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	263	184	216	221	17.9
1,3-Dichlorobenzene	31.5	38.5	54.9	41.7	28.7
1,4-Dichlorobenzene	15.9	17.4	24.2	19.1	23.1
1,2-Dichlorobenzene	18.2	19.5	31.9	23.2	32.6
Total Dichlorobenzene	65.6	75.4	111	84.0	28.4
1,3,5-trichlorobenzene	3.68	5.11	5.39	4.73	19.4
1,2,4-trichlorobenzene	5.19	8.48	10.7	8.11	34.0
1,2,3-trichlorobenzene	2.01	2.70	3.73	2.81	30.8
Total Trichlorobenzene	10.9	16.3	19.8	15.7	28.7
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.19	2.26	3.26	2.57	23.2
1,2,3,4-tetrachlorobenzene	<1.20	<1.20	<1.18	<1.19	0.8
Total Tetrachlorobenzene	<3.38	<3.46	<4.44	<3.76	15.6
Pentachlorobenzene	1.46	1.83	1.52	1.60	12.4
Hexachlorobenzene	<1.20	<1.20	<1.18	<1.19	0.8
Total Chlorobenzenes	<345	<282	<354	<327	11.9

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	451	317	371	380	17.8
1,3-Dichlorobenzene	54.1	66.2	94.4	71.6	28.8
1,4-Dichlorobenzene	27.3	29.8	41.6	32.9	23.2
1,2-Dichlorobenzene	31.2	33.5	54.8	39.8	32.7
Total Dichlorobenzene	113	130	191	144	28.5
1,3,5-trichlorobenzene	6.32	8.78	9.27	8.12	19.5
1,2,4-trichlorobenzene	8.90	14.6	18.3	13.9	34.0
1,2,3-trichlorobenzene	3.45	4.65	6.41	4.83	30.9
Total Trichlorobenzene	18.7	28.0	34.0	26.9	28.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.75	3.89	5.60	4.41	23.4
1,2,3,4-tetrachlorobenzene	<2.05	<2.06	<2.03	<2.05	0.7
Total Tetrachlorobenzene	<5.80	<5.94	<7.63	<6.46	15.7
Pentachlorobenzene	2.50	3.15	2.62	2.76	12.5
Hexachlorobenzene	<2.05	<2.06	<2.03	<2.05	0.7
Total Chlorobenzenes	<593	<485	<608	<562	11.9

* 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	362	256	301	306	17.5
1,3-Dichlorobenzene	43.5	53.5	76.4	57.8	29.2
1,4-Dichlorobenzene	21.9	24.1	33.7	26.6	23.5
1,2-Dichlorobenzene	25.0	27.1	44.3	32.2	33.0
Total Dichlorobenzene	90.4	105	154	116	28.8
1,3,5-trichlorobenzene	5.07	7.10	7.50	6.56	19.9
1,2,4-trichlorobenzene	7.15	11.8	14.8	11.3	34.4
1,2,3-trichlorobenzene	2.77	3.76	5.19	3.90	31.2
Total Trichlorobenzene	15.0	22.6	27.5	21.7	29.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.01	3.14	4.53	3.56	23.6
1,2,3,4-tetrachlorobenzene	<1.65	<1.66	<1.64	<1.65	0.6
Total Tetrachlorobenzene	<4.66	<4.80	<6.17	<5.21	16.0
Pentachlorobenzene	2.01	2.54	2.12	2.22	12.7
Hexachlorobenzene	<1.65	<1.66	<1.64	<1.65	0.6
Total Chlorobenzenes	<476	<392	<492	<454	11.8

* 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	382	270	315	322	17.5
1,3-Dichlorobenzene	45.9	56.4	80.1	60.8	28.8
1,4-Dichlorobenzene	23.1	25.4	35.3	27.9	23.2
1,2-Dichlorobenzene	26.4	28.6	46.5	33.8	32.6
Total Dichlorobenzene	95.4	110	162	123	28.5
1,3,5-trichlorobenzene	5.35	7.48	7.87	6.90	19.7
1,2,4-trichlorobenzene	7.54	12.4	15.6	11.8	34.1
1,2,3-trichlorobenzene	2.92	3.96	5.44	4.11	30.9
Total Trichlorobenzene	15.8	23.9	28.9	22.8	28.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.18	3.31	4.75	3.75	23.3
1,2,3,4-tetrachlorobenzene	<1.74	<1.75	<1.72	<1.74	0.9
Total Tetrachlorobenzene	<4.92	<5.06	<6.48	<5.49	15.7
Pentachlorobenzene	2.12	2.68	2.22	2.34	12.8
Hexachlorobenzene	<1.74	<1.75	<1.72	<1.74	0.9
Total Chlorobenzenes	<502	<414	<516	<477	11.6

* 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	6.99	4.94	5.83	5.92	17.4
1,3-Dichlorobenzene	0.84	1.03	1.48	1.12	29.5
1,4-Dichlorobenzene	0.42	0.47	0.65	0.51	23.9
1,2-Dichlorobenzene	0.48	0.52	0.86	0.62	33.3
Total Dichlorobenzene	1.75	2.02	2.99	2.25	29.1
1,3,5-trichlorobenzene	0.098	0.14	0.15	0.13	20.0
1,2,4-trichlorobenzene	0.14	0.23	0.29	0.22	34.6
1,2,3-trichlorobenzene	0.053	0.072	0.10	0.076	31.5
Total Trichlorobenzene	0.29	0.44	0.53	0.42	29.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.058	0.061	0.088	0.069	24.0
1,2,3,4-tetrachlorobenzene	<0.032	<0.032	<0.032	<0.032	0.5
Total Tetrachlorobenzene	<0.090	<0.093	<0.12	<0.10	16.4
Pentachlorobenzene	0.039	0.049	0.041	0.043	12.6
Hexachlorobenzene	<0.032	<0.032	<0.032	<0.032	0.5
Total Chlorobenzenes	<9.19	<7.57	<9.55	<8.77	12.0

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

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
Monochlorobenzene	221	380	306	322	5.92
1,3-Dichlorobenzene	41.7	71.6	57.8	60.8	1.12
1,4-Dichlorobenzene	19.1	32.9	26.6	27.9	0.51
1,2-Dichlorobenzene	23.2	39.8	32.2	33.8	0.62
Total Dichlorobenzene	84.0	144	116	123	2.25
1,3,5-trichlorobenzene	4.73	8.12	6.56	6.90	0.13
1,2,4-trichlorobenzene	8.11	13.9	11.3	11.8	0.22
1,2,3-trichlorobenzene	2.81	4.83	3.90	4.11	0.076
Total Trichlorobenzene	15.7	26.9	21.7	22.8	0.42
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.57	4.41	3.56	3.75	0.069
1,2,3,4-tetrachlorobenzene	<1.19	<2.05	<1.65	<1.74	<0.032
Total Tetrachlorobenzene	<3.76	<6.46	<5.21	<5.49	<0.10
Pentachlorobenzene	1.60	2.76	2.22	2.34	0.043
Hexachlorobenzene	<1.19	<2.05	<1.65	<1.74	<0.032
Total Chlorobenzenes	<327	<562	<454	<477	<8.77

* 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	Laboratory Blank Total ng
Monochlorobenzene	<10	<10
1,3-Dichlorobenzene	<10	<10
1,4-Dichlorobenzene	<10	<10
1,2-Dichlorobenzene	14	<10
Total Dichlorobenzene	<34.0	<30.0
1,3,5-trichlorobenzene	<10	<10
1,2,4-trichlorobenzene	<10	<10
1,2,3-trichlorobenzene	<10	<10
Total Trichlorobenzene	<30.0	<30.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<10	<10
1,2,3,4-tetrachlorobenzene	<10	<10
Total Tetrachlorobenzene	<20.0	<20.0
Pentachlorobenzene	<10	<10
Hexachlorobenzene	<10	<10
Total Chlorobenzenes	<114	<110

"<" 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	<50	<5.98	<10.3	<8.24	<8.69	<0.16
3-monochlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
4-monochlorophenol	142	17.0	29.1	23.4	24.7	0.45
Total Monochlorophenols	<242	<28.9	<49.6	<39.9	<42.0	<0.77
2,6-dichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
2,4 & 2,5-dichlorophenol	65.6	7.84	13.5	10.8	11.4	0.21
3,5-dichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
2,3-dichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
3,4-dichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
Total Dichlorophenols	<266	<31.7	<54.5	<43.7	<46.1	<0.84
2,4,6-trichlorophenol	154	18.4	31.6	25.4	26.8	0.49
2,3,6-trichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
2,3,5-trichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
2,4,5-trichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
2,3,4-trichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
3,4,5-trichlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
Total Trichlorophenols	<404	<48.3	<82.9	<66.5	<70.2	<1.28
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
2,3,4,5-tetrachlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
Total Tetrachlorophenols	<100	<12.0	<20.5	<16.5	<17.4	<0.32
Pentachlorophenol	<50	<5.98	<10.3	<8.24	<8.69	<0.16
Total Chlorophenols	<1062	<127	<218	<175	<184	<3.37

Dry Gas Volume Sampled (Rm^3*) :	4.876
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
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

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	<50	<5.98	<10.3	<8.31	<8.76	<0.16
3-monochlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
4-monochlorophenol	64.2	7.68	13.2	10.7	11.3	0.21
Total Monochlorophenols	<164	<19.7	<33.8	<27.3	<28.8	<0.53
2,6-dichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,4 & 2,5-dichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
3,5-dichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,3-dichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
3,4-dichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
Total Dichlorophenols	<250	<29.9	<51.4	<41.5	<43.8	<0.80
2,4,6-trichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,3,6-trichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,3,5-trichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,4,5-trichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,3,4-trichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
3,4,5-trichlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
Total Trichlorophenols	<300	<35.9	<61.7	<49.9	<52.6	<0.96
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
2,3,4,5-tetrachlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
Total Tetrachlorophenols	<100	<12.0	<20.6	<16.6	<17.5	<0.32
Pentachlorophenol	<50	<5.98	<10.3	<8.31	<8.76	<0.16
Total Chlorophenols	<864	<103	<178	<144	<151	<2.77

Dry Gas Volume Sampled (Rm^3*) :	4.864
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.6
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

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	<50	<5.90	<10.1	<8.21	<8.61	<0.16
3-monochlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
4-monochlorophenol	97.3	11.5	19.7	16.0	16.8	0.31
Total Monochlorophenols	<197	<23.3	<40.0	<32.4	<34.0	<0.63
2,6-dichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
2,4 & 2,5-dichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
3,5-dichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
2,3-dichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
3,4-dichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
Total Dichlorophenols	<250	<29.5	<50.7	<41.1	<43.1	<0.80
2,4,6-trichlorophenol	96.2	11.4	19.5	15.8	16.6	0.31
2,3,6-trichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
2,3,5-trichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
2,4,5-trichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
2,3,4-trichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
3,4,5-trichlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
Total Trichlorophenols	<346	<40.9	<70.3	<56.9	<59.6	<1.10
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
2,3,4,5-tetrachlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
Total Tetrachlorophenols	<100	<11.8	<20.3	<16.4	<17.2	<0.32
Pentachlorophenol	<50	<5.90	<10.1	<8.21	<8.61	<0.16
Total Chlorophenols	<944	<111	<191	<155	<162	<3.01

Dry Gas Volume Sampled (Rm^3*) :	4.928
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
Wet Reference Flowrate (Rm^3/s*) :	18.5

* 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	<5.98	<5.98	<5.90	<5.95	0.8
3-monochlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
4-monochlorophenol	17.0	7.68	11.5	12.0	38.8
Total Monochlorophenols	<28.9	<19.7	<23.3	<24.0	19.5
2,6-dichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
2,4 & 2,5-dichlorophenol	7.84	<5.98	<5.90	<6.57	16.7
3,5-dichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
2,3-dichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
3,4-dichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
Total Dichlorophenols	<31.7	<29.9	<29.5	<30.4	3.9
2,4,6-trichlorophenol	18.4	<5.98	11.4	<11.9	52.3
2,3,6-trichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
2,3,5-trichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
2,4,5-trichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
2,3,4-trichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
3,4,5-trichlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
Total Trichlorophenols	<48.3	<35.9	<40.9	<41.7	14.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
2,3,4,5-tetrachlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
Total Tetrachlorophenols	<12.0	<12.0	<11.8	<11.9	0.8
Pentachlorophenol	<5.98	<5.98	<5.90	<5.95	0.8
Total Chlorophenols	<127	<103	<111	<114	10.5

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	<10.3	<10.3	<10.1	<10.2	0.7
3-monochlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
4-monochlorophenol	29.1	13.2	19.7	20.7	38.7
Total Monochlorophenols	<49.6	<33.8	<40.0	<41.1	19.4
2,6-dichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
2,4 & 2,5-dichlorophenol	13.5	<10.3	<10.1	<11.3	16.6
3,5-dichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
2,3-dichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
3,4-dichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
Total Dichlorophenols	<54.5	<51.4	<50.7	<52.2	3.8
2,4,6-trichlorophenol	31.6	<10.3	19.5	<20.5	52.2
2,3,6-trichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
2,3,5-trichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
2,4,5-trichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
2,3,4-trichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
3,4,5-trichlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
Total Trichlorophenols	<82.9	<61.7	<70.3	<71.6	14.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
2,3,4,5-tetrachlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
Total Tetrachlorophenols	<20.5	<20.6	<20.3	<20.5	0.7
Pentachlorophenol	<10.3	<10.3	<10.1	<10.2	0.7
Total Chlorophenols	<218	<178	<191	<196	10.4

* 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	<8.24	<8.31	<8.21	<8.25	0.6
3-monochlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
4-monochlorophenol	23.4	10.7	16.0	16.7	38.3
Total Monochlorophenols	<39.9	<27.3	<32.4	<33.2	19.1
2,6-dichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
2,4 & 2,5-dichlorophenol	10.8	<8.31	<8.21	<9.11	16.1
3,5-dichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
2,3-dichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
3,4-dichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
Total Dichlorophenols	<43.7	<41.5	<41.1	<42.1	3.4
2,4,6-trichlorophenol	25.4	<8.31	15.8	<16.5	51.8
2,3,6-trichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
2,3,5-trichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
2,4,5-trichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
2,3,4-trichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
3,4,5-trichlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
Total Trichlorophenols	<66.5	<49.9	<56.9	<57.7	14.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
2,3,4,5-tetrachlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
Total Tetrachlorophenols	<16.5	<16.6	<16.4	<16.5	0.6
Pentachlorophenol	<8.24	<8.31	<8.21	<8.25	0.6
Total Chlorophenols	<175	<144	<155	<158	10.0

* 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	<8.69	<8.76	<8.61	<8.69	0.9
3-monochlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
4-monochlorophenol	24.7	11.3	16.8	17.6	38.4
Total Monochlorophenols	<42.0	<28.8	<34.0	<34.9	19.1
2,6-dichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
2,4 & 2,5-dichlorophenol	11.4	<8.76	<8.61	<9.59	16.3
3,5-dichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
2,3-dichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
3,4-dichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
Total Dichlorophenols	<46.1	<43.8	<43.1	<44.3	3.6
2,4,6-trichlorophenol	26.8	<8.76	16.6	<17.4	52.0
2,3,6-trichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
2,3,5-trichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
2,4,5-trichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
2,3,4-trichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
3,4,5-trichlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
Total Trichlorophenols	<70.2	<52.6	<59.6	<60.8	14.6
2,3,5,6/2,3,4,6-tetrachlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
2,3,4,5-tetrachlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
Total Tetrachlorophenols	<17.4	<17.5	<17.2	<17.4	0.9
Pentachlorophenol	<8.69	<8.76	<8.61	<8.69	0.9
Total Chlorophenols	<184	<151	<162	<166	10.1

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
3-monochlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
4-monochlorophenol	0.45	0.21	0.31	0.32	38.2
Total Monochlorophenols	<0.77	<0.53	<0.63	<0.64	19.0
2,6-dichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
2,4 & 2,5-dichlorophenol	0.21	<0.16	<0.16	<0.18	16.0
3,5-dichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
2,3-dichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
3,4-dichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
Total Dichlorophenols	<0.84	<0.80	<0.80	<0.81	3.2
2,4,6-trichlorophenol	0.49	<0.16	0.31	<0.32	51.7
2,3,6-trichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
2,3,5-trichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
2,4,5-trichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
2,3,4-trichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
3,4,5-trichlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
Total Trichlorophenols	<1.28	<0.96	<1.10	<1.12	14.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
2,3,4,5-tetrachlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
Total Tetrachlorophenols	<0.32	<0.32	<0.32	<0.32	0.5
Pentachlorophenol	<0.16	<0.16	<0.16	<0.16	0.5
Total Chlorophenols	<3.37	<2.77	<3.01	<3.05	10.0

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	<5.95	<10.2	<8.25	<8.69	<0.16
3-monochlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
4-monochlorophenol	12.0	20.7	16.7	17.6	0.32
Total Monochlorophenols	<24.0	<41.1	<33.2	<34.9	<0.64
2,6-dichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
2,4 & 2,5-dichlorophenol	<6.57	<11.3	<9.11	<9.59	<0.18
3,5-dichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
2,3-dichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
3,4-dichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
Total Dichlorophenols	<30.4	<52.2	<42.1	<44.3	<0.81
2,4,6-trichlorophenol	<11.9	<20.5	<16.5	<17.4	<0.32
2,3,6-trichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
2,3,5-trichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
2,4,5-trichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
2,3,4-trichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
3,4,5-trichlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
Total Trichlorophenols	<41.7	<71.6	<57.7	<60.8	<1.12
2,3,5,6/2,3,4,6-tetrachlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
2,3,4,5-tetrachlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
Total Tetrachlorophenols	<11.9	<20.5	<16.5	<17.4	<0.32
Pentachlorophenol	<5.95	<10.2	<8.25	<8.69	<0.16
Total Chlorophenols	<114	<196	<158	<166	<3.05

* 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	Lab Blank Total ng	Blank Train Total ng
2-monochlorophenol	<50	<50
3-monochlorophenol	<50	<50
4-monochlorophenol	<50	<50
Total Monochlorophenols	<150	<150
2,6-dichlorophenol	<50	<50
2,4 & 2,5-dichlorophenol	<50	<50
3,5-dichlorophenol	<50	<50
2,3-dichlorophenol	<50	<50
3,4-dichlorophenol	<50	<50
Total Dichlorophenols	<250	<250
2,4,6-trichlorophenol	<50	<50
2,3,6-trichlorophenol	<50	<50
2,3,5-trichlorophenol	<50	<50
2,4,5-trichlorophenol	<50	<50
2,3,4-trichlorophenol	<50	<50
3,4,5-trichlorophenol	<50	<50
Total Trichlorophenols	<300	<300
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<50
2,3,4,5-tetrachlorophenol	<50	<50
Total Tetrachlorophenols	<100	<100
Pentachlorophenol	<50	<50
Total Chlorophenols	<850	<850

"<" 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	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Acenaphthylene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Anthracene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(a)anthracene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(b)fluoranthene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(k)fluoranthene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(a)fluorene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(b)fluorene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(g,h,i)perylene	28.1	3.36	5.76	4.63	4.88	0.089
Benzo(a)pyrene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Benzo(e)pyrene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Biphenyl	263	31.4	53.9	43.3	45.7	0.84
2-Chloronaphthalene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Chrysene/Triphenylene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Coronene	<50	<5.98	<10.3	<8.24	<8.69	<0.16
Dibenzo(a,h/a,c)anthracene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Dibenzo(a,e)pyrene	<50	<5.98	<10.3	<8.24	<8.69	<0.16
9,10-dimethylanthracene	20.2	2.41	4.14	3.33	3.51	0.064
7,12-Dimethylbenzo(a)anthracene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Fluoranthene	21.6	2.58	4.43	3.56	3.75	0.069
Fluorene	15.1	1.80	3.10	2.49	2.62	0.048
Indeno(1,2,3-cd)pyrene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
2-methylanthracene	13.6	1.63	2.79	2.24	2.36	0.043
3-Methylcholanthrene	<50	<5.98	<10.3	<8.24	<8.69	<0.16
1-Methylnaphthalene	20.7	2.47	4.25	3.41	3.60	0.066
2-Methylnaphthalene	38.1	4.55	7.81	6.28	6.62	0.12
1-Methylphenanthrene	11.1	1.33	2.28	1.83	1.93	0.035
9-Methylphenanthrene	13.1	1.57	2.69	2.16	2.28	0.042
Naphthalene	106	12.7	21.7	17.5	18.4	0.34
Perylene	<10	<1.20	<2.05	<1.65	<1.74	<0.032
Phenanthrene	97.3	11.6	20.0	16.0	16.9	0.31
Picene	<50	<5.98	<10.3	<8.24	<8.69	<0.16
Pyrene	30.9	3.69	6.34	5.09	5.37	0.098
Tetralin	138	16.5	28.3	22.7	24.0	0.44
m-terphenyl	103	12.3	21.1	17.0	17.9	0.33
o-Terphenyl	15.0	1.79	3.08	2.47	2.61	0.048
p-terphenyl	102	12.2	20.9	16.8	17.7	0.32
Total	<1397	<167	<286	<230	<243	<4.44

Dry Gas Volume Sampled (Rm³*) :	4.876
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.3
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 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	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Acenaphthylene	19.1	2.29	3.93	3.17	3.35	0.061
Anthracene	11.1	1.33	2.28	1.84	1.95	0.036
Benzo(a)anthracene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Benzo(b)fluoranthene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Benzo(k)fluoranthene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Benzo(a)fluorene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Benzo(b)fluorene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Benzo(g,h,i)perylene	87.0	10.4	17.9	14.5	15.2	0.28
Benzo(a)pyrene	13.0	1.56	2.67	2.16	2.28	0.042
Benzo(e)pyrene	13.8	1.65	2.84	2.29	2.42	0.044
Biphenyl	222	26.6	45.6	36.9	38.9	0.71
2-Chloronaphthalene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Chrysene/Triphenylene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Coronene	77.5	9.27	15.9	12.9	13.6	0.25
Dibenzo(a,h/a,c)anthracene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Dibenzo(a,e)pyrene	<50	<5.98	<10.3	<8.31	<8.76	<0.16
9,10-dimethylanthracene	19.1	2.29	3.93	3.17	3.35	0.061
7,12-Dimethylbenzo(a)anthracene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Fluoranthene	43.3	5.18	8.90	7.20	7.59	0.14
Fluorene	22.8	2.73	4.69	3.79	4.00	0.073
Indeno(1,2,3-cd)pyrene	10.5	1.26	2.16	1.74	1.84	0.034
2-methylanthracene	23.1	2.76	4.75	3.84	4.05	0.074
3-Methylcholanthrene	<50	<5.98	<10.3	<8.31	<8.76	<0.16
1-Methylnaphthalene	28.1	3.36	5.78	4.67	4.92	0.090
2-Methylnaphthalene	51.8	6.20	10.6	8.61	9.08	0.17
1-Methylphenanthrene	16.5	1.97	3.39	2.74	2.89	0.053
9-Methylphenanthrene	25.9	3.10	5.32	4.30	4.54	0.083
Naphthalene	157	18.8	32.3	26.1	27.5	0.50
Perylene	<10	<1.20	<2.06	<1.66	<1.75	<0.032
Phenanthrene	125	15.0	25.7	20.8	21.9	0.40
Picene	<50	<5.98	<10.3	<8.31	<8.76	<0.16
Pyrene	54.6	6.53	11.2	9.07	9.57	0.18
Tetralin	153	18.3	31.5	25.4	26.8	0.49
m-terphenyl	70.5	8.44	14.5	11.7	12.4	0.23
o-Terphenyl	11.7	1.40	2.41	1.94	2.05	0.038
p-terphenyl	75.3	9.01	15.5	12.5	13.2	0.24
Total	<1592	<190	<327	<265	<279	<5.10

Dry Gas Volume Sampled (Rm³*) :	4.864
Actual Flowrate (m³/s) :	26.8
Dry Reference Flowrate (Rm³/s*) :	15.6
Dry Adjusted Flowrate (Rm³/s**) :	19.3
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 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	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Acenaphthylene	10.6	1.25	2.15	1.74	1.83	0.034
Anthracene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Benzo(a)anthracene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Benzo(b)fluoranthene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Benzo(k)fluoranthene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Benzo(a)fluorene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Benzo(b)fluorene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Benzo(g,h,i)perylene	171	20.2	34.7	28.1	29.4	0.54
Benzo(a)pyrene	14.8	1.75	3.00	2.43	2.55	0.047
Benzo(e)pyrene	26.4	3.12	5.36	4.34	4.55	0.084
Biphenyl	319	37.6	64.7	52.4	54.9	1.02
2-Chloronaphthalene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Chrysene/Triphenylene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Coronene	176	20.8	35.7	28.9	30.3	0.56
Dibenzo(a,h/a,c)anthracene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Dibenzo(a,e)pyrene	<50	<5.90	<10.1	<8.21	<8.61	<0.16
9,10-dimethylanthracene	18.8	2.22	3.81	3.09	3.24	0.060
7,12-Dimethylbenzo(a)anthracene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Fluoranthene	18.2	2.15	3.69	2.99	3.13	0.058
Fluorene	10.3	1.22	2.09	1.69	1.77	0.033
Indeno(1,2,3-cd)pyrene	24.3	2.87	4.93	3.99	4.18	0.077
2-methylanthracene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
3-Methylcholanthrene	<50	<5.90	<10.1	<8.21	<8.61	<0.16
1-Methylnaphthalene	13.2	1.56	2.68	2.17	2.27	0.042
2-Methylnaphthalene	24.6	2.90	4.99	4.04	4.24	0.078
1-Methylphenanthrene	18.2	2.15	3.69	2.99	3.13	0.058
9-Methylphenanthrene	10.1	1.19	2.05	1.66	1.74	0.032
Naphthalene	113	13.3	22.9	18.6	19.5	0.36
Perylene	<10	<1.18	<2.03	<1.64	<1.72	<0.032
Phenanthrene	65.5	7.73	13.3	10.8	11.3	0.21
Picene	<50	<5.90	<10.1	<8.21	<8.61	<0.16
Pyrene	27.3	3.22	5.54	4.48	4.70	0.087
Tetralin	188	22.2	38.1	30.9	32.4	0.60
m-terphenyl	61.2	7.22	12.4	10.1	10.5	0.19
o-Terphenyl	<10	<1.18	<2.03	<1.64	<1.72	<0.032
p-terphenyl	67.8	8.00	13.8	11.1	11.7	0.22
Total	<1668	<197	<339	<274	<287	<5.31

Dry Gas Volume Sampled (Rm³*) :	4.928
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	19.4
Wet Reference Flowrate (Rm³/s*) :	18.5

* 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	<1.20	<1.20	<1.18	<1.19	0.8
Acenaphthylene	<1.20	2.29	1.25	<1.58	38.9
Anthracene	<1.20	1.33	<1.18	<1.23	6.6
Benzo(a)anthracene	<1.20	<1.20	<1.18	<1.19	0.8
Benzo(b)fluoranthene	<1.20	<1.20	<1.18	<1.19	0.8
Benzo(k)fluoranthene	<1.20	<1.20	<1.18	<1.19	0.8
Benzo(a)fluorene	<1.20	<1.20	<1.18	<1.19	0.8
Benzo(b)fluorene	<1.20	<1.20	<1.18	<1.19	0.8
Benzo(g,h,i)perylene	3.36	10.4	20.2	11.3	74.6
Benzo(a)pyrene	<1.20	1.56	1.75	<1.50	18.7
Benzo(e)pyrene	<1.20	1.65	3.12	<1.99	50.5
Biphenyl	31.4	26.6	37.6	31.9	17.4
2-Chloronaphthalene	<1.20	<1.20	<1.18	<1.19	0.8
Chrysene/Triphenylene	<1.20	<1.20	<1.18	<1.19	0.8
Coronene	<5.98	9.27	20.8	<12.0	64.7
Dibenzo(a,h/a,c)anthracene	<1.20	<1.20	<1.18	<1.19	0.8
Dibenzo(a,e)pyrene	<5.98	<5.98	<5.90	<5.95	0.8
9,10-dimethylanthracene	2.41	2.29	2.22	2.31	4.3
7,12-Dimethylbenzo(a)anthracene	<1.20	<1.20	<1.18	<1.19	0.8
Fluoranthene	2.58	5.18	2.15	3.30	49.7
Fluorene	1.80	2.73	1.22	1.92	39.8
Indeno(1,2,3-cd)pyrene	<1.20	1.26	2.87	<1.77	53.5
2-methylanthracene	1.63	2.76	<1.18	<1.86	44.0
3-Methylcholanthrene	<5.98	<5.98	<5.90	<5.95	0.8
1-Methylnaphthalene	2.47	3.36	1.56	2.46	36.6
2-Methylnaphthalene	4.55	6.20	2.90	4.55	36.2
1-Methylphenanthrene	1.33	1.97	2.15	1.82	23.8
9-Methylphenanthrene	1.57	3.10	1.19	1.95	51.8
Naphthalene	12.7	18.8	13.3	14.9	22.5
Perylene	<1.20	<1.20	<1.18	<1.19	0.8
Phenanthrene	11.6	15.0	7.73	11.4	31.6
Picene	<5.98	<5.98	<5.90	<5.95	0.8
Pyrene	3.69	6.53	3.22	4.48	40.0
Tetralin	16.5	18.3	22.2	19.0	15.3
m-terphenyl	12.3	8.44	7.22	9.32	28.5
o-Terphenyl	1.79	1.40	<1.18	1.46	21.3
p-terphenyl	12.2	9.01	8.00	9.73	22.5
Total	<167	<190	<197	<185	8.5

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	<2.05	<2.06	<2.03	<2.05	0.7
Acenaphthylene	<2.05	3.93	2.15	<2.71	38.9
Anthracene	<2.05	2.28	<2.03	<2.12	6.6
Benzo(a)anthracene	<2.05	<2.06	<2.03	<2.05	0.7
Benzo(b)fluoranthene	<2.05	<2.06	<2.03	<2.05	0.7
Benzo(k)fluoranthene	<2.05	<2.06	<2.03	<2.05	0.7
Benzo(a)fluorene	<2.05	<2.06	<2.03	<2.05	0.7
Benzo(b)fluorene	<2.05	<2.06	<2.03	<2.05	0.7
Benzo(g,h,i)perylene	5.76	17.9	34.7	19.4	74.7
Benzo(a)pyrene	<2.05	2.67	3.00	<2.58	18.8
Benzo(e)pyrene	<2.05	2.84	5.36	<3.42	50.6
Biphenyl	53.9	45.6	64.7	54.8	17.5
2-Chloronaphthalene	<2.05	<2.06	<2.03	<2.05	0.7
Chrysene/Triphenylene	<2.05	<2.06	<2.03	<2.05	0.7
Coronene	<10.3	15.9	35.7	<20.6	64.8
Dibenzo(a,h/a,c)anthracene	<2.05	<2.06	<2.03	<2.05	0.7
Dibenzo(a,e)pyrene	<10.3	<10.3	<10.1	<10.2	0.7
9,10-dimethylanthracene	4.14	3.93	3.81	3.96	4.2
7,12-Dimethylbenzo(a)anthracene	<2.05	<2.06	<2.03	<2.05	0.7
Fluoranthene	4.43	8.90	3.69	5.68	49.7
Fluorene	3.10	4.69	2.09	3.29	39.8
Indeno(1,2,3-cd)pyrene	<2.05	2.16	4.93	<3.05	53.6
2-methylanthracene	2.79	4.75	<2.03	<3.19	44.0
3-Methylcholanthrene	<10.3	<10.3	<10.1	<10.2	0.7
1-Methylnaphthalene	4.25	5.78	2.68	4.23	36.6
2-Methylnaphthalene	7.81	10.6	4.99	7.82	36.2
1-Methylphenanthrene	2.28	3.39	3.69	3.12	23.9
9-Methylphenanthrene	2.69	5.32	2.05	3.35	51.8
Naphthalene	21.7	32.3	22.9	25.6	22.5
Perylene	<2.05	<2.06	<2.03	<2.05	0.7
Phenanthrene	20.0	25.7	13.3	19.6	31.6
Picene	<10.3	<10.3	<10.1	<10.2	0.7
Pyrene	6.34	11.2	5.54	7.70	40.0
Tetralin	28.3	31.5	38.1	32.6	15.4
m-terphenyl	21.1	14.5	12.4	16.0	28.4
o-Terphenyl	3.08	2.41	<2.03	2.50	21.2
p-terphenyl	20.9	15.5	13.8	16.7	22.4
Total	<286	<327	<339	<317	8.6

* 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	<1.65	<1.66	<1.64	<1.65	0.6
Acenaphthylene	<1.65	3.17	1.74	<2.19	39.1
Anthracene	<1.65	1.84	<1.64	<1.71	6.7
Benzo(a)anthracene	<1.65	<1.66	<1.64	<1.65	0.6
Benzo(b)fluoranthene	<1.65	<1.66	<1.64	<1.65	0.6
Benzo(k)fluoranthene	<1.65	<1.66	<1.64	<1.65	0.6
Benzo(a)fluorene	<1.65	<1.66	<1.64	<1.65	0.6
Benzo(b)fluorene	<1.65	<1.66	<1.64	<1.65	0.6
Benzo(g,h,i)perylene	4.63	14.5	28.1	15.7	74.9
Benzo(a)pyrene	<1.65	2.16	2.43	<2.08	19.1
Benzo(e)pyrene	<1.65	2.29	4.34	<2.76	50.9
Biphenyl	43.3	36.9	52.4	44.2	17.6
2-Chloronaphthalene	<1.65	<1.66	<1.64	<1.65	0.6
Chrysene/Triphenylene	<1.65	<1.66	<1.64	<1.65	0.6
Coronene	<8.24	12.9	28.9	<16.7	65.0
Dibenzo(a,h/a,c)anthracene	<1.65	<1.66	<1.64	<1.65	0.6
Dibenzo(a,e)pyrene	<8.24	<8.31	<8.21	<8.25	0.6
9,10-dimethylanthracene	3.33	3.17	3.09	3.20	3.8
7,12-Dimethylbenzo(a)anthracene	<1.65	<1.66	<1.64	<1.65	0.6
Fluoranthene	3.56	7.20	2.99	4.58	49.8
Fluorene	2.49	3.79	1.69	2.66	39.9
Indeno(1,2,3-cd)pyrene	<1.65	1.74	3.99	<2.46	53.9
2-methylanthracene	2.24	3.84	<1.64	<2.57	44.1
3-Methylcholanthrene	<8.24	<8.31	<8.21	<8.25	0.6
1-Methylnaphthalene	3.41	4.67	2.17	3.42	36.6
2-Methylnaphthalene	6.28	8.61	4.04	6.31	36.2
1-Methylphenanthrene	1.83	2.74	2.99	2.52	24.3
9-Methylphenanthrene	2.16	4.30	1.66	2.71	51.9
Naphthalene	17.5	26.1	18.6	20.7	22.7
Perylene	<1.65	<1.66	<1.64	<1.65	0.6
Phenanthrene	16.0	20.8	10.8	15.9	31.6
Picene	<8.24	<8.31	<8.21	<8.25	0.6
Pyrene	5.09	9.07	4.48	6.22	40.1
Tetralin	22.7	25.4	30.9	26.3	15.7
m-terphenyl	17.0	11.7	10.1	12.9	28.0
o-Terphenyl	2.47	1.94	<1.64	2.02	20.8
p-terphenyl	16.8	12.5	11.1	13.5	21.9
Total	<230	<265	<274	<256	9.0

* 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	<1.74	<1.75	<1.72	<1.74	0.9
Acenaphthylene	<1.74	3.35	1.83	<2.30	39.3
Anthracene	<1.74	1.95	<1.72	<1.80	6.9
Benzo(a)anthracene	<1.74	<1.75	<1.72	<1.74	0.9
Benzo(b)fluoranthene	<1.74	<1.75	<1.72	<1.74	0.9
Benzo(k)fluoranthene	<1.74	<1.75	<1.72	<1.74	0.9
Benzo(a)fluorene	<1.74	<1.75	<1.72	<1.74	0.9
Benzo(b)fluorene	<1.74	<1.75	<1.72	<1.74	0.9
Benzo(g,h,i)perylene	4.88	15.2	29.4	16.5	74.6
Benzo(a)pyrene	<1.74	2.28	2.55	<2.19	18.9
Benzo(e)pyrene	<1.74	2.42	4.55	<2.90	50.5
Biphenyl	45.7	38.9	54.9	46.5	17.3
2-Chloronaphthalene	<1.74	<1.75	<1.72	<1.74	0.9
Chrysene/Triphenylene	<1.74	<1.75	<1.72	<1.74	0.9
Coronene	<8.69	13.6	30.3	<17.5	64.7
Dibenzo(a,h/a,c)anthracene	<1.74	<1.75	<1.72	<1.74	0.9
Dibenzo(a,e)pyrene	<8.69	<8.76	<8.61	<8.69	0.9
9,10-dimethylanthracene	3.51	3.35	3.24	3.36	4.1
7,12-Dimethylbenzo(a)anthracene	<1.74	<1.75	<1.72	<1.74	0.9
Fluoranthene	3.75	7.59	3.13	4.82	50.0
Fluorene	2.62	4.00	1.77	2.80	40.1
Indeno(1,2,3-cd)pyrene	<1.74	1.84	4.18	<2.59	53.5
2-methylanthracene	2.36	4.05	<1.72	<2.71	44.3
3-Methylcholanthrene	<8.69	<8.76	<8.61	<8.69	0.9
1-Methylnaphthalene	3.60	4.92	2.27	3.60	36.8
2-Methylnaphthalene	6.62	9.08	4.24	6.64	36.4
1-Methylphenanthrene	1.93	2.89	3.13	2.65	24.1
9-Methylphenanthrene	2.28	4.54	1.74	2.85	52.1
Naphthalene	18.4	27.5	19.5	21.8	22.9
Perylene	<1.74	<1.75	<1.72	<1.74	0.9
Phenanthrene	16.9	21.9	11.3	16.7	31.8
Picene	<8.69	<8.76	<8.61	<8.69	0.9
Pyrene	5.37	9.57	4.70	6.55	40.3
Tetralin	24.0	26.8	32.4	27.7	15.4
m-terphenyl	17.9	12.4	10.5	13.6	28.2
o-Terphenyl	2.61	2.05	<1.72	2.13	21.0
p-terphenyl	17.7	13.2	11.7	14.2	22.1
Total	<243	<279	<287	<270	8.8

* 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	<0.032	<0.032	<0.032	<0.032	0.5
Acenaphthylene	<0.032	0.061	0.034	<0.042	39.0
Anthracene	<0.032	0.036	<0.032	<0.033	6.6
Benzo(a)anthracene	<0.032	<0.032	<0.032	<0.032	0.5
Benzo(b)fluoranthene	<0.032	<0.032	<0.032	<0.032	0.5
Benzo(k)fluoranthene	<0.032	<0.032	<0.032	<0.032	0.5
Benzo(a)fluorene	<0.032	<0.032	<0.032	<0.032	0.5
Benzo(b)fluorene	<0.032	<0.032	<0.032	<0.032	0.5
Benzo(g,h,i)perylene	0.089	0.28	0.54	0.30	75.2
Benzo(a)pyrene	<0.032	0.042	0.047	<0.040	19.4
Benzo(e)pyrene	<0.032	0.044	0.084	<0.053	51.2
Biphenyl	0.84	0.71	1.02	0.85	17.9
2-Chloronaphthalene	<0.032	<0.032	<0.032	<0.032	0.5
Chrysene/Triphenylene	<0.032	<0.032	<0.032	<0.032	0.5
Coronene	<0.16	0.25	0.56	<0.32	65.3
Dibenzo(a,h/a,c)anthracene	<0.032	<0.032	<0.032	<0.032	0.5
Dibenzo(a,e)pyrene	<0.16	<0.16	<0.16	<0.16	0.5
9,10-dimethylanthracene	0.064	0.061	0.060	0.062	3.6
7,12-Dimethylbenzo(a)anthracene	<0.032	<0.032	<0.032	<0.032	0.5
Fluoranthene	0.069	0.14	0.058	0.089	49.7
Fluorene	0.048	0.073	0.033	0.051	39.7
Indeno(1,2,3-cd)pyrene	<0.032	0.034	0.077	<0.048	54.2
2-methylanthracene	0.043	0.074	<0.032	<0.050	43.9
3-Methylcholanthrene	<0.16	<0.16	<0.16	<0.16	0.5
1-Methylnaphthalene	0.066	0.090	0.042	0.066	36.4
2-Methylnaphthalene	0.12	0.17	0.078	0.12	36.0
1-Methylphenanthrene	0.035	0.053	0.058	0.049	24.5
9-Methylphenanthrene	0.042	0.083	0.032	0.052	51.8
Naphthalene	0.34	0.50	0.36	0.40	22.6
Perylene	<0.032	<0.032	<0.032	<0.032	0.5
Phenanthrene	0.31	0.40	0.21	0.31	31.4
Picene	<0.16	<0.16	<0.16	<0.16	0.5
Pyrene	0.098	0.18	0.087	0.12	39.9
Tetralin	0.44	0.49	0.60	0.51	16.0
m-terphenyl	0.33	0.23	0.19	0.25	27.8
o-Terphenyl	0.048	0.038	<0.032	0.039	20.5
p-terphenyl	0.32	0.24	0.22	0.26	21.7
Total	<4.44	<5.10	<5.31	<4.95	9.2

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 1 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	<1.19	<2.05	<1.65	<1.74	<0.032
Acenaphthylene	<1.58	<2.71	<2.19	<2.30	<0.042
Anthracene	<1.23	<2.12	<1.71	<1.80	<0.033
Benzo(a)anthracene	<1.19	<2.05	<1.65	<1.74	<0.032
Benzo(b)fluoranthene	<1.19	<2.05	<1.65	<1.74	<0.032
Benzo(k)fluoranthene	<1.19	<2.05	<1.65	<1.74	<0.032
Benzo(a)fluorene	<1.19	<2.05	<1.65	<1.74	<0.032
Benzo(b)fluorene	<1.19	<2.05	<1.65	<1.74	<0.032
Benzo(g,h,i)perylene	11.3	19.4	15.7	16.5	0.30
Benzo(a)pyrene	<1.50	<2.58	<2.08	<2.19	<0.040
Benzo(e)pyrene	<1.99	<3.42	<2.76	<2.90	<0.053
Biphenyl	31.9	54.8	44.2	46.5	0.85
2-Chloronaphthalene	<1.19	<2.05	<1.65	<1.74	<0.032
Chrysene/Triphenylene	<1.19	<2.05	<1.65	<1.74	<0.032
Coronene	<12.0	<20.6	<16.7	<17.5	<0.32
Dibenzo(a,h/a,c)anthracene	<1.19	<2.05	<1.65	<1.74	<0.032
Dibenzo(a,e)pyrene	<5.95	<10.2	<8.25	<8.69	<0.16
9,10-dimethylanthracene	2.31	3.96	3.20	3.36	0.062
7,12-Dimethylbenzo(a)anthracene	<1.19	<2.05	<1.65	<1.74	<0.032
Fluoranthene	3.30	5.68	4.58	4.82	0.089
Fluorene	1.92	3.29	2.66	2.80	0.051
Indeno(1,2,3-cd)pyrene	<1.77	<3.05	<2.46	<2.59	<0.048
2-methylanthracene	<1.86	<3.19	<2.57	<2.71	<0.050
3-Methylcholanthrene	<5.95	<10.2	<8.25	<8.69	<0.16
1-Methylnaphthalene	2.46	4.23	3.42	3.60	0.066
2-Methylnaphthalene	4.55	7.82	6.31	6.64	0.12
1-Methylphenanthrene	1.82	3.12	2.52	2.65	0.049
9-Methylphenanthrene	1.95	3.35	2.71	2.85	0.052
Naphthalene	14.9	25.6	20.7	21.8	0.40
Perylene	<1.19	<2.05	<1.65	<1.74	<0.032
Phenanthrene	11.4	19.6	15.9	16.7	0.31
Picene	<5.95	<10.2	<8.25	<8.69	<0.16
Pyrene	4.48	7.70	6.22	6.55	0.12
Tetralin	19.0	32.6	26.3	27.7	0.51
m-terphenyl	9.32	16.0	12.9	13.6	0.25
o-Terphenyl	1.46	2.50	2.02	2.13	0.039
p-terphenyl	9.73	16.7	13.5	14.2	0.26
Total	<185	<317	<256	<270	<4.95

* 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	Laboratory Blank ng
Acenaphthene	<10	<10
Acenaphthylene	<10	<10
Anthracene	<10	<10
Benzo(a)anthracene	<10	<10
Benzo(b)fluoranthene	<10	<10
Benzo(k)fluoranthene	<10	<10
Benzo(a)fluorene	<10	<10
Benzo(b)fluorene	<10	<10
Benzo(g,h,i)perylene	<10	<10
Benzo(a)pyrene	<10	<10
Benzo(e)pyrene	<10	<10
Biphenyl	<10	<10
2-Chloronaphthalene	<10	<10
Chrysene/Triphenylene	<10	<10
Coronene	<50	<50
Dibenzo(a,h/a,c)anthracene	<10	<10
Dibenzo(a,e)pyrene	<50	<50
9,10-dimethylanthracene	<10	<10
7,12-Dimethylbenzo(a)anthracene	<10	<10
Fluoranthene	<10	<10
Fluorene	<10	<10
Indeno(1,2,3-cd)pyrene	<10	<10
2-methylanthracene	<10	<10
3-Methylcholanthrene	<50	<50
1-Methylnaphthalene	<10	<10
2-Methylnaphthalene	<10	<10
1-Methylphenanthrene	<10	<10
9-Methylphenanthrene	<10	<10
Naphthalene	54.5	51.1
Perylene	<10	<10
Phenanthrene	13.3	<10
Picene	<50	<50
Pyrene	<10	<10
Tetralin	72.2	105
m-terphenyl	<10	<10
o-Terphenyl	<10	<10
p-terphenyl	<10	<10
Total	<640	<666

"<" 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*	Actual $\mu g/m^3$	Acetaldehyde Concentration Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acetaldehyde Emission Rate mg/s
1	0.051	0.0299	0.99	1.71	1.38	1.45	0.027
2	0.061	0.0308	1.15	1.98	1.60	1.68	0.031
3	<0.045	0.0319	<0.82	<1.41	<1.14	<1.20	<0.022
Average			<0.99	<1.70	<1.38	<1.44	<0.027
Blank	<0.045						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Actual $\mu g/m^3$	Formaldehyde Concentration Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Formaldehyde Emission Rate mg/s
1	0.089	0.0299	1.73	2.98	2.41	2.53	0.047
2	<0.22	0.0308	<4.16	<7.15	<5.78	<6.07	<0.11
3	<0.22	0.0319	<4.01	<6.90	<5.59	<5.86	<0.11
Average			<3.30	<5.68	<4.59	<4.82	<0.089
Blank	<0.22						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Actual $\mu g/m^3$	Acrolein Concentration Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acrolein Emission Rate mg/s
1	0.20	0.0299	3.89	6.69	5.42	5.68	0.11
2	0.065	0.0308	1.23	2.11	1.71	1.79	0.033
3	0.23	0.0319	4.20	7.22	5.84	6.13	0.11
Average			3.11	5.34	4.32	4.53	0.084
Blank	0.15						

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 the corresponding isokinetic SVOC 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 Analyses
Test No. 1

Compound	Cartridge Amount Collected			Average	Coefficient of Variation	Total Collected
	Run No. 1 Tube 1A/1B	Run No. 2 Tube 2A/2B	Run No. 3 Tube 3A/3B			
	µg	µg	µg	µg	%	µg
Acetone	0.15	<0.1	<0.1	<0.12	26.0	<0.35
Benzene	0.12	0.070	0.060	0.083	37.3	0.25
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.05	<0.05	<0.05	<0.050	-	<0.15
2-Butanone	0.096	<0.01	<0.01	<0.039	128	<0.12
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	0.014	<0.01	<0.01	<0.011	20.8	<0.034
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	0.19	<0.1	<0.1	<0.13	39.9	<0.39
Styrene	<0.02	<0.02	<0.02	<0.020	-	<0.060
Tetrachloroethene	0.054	0.016	0.015	0.028	77.6	0.085
Toluene	0.21	<0.05	<0.05	<0.10	88.9	<0.31
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichlorotrifluoroethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	0.030	<0.03	<0.03	<0.030	0.2	<0.090
O-Xylene	0.010	<0.01	<0.01	<0.010	1.3	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<1.34	<0.87	<0.86	<1.02	27.3	<3.07

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0202
Run No. 2	0.0198
Run No. 3	0.0200

* At 25°C and 1 atmosphere.

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 Analyses
Test No. 2

Compound	Cartridge Amount Collected				Coefficient	Total
	Run No. 1 Tube 6A/6B	Run No. 2 Tube 7A/7B	Run No. 3 Tube 8A/8B	Average	of Variation	Collected
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	0.051	0.050	0.073	0.058	22.6	0.17
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.05	<0.05	<0.05	<0.050	-	<0.15
2-Butanone	0.018	<0.01	0.018	<0.015	29.4	<0.045
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	<0.1	<0.1	<0.1	<0.10	-	<0.30
Styrene	<0.02	<0.02	<0.02	<0.020	-	<0.060
Tetrachloroethene	<0.01	0.013	0.014	<0.012	16.6	<0.037
Toluene	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichlorotrifluoroethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	<0.03	<0.03	<0.03	<0.030	-	<0.090
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.85	<0.84	<0.87	<0.86	2.0	<2.57

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0206
Run No. 2	0.0204
Run No. 3	0.0209

* At 25°C and 1 atmosphere.

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 Analyses
Test No. 3

Compound	Cartridge Amount Collected				Coefficient	Total
	Run No. 1 Tube 10A/10B	Run No. 2 Tube 11A/11B	Run No. 3 Tube 12A/12B	Average	of Variation	Collected
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	<0.05	<0.05	0.076	<0.059	25.6	<0.18
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.05	<0.05	<0.05	<0.050	-	<0.15
2-Butanone	0.015	<0.01	0.013	<0.013	20.7	<0.038
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	<0.1	0.14	<0.1	<0.11	18.4	<0.34
Styrene	<0.02	<0.02	<0.02	<0.020	-	<0.060
Tetrachloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Toluene	0.062	<0.05	0.053	<0.055	10.8	<0.16
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichlorotrifluoroethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	<0.03	<0.03	<0.03	<0.030	-	<0.090
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.86	<0.88	<0.87	<0.87	1.2	<2.61

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0204
Run No. 2	0.0209
Run No. 3	0.0207

* At 25°C and 1 atmosphere.

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 Emission Data
Test No. 1

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	<0.35	<3.43	<5.89	<4.73	<4.99	<0.091
Benzene	0.25	2.43	4.16	3.34	3.53	0.065
Bromodichloromethane	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Bromoform	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Bromomethane	<0.27	<2.62	<4.50	<3.62	<3.81	<0.070
1,3-Butadiene	<0.15	<1.46	<2.50	<2.01	<2.12	<0.039
2-Butanone	<0.12	<1.13	<1.93	<1.55	<1.64	<0.030
Carbon Tetrachloride	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Chloroform	<0.034	<0.33	<0.57	<0.46	<0.48	<0.0088
Cumene (Isopropylbenzene)	<0.060	<0.58	<1.00	<0.80	<0.85	<0.016
Dibromochloromethane	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Dichlorodifluoromethane	<0.15	<1.46	<2.50	<2.01	<2.12	<0.039
1,2-Dichloroethane	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
trans,1,2-Dichloroethene	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
1,1-Dichloroethene	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
1,2-Dichloropropane	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Ethylbenzene	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Ethylene Dibromide	<0.060	<0.58	<1.00	<0.80	<0.85	<0.016
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.58	<1.00	<0.80	<0.85	<0.016
Methylene Chloride	<0.39	<3.79	<6.50	<5.22	<5.51	<0.10
Styrene	<0.060	<0.58	<1.00	<0.80	<0.85	<0.016
Tetrachloroethene	0.085	0.82	1.41	1.13	1.20	0.022
Toluene	<0.31	<3.00	<5.14	<4.13	<4.36	<0.080
1,1,1-Trichloroethane	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Trichloroethene/1,1,2-Trichloroethene	<0.030	<0.29	<0.50	<0.40	<0.42	<0.0078
Trichlorotrifluoroethane	<0.15	<1.46	<2.50	<2.01	<2.12	<0.039
Trichlorofluoromethane	<0.060	<0.58	<1.00	<0.80	<0.85	<0.016
M&P-Xylene	<0.090	<0.88	<1.50	<1.21	<1.27	<0.023
O-Xylene	<0.030	<0.29	<0.50	<0.40	<0.43	<0.0078
Vinyl Chloride	<0.060	<0.58	<1.00	<0.80	<0.85	<0.016
Total	<3.07	<29.8	<51.1	<41.1	<43.3	<0.79

Dry Gas Volume Sampled (Rm^3*) :	0.0599
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
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 86
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Data
Test No. 2

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	<0.30	<2.82	<4.84	<3.89	<4.10	<0.075
Benzene	0.17	1.64	2.82	2.26	2.38	0.044
Bromodichloromethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Bromoform	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Bromomethane	<0.27	<2.54	<4.36	<3.50	<3.69	<0.068
1,3-Butadiene	<0.15	<1.41	<2.42	<1.94	<2.05	<0.038
2-Butanone	<0.045	<0.43	<0.73	<0.59	<0.62	<0.011
Carbon Tetrachloride	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Chloroform	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Cumene (Isopropylbenzene)	<0.060	<0.56	<0.97	<0.78	<0.82	<0.015
Dibromochloromethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Dichlorodifluoromethane	<0.15	<1.41	<2.42	<1.94	<2.05	<0.038
1,2-Dichloroethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
trans,1,2-Dichloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
1,1-Dichloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
1,2-Dichloropropane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Ethylbenzene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Ethylene Dibromide	<0.060	<0.56	<0.97	<0.78	<0.82	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.56	<0.97	<0.78	<0.82	<0.015
Methylene Chloride	<0.30	<2.82	<4.84	<3.89	<4.10	<0.075
Styrene	<0.060	<0.56	<0.97	<0.78	<0.82	<0.015
Tetrachloroethene	<0.037	<0.34	<0.59	<0.47	<0.50	<0.0091
Toluene	<0.15	<1.41	<2.42	<1.94	<2.05	<0.038
1,1,1-Trichloroethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Trichlorotrifluoroethane	<0.15	<1.41	<2.42	<1.94	<2.05	<0.038
Trichlorofluoromethane	<0.060	<0.56	<0.97	<0.78	<0.82	<0.015
M&P-Xylene	<0.090	<0.85	<1.45	<1.17	<1.23	<0.023
O-Xylene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0075
Vinyl Chloride	<0.060	<0.56	<0.97	<0.78	<0.82	<0.015
Total	<2.57	<24.1	<41.4	<33.3	<35.1	<0.64

Dry Gas Volume Sampled (Rm^3*) :	0.0619
Actual Flowrate (m^3/s) :	26.6
Dry Reference Flowrate (Rm^3/s*) :	15.5
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 87
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	<0.30	<2.82	<4.85	<3.92	<4.13	<0.076
Benzene	<0.18	<1.66	<2.84	<2.30	<2.43	<0.044
Bromodichloromethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Bromoform	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Bromomethane	<0.27	<2.54	<4.36	<3.53	<3.72	<0.068
1,3-Butadiene	<0.15	<1.41	<2.42	<1.96	<2.07	<0.038
2-Butanone	<0.038	<0.36	<0.62	<0.50	<0.53	<0.0097
Carbon Tetrachloride	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Chloroform	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Cumene (Isopropylbenzene)	<0.060	<0.56	<0.97	<0.78	<0.83	<0.015
Dibromochloromethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Dichlorodifluoromethane	<0.15	<1.41	<2.42	<1.96	<2.07	<0.038
1,2-Dichloroethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
trans,1,2-Dichloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
1,1-Dichloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
1,2-Dichloropropane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Ethylbenzene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Ethylene Dibromide	<0.060	<0.56	<0.97	<0.78	<0.83	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.56	<0.97	<0.78	<0.83	<0.015
Methylene Chloride	<0.34	<3.16	<5.43	<4.39	<4.63	<0.085
Styrene	<0.060	<0.56	<0.97	<0.78	<0.83	<0.015
Tetrachloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Toluene	<0.16	<1.55	<2.66	<2.15	<2.27	<0.042
1,1,1-Trichloroethane	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Trichlorotrifluoroethane	<0.15	<1.41	<2.42	<1.96	<2.07	<0.038
Trichlorofluoromethane	<0.060	<0.56	<0.97	<0.78	<0.83	<0.015
M&P-Xylene	<0.090	<0.85	<1.45	<1.18	<1.24	<0.023
O-Xylene	<0.030	<0.28	<0.48	<0.39	<0.41	<0.0076
Vinyl Chloride	<0.060	<0.56	<0.97	<0.78	<0.83	<0.015
Total	<2.61	<24.5	<42.1	<34.0	<35.9	<0.66

Dry Gas Volume Sampled (Rm^3*) :	0.0619
Actual Flowrate (m^3/s) :	26.8
Dry Reference Flowrate (Rm^3/s*) :	15.6
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 88
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Actual Concentrations

Compound	Actual Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/m^3	µg/m^3	µg/m^3	µg/m^3
Acetone	<3.43	<2.82	<2.82	<3.02
Benzene	2.43	1.64	<1.66	<1.91
Bromodichloromethane	<0.29	<0.28	<0.28	<0.29
Bromoform	<0.29	<0.28	<0.28	<0.29
Bromomethane	<2.62	<2.54	<2.54	<2.57
1,3-Butadiene	<1.46	<1.41	<1.41	<1.43
2-Butanone	<1.13	<0.43	<0.36	<0.64
Carbon Tetrachloride	<0.29	<0.28	<0.28	<0.29
Chloroform	<0.33	<0.28	<0.28	<0.30
Cumene (Isopropylbenzene)	<0.58	<0.56	<0.56	<0.57
Dibromochloromethane	<0.29	<0.28	<0.28	<0.29
Dichlorodifluoromethane	<1.46	<1.41	<1.41	<1.43
1,2-Dichloroethane	<0.29	<0.28	<0.28	<0.29
trans,1,2-Dichloroethene	<0.29	<0.28	<0.28	<0.29
1,1-Dichloroethene	<0.29	<0.28	<0.28	<0.29
1,2-Dichloropropane	<0.29	<0.28	<0.28	<0.29
Ethylbenzene	<0.29	<0.28	<0.28	<0.29
Ethylene Dibromide	<0.58	<0.56	<0.56	<0.57
Mesitylene (1,3,5-Trimethylbenzene)	<0.58	<0.56	<0.56	<0.57
Methylene Chloride	<3.79	<2.82	<3.16	<3.26
Styrene	<0.58	<0.56	<0.56	<0.57
Tetrachloroethene	0.82	<0.34	<0.28	<0.48
Toluene	<3.00	<1.41	<1.55	<1.99
1,1,1-Trichloroethane	<0.29	<0.28	<0.28	<0.29
Trichloroethene/1,1,2-Trichloroethene	<0.29	<0.28	<0.28	<0.29
Trichlorotrifluoroethane	<1.46	<1.41	<1.41	<1.43
Trichlorofluoromethane	<0.58	<0.56	<0.56	<0.57
M&P-Xylene	<0.88	<0.85	<0.85	<0.86
O-Xylene	<0.29	<0.28	<0.28	<0.29
Vinyl Chloride	<0.58	<0.56	<0.56	<0.57
Total	<29.8	<24.1	<24.5	<26.1

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*
Acetone	<5.89	<4.84	<4.85	<5.19
Benzene	4.16	2.82	<2.84	<3.27
Bromodichloromethane	<0.50	<0.48	<0.48	<0.49
Bromoform	<0.50	<0.48	<0.48	<0.49
Bromomethane	<4.50	<4.36	<4.36	<4.41
1,3-Butadiene	<2.50	<2.42	<2.42	<2.45
2-Butanone	<1.93	<0.73	<0.62	<1.10
Carbon Tetrachloride	<0.50	<0.48	<0.48	<0.49
Chloroform	<0.57	<0.48	<0.48	<0.51
Cumene (Isopropylbenzene)	<1.00	<0.97	<0.97	<0.98
Dibromochloromethane	<0.50	<0.48	<0.48	<0.49
Dichlorodifluoromethane	<2.50	<2.42	<2.42	<2.45
1,2-Dichloroethane	<0.50	<0.48	<0.48	<0.49
trans,1,2-Dichloroethene	<0.50	<0.48	<0.48	<0.49
1,1-Dichloroethene	<0.50	<0.48	<0.48	<0.49
1,2-Dichloropropane	<0.50	<0.48	<0.48	<0.49
Ethylbenzene	<0.50	<0.48	<0.48	<0.49
Ethylene Dibromide	<1.00	<0.97	<0.97	<0.98
Mesitylene (1,3,5-Trimethylbenzene)	<1.00	<0.97	<0.97	<0.98
Methylene Chloride	<6.50	<4.84	<5.43	<5.59
Styrene	<1.00	<0.97	<0.97	<0.98
Tetrachloroethene	1.41	<0.59	<0.48	<0.83
Toluene	<5.14	<2.42	<2.66	<3.41
1,1,1-Trichloroethane	<0.50	<0.48	<0.48	<0.49
Trichloroethene/1,1,2-Trichloroethene	<0.50	<0.48	<0.48	<0.49
Trichlorotrifluoroethane	<2.50	<2.42	<2.42	<2.45
Trichlorofluoromethane	<1.00	<0.97	<0.97	<0.98
M&P-Xylene	<1.50	<1.45	<1.45	<1.47
O-Xylene	<0.50	<0.48	<0.48	<0.49
Vinyl Chloride	<1.00	<0.97	<0.97	<0.98
Total	<51.1	<41.4	<42.1	<44.9

* At 25°C and 1 atmosphere

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*
Acetone	<4.73	<3.89	<3.92	<4.18
Benzene	3.34	2.26	<2.30	<2.63
Bromodichloromethane	<0.40	<0.39	<0.39	<0.39
Bromoform	<0.40	<0.39	<0.39	<0.39
Bromomethane	<3.62	<3.50	<3.53	<3.55
1,3-Butadiene	<2.01	<1.94	<1.96	<1.97
2-Butanone	<1.55	<0.59	<0.50	<0.88
Carbon Tetrachloride	<0.40	<0.39	<0.39	<0.39
Chloroform	<0.46	<0.39	<0.39	<0.41
Cumene (Isopropylbenzene)	<0.80	<0.78	<0.78	<0.79
Dibromochloromethane	<0.40	<0.39	<0.39	<0.39
Dichlorodifluoromethane	<2.01	<1.94	<1.96	<1.97
1,2-Dichloroethane	<0.40	<0.39	<0.39	<0.39
trans,1,2-Dichloroethene	<0.40	<0.39	<0.39	<0.39
1,1-Dichloroethene	<0.40	<0.39	<0.39	<0.39
1,2-Dichloropropane	<0.40	<0.39	<0.39	<0.39
Ethylbenzene	<0.40	<0.39	<0.39	<0.39
Ethylene Dibromide	<0.80	<0.78	<0.78	<0.79
Mesitylene (1,3,5-Trimethylbenzene)	<0.80	<0.78	<0.78	<0.79
Methylene Chloride	<5.22	<3.89	<4.39	<4.50
Styrene	<0.80	<0.78	<0.78	<0.79
Tetrachloroethene	1.13	<0.47	<0.39	<0.67
Toluene	<4.13	<1.94	<2.15	<2.74
1,1,1-Trichloroethane	<0.40	<0.39	<0.39	<0.39
Trichloroethene/1,1,2-Trichloroethene	<0.40	<0.39	<0.39	<0.39
Trichlorotrifluoroethane	<2.01	<1.94	<1.96	<1.97
Trichlorofluoromethane	<0.80	<0.78	<0.78	<0.79
M&P-Xylene	<1.21	<1.17	<1.18	<1.18
O-Xylene	<0.40	<0.39	<0.39	<0.40
Vinyl Chloride	<0.80	<0.78	<0.78	<0.79
Total	<41.1	<33.3	<34.0	<36.1

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

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*
Acetone	<4.99	<4.10	<4.13	<4.41
Benzene	3.53	2.38	<2.43	<2.78
Bromodichloromethane	<0.42	<0.41	<0.41	<0.42
Bromoform	<0.42	<0.41	<0.41	<0.42
Bromomethane	<3.81	<3.69	<3.72	<3.74
1,3-Butadiene	<2.12	<2.05	<2.07	<2.08
2-Butanone	<1.64	<0.62	<0.53	<0.93
Carbon Tetrachloride	<0.42	<0.41	<0.41	<0.42
Chloroform	<0.48	<0.41	<0.41	<0.44
Cumene (Isopropylbenzene)	<0.85	<0.82	<0.83	<0.83
Dibromochloromethane	<0.42	<0.41	<0.41	<0.42
Dichlorodifluoromethane	<2.12	<2.05	<2.07	<2.08
1,2-Dichloroethane	<0.42	<0.41	<0.41	<0.42
trans,1,2-Dichloroethene	<0.42	<0.41	<0.41	<0.42
1,1-Dichloroethene	<0.42	<0.41	<0.41	<0.42
1,2-Dichloropropane	<0.42	<0.41	<0.41	<0.42
Ethylbenzene	<0.42	<0.41	<0.41	<0.42
Ethylene Dibromide	<0.85	<0.82	<0.83	<0.83
Mesitylene (1,3,5-Trimethylbenzene)	<0.85	<0.82	<0.83	<0.83
Methylene Chloride	<5.51	<4.10	<4.63	<4.74
Styrene	<0.85	<0.82	<0.83	<0.83
Tetrachloroethene	1.20	<0.50	<0.41	<0.70
Toluene	<4.36	<2.05	<2.27	<2.89
1,1,1-Trichloroethane	<0.42	<0.41	<0.41	<0.42
Trichloroethene/1,1,2-Trichloroethene	<0.42	<0.41	<0.41	<0.42
Trichlorotrifluoroethane	<2.12	<2.05	<2.07	<2.08
Trichlorofluoromethane	<0.85	<0.82	<0.83	<0.83
M&P-Xylene	<1.27	<1.23	<1.24	<1.25
O-Xylene	<0.43	<0.41	<0.41	<0.42
Vinyl Chloride	<0.85	<0.82	<0.83	<0.83
Total	<43.3	<35.1	<35.9	<38.1

* At 25°C and 1 atmosphere

TABLE 92
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate			
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s
Acetone	<0.091	<0.075	<0.076	<0.081
Benzene	0.065	0.044	<0.044	<0.051
Bromodichloromethane	<0.0078	<0.0075	<0.0076	<0.0076
Bromoform	<0.0078	<0.0075	<0.0076	<0.0076
Bromomethane	<0.070	<0.068	<0.068	<0.068
1,3-Butadiene	<0.039	<0.038	<0.038	<0.038
2-Butanone	<0.030	<0.011	<0.0097	<0.017
Carbon Tetrachloride	<0.0078	<0.0075	<0.0076	<0.0076
Chloroform	<0.0088	<0.0075	<0.0076	<0.0080
Cumene (Isopropylbenzene)	<0.016	<0.015	<0.015	<0.015
Dibromochloromethane	<0.0078	<0.0075	<0.0076	<0.0076
Dichlorodifluoromethane	<0.039	<0.038	<0.038	<0.038
1,2-Dichloroethane	<0.0078	<0.0075	<0.0076	<0.0076
trans,1,2-Dichloroethene	<0.0078	<0.0075	<0.0076	<0.0076
1,1-Dichloroethene	<0.0078	<0.0075	<0.0076	<0.0076
1,2-Dichloropropane	<0.0078	<0.0075	<0.0076	<0.0076
Ethylbenzene	<0.0078	<0.0075	<0.0076	<0.0076
Ethylene Dibromide	<0.016	<0.015	<0.015	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.016	<0.015	<0.015	<0.015
Methylene Chloride	<0.10	<0.075	<0.085	<0.087
Styrene	<0.016	<0.015	<0.015	<0.015
Tetrachloroethene	0.022	<0.0091	<0.0076	<0.013
Toluene	<0.080	<0.038	<0.042	<0.053
1,1,1-Trichloroethane	<0.0078	<0.0075	<0.0076	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.0078	<0.0075	<0.0076	<0.0076
Trichlorotrifluoroethane	<0.039	<0.038	<0.038	<0.038
Trichlorofluoromethane	<0.016	<0.015	<0.015	<0.015
M&P-Xylene	<0.023	<0.023	<0.023	<0.023
O-Xylene	<0.0078	<0.0075	<0.0076	<0.0076
Vinyl Chloride	<0.016	<0.015	<0.015	<0.015
Total	<0.79	<0.64	<0.66	<0.70

TABLE 93
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	<3.02	<5.19	<4.18	<4.41	<0.081
Benzene	<1.91	<3.27	<2.63	<2.78	<0.051
Bromodichloromethane	<0.29	<0.49	<0.39	<0.42	<0.0076
Bromoform	<0.29	<0.49	<0.39	<0.42	<0.0076
Bromomethane	<2.57	<4.41	<3.55	<3.74	<0.068
1,3-Butadiene	<1.43	<2.45	<1.97	<2.08	<0.038
2-Butanone	<0.64	<1.10	<0.88	<0.93	<0.017
Carbon Tetrachloride	<0.29	<0.49	<0.39	<0.42	<0.0076
Chloroform	<0.30	<0.51	<0.41	<0.44	<0.0080
Cumene (Isopropylbenzene)	<0.57	<0.98	<0.79	<0.83	<0.015
Dibromochloromethane	<0.29	<0.49	<0.39	<0.42	<0.0076
Dichlorodifluoromethane	<1.43	<2.45	<1.97	<2.08	<0.038
1,2-Dichloroethane	<0.29	<0.49	<0.39	<0.42	<0.0076
trans,1,2-Dichloroethene	<0.29	<0.49	<0.39	<0.42	<0.0076
1,1-Dichloroethene	<0.29	<0.49	<0.39	<0.42	<0.0076
1,2-Dichloropropane	<0.29	<0.49	<0.39	<0.42	<0.0076
Ethylbenzene	<0.29	<0.49	<0.39	<0.42	<0.0076
Ethylene Dibromide	<0.57	<0.98	<0.79	<0.83	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.57	<0.98	<0.79	<0.83	<0.015
Methylene Chloride	<3.26	<5.59	<4.50	<4.74	<0.087
Styrene	<0.57	<0.98	<0.79	<0.83	<0.015
Tetrachloroethene	<0.48	<0.83	<0.67	<0.70	<0.013
Toluene	<1.99	<3.41	<2.74	<2.89	<0.053
1,1,1-Trichloroethane	<0.29	<0.49	<0.39	<0.42	<0.0076
Trichloroethene/1,1,2-Trichloroethene	<0.29	<0.49	<0.39	<0.42	<0.0076
Trichlorotrifluoroethane	<1.43	<2.45	<1.97	<2.08	<0.038
Trichlorofluoromethane	<0.57	<0.98	<0.79	<0.83	<0.015
M&P-Xylene	<0.86	<1.47	<1.18	<1.25	<0.023
O-Xylene	<0.29	<0.49	<0.40	<0.42	<0.0076
Vinyl Chloride	<0.57	<0.98	<0.79	<0.83	<0.015
Total	<26.1	<44.9	<36.1	<38.1	<0.70

* At 25°C and 1 atmosphere

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

TABLE 94
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank Tube 5A/5B µg	Trip Blank Tube 30A/30B µg	Method Blank µg
Acetone	<0.1	<0.1	<0.1
Benzene	<0.05	<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	<0.05	<0.05	<0.05
2-Butanone	0.011	<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	<0.05	<0.05	<0.05
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)	<0.02	<0.02	<0.02
Methylene Chloride	<0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01
Trichlorotrifluoroethane	<0.05	<0.05	<0.05
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	<0.84	<0.84	<0.84

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
(96 pages)

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

Particulate and Metals Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 24, 2017	8:18	11:27	180
2	May 24, 2017	12:04	15:15	180
3	May 24, 2017	15:32	18:40	180

Particle Size Distribution Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 23, 2017	10:20	12:24	119.6
2	May 23, 2017	14:19	16:23	120.2
3	May 23, 2017	17:27	19:29	120.2

Acid Gases Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 24, 2017	8:19	9:19	60
2	May 24, 2017	10:00	11:00	60
3	May 24, 2017	11:56	12:56	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 25, 2017	9:04	13:33	240
2	May 25, 2017	15:00	19:38	240
3	May 26, 2017	8:15	12:34	240

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

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

Acrolein and Aldehydes Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	May 26, 2017	8:23	9:23	60
2	May 26, 2017	9:39	10:39	60
3	May 26, 2017	10:59	11:59	60

Volatile Organic Compounds Trains

Test Number	Tube Pair	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	1	May 25, 2017	9:14	9:34	20
	2	May 25, 2017	9:44	10:04	20
	3	May 25, 2017	10:23	10:43	20
	4	May 25, 2017	10:52	11:12	20
2	1	May 25, 2017	11:41	12:01	20
	2	May 25, 2017	12:10	12:30	20
	3	May 25, 2017	12:39	12:59	20
	4	May 25, 2017	13:08	13:28	20
3	1	May 25, 2017	15:18	15:38	20
	2	May 25, 2017	15:46	16:06	20
	3	May 25, 2017	16:16	16:36	20
	4	May 25, 2017	16:46	17:06	20

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	May 24, 2017	15:00	16:00	60
2	May 24, 2017	16:05	17:05	60
3	May 24, 2017	17:10	18:10	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	0.844	0.979	6.42	3.587	99.2
2	0.844	0.979	6.42	3.508	99.6
3	0.844	0.979	6.48	3.584	99.5

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	0.840	0.983	4.50	1.198	97.5
2	0.840	0.983	4.50	1.187	97.1
3	0.840	0.983	4.50	1.178	97.1

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.849	0.983	5.93	1.040	99.4
2	0.849	0.983	5.93	1.027	101.0
3	0.849	0.983	5.93	1.005	100.0

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	0.840	0.979	6.52	4.854	101.3
2	0.840	0.979	6.52	4.849	101.6
3	0.840	0.979	6.44	4.870	101.7

* 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	140	15.5	17.6	-2.30	97.4	10.7	8.26
2	140	16.0	17.3	-2.30	97.3	10.8	8.13
3	140	16.3	17.4	-2.30	97.2	10.9	8.00
Average	140	15.9	17.4	-2.30	97.3	10.8	8.13

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	139	16.4	18.2	-2.27	98.0	11.0	8.04
2	139	16.0	18.0	-2.27	97.7	10.8	8.21
3	139	16.3	18.0	-2.27	97.6	11.0	7.95
Average	139	16.2	18.1	-2.27	97.8	11.0	8.07

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	138	16.1	18.0	-2.30	97.4	10.7	8.25
2	139	15.9	17.5	-2.30	97.4	10.6	8.36
3	139	16.1	17.3	-2.30	97.3	10.8	8.13
Average	139	16.0	17.6	-2.30	97.3	10.7	8.25

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	15.4	17.1	-2.37	96.9	10.7	8.28
2	138	15.6	17.0	-2.37	96.7	10.6	8.26
3	139	16.2	17.6	-2.37	97.2	11.0	7.97
Average	139	15.7	17.2	-2.37	96.9	10.8	8.17

* Dry basis, measured by the DYEC CEMS

** Sampling was conducted isokinetically at a single point 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	26.1	15.3	19.5	18.1
2	25.5	14.9	19.2	17.7
3	25.7	14.9	19.4	17.8
Average	25.8	15.0	19.4	17.9

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	26.9	15.7	20.4	18.8
2	26.6	15.6	20.0	18.6
3	26.5	15.5	20.3	18.5
Average	26.7	15.6	20.2	18.6

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	26.6	15.5	19.8	18.5
2	25.8	15.1	19.1	18.0
3	25.6	14.9	19.2	17.8
Average	26.0	15.2	19.4	18.1

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	25.2	14.8	18.8	17.5
2	25.2	14.7	18.8	17.4
3	26.0	15.1	19.7	18.0
Average	25.4	14.8	19.1	17.6

* At 25°C and 1 atmosphere

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

*** Sampling was conducted isokinetically at a single point 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	Particulate Concentration				Particulate Emission Rate
	Probe Rinse	Main Filter	Total		Actual	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	0.7	5.5	6.2	3.587	1.01	1.73	1.35	1.46	26.4
2	1.6	4.4	6.0	3.508	1.00	1.71	1.33	1.44	25.4
3	1.5	2.4	3.9	3.584	0.63	1.09	0.84	0.91	16.2
Average					0.88	1.51	1.17	1.27	22.7
Blank	2.7	0.1	2.8						

* 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	<0.2	1.198	<0.097	<0.17	<0.13	<0.14	<2.62
2	<0.6	1.187	<0.30	<0.51	<0.39	<0.42	<7.89
3	<0.6	1.178	<0.30	<0.51	<0.39	<0.43	<7.89
Average			<0.23	<0.39	<0.30	<0.33	<6.13
Blank	<0.3						

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	1.198	<0.15	<0.25	<0.19	<0.21	<3.93
2	<0.8	1.187	<0.40	<0.67	<0.53	<0.57	<10.5
3	<0.7	1.178	<0.35	<0.59	<0.45	<0.50	<9.21
Average			<0.30	<0.51	<0.39	<0.42	<7.89
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 in at least one of the fractions, 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 Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	2.8	1.198	1.36	2.34	1.80	1.95	36.7
2	<0.1	1.187	<0.049	<0.084	<0.066	<0.071	<1.31
3	<0.1	1.178	<0.050	<0.085	<0.065	<0.071	<1.32
Average			<0.49	<0.84	<0.64	<0.70	<13.1
Blank	2.4						

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	2.1	1.198	1.02	1.75	1.35	1.46	27.5
2	1.8	1.187	0.89	1.52	1.18	1.27	23.7
3	1.9	1.178	0.94	1.61	1.23	1.35	25.0
Average			0.95	1.63	1.25	1.36	25.4
Blank	0.6						

* 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*	Hydrogen Chloride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HCl Emission Rate mg/s
1	4.33	1.040	2.44	4.16	3.26	3.51	63.6
2	4.79	1.027	2.73	4.66	3.65	3.94	71.2
3	4.60	1.005	2.67	4.58	3.55	3.85	68.1
Average			2.61	4.47	3.49	3.77	67.6
Blank	<0.669						

Hydrogen Fluoride

Test No.	HF Collected mg	Dry Volume Sampled Rm^3*	Hydrogen Fluoride Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	HF Emission Rate mg/s
1	<0.170	1.040	<0.096	<0.16	<0.13	<0.14	<2.50
2	<0.160	1.027	<0.091	<0.16	<0.12	<0.13	<2.38
3	<0.184	1.005	<0.11	<0.18	<0.14	<0.15	<2.72
Average			<0.098	<0.17	<0.13	<0.14	<2.53
Blank	<0.114						

Ammonia

Test No.	Ammonia Collected mg	Dry Volume Sampled Rm^3*	Ammonia Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Ammonia Emission Rate mg/s
1	1.09	1.040	0.61	1.05	0.82	0.88	16.0
2	0.852	1.027	0.49	0.83	0.65	0.70	12.7
3	0.931	1.005	0.54	0.93	0.72	0.78	13.8
Average			0.55	0.93	0.73	0.79	14.1
Blank	<0.288						

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 May 23-26, 2017

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.50	8.13	9.37
BH Outlet	Carbon Dioxide (kg/Rm^3, 1 hr Avg) *	0.18	0.20	0.21
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	7	16	29
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	9.8	15.8	22.8
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	0	0
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0	0
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	101	112	130
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	111	112	113
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	3	6
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.5	3.1	4.5
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	0
Quench Inlet	Oxygen (%, 1 hr Avg)	7	8	9

Data measured by the ORTECH CEMS on May 24, 2017

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	2.1	5.9
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	1.0	2.1	3.8
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.0	3.1
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.7	

* 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	<0.2	<0.1	<0.20
Arsenic	<1	<0.2	<0.20
Barium	10.9	0.89	11.8
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.21	0.10	0.31
Chromium	4.12	0.48	4.60
Cobalt	0.66	<0.1	0.66
Copper	1.27	3.46	4.73
Lead	0.51	0.28	0.79
Manganese	1.11	1.15	2.26
Mercury *	0.032	0.43	0.46
Molybdenum	19.3	0.14	19.4
Nickel	5.05	0.50	5.55
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	8.05	4.61	12.7
Total			<65.3

* 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	0.45	<0.1	0.45
Arsenic	<1	<0.2	<0.20
Barium	10.2	1.13	11.3
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.26	0.058	0.31
Chromium	4.12	0.56	4.68
Cobalt	0.73	<0.1	0.73
Copper	1.31	1.17	2.48
Lead	1.11	0.36	1.47
Manganese	1.40	7.73	9.13
Mercury *	0.033	0.42	0.45
Molybdenum	18.0	0.10	18.1
Nickel	5.27	1.61	6.88
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	15.5	6.11	21.6
Total			<79.5

* 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 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	0.28	<0.1	0.28
Arsenic	<1	<0.2	<0.20
Barium	9.31	1.23	10.5
Beryllium	<0.2	<0.1	<0.20
Cadmium	0.33	<0.05	0.33
Chromium	3.91	0.39	4.30
Cobalt	0.80	<0.1	0.80
Copper	1.78	0.55	2.33
Lead	1.32	0.24	1.56
Manganese	1.15	0.30	1.45
Mercury *	0.036	0.42	0.46
Molybdenum	18.3	<0.1	18.3
Nickel	4.91	0.96	5.87
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	9.46	<3	9.46
Total			<57.6

* 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	<0.20	<0.033	<0.056	<0.044	<0.047	<0.00085
Arsenic	<0.20	<0.033	<0.056	<0.044	<0.047	<0.00085
Barium	11.8	1.93	3.29	2.58	2.77	0.050
Beryllium	<0.20	<0.033	<0.056	<0.044	<0.047	<0.00085
Cadmium	0.31	0.051	0.087	0.068	0.073	0.0013
Chromium	4.60	0.75	1.28	1.00	1.08	0.020
Cobalt	0.66	0.11	0.18	0.14	0.16	0.0028
Copper	4.73	0.77	1.32	1.03	1.11	0.020
Lead	0.79	0.13	0.22	0.17	0.19	0.0034
Manganese	2.26	0.37	0.63	0.49	0.53	0.0096
Mercury	0.46	0.075	0.13	0.10	0.11	0.0020
Molybdenum	19.4	3.18	5.42	4.25	4.57	0.083
Nickel	5.55	0.91	1.55	1.21	1.30	0.024
Selenium	<1.00	<0.16	<0.28	<0.22	<0.24	<0.0043
Silver	<0.20	<0.033	<0.056	<0.044	<0.047	<0.00085
Thallium	<0.20	<0.033	<0.056	<0.044	<0.047	<0.00085
Vanadium	<0.10	<0.016	<0.028	<0.022	<0.024	<0.00043
Zinc	12.7	2.07	3.53	2.77	2.98	0.054
Total	<65.3	<10.7	<18.2	<14.3	<15.4	<0.28

Dry Gas Volume Sampled (Rm^3*) :	3.587
Actual Flowrate (m^3/s) :	26.1
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	19.5
Wet Reference Flowrate (Rm^3/s*) :	18.1

* 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	0.45	0.075	0.13	0.10	0.11	0.0019
Arsenic	<0.20	<0.033	<0.057	<0.044	<0.048	<0.00085
Barium	11.3	1.88	3.23	2.50	2.71	0.048
Beryllium	<0.20	<0.033	<0.057	<0.044	<0.048	<0.00085
Cadmium	0.31	0.052	0.090	0.070	0.075	0.0013
Chromium	4.68	0.78	1.33	1.03	1.12	0.020
Cobalt	0.73	0.12	0.21	0.16	0.17	0.0031
Copper	2.48	0.41	0.71	0.55	0.59	0.011
Lead	1.47	0.24	0.42	0.33	0.35	0.0062
Manganese	9.13	1.52	2.60	2.02	2.19	0.039
Mercury	0.45	0.075	0.13	0.10	0.11	0.0019
Molybdenum	18.1	3.01	5.16	4.00	4.34	0.077
Nickel	6.88	1.14	1.96	1.52	1.65	0.029
Selenium	<1.00	<0.17	<0.29	<0.22	<0.24	<0.0042
Silver	<0.20	<0.033	<0.057	<0.044	<0.048	<0.00085
Thallium	<0.20	<0.033	<0.057	<0.044	<0.048	<0.00085
Vanadium	<0.10	<0.017	<0.029	<0.022	<0.024	<0.00042
Zinc	21.6	3.59	6.16	4.78	5.18	0.092
Total	<79.5	<13.2	<22.7	<17.6	<19.0	<0.34

Dry Gas Volume Sampled (Rm^3*) :	3.508
Actual Flowrate (m^3/s) :	25.5
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.2
Wet Reference Flowrate (Rm^3/s*) :	17.7

* 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	0.28	0.044	0.077	0.059	0.064	0.0011
Arsenic	<0.20	<0.032	<0.056	<0.043	<0.047	<0.00083
Barium	10.5	1.70	2.94	2.26	2.46	0.044
Beryllium	<0.20	<0.032	<0.056	<0.043	<0.047	<0.00083
Cadmium	0.33	0.053	0.091	0.070	0.076	0.0014
Chromium	4.30	0.70	1.20	0.92	1.00	0.018
Cobalt	0.80	0.13	0.22	0.17	0.19	0.0033
Copper	2.33	0.38	0.65	0.50	0.54	0.0097
Lead	1.56	0.25	0.44	0.33	0.36	0.0065
Manganese	1.45	0.23	0.40	0.31	0.34	0.0060
Mercury	0.46	0.074	0.13	0.099	0.11	0.0019
Molybdenum	18.3	2.96	5.11	3.92	4.27	0.076
Nickel	5.87	0.95	1.64	1.26	1.37	0.024
Selenium	<1.00	<0.16	<0.28	<0.21	<0.23	<0.0042
Silver	<0.20	<0.032	<0.056	<0.043	<0.047	<0.00083
Thallium	<0.20	<0.032	<0.056	<0.043	<0.047	<0.00083
Vanadium	<0.10	<0.016	<0.028	<0.021	<0.023	<0.00042
Zinc	9.46	1.53	2.64	2.03	2.21	0.039
Total	<57.6	<9.31	<16.1	<12.3	<13.4	<0.24

Dry Gas Volume Sampled (Rm^3*) :	3.584
Actual Flowrate (m^3/s) :	25.7
Dry Reference Flowrate (Rm^3/s*) :	14.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.4
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

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	<0.033	0.075	0.044	<0.051	43.4
Arsenic	<0.033	<0.033	<0.032	<0.033	1.3
Barium	1.93	1.88	1.70	1.84	6.4
Beryllium	<0.033	<0.033	<0.032	<0.033	1.3
Cadmium	0.051	0.052	0.053	0.052	2.0
Chromium	0.75	0.78	0.70	0.74	5.6
Cobalt	0.11	0.12	0.13	0.12	8.7
Copper	0.77	0.41	0.38	0.52	42.2
Lead	0.13	0.24	0.25	0.21	33.2
Manganese	0.37	1.52	0.23	0.71	99.7
Mercury	0.075	0.075	0.074	0.075	0.4
Molybdenum	3.18	3.01	2.96	3.05	3.7
Nickel	0.91	1.14	0.95	1.00	12.6
Selenium	<0.16	<0.17	<0.16	<0.16	1.3
Silver	<0.033	<0.033	<0.032	<0.033	1.3
Thallium	<0.033	<0.033	<0.032	<0.033	1.3
Vanadium	<0.016	<0.017	<0.016	<0.016	1.3
Zinc	2.07	3.59	1.53	2.40	44.5
Total	<10.7	<13.2	<9.31	<11.1	17.9

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	<0.056	0.13	0.077	<0.087	43.5
Arsenic	<0.056	<0.057	<0.056	<0.056	1.3
Barium	3.29	3.23	2.94	3.15	5.9
Beryllium	<0.056	<0.057	<0.056	<0.056	1.3
Cadmium	0.087	0.090	0.091	0.089	2.6
Chromium	1.28	1.33	1.20	1.27	5.3
Cobalt	0.18	0.21	0.22	0.20	9.3
Copper	1.32	0.71	0.65	0.89	41.6
Lead	0.22	0.42	0.44	0.36	33.6
Manganese	0.63	2.60	0.40	1.21	99.8
Mercury	0.13	0.13	0.13	0.13	0.3
Molybdenum	5.42	5.16	5.11	5.23	3.2
Nickel	1.55	1.96	1.64	1.71	12.7
Selenium	<0.28	<0.29	<0.28	<0.28	1.3
Silver	<0.056	<0.057	<0.056	<0.056	1.3
Thallium	<0.056	<0.057	<0.056	<0.056	1.3
Vanadium	<0.028	<0.029	<0.028	<0.028	1.3
Zinc	3.53	6.16	2.64	4.11	44.5
Total	<18.2	<22.7	<16.1	<19.0	17.8

* 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	<0.044	0.10	0.059	<0.068	43.3
Arsenic	<0.044	<0.044	<0.043	<0.044	1.6
Barium	2.58	2.50	2.26	2.45	6.8
Beryllium	<0.044	<0.044	<0.043	<0.044	1.6
Cadmium	0.068	0.070	0.070	0.069	1.6
Chromium	1.00	1.03	0.92	0.99	5.9
Cobalt	0.14	0.16	0.17	0.16	8.3
Copper	1.03	0.55	0.50	0.69	42.6
Lead	0.17	0.33	0.33	0.28	32.9
Manganese	0.49	2.02	0.31	0.94	99.7
Mercury	0.10	0.10	0.099	0.099	0.8
Molybdenum	4.25	4.00	3.92	4.06	4.2
Nickel	1.21	1.52	1.26	1.33	12.6
Selenium	<0.22	<0.22	<0.21	<0.22	1.6
Silver	<0.044	<0.044	<0.043	<0.044	1.6
Thallium	<0.044	<0.044	<0.043	<0.044	1.6
Vanadium	<0.022	<0.022	<0.021	<0.022	1.6
Zinc	2.77	4.78	2.03	3.19	44.6
Total	<14.3	<17.6	<12.3	<14.7	18.0

** 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	<0.047	0.11	0.064	<0.073	43.4
Arsenic	<0.047	<0.048	<0.047	<0.047	1.3
Barium	2.77	2.71	2.46	2.65	6.3
Beryllium	<0.047	<0.048	<0.047	<0.047	1.3
Cadmium	0.073	0.075	0.076	0.075	2.2
Chromium	1.08	1.12	1.00	1.07	5.5
Cobalt	0.16	0.17	0.19	0.17	8.8
Copper	1.11	0.59	0.54	0.75	42.0
Lead	0.19	0.35	0.36	0.30	33.3
Manganese	0.53	2.19	0.34	1.02	99.7
Mercury	0.11	0.11	0.11	0.11	0.3
Molybdenum	4.57	4.34	4.27	4.39	3.6
Nickel	1.30	1.65	1.37	1.44	12.6
Selenium	<0.24	<0.24	<0.23	<0.24	1.3
Silver	<0.047	<0.048	<0.047	<0.047	1.3
Thallium	<0.047	<0.048	<0.047	<0.047	1.3
Vanadium	<0.024	<0.024	<0.023	<0.024	1.3
Zinc	2.98	5.18	2.21	3.45	44.5
Total	<15.4	<19.0	<13.4	<16.0	17.8

* 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	<0.00085	0.0019	0.0011	<0.0013	42.5
Arsenic	<0.00085	<0.00085	<0.00083	<0.00084	1.2
Barium	0.050	0.048	0.044	0.047	6.8
Beryllium	<0.00085	<0.00085	<0.00083	<0.00084	1.2
Cadmium	0.0013	0.0013	0.0014	0.0013	1.4
Chromium	0.020	0.020	0.018	0.019	5.5
Cobalt	0.0028	0.0031	0.0033	0.0031	8.1
Copper	0.020	0.011	0.0097	0.013	43.2
Lead	0.0034	0.0062	0.0065	0.0054	32.6
Manganese	0.0096	0.039	0.0060	0.018	99.0
Mercury	0.0020	0.0019	0.0019	0.0019	1.2
Molybdenum	0.083	0.077	0.076	0.079	4.7
Nickel	0.024	0.029	0.024	0.026	11.7
Selenium	<0.0043	<0.0042	<0.0042	<0.0042	1.2
Silver	<0.00085	<0.00085	<0.00083	<0.00084	1.2
Thallium	<0.00085	<0.00085	<0.00083	<0.00084	1.2
Vanadium	<0.00043	<0.00042	<0.00042	<0.00042	1.2
Zinc	0.054	0.092	0.039	0.062	43.8
Total	<0.28	<0.34	<0.24	<0.28	17.3

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	<0.051	<0.087	<0.068	<0.073	<0.0013
Arsenic	<0.033	<0.056	<0.044	<0.047	<0.00084
Barium	1.84	3.15	2.45	2.65	0.047
Beryllium	<0.033	<0.056	<0.044	<0.047	<0.00084
Cadmium	0.052	0.089	0.069	0.075	0.0013
Chromium	0.74	1.27	0.99	1.07	0.019
Cobalt	0.12	0.20	0.16	0.17	0.0031
Copper	0.52	0.89	0.69	0.75	0.013
Lead	0.21	0.36	0.28	0.30	0.0054
Manganese	0.71	1.21	0.94	1.02	0.018
Mercury	0.075	0.13	0.099	0.11	0.0019
Molybdenum	3.05	5.23	4.06	4.39	0.079
Nickel	1.00	1.71	1.33	1.44	0.026
Selenium	<0.16	<0.28	<0.22	<0.24	<0.0042
Silver	<0.033	<0.056	<0.044	<0.047	<0.00084
Thallium	<0.033	<0.056	<0.044	<0.047	<0.00084
Vanadium	<0.016	<0.028	<0.022	<0.024	<0.00042
Zinc	2.40	4.11	3.19	3.45	0.062
Total	<11.1	<19.0	<14.7	<16.0	<0.28

* 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	10.5	0.76	11.3
Beryllium	<0.2	<0.1	<0.20
Cadmium	<0.1	<0.05	<0.10
Chromium	2.26	0.40	2.66
Cobalt	0.98	<0.1	0.98
Copper	<1	4.21	4.21
Lead	<0.5	0.20	0.20
Manganese	0.54	0.58	1.11
Mercury *	0.021	0.18	0.20
Molybdenum	19.9	<0.1	19.9
Nickel	3.71	0.24	3.95
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			<52.7

* 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	164	0.020	0.034	0.027	0.029	0.50
Pentachlorodibenzo-p-dioxins	270	0.033	0.056	0.044	0.047	0.82
Hexachlorodibenzo-p-dioxins	832	0.10	0.17	0.13	0.14	2.54
Heptachlorodibenzo-p-dioxins	3660	0.44	0.75	0.59	0.64	11.2
Octachlorodibenzo-p-dioxin	6120	0.74	1.26	0.99	1.07	18.7
Total	11046	1.34	2.28	1.79	1.92	33.7

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	62.8	0.0076	0.013	0.010	0.011	0.19
Pentachlorodibenzofurans	74.6	0.0090	0.015	0.012	0.013	0.23
Hexachlorodibenzofurans	99.8	0.012	0.021	0.016	0.017	0.30
Heptachlorodibenzofurans	304	0.037	0.063	0.049	0.053	0.93
Octachlorodibenzofuran	<220	<0.027	<0.045	<0.036	<0.038	<0.67
Total	<761	<0.092	<0.16	<0.12	<0.13	<2.32

Dry Gas Volume Sampled (Rm^3*) :	4.854
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.5

* 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	94.3	0.011	0.019	0.015	0.016	0.29
Pentachlorodibenzo-p-dioxins	237	0.029	0.049	0.038	0.041	0.72
Hexachlorodibenzo-p-dioxins	852	0.10	0.18	0.14	0.15	2.58
Heptachlorodibenzo-p-dioxins	3360	0.40	0.69	0.54	0.59	10.2
Octachlorodibenzo-p-dioxin	5680	0.68	1.17	0.92	0.99	17.2
Total	10223	1.23	2.11	1.65	1.78	31.0

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	4.00	0.00048	0.00082	0.00065	0.00070	0.012
Pentachlorodibenzofurans	42.6	0.0051	0.0088	0.0069	0.0074	0.13
Hexachlorodibenzofurans	100	0.012	0.021	0.016	0.017	0.30
Heptachlorodibenzofurans	295	0.035	0.061	0.048	0.051	0.89
Octachlorodibenzofuran	<210	<0.025	<0.043	<0.034	<0.037	<0.64
Total	<652	<0.078	<0.13	<0.11	<0.11	<1.98

Dry Gas Volume Sampled (Rm^3*) :	4.849
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.4

* 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	125	0.015	0.026	0.020	0.022	0.39
Pentachlorodibenzo-p-dioxins	294	0.035	0.060	0.046	0.051	0.91
Hexachlorodibenzo-p-dioxins	1050	0.13	0.22	0.17	0.18	3.26
Heptachlorodibenzo-p-dioxins	4330	0.52	0.89	0.68	0.75	13.4
Octachlorodibenzo-p-dioxin	7690	0.92	1.58	1.21	1.32	23.8
Total	13489	1.61	2.77	2.12	2.32	41.8

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	65.7	0.0078	0.013	0.010	0.011	0.20
Pentachlorodibenzofurans	77.1	0.0092	0.016	0.012	0.013	0.24
Hexachlorodibenzofurans	101	0.012	0.021	0.016	0.017	0.31
Heptachlorodibenzofurans	387	0.046	0.079	0.061	0.067	1.20
Octachlorodibenzofuran	<290	<0.035	<0.060	<0.046	<0.050	<0.90
Total	<921	<0.11	<0.19	<0.14	<0.16	<2.86

Dry Gas Volume Sampled (Rm^3*) :	4.870
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.0

* 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	0.020	0.011	0.015	0.015	27.8
Pentachlorodibenzo-p-dioxins	0.033	0.029	0.035	0.032	10.3
Hexachlorodibenzo-p-dioxins	0.10	0.10	0.13	0.11	12.5
Heptachlorodibenzo-p-dioxins	0.44	0.40	0.52	0.45	12.5
Octachlorodibenzo-p-dioxin	0.74	0.68	0.92	0.78	15.6
Total	1.34	1.23	1.61	1.39	14.0

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	0.0076	0.00048	0.0078	0.0053	78.8
Pentachlorodibenzofurans	0.0090	0.0051	0.0092	0.0078	29.6
Hexachlorodibenzofurans	0.012	0.012	0.012	0.012	0.2
Heptachlorodibenzofurans	0.037	0.035	0.046	0.039	14.7
Octachlorodibenzofuran	<0.027	<0.025	<0.035	<0.029	17.5
Total	<0.092	<0.078	<0.11	<0.093	16.9

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	0.034	0.019	0.026	0.026	27.3
Pentachlorodibenzo-p-dioxins	0.056	0.049	0.060	0.055	10.5
Hexachlorodibenzo-p-dioxins	0.17	0.18	0.22	0.19	13.0
Heptachlorodibenzo-p-dioxins	0.75	0.69	0.89	0.78	12.9
Octachlorodibenzo-p-dioxin	1.26	1.17	1.58	1.34	16.0
Total	2.28	2.11	2.77	2.38	14.4

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	0.013	0.00082	0.013	0.0091	78.8
Pentachlorodibenzofurans	0.015	0.0088	0.016	0.013	29.6
Hexachlorodibenzofurans	0.021	0.021	0.021	0.021	0.4
Heptachlorodibenzofurans	0.063	0.061	0.079	0.068	15.2
Octachlorodibenzofuran	<0.045	<0.043	<0.060	<0.049	17.9
Total	<0.16	<0.13	<0.19	<0.16	17.2

* 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	0.027	0.015	0.020	0.020	28.0
Pentachlorodibenzo-p-dioxins	0.044	0.038	0.046	0.043	9.6
Hexachlorodibenzo-p-dioxins	0.13	0.14	0.17	0.15	11.5
Heptachlorodibenzo-p-dioxins	0.59	0.54	0.68	0.61	11.7
Octachlorodibenzo-p-dioxin	0.99	0.92	1.21	1.04	14.7
Total	1.79	1.65	2.12	1.85	13.1

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	0.010	0.00065	0.010	0.0071	78.7
Pentachlorodibenzofurans	0.012	0.0069	0.012	0.010	29.2
Hexachlorodibenzofurans	0.016	0.016	0.016	0.016	0.9
Heptachlorodibenzofurans	0.049	0.048	0.061	0.053	13.8
Octachlorodibenzofuran	<0.036	<0.034	<0.046	<0.038	16.5
Total	<0.12	<0.11	<0.14	<0.12	16.0

* 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	0.029	0.016	0.022	0.022	27.5
Pentachlorodibenzo-p-dioxins	0.047	0.041	0.051	0.046	10.2
Hexachlorodibenzo-p-dioxins	0.14	0.15	0.18	0.16	12.5
Heptachlorodibenzo-p-dioxins	0.64	0.59	0.75	0.66	12.5
Octachlorodibenzo-p-dioxin	1.07	0.99	1.32	1.13	15.6
Total	1.92	1.78	2.32	2.01	14.0

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	0.011	0.00070	0.011	0.0077	78.8
Pentachlorodibenzofurans	0.013	0.0074	0.013	0.011	29.4
Hexachlorodibenzofurans	0.017	0.017	0.017	0.017	0.1
Heptachlorodibenzofurans	0.053	0.051	0.067	0.057	14.7
Octachlorodibenzofuran	<0.038	<0.037	<0.050	<0.042	17.5
Total	<0.13	<0.11	<0.16	<0.13	16.8

* 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	0.50	0.29	0.39	0.39	27.4
Pentachlorodibenzo-p-dioxins	0.82	0.72	0.91	0.82	11.8
Hexachlorodibenzo-p-dioxins	2.54	2.58	3.26	2.79	14.4
Heptachlorodibenzo-p-dioxins	11.2	10.2	13.4	11.6	14.3
Octachlorodibenzo-p-dioxin	18.7	17.2	23.8	19.9	17.5
Total	33.7	31.0	41.8	35.5	15.9

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	0.19	0.012	0.20	0.14	79.0
Pentachlorodibenzofurans	0.23	0.13	0.24	0.20	30.4
Hexachlorodibenzofurans	0.30	0.30	0.31	0.31	1.8
Heptachlorodibenzofurans	0.93	0.89	1.20	1.01	16.7
Octachlorodibenzofuran	<0.67	<0.64	<0.90	<0.74	19.4
Total	<2.32	<1.98	<2.86	<2.38	18.6

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	0.015	0.026	0.020	0.022	0.39
Pentachlorodibenzo-p-dioxins	0.032	0.055	0.043	0.046	0.82
Hexachlorodibenzo-p-dioxins	0.11	0.19	0.15	0.16	2.79
Heptachlorodibenzo-p-dioxins	0.45	0.78	0.61	0.66	11.6
Octachlorodibenzo-p-dioxin	0.78	1.34	1.04	1.13	19.9
Total	1.39	2.38	1.85	2.01	35.5

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	0.0053	0.0091	0.0071	0.0077	0.14
Pentachlorodibenzofurans	0.0078	0.013	0.010	0.011	0.20
Hexachlorodibenzofurans	0.012	0.021	0.016	0.017	0.31
Heptachlorodibenzofurans	0.039	0.068	0.053	0.057	1.01
Octachlorodibenzofuran	<0.029	<0.049	<0.038	<0.042	<0.74
Total	<0.093	<0.16	<0.12	<0.13	<2.38

* 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	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<2.3	<0.66
Pentachlorodibenzo-p-dioxins	<1.1	<1.1
Hexachlorodibenzo-p-dioxins	<1.1	<0.83
Heptachlorodibenzo-p-dioxins	1.98	<1.3
Octachlorodibenzo-p-dioxin	<3.4	<9.1
Total	<9.88	<13.0

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	10.8	2.36
Pentachlorodibenzofurans	<1.1	<0.7
Hexachlorodibenzofurans	2.87	<0.7
Heptachlorodibenzofurans	<0.88	0.85
Octachlorodibenzofuran	<0.79	1.61
Total	<16.4	<6.19

"<" 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	<1.0	<0.12	<0.21	<0.16	<0.17	<0.0030
12378-pentachlorodibenzo-p-dioxin	5.09	0.62	1.05	0.83	0.89	0.016
123478-hexachlorodibenzo-p-dioxin	17.0	2.06	3.50	2.76	2.96	0.052
123678-hexachlorodibenzo-p-dioxin	38.0	4.60	7.83	6.16	6.62	0.12
123789-hexachlorodibenzo-p-dioxin	24.4	2.95	5.03	3.96	4.25	0.074
1234678-heptachlorodibenzo-p-dioxin	1480	179	305	240	258	4.51
Octachlorodibenzo-p-dioxin	6120	740	1261	993	1066	18.7
2378-tetrachlorodibenzofuran	3.58	0.43	0.74	0.58	0.62	0.011
12378-pentachlorodibenzofuran	<5.5	<0.67	<1.13	<0.89	<0.96	<0.017
23478-pentachlorodibenzofuran	9.53	1.15	1.96	1.55	1.66	0.029
123478-hexachlorodibenzofuran	<13	<1.57	<2.68	<2.11	<2.26	<0.040
123678-hexachlorodibenzofuran	<13	<1.57	<2.68	<2.11	<2.26	<0.040
234678-hexachlorodibenzofuran	<25	<3.02	<5.15	<4.05	<4.36	<0.076
123789-hexachlorodibenzofuran	10.9	1.32	2.25	1.77	1.90	0.033
1234678-heptachlorodibenzofuran	192	23.2	39.6	31.1	33.5	0.59
1234789-heptachlorodibenzofuran	<24	<2.90	<4.94	<3.89	<4.18	<0.073
Octachlorodibenzofuran	<220	<26.6	<45.3	<35.7	<38.3	<0.67
PCB 81	<27	<3.27	<5.56	<4.38	<4.70	<0.082
PCB 77	154	18.6	31.7	25.0	26.8	0.47
PCB 123	<170	<20.6	<35.0	<27.6	<29.6	<0.52
PCB 118	1430	173	295	232	249	4.36
PCB 114	<46	<5.57	<9.48	<7.46	<8.01	<0.14
PCB 105	534	64.6	110	86.6	93.0	1.63
PCB 126	<24	<2.90	<4.94	<3.89	<4.18	<0.073
PCB 167	<15	<1.81	<3.09	<2.43	<2.61	<0.046
PCB 156	45.8	5.54	9.44	7.43	7.98	0.14
PCB 157	<16	<1.94	<3.30	<2.59	<2.79	<0.049
PCB 169	<16	<1.94	<3.30	<2.59	<2.79	<0.049
PCB 189	<12	<1.45	<2.47	<1.95	<2.09	<0.037
Total Dioxins & Furans Only	<8202	<992	<1690	<1330	<1429	<25.0
Total PCBs Only	<2490	<301	<513	<404	<434	<7.59
Total Dioxins & Furans and PCBs	<10692	<1294	<2203	<1734	<1863	<32.6

Dry Gas Volume Sampled (Rm³*) :	4.854
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.5

* 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	<2.7	<0.32	<0.56	<0.44	<0.47	<0.0082
12378-pentachlorodibenzo-p-dioxin	4.39	0.53	0.91	0.71	0.76	0.013
123478-hexachlorodibenzo-p-dioxin	20.8	2.50	4.29	3.35	3.62	0.063
123678-hexachlorodibenzo-p-dioxin	36.6	4.40	7.55	5.90	6.38	0.11
123789-hexachlorodibenzo-p-dioxin	22.0	2.65	4.54	3.55	3.83	0.067
1234678-heptachlorodibenzo-p-dioxin	1390	167	287	224	242	4.21
Octachlorodibenzo-p-dioxin	5680	683	1171	916	990	17.2
2378-tetrachlorodibenzofuran	4.00	0.48	0.82	0.65	0.70	0.012
12378-pentachlorodibenzofuran	4.70	0.57	0.97	0.76	0.82	0.014
23478-pentachlorodibenzofuran	7.54	0.91	1.55	1.22	1.31	0.023
123478-hexachlorodibenzofuran	<8.2	<0.99	<1.69	<1.32	<1.43	<0.025
123678-hexachlorodibenzofuran	<8.8	<1.06	<1.81	<1.42	<1.53	<0.027
234678-hexachlorodibenzofuran	19.2	2.31	3.96	3.10	3.35	0.058
123789-hexachlorodibenzofuran	8.91	1.07	1.84	1.44	1.55	0.027
1234678-heptachlorodibenzofuran	168	20.2	34.6	27.1	29.3	0.51
1234789-heptachlorodibenzofuran	23.0	2.77	4.74	3.71	4.01	0.070
Octachlorodibenzofuran	<210	<25.3	<43.3	<33.9	<36.6	<0.64
PCB 81	<71	<8.54	<14.6	<11.4	<12.4	<0.22
PCB 77	105	12.6	21.7	16.9	18.3	0.32
PCB 123	<110	<13.2	<22.7	<17.7	<19.2	<0.33
PCB 118	<760	<91.4	<157	<123	<132	<2.30
PCB 114	<43	<5.17	<8.87	<6.93	<7.49	<0.13
PCB 105	<260	<31.3	<53.6	<41.9	<45.3	<0.79
PCB 126	<47	<5.65	<9.69	<7.58	<8.19	<0.14
PCB 167	<15	<1.80	<3.09	<2.42	<2.61	<0.045
PCB 156	<16	<1.92	<3.30	<2.58	<2.79	<0.049
PCB 157	<17	<2.05	<3.51	<2.74	<2.96	<0.052
PCB 169	<17	<2.05	<3.51	<2.74	<2.96	<0.052
PCB 189	<8.6	<1.03	<1.77	<1.39	<1.50	<0.026
Total Dioxins & Furans Only	<7619	<917	<1571	<1229	<1327	<23.1
Total PCBs Only	<1470	<177	<303	<237	<256	<4.46
Total Dioxins & Furans and PCBs	<9088	<1093	<1874	<1466	<1583	<27.6

Dry Gas Volume Sampled (Rm³*) :	4.849
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.4

* 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	<2.7	<0.32	<0.55	<0.42	<0.47	<0.0084
12378-pentachlorodibenzo-p-dioxin	6.28	0.75	1.29	0.99	1.08	0.019
123478-hexachlorodibenzo-p-dioxin	25.3	3.02	5.20	3.98	4.36	0.078
123678-hexachlorodibenzo-p-dioxin	47.1	5.62	9.67	7.41	8.11	0.15
123789-hexachlorodibenzo-p-dioxin	26.1	3.11	5.36	4.11	4.50	0.081
1234678-heptachlorodibenzo-p-dioxin	1740	208	357	274	300	5.40
Octachlorodibenzo-p-dioxin	7690	917	1579	1210	1325	23.8
2378-tetrachlorodibenzofuran	<3.3	<0.39	<0.68	<0.52	<0.57	<0.010
12378-pentachlorodibenzofuran	4.73	0.56	0.97	0.74	0.81	0.015
23478-pentachlorodibenzofuran	8.92	1.06	1.83	1.40	1.54	0.028
123478-hexachlorodibenzofuran	<11	<1.31	<2.26	<1.73	<1.89	<0.034
123678-hexachlorodibenzofuran	<12	<1.43	<2.46	<1.89	<2.07	<0.037
234678-hexachlorodibenzofuran	25.7	3.06	5.28	4.04	4.43	0.080
123789-hexachlorodibenzofuran	<3.0	<0.36	<0.62	<0.47	<0.52	<0.0093
1234678-heptachlorodibenzofuran	228	27.2	46.8	35.9	39.3	0.71
1234789-heptachlorodibenzofuran	25.9	3.09	5.32	4.08	4.46	0.080
Octachlorodibenzofuran	<290	<34.6	<59.5	<45.6	<50.0	<0.90
PCB 81	<52	<6.20	<10.7	<8.18	<8.96	<0.16
PCB 77	<110	<13.1	<22.6	<17.3	<18.9	<0.34
PCB 123	<120	<14.3	<24.6	<18.9	<20.7	<0.37
PCB 118	621	74.1	128	97.7	107	1.93
PCB 114	<44	<5.25	<9.03	<6.93	<7.58	<0.14
PCB 105	258	30.8	53.0	40.6	44.4	0.80
PCB 126	<49	<5.84	<10.1	<7.71	<8.44	<0.15
PCB 167	<11	<1.31	<2.26	<1.73	<1.89	<0.034
PCB 156	<20	<2.39	<4.11	<3.15	<3.45	<0.062
PCB 157	<13	<1.55	<2.67	<2.05	<2.24	<0.040
PCB 169	<14	<1.67	<2.87	<2.20	<2.41	<0.043
PCB 189	<11	<1.31	<2.26	<1.73	<1.89	<0.034
Total Dioxins & Furans Only	<10150	<1210	<2084	<1598	<1748	<31.5
Total PCBs Only	<1323	<158	<272	<208	<228	<4.10
Total Dioxins & Furans and PCBs	<11473	<1368	<2356	<1806	<1976	<35.6

Dry Gas Volume Sampled (Rm³*) :	4.870
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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	<0.12	<0.32	<0.32	<0.26	45.7
12378-pentachlorodibenzo-p-dioxin	0.62	0.53	0.75	0.63	17.6
123478-hexachlorodibenzo-p-dioxin	2.06	2.50	3.02	2.53	19.0
123678-hexachlorodibenzo-p-dioxin	4.60	4.40	5.62	4.87	13.4
123789-hexachlorodibenzo-p-dioxin	2.95	2.65	3.11	2.90	8.2
1234678-heptachlorodibenzo-p-dioxin	179	167	208	185	11.2
Octachlorodibenzo-p-dioxin	740	683	917	780	15.6
2378-tetrachlorodibenzofuran	0.43	0.48	<0.39	<0.44	10.1
12378-pentachlorodibenzofuran	<0.67	0.57	0.56	<0.60	9.7
23478-pentachlorodibenzofuran	1.15	0.91	1.06	1.04	12.0
123478-hexachlorodibenzofuran	<1.57	<0.99	<1.31	<1.29	22.8
123678-hexachlorodibenzofuran	<1.57	<1.06	<1.43	<1.35	19.6
234678-hexachlorodibenzofuran	<3.02	2.31	3.06	<2.80	15.2
123789-hexachlorodibenzofuran	1.32	1.07	<0.36	<0.92	54.5
1234678-heptachlorodibenzofuran	23.2	20.2	27.2	23.5	14.9
1234789-heptachlorodibenzofuran	<2.90	2.77	3.09	<2.92	5.5
Octachlorodibenzofuran	<26.6	<25.3	<34.6	<28.8	17.5
PCB 81	<3.27	<8.54	<6.20	<6.00	44.0
PCB 77	18.6	12.6	<13.1	<14.8	22.5
PCB 123	<20.6	<13.2	<14.3	<16.0	24.7
PCB 118	173	<91.4	74.1	<113	46.8
PCB 114	<5.57	<5.17	<5.25	<5.33	3.9
PCB 105	64.6	<31.3	30.8	<42.2	45.9
PCB 126	<2.90	<5.65	<5.84	<4.80	34.3
PCB 167	<1.81	<1.80	<1.31	<1.64	17.5
PCB 156	5.54	<1.92	<2.39	<3.28	60.0
PCB 157	<1.94	<2.05	<1.55	<1.84	14.1
PCB 169	<1.94	<2.05	<1.67	<1.88	10.3
PCB 189	<1.45	<1.03	<1.31	<1.27	16.8
Total Dioxins & Furans Only	<992	<917	<1210	<1040	14.7
Total PCBs Only	<301	<177	<158	<212	36.8
Total Dioxins & Furans and PCBs	<1294	<1093	<1368	<1252	11.4

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	<0.21	<0.56	<0.55	<0.44	46.0
12378-pentachlorodibenzo-p-dioxin	1.05	0.91	1.29	1.08	18.0
123478-hexachlorodibenzo-p-dioxin	3.50	4.29	5.20	4.33	19.6
123678-hexachlorodibenzo-p-dioxin	7.83	7.55	9.67	8.35	13.8
123789-hexachlorodibenzo-p-dioxin	5.03	4.54	5.36	4.97	8.3
1234678-heptachlorodibenzo-p-dioxin	305	287	357	316	11.6
Octachlorodibenzo-p-dioxin	1261	1171	1579	1337	16.0
2378-tetrachlorodibenzofuran	0.74	0.82	<0.68	<0.75	9.9
12378-pentachlorodibenzofuran	<1.13	0.97	0.97	<1.02	9.2
23478-pentachlorodibenzofuran	1.96	1.55	1.83	1.78	11.7
123478-hexachlorodibenzofuran	<2.68	<1.69	<2.26	<2.21	22.4
123678-hexachlorodibenzofuran	<2.68	<1.81	<2.46	<2.32	19.4
234678-hexachlorodibenzofuran	<5.15	3.96	5.28	<4.80	15.2
123789-hexachlorodibenzofuran	2.25	1.84	<0.62	<1.57	54.1
1234678-heptachlorodibenzofuran	39.6	34.6	46.8	40.3	15.2
1234789-heptachlorodibenzofuran	<4.94	4.74	5.32	<5.00	5.8
Octachlorodibenzofuran	<45.3	<43.3	<59.5	<49.4	17.9
PCB 81	<5.56	<14.6	<10.7	<10.3	44.2
PCB 77	31.7	21.7	<22.6	<25.3	22.0
PCB 123	<35.0	<22.7	<24.6	<27.4	24.2
PCB 118	295	<157	128	<193	46.2
PCB 114	<9.48	<8.87	<9.03	<9.13	3.4
PCB 105	110	<53.6	53.0	<72.2	45.4
PCB 126	<4.94	<9.69	<10.1	<8.23	34.7
PCB 167	<3.09	<3.09	<2.26	<2.81	17.1
PCB 156	9.44	<3.30	<4.11	<5.61	59.4
PCB 157	<3.30	<3.51	<2.67	<3.16	13.8
PCB 169	<3.30	<3.51	<2.87	<3.23	10.0
PCB 189	<2.47	<1.77	<2.26	<2.17	16.5
Total Dioxins & Furans Only	<1690	<1571	<2084	<1782	15.1
Total PCBs Only	<513	<303	<272	<363	36.2
Total Dioxins & Furans and PCBs	<2203	<1874	<2356	<2144	11.5

* 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	<0.16	<0.44	<0.42	<0.34	45.4
12378-pentachlorodibenzo-p-dioxin	0.83	0.71	0.99	0.84	16.8
123478-hexachlorodibenzo-p-dioxin	2.76	3.35	3.98	3.36	18.2
123678-hexachlorodibenzo-p-dioxin	6.16	5.90	7.41	6.49	12.4
123789-hexachlorodibenzo-p-dioxin	3.96	3.55	4.11	3.87	7.5
1234678-heptachlorodibenzo-p-dioxin	240	224	274	246	10.3
Octachlorodibenzo-p-dioxin	993	916	1210	1040	14.7
2378-tetrachlorodibenzofuran	0.58	0.65	<0.52	<0.58	10.8
12378-pentachlorodibenzofuran	<0.89	0.76	0.74	<0.80	10.2
23478-pentachlorodibenzofuran	1.55	1.22	1.40	1.39	11.9
123478-hexachlorodibenzofuran	<2.11	<1.32	<1.73	<1.72	22.8
123678-hexachlorodibenzofuran	<2.11	<1.42	<1.89	<1.81	19.5
234678-hexachlorodibenzofuran	<4.05	3.10	4.04	<3.73	14.8
123789-hexachlorodibenzofuran	1.77	1.44	<0.47	<1.23	54.9
1234678-heptachlorodibenzofuran	31.1	27.1	35.9	31.4	14.0
1234789-heptachlorodibenzofuran	<3.89	3.71	4.08	<3.89	4.7
Octachlorodibenzofuran	<35.7	<33.9	<45.6	<38.4	16.5
PCB 81	<4.38	<11.4	<8.18	<8.00	44.2
PCB 77	25.0	16.9	<17.3	<19.7	23.0
PCB 123	<27.6	<17.7	<18.9	<21.4	25.1
PCB 118	232	<123	97.7	<151	47.4
PCB 114	<7.46	<6.93	<6.93	<7.11	4.3
PCB 105	86.6	<41.9	40.6	<56.4	46.4
PCB 126	<3.89	<7.58	<7.71	<6.39	33.9
PCB 167	<2.43	<2.42	<1.73	<2.19	18.3
PCB 156	7.43	<2.58	<3.15	<4.39	60.4
PCB 157	<2.59	<2.74	<2.05	<2.46	14.9
PCB 169	<2.59	<2.74	<2.20	<2.51	11.1
PCB 189	<1.95	<1.39	<1.73	<1.69	16.7
Total Dioxins & Furans Only	<1330	<1229	<1598	<1385	13.8
Total PCBs Only	<404	<237	<208	<283	37.3
Total Dioxins & Furans and PCBs	<1734	<1466	<1806	<1668	10.7

* 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	<0.17	<0.47	<0.47	<0.37	45.8
12378-pentachlorodibenzo-p-dioxin	0.89	0.76	1.08	0.91	17.5
123478-hexachlorodibenzo-p-dioxin	2.96	3.62	4.36	3.65	19.1
123678-hexachlorodibenzo-p-dioxin	6.62	6.38	8.11	7.04	13.4
123789-hexachlorodibenzo-p-dioxin	4.25	3.83	4.50	4.19	8.0
1234678-heptachlorodibenzo-p-dioxin	258	242	300	267	11.2
Octachlorodibenzo-p-dioxin	1066	990	1325	1127	15.6
2378-tetrachlorodibenzofuran	0.62	0.70	<0.57	<0.63	10.2
12378-pentachlorodibenzofuran	<0.96	0.82	0.81	<0.86	9.5
23478-pentachlorodibenzofuran	1.66	1.31	1.54	1.50	11.7
123478-hexachlorodibenzofuran	<2.26	<1.43	<1.89	<1.86	22.5
123678-hexachlorodibenzofuran	<2.26	<1.53	<2.07	<1.96	19.4
234678-hexachlorodibenzofuran	<4.36	3.35	4.43	<4.04	15.0
123789-hexachlorodibenzofuran	1.90	1.55	<0.52	<1.32	54.4
1234678-heptachlorodibenzofuran	33.5	29.3	39.3	34.0	14.8
1234789-heptachlorodibenzofuran	<4.18	4.01	4.46	<4.22	5.4
Octachlorodibenzofuran	<38.3	<36.6	<50.0	<41.6	17.5
PCB 81	<4.70	<12.4	<8.96	<8.68	44.3
PCB 77	26.8	18.3	<18.9	<21.4	22.2
PCB 123	<29.6	<19.2	<20.7	<23.2	24.4
PCB 118	249	<132	107	<163	46.6
PCB 114	<8.01	<7.49	<7.58	<7.70	3.6
PCB 105	93.0	<45.3	44.4	<60.9	45.7
PCB 126	<4.18	<8.19	<8.44	<6.94	34.4
PCB 167	<2.61	<2.61	<1.89	<2.37	17.5
PCB 156	7.98	<2.79	<3.45	<4.74	59.7
PCB 157	<2.79	<2.96	<2.24	<2.66	14.2
PCB 169	<2.79	<2.96	<2.41	<2.72	10.3
PCB 189	<2.09	<1.50	<1.89	<1.83	16.5
Total Dioxins & Furans Only	<1429	<1327	<1748	<1502	14.6
Total PCBs Only	<434	<256	<228	<306	36.5
Total Dioxins & Furans and PCBs	<1863	<1583	<1976	<1808	11.2

* 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 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	<0.0030	<0.0082	<0.0084	<0.0065	46.2
12378-pentachlorodibenzo-p-dioxin	0.016	0.013	0.019	0.016	19.4
123478-hexachlorodibenzo-p-dioxin	0.052	0.063	0.078	0.064	20.7
123678-hexachlorodibenzo-p-dioxin	0.12	0.11	0.15	0.12	15.3
123789-hexachlorodibenzo-p-dioxin	0.074	0.067	0.081	0.074	9.6
1234678-heptachlorodibenzo-p-dioxin	4.51	4.21	5.40	4.71	13.0
Octachlorodibenzo-p-dioxin	18.7	17.2	23.8	19.9	17.5
2378-tetrachlorodibenzofuran	0.011	0.012	<0.010	<0.011	8.6
12378-pentachlorodibenzofuran	<0.017	0.014	0.015	<0.015	8.9
23478-pentachlorodibenzofuran	0.029	0.023	0.028	0.027	12.3
123478-hexachlorodibenzofuran	<0.040	<0.025	<0.034	<0.033	22.7
123678-hexachlorodibenzofuran	<0.040	<0.027	<0.037	<0.035	20.0
234678-hexachlorodibenzofuran	<0.076	0.058	0.080	<0.071	16.2
123789-hexachlorodibenzofuran	0.033	0.027	<0.0093	<0.023	53.6
1234678-heptachlorodibenzofuran	0.59	0.51	0.71	0.60	16.6
1234789-heptachlorodibenzofuran	<0.073	0.070	0.080	<0.074	7.3
Octachlorodibenzofuran	<0.67	<0.64	<0.90	<0.74	19.4
PCB 81	<0.082	<0.22	<0.16	<0.15	43.7
PCB 77	0.47	0.32	<0.34	<0.38	21.7
PCB 123	<0.52	<0.33	<0.37	<0.41	23.9
PCB 118	4.36	<2.30	1.93	<2.86	45.8
PCB 114	<0.14	<0.13	<0.14	<0.14	3.7
PCB 105	1.63	<0.79	0.80	<1.07	44.9
PCB 126	<0.073	<0.14	<0.15	<0.12	35.1
PCB 167	<0.046	<0.045	<0.034	<0.042	15.9
PCB 156	0.14	<0.049	<0.062	<0.083	59.0
PCB 157	<0.049	<0.052	<0.040	<0.047	12.5
PCB 169	<0.049	<0.052	<0.043	<0.048	8.6
PCB 189	<0.037	<0.026	<0.034	<0.032	17.0
Total Dioxins & Furans Only	<25.0	<23.1	<31.5	<26.5	16.5
Total PCBs Only	<7.59	<4.46	<4.10	<5.38	35.7
Total Dioxins & Furans and PCBs	<32.6	<27.6	<35.6	<31.9	12.7

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	<0.26	<0.44	<0.34	<0.37	<0.0065
12378-pentachlorodibenzo-p-dioxin	0.63	1.08	0.84	0.91	0.016
123478-hexachlorodibenzo-p-dioxin	2.53	4.33	3.36	3.65	0.064
123678-hexachlorodibenzo-p-dioxin	4.87	8.35	6.49	7.04	0.12
123789-hexachlorodibenzo-p-dioxin	2.90	4.97	3.87	4.19	0.074
1234678-heptachlorodibenzo-p-dioxin	185	316	246	267	4.71
Octachlorodibenzo-p-dioxin	780	1337	1040	1127	19.9
2378-tetrachlorodibenzofuran	<0.44	<0.75	<0.58	<0.63	<0.011
12378-pentachlorodibenzofuran	<0.60	<1.02	<0.80	<0.86	<0.015
23478-pentachlorodibenzofuran	1.04	1.78	1.39	1.50	0.027
123478-hexachlorodibenzofuran	<1.29	<2.21	<1.72	<1.86	<0.033
123678-hexachlorodibenzofuran	<1.35	<2.32	<1.81	<1.96	<0.035
234678-hexachlorodibenzofuran	<2.80	<4.80	<3.73	<4.04	<0.071
123789-hexachlorodibenzofuran	<0.92	<1.57	<1.23	<1.32	<0.023
1234678-heptachlorodibenzofuran	23.5	40.3	31.4	34.0	0.60
1234789-heptachlorodibenzofuran	<2.92	<5.00	<3.89	<4.22	<0.074
Octachlorodibenzofuran	<28.8	<49.4	<38.4	<41.6	<0.74
PCB 81	<6.00	<10.3	<8.00	<8.68	<0.15
PCB 77	<14.8	<25.3	<19.7	<21.4	<0.38
PCB 123	<16.0	<27.4	<21.4	<23.2	<0.41
PCB 118	<113	<193	<151	<163	<2.86
PCB 114	<5.33	<9.13	<7.11	<7.70	<0.14
PCB 105	<42.2	<72.2	<56.4	<60.9	<1.07
PCB 126	<4.80	<8.23	<6.39	<6.94	<0.12
PCB 167	<1.64	<2.81	<2.19	<2.37	<0.042
PCB 156	<3.28	<5.61	<4.39	<4.74	<0.083
PCB 157	<1.84	<3.16	<2.46	<2.66	<0.047
PCB 169	<1.88	<3.23	<2.51	<2.72	<0.048
PCB 189	<1.27	<2.17	<1.69	<1.83	<0.032
Total Dioxins & Furans Only	<1040	<1782	<1385	<1502	<26.5
Total PCBs Only	<212	<363	<283	<306	<5.38
Total Dioxins & Furans and PCBs	<1252	<2144	<1668	<1808	<31.9

* 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 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train	Laboratory Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<2.3	<0.66
12378-pentachlorodibenzo-p-dioxin	<1.1	<1.1
123478-hexachlorodibenzo-p-dioxin	<1.1	<0.83
123678-hexachlorodibenzo-p-dioxin	<0.90	<0.67
123789-hexachlorodibenzo-p-dioxin	<0.98	<0.92
1234678-heptachlorodibenzo-p-dioxin	1.98	<3.0
Octachlorodibenzo-p-dioxin	<3.4	<9.1
2378-tetrachlorodibenzofuran	<3.0	<1.1
12378-pentachlorodibenzofuran	<2.6	<1.7
23478-pentachlorodibenzofuran	<1.3	<0.70
123478-hexachlorodibenzofuran	<1.2	<0.56
123678-hexachlorodibenzofuran	<1.1	<0.56
234678-hexachlorodibenzofuran	<1.2	<0.54
123789-hexachlorodibenzofuran	1.87	<1.7
1234678-heptachlorodibenzofuran	<1.1	0.85
1234789-heptachlorodibenzofuran	<0.88	<0.63
Octachlorodibenzofuran	<0.79	1.61
PCB 81	<9.8	<7.4
PCB 77	<14	23.2
PCB 123	<38	<17
PCB 118	<190	<14
PCB 114	<33	<15
PCB 105	<84	<15
PCB 126	<36	<16
PCB 167	<6.4	<8.9
PCB 156	<6.5	<9.7
PCB 157	<6.5	<9.3
PCB 169	<7.3	<12
PCB 189	<5.9	<2.4
Total Dioxins & Furans Only	<26.8	<26.2
Total PCBs Only	<437	<150
Total Dioxins & Furans and PCBs	<464	<176

"<" 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	1.000	<0.12	<0.32	<0.32	<0.26
12378-pentachlorodibenzo-p-dioxin	1.000	0.62	0.53	0.75	0.63
123478-hexachlorodibenzo-p-dioxin	0.100	0.21	0.25	0.30	0.25
123678-hexachlorodibenzo-p-dioxin	0.100	0.46	0.44	0.56	0.49
123789-hexachlorodibenzo-p-dioxin	0.100	0.30	0.26	0.31	0.29
1234678-heptachlorodibenzo-p-dioxin	0.010	1.79	1.67	2.08	1.85
Octachlorodibenzo-p-dioxin	0.0003	0.22	0.20	0.28	0.23
2378-tetrachlorodibenzofuran	0.100	0.043	0.048	<0.039	<0.044
12378-pentachlorodibenzofuran	0.030	<0.020	0.017	0.017	<0.018
23478-pentachlorodibenzofuran	0.300	0.35	0.27	0.32	0.31
123478-hexachlorodibenzofuran	0.100	<0.16	<0.099	<0.13	<0.13
123678-hexachlorodibenzofuran	0.100	<0.16	<0.11	<0.14	<0.14
234678-hexachlorodibenzofuran	0.100	<0.30	0.23	0.31	<0.28
123789-hexachlorodibenzofuran	0.100	0.13	0.11	<0.036	<0.092
1234678-heptachlorodibenzofuran	0.010	0.23	0.20	0.27	0.24
1234789-heptachlorodibenzofuran	0.010	<0.029	0.028	0.031	<0.029
Octachlorodibenzofuran	0.0003	<0.0080	<0.0076	<0.010	<0.0086
PCB 81	0.0003	<0.00098	<0.0026	<0.0019	<0.0018
PCB 77	0.0001	0.0019	0.0013	<0.0013	<0.0015
PCB 123	0.00003	<0.00062	<0.00040	<0.00043	<0.00048
PCB 118	0.00003	0.0052	<0.0027	0.0022	<0.0034
PCB 114	0.00003	<0.00017	<0.00016	<0.00016	<0.00016
PCB 105	0.00003	0.0019	<0.00094	0.00092	<0.0013
PCB 126	0.100	<0.29	<0.57	<0.58	<0.48
PCB 167	0.00003	<0.000054	<0.000054	<0.000039	<0.000049
PCB 156	0.00003	0.00017	<0.000058	<0.000072	<0.000099
PCB 157	0.00003	<0.000058	<0.000061	<0.000047	<0.000055
PCB 169	0.030	<0.058	<0.061	<0.050	<0.057
PCB 189	0.00003	<0.000044	<0.000031	<0.000039	<0.000038
Total Dioxins & Furans Only		<5.14	<4.80	<5.90	<5.28
Total PCBs Only		<0.36	<0.64	<0.64	<0.55
Total Dioxins & Furans and PCBs		<5.50	<5.44	<6.54	<5.83

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	1.000	<0.21	<0.56	<0.55	<0.44
12378-pentachlorodibenzo-p-dioxin	1.000	1.05	0.91	1.29	1.08
123478-hexachlorodibenzo-p-dioxin	0.100	0.35	0.43	0.52	0.43
123678-hexachlorodibenzo-p-dioxin	0.100	0.78	0.75	0.97	0.83
123789-hexachlorodibenzo-p-dioxin	0.100	0.50	0.45	0.54	0.50
1234678-heptachlorodibenzo-p-dioxin	0.010	3.05	2.87	3.57	3.16
Octachlorodibenzo-p-dioxin	0.0003	0.38	0.35	0.47	0.40
2378-tetrachlorodibenzofuran	0.100	0.074	0.082	<0.068	<0.075
12378-pentachlorodibenzofuran	0.030	<0.034	0.029	0.029	<0.031
23478-pentachlorodibenzofuran	0.300	0.59	0.47	0.55	0.53
123478-hexachlorodibenzofuran	0.100	<0.27	<0.17	<0.23	<0.22
123678-hexachlorodibenzofuran	0.100	<0.27	<0.18	<0.25	<0.23
234678-hexachlorodibenzofuran	0.100	<0.52	0.40	0.53	<0.48
123789-hexachlorodibenzofuran	0.100	0.22	0.18	<0.062	<0.16
1234678-heptachlorodibenzofuran	0.010	0.40	0.35	0.47	0.40
1234789-heptachlorodibenzofuran	0.010	<0.049	0.047	0.053	<0.050
Octachlorodibenzofuran	0.0003	<0.014	<0.013	<0.018	<0.015
PCB 81	0.0003	<0.0017	<0.0044	<0.0032	<0.0031
PCB 77	0.0001	0.0032	0.0022	<0.0023	<0.0025
PCB 123	0.00003	<0.0011	<0.00068	<0.00074	<0.00082
PCB 118	0.00003	0.0088	<0.0047	0.0038	<0.0058
PCB 114	0.00003	<0.00028	<0.00027	<0.00027	<0.00027
PCB 105	0.00003	0.0033	<0.0016	0.0016	<0.0022
PCB 126	0.100	<0.49	<0.97	<1.01	<0.82
PCB 167	0.00003	<0.000093	<0.000093	<0.000068	<0.000084
PCB 156	0.00003	0.00028	<0.000099	<0.00012	<0.00017
PCB 157	0.00003	<0.000099	<0.00011	<0.000080	<0.000095
PCB 169	0.030	<0.099	<0.11	<0.086	<0.097
PCB 189	0.00003	<0.000074	<0.000053	<0.000068	<0.000065
Total Dioxins & Furans Only		<8.75	<8.23	<10.2	<9.05
Total PCBs Only		<0.61	<1.09	<1.10	<0.94
Total Dioxins & Furans and PCBs		<9.36	<9.32	<11.3	<9.98

* 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	1.000	<0.16	<0.44	<0.42	<0.34
12378-pentachlorodibenzo-p-dioxin	1.000	0.83	0.71	0.99	0.84
123478-hexachlorodibenzo-p-dioxin	0.100	0.28	0.34	0.40	0.34
123678-hexachlorodibenzo-p-dioxin	0.100	0.62	0.59	0.74	0.65
123789-hexachlorodibenzo-p-dioxin	0.100	0.40	0.35	0.41	0.39
1234678-heptachlorodibenzo-p-dioxin	0.010	2.40	2.24	2.74	2.46
Octachlorodibenzo-p-dioxin	0.0003	0.30	0.27	0.36	0.31
2378-tetrachlorodibenzofuran	0.100	0.058	0.065	<0.052	<0.058
12378-pentachlorodibenzofuran	0.030	<0.027	0.023	0.022	<0.024
23478-pentachlorodibenzofuran	0.300	0.46	0.36	0.42	0.42
123478-hexachlorodibenzofuran	0.100	<0.21	<0.13	<0.17	<0.17
123678-hexachlorodibenzofuran	0.100	<0.21	<0.14	<0.19	<0.18
234678-hexachlorodibenzofuran	0.100	<0.41	0.31	0.40	<0.37
123789-hexachlorodibenzofuran	0.100	0.18	0.14	<0.047	<0.12
1234678-heptachlorodibenzofuran	0.010	0.31	0.27	0.36	0.31
1234789-heptachlorodibenzofuran	0.010	<0.039	0.037	0.041	<0.039
Octachlorodibenzofuran	0.0003	<0.011	<0.010	<0.014	<0.012
PCB 81	0.0003	<0.0013	<0.0034	<0.0025	<0.0024
PCB 77	0.0001	0.0025	0.0017	<0.0017	<0.0020
PCB 123	0.00003	<0.00083	<0.00053	<0.00057	<0.00064
PCB 118	0.00003	0.0070	<0.0037	0.0029	<0.0045
PCB 114	0.00003	<0.00022	<0.00021	<0.00021	<0.00021
PCB 105	0.00003	0.0026	<0.0013	0.0012	<0.0017
PCB 126	0.100	<0.39	<0.76	<0.77	<0.64
PCB 167	0.00003	<0.000073	<0.000073	<0.000052	<0.000066
PCB 156	0.00003	0.00022	<0.000077	<0.000094	<0.00013
PCB 157	0.00003	<0.000078	<0.000082	<0.000061	<0.000074
PCB 169	0.030	<0.078	<0.082	<0.066	<0.075
PCB 189	0.00003	<0.000058	<0.000042	<0.000052	<0.000051
Total Dioxins & Furans Only		<6.89	<6.44	<7.79	<7.04
Total PCBs Only		<0.48	<0.85	<0.85	<0.73
Total Dioxins & Furans and PCBs		<7.37	<7.29	<8.63	<7.76

* 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	1.000	0.081	0.22	0.21	0.17
12378-pentachlorodibenzo-p-dioxin	1.000	0.83	0.71	0.99	0.84
123478-hexachlorodibenzo-p-dioxin	0.100	0.28	0.34	0.40	0.34
123678-hexachlorodibenzo-p-dioxin	0.100	0.62	0.59	0.74	0.65
123789-hexachlorodibenzo-p-dioxin	0.100	0.40	0.35	0.41	0.39
1234678-heptachlorodibenzo-p-dioxin	0.010	2.40	2.24	2.74	2.46
Octachlorodibenzo-p-dioxin	0.0003	0.30	0.27	0.36	0.31
2378-tetrachlorodibenzofuran	0.100	0.058	0.065	0.026	0.050
12378-pentachlorodibenzofuran	0.030	0.013	0.023	0.022	0.019
23478-pentachlorodibenzofuran	0.300	0.46	0.36	0.42	0.42
123478-hexachlorodibenzofuran	0.100	0.11	0.066	0.087	0.086
123678-hexachlorodibenzofuran	0.100	0.11	0.071	0.094	0.090
234678-hexachlorodibenzofuran	0.100	0.20	0.31	0.40	0.31
123789-hexachlorodibenzofuran	0.100	0.18	0.14	0.024	0.11
1234678-heptachlorodibenzofuran	0.010	0.31	0.27	0.36	0.31
1234789-heptachlorodibenzofuran	0.010	0.019	0.037	0.041	0.032
Octachlorodibenzofuran	0.0003	0.0054	0.0051	0.0068	0.0058
PCB 81	0.0003	0.00066	0.0017	0.0012	0.0012
PCB 77	0.0001	0.0025	0.0017	0.00087	0.0017
PCB 123	0.00003	0.00041	0.00027	0.00028	0.00032
PCB 118	0.00003	0.0070	0.0018	0.0029	0.0039
PCB 114	0.00003	0.00011	0.00010	0.00010	0.00011
PCB 105	0.00003	0.0026	0.00063	0.0012	0.0015
PCB 126	0.100	0.19	0.38	0.39	0.32
PCB 167	0.00003	0.000036	0.000036	0.000026	0.000033
PCB 156	0.00003	0.00022	0.000039	0.000047	0.00010
PCB 157	0.00003	0.000039	0.000041	0.000031	0.000037
PCB 169	0.030	0.039	0.041	0.033	0.038
PCB 189	0.00003	0.000029	0.000021	0.000026	0.000025
Total Dioxins & Furans Only		6.35	6.08	7.34	6.59
Total PCBs Only		0.25	0.43	0.43	0.37
Total Dioxins & Furans and PCBs		6.60	6.50	7.76	6.96

* 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	<0.16	<0.44	<0.42	<0.34
12378-pentachlorodibenzo-p-dioxin	0.500	0.41	0.35	0.49	0.42
123478-hexachlorodibenzo-p-dioxin	0.100	0.28	0.34	0.40	0.34
123678-hexachlorodibenzo-p-dioxin	0.100	0.62	0.59	0.74	0.65
123789-hexachlorodibenzo-p-dioxin	0.100	0.40	0.35	0.41	0.39
1234678-heptachlorodibenzo-p-dioxin	0.010	2.40	2.24	2.74	2.46
Octachlorodibenzo-p-dioxin	0.001	0.99	0.92	1.21	1.04
2378-tetrachlorodibenzofuran	0.100	0.058	0.065	<0.052	<0.058
12378-pentachlorodibenzofuran	0.050	<0.045	0.038	0.037	<0.040
23478-pentachlorodibenzofuran	0.500	0.77	0.61	0.70	0.69
123478-hexachlorodibenzofuran	0.100	<0.21	<0.13	<0.17	<0.17
123678-hexachlorodibenzofuran	0.100	<0.21	<0.14	<0.19	<0.18
234678-hexachlorodibenzofuran	0.100	<0.41	0.31	0.40	<0.37
123789-hexachlorodibenzofuran	0.100	0.18	0.14	<0.047	<0.12
1234678-heptachlorodibenzofuran	0.010	0.31	0.27	0.36	0.31
1234789-heptachlorodibenzofuran	0.010	<0.039	0.037	0.041	<0.039
Octachlorodibenzofuran	0.001	<0.036	<0.034	<0.046	<0.038
Total Dioxins & Furans		<7.52	<7.01	<8.47	<7.67
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	1.000	<0.17	<0.47	<0.47	<0.37
12378-pentachlorodibenzo-p-dioxin	1.000	0.89	0.76	1.08	0.91
123478-hexachlorodibenzo-p-dioxin	0.100	0.30	0.36	0.44	0.36
123678-hexachlorodibenzo-p-dioxin	0.100	0.66	0.64	0.81	0.70
123789-hexachlorodibenzo-p-dioxin	0.100	0.43	0.38	0.45	0.42
1234678-heptachlorodibenzo-p-dioxin	0.010	2.58	2.42	3.00	2.67
Octachlorodibenzo-p-dioxin	0.0003	0.32	0.30	0.40	0.34
2378-tetrachlorodibenzofuran	0.100	0.062	0.070	<0.057	<0.063
12378-pentachlorodibenzofuran	0.030	<0.029	0.025	0.024	<0.026
23478-pentachlorodibenzofuran	0.300	0.50	0.39	0.46	0.45
123478-hexachlorodibenzofuran	0.100	<0.23	<0.14	<0.19	<0.19
123678-hexachlorodibenzofuran	0.100	<0.23	<0.15	<0.21	<0.20
234678-hexachlorodibenzofuran	0.100	<0.44	0.33	0.44	<0.40
123789-hexachlorodibenzofuran	0.100	0.19	0.16	<0.052	<0.13
1234678-heptachlorodibenzofuran	0.010	0.33	0.29	0.39	0.34
1234789-heptachlorodibenzofuran	0.010	<0.042	0.040	0.045	<0.042
Octachlorodibenzofuran	0.0003	<0.011	<0.011	<0.015	<0.012
PCB 81	0.0003	<0.0014	<0.0037	<0.0027	<0.0026
PCB 77	0.0001	0.0027	0.0018	<0.0019	<0.0021
PCB 123	0.00003	<0.00089	<0.00057	<0.00062	<0.00069
PCB 118	0.00003	0.0075	<0.0040	0.0032	<0.0049
PCB 114	0.00003	<0.00024	<0.00022	<0.00023	<0.00023
PCB 105	0.00003	0.0028	<0.0014	0.0013	<0.0018
PCB 126	0.100	<0.42	<0.82	<0.84	<0.69
PCB 167	0.00003	<0.000078	<0.000078	<0.000057	<0.000071
PCB 156	0.00003	0.00024	<0.000084	<0.00010	<0.00014
PCB 157	0.00003	<0.000084	<0.000089	<0.000067	<0.000080
PCB 169	0.030	<0.084	<0.089	<0.072	<0.082
PCB 189	0.00003	<0.000063	<0.000045	<0.000057	<0.000055
Total Dioxins & Furans Only		<7.40	<6.96	<8.52	<7.63
Total PCBs Only		<0.52	<0.92	<0.93	<0.79
Total Dioxins & Furans and PCBs		<7.92	<7.88	<9.45	<8.41

* 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	1.000	<0.0030	<0.0082	<0.0084	<0.0065
12378-pentachlorodibenzo-p-dioxin	1.000	0.016	0.013	0.019	0.016
123478-hexachlorodibenzo-p-dioxin	0.100	0.0052	0.0063	0.0078	0.0064
123678-hexachlorodibenzo-p-dioxin	0.100	0.012	0.011	0.015	0.012
123789-hexachlorodibenzo-p-dioxin	0.100	0.0074	0.0067	0.0081	0.0074
1234678-heptachlorodibenzo-p-dioxin	0.010	0.045	0.042	0.054	0.047
Octachlorodibenzo-p-dioxin	0.0003	0.0056	0.0052	0.0072	0.0060
2378-tetrachlorodibenzofuran	0.100	0.0011	0.0012	<0.0010	<0.0011
12378-pentachlorodibenzofuran	0.030	<0.00050	0.00043	0.00044	<0.00046
23478-pentachlorodibenzofuran	0.300	0.0087	0.0069	0.0083	0.0080
123478-hexachlorodibenzofuran	0.100	<0.0040	<0.0025	<0.0034	<0.0033
123678-hexachlorodibenzofuran	0.100	<0.0040	<0.0027	<0.0037	<0.0035
234678-hexachlorodibenzofuran	0.100	<0.0076	0.0058	0.0080	<0.0071
123789-hexachlorodibenzofuran	0.100	0.0033	0.0027	<0.00093	<0.0023
1234678-heptachlorodibenzofuran	0.010	0.0059	0.0051	0.0071	0.0060
1234789-heptachlorodibenzofuran	0.010	<0.00073	0.00070	0.00080	<0.00074
Octachlorodibenzofuran	0.0003	<0.00020	<0.00019	<0.00027	<0.00022
PCB 81	0.0003	<0.000025	<0.000065	<0.000048	<0.000046
PCB 77	0.0001	0.000047	0.000032	<0.000034	<0.000038
PCB 123	0.00003	<0.000016	<0.000010	<0.000011	<0.000012
PCB 118	0.00003	0.00013	<0.000069	0.000058	<0.000086
PCB 114	0.00003	<0.0000042	<0.0000039	<0.0000041	<0.0000041
PCB 105	0.00003	0.000049	<0.000024	0.000024	<0.000032
PCB 126	0.100	<0.0073	<0.014	<0.015	<0.012
PCB 167	0.00003	<0.0000014	<0.0000014	<0.0000010	<0.0000013
PCB 156	0.00003	0.0000042	<0.0000015	<0.0000019	<0.0000025
PCB 157	0.00003	<0.0000015	<0.0000015	<0.0000012	<0.0000014
PCB 169	0.030	<0.0015	<0.0015	<0.0013	<0.0014
PCB 189	0.00003	<0.0000011	<0.00000078	<0.0000010	<0.00000097
Total Dioxins & Furans Only		<0.13	<0.12	<0.15	<0.13
Total PCBs Only		<0.0091	<0.016	<0.017	<0.014
Total Dioxins & Furans and PCBs		<0.14	<0.14	<0.17	<0.15

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 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	<0.26	<0.44	<0.34	<0.37	<0.0065
12378-pentachlorodibenzo-p-dioxin	0.63	1.08	0.84	0.91	0.016
123478-hexachlorodibenzo-p-dioxin	0.25	0.43	0.34	0.36	0.0064
123678-hexachlorodibenzo-p-dioxin	0.49	0.83	0.65	0.70	0.012
123789-hexachlorodibenzo-p-dioxin	0.29	0.50	0.39	0.42	0.0074
1234678-heptachlorodibenzo-p-dioxin	1.85	3.16	2.46	2.67	0.047
Octachlorodibenzo-p-dioxin	0.23	0.40	0.31	0.34	0.0060
2378-tetrachlorodibenzofuran	<0.044	<0.075	<0.058	<0.063	<0.0011
12378-pentachlorodibenzofuran	<0.018	<0.031	<0.024	<0.026	<0.00046
23478-pentachlorodibenzofuran	0.31	0.53	0.42	0.45	0.0080
123478-hexachlorodibenzofuran	<0.13	<0.22	<0.17	<0.19	<0.0033
123678-hexachlorodibenzofuran	<0.14	<0.23	<0.18	<0.20	<0.0035
234678-hexachlorodibenzofuran	<0.28	<0.48	<0.37	<0.40	<0.0071
123789-hexachlorodibenzofuran	<0.092	<0.16	<0.12	<0.13	<0.0023
1234678-heptachlorodibenzofuran	0.24	0.40	0.31	0.34	0.0060
1234789-heptachlorodibenzofuran	<0.029	<0.050	<0.039	<0.042	<0.00074
Octachlorodibenzofuran	<0.0086	<0.015	<0.012	<0.012	<0.00022
PCB 81	<0.0018	<0.0031	<0.0024	<0.0026	<0.000046
PCB 77	<0.0015	<0.0025	<0.0020	<0.0021	<0.000038
PCB 123	<0.00048	<0.00082	<0.00064	<0.00069	<0.000012
PCB 118	<0.0034	<0.0058	<0.0045	<0.0049	<0.000086
PCB 114	<0.00016	<0.00027	<0.00021	<0.00023	<0.0000041
PCB 105	<0.0013	<0.0022	<0.0017	<0.0018	<0.000032
PCB 126	<0.48	<0.82	<0.64	<0.69	<0.012
PCB 167	<0.000049	<0.000084	<0.000066	<0.000071	<0.0000013
PCB 156	<0.000099	<0.00017	<0.00013	<0.00014	<0.0000025
PCB 157	<0.000055	<0.000095	<0.000074	<0.000080	<0.0000014
PCB 169	<0.057	<0.097	<0.075	<0.082	<0.0014
PCB 189	<0.000038	<0.000065	<0.000051	<0.000055	<0.00000097
Total Dioxins & Furans Only	<5.28	<9.05	<7.04	<7.63	<0.13
Total PCBs Only	<0.55	<0.94	<0.73	<0.79	<0.014
Total Dioxins & Furans and PCBs	<5.83	<9.98	<7.76	<8.41	<0.15

* 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/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	0.13	0.22	0.17	0.18	0.0033
12378-pentachlorodibenzo-p-dioxin	0.63	1.08	0.84	0.91	0.016
123478-hexachlorodibenzo-p-dioxin	0.25	0.43	0.34	0.36	0.0064
123678-hexachlorodibenzo-p-dioxin	0.49	0.83	0.65	0.70	0.012
123789-hexachlorodibenzo-p-dioxin	0.29	0.50	0.39	0.42	0.0074
1234678-heptachlorodibenzo-p-dioxin	1.85	3.16	2.46	2.67	0.047
Octachlorodibenzo-p-dioxin	0.23	0.40	0.31	0.34	0.0060
2378-tetrachlorodibenzofuran	0.037	0.063	0.050	0.053	0.00094
12378-pentachlorodibenzofuran	0.015	0.025	0.019	0.021	0.00037
23478-pentachlorodibenzofuran	0.31	0.53	0.42	0.45	0.0080
123478-hexachlorodibenzofuran	0.065	0.11	0.086	0.093	0.0016
123678-hexachlorodibenzofuran	0.068	0.12	0.090	0.098	0.0017
234678-hexachlorodibenzofuran	0.23	0.39	0.31	0.33	0.0059
123789-hexachlorodibenzofuran	0.086	0.15	0.11	0.12	0.0022
1234678-heptachlorodibenzofuran	0.24	0.40	0.31	0.34	0.0060
1234789-heptachlorodibenzofuran	0.024	0.042	0.032	0.035	0.00062
Octachlorodibenzofuran	0.0043	0.0074	0.0058	0.0062	0.00011
PCB 81	0.00090	0.0015	0.0012	0.0013	0.000023
PCB 77	0.0013	0.0022	0.0017	0.0018	0.000032
PCB 123	0.00024	0.00041	0.00032	0.00035	0.0000061
PCB 118	0.0029	0.0050	0.0039	0.0042	0.000074
PCB 114	0.000080	0.00014	0.00011	0.00012	0.0000020
PCB 105	0.0011	0.0019	0.0015	0.0016	0.000028
PCB 126	0.24	0.41	0.32	0.35	0.0061
PCB 167	0.000025	0.000042	0.000033	0.000036	0.00000063
PCB 156	0.000077	0.00013	0.00010	0.00011	0.0000019
PCB 157	0.000028	0.000047	0.000037	0.000040	0.00000070
PCB 169	0.028	0.048	0.038	0.041	0.00072
PCB 189	0.000019	0.000033	0.000025	0.000027	0.00000048
Total Dioxins & Furans Only	4.94	8.47	6.59	7.14	0.13
Total PCBs Only	0.27	0.47	0.37	0.40	0.0070
Total Dioxins & Furans and PCBs	5.22	8.94	6.96	7.54	0.13

* 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	2090	253	431	339	364	6.37
1,3-Dichlorobenzene	249	30.1	51.3	40.4	43.4	0.76
1,4-Dichlorobenzene	132	16.0	27.2	21.4	23.0	0.40
1,2-Dichlorobenzene	148	17.9	30.5	24.0	25.8	0.45
Total Dichlorobenzene	529	64.0	109	85.8	92.2	1.61
1,3,5-trichlorobenzene	24.6	2.98	5.07	3.99	4.29	0.075
1,2,4-trichlorobenzene	81.0	9.80	16.7	13.1	14.1	0.25
1,2,3-trichlorobenzene	17.9	2.17	3.69	2.90	3.12	0.055
Total Trichlorobenzene	124	14.9	25.4	20.0	21.5	0.38
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	14.8	1.79	3.05	2.40	2.58	0.045
1,2,3,4-tetrachlorobenzene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Total Tetrachlorobenzene	<24.8	<3.00	<5.11	<4.02	<4.32	<0.076
Pentachlorobenzene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Hexachlorobenzene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Total Chlorobenzenes	<2787	<337	<574	<452	<486	<8.50

Dry Gas Volume Sampled (Rm^3*) :	4.854
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.5

* 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	2850	343	588	460	497	8.64
1,3-Dichlorobenzene	240	28.9	49.5	38.7	41.8	0.73
1,4-Dichlorobenzene	144	17.3	29.7	23.2	25.1	0.44
1,2-Dichlorobenzene	148	17.8	30.5	23.9	25.8	0.45
Total Dichlorobenzene	532	64.0	110	85.8	92.7	1.61
1,3,5-trichlorobenzene	27.3	3.28	5.63	4.40	4.76	0.083
1,2,4-trichlorobenzene	69.7	8.38	14.4	11.2	12.1	0.21
1,2,3-trichlorobenzene	21.8	2.62	4.50	3.52	3.80	0.066
Total Trichlorobenzene	119	14.3	24.5	19.2	20.7	0.36
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	12.9	1.55	2.66	2.08	2.25	0.039
1,2,3,4-tetrachlorobenzene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Total Tetrachlorobenzene	<22.9	<2.75	<4.72	<3.69	<3.99	<0.069
Pentachlorobenzene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Hexachlorobenzene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Total Chlorobenzenes	<3544	<426	<731	<571	<617	<10.7

Dry Gas Volume Sampled (Rm³*) :	4.849
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.4

* 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. 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	1950	233	400	307	336	6.05
1,3-Dichlorobenzene	257	30.6	52.8	40.4	44.3	0.80
1,4-Dichlorobenzene	140	16.7	28.7	22.0	24.1	0.43
1,2-Dichlorobenzene	152	18.1	31.2	23.9	26.2	0.47
Total Dichlorobenzene	549	65.5	113	86.4	94.6	1.70
1,3,5-trichlorobenzene	23.5	2.80	4.83	3.70	4.05	0.073
1,2,4-trichlorobenzene	77.8	9.28	16.0	12.2	13.4	0.24
1,2,3-trichlorobenzene	18.9	2.25	3.88	2.97	3.26	0.059
Total Trichlorobenzene	120	14.3	24.7	18.9	20.7	0.37
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	16.6	1.98	3.41	2.61	2.86	0.051
1,2,3,4-tetrachlorobenzene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Total Tetrachlorobenzene	<26.6	<3.17	<5.46	<4.19	<4.58	<0.082
Pentachlorobenzene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Hexachlorobenzene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Total Chlorobenzenes	<2666	<318	<547	<420	<459	<8.27

Dry Gas Volume Sampled (Rm^3*) :	4.870
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.0

* 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	253	343	233	276	21.3
1,3-Dichlorobenzene	30.1	28.9	30.6	29.9	3.1
1,4-Dichlorobenzene	16.0	17.3	16.7	16.7	4.1
1,2-Dichlorobenzene	17.9	17.8	18.1	17.9	0.9
Total Dichlorobenzene	64.0	64.0	65.5	64.5	1.3
1,3,5-trichlorobenzene	2.98	3.28	2.80	3.02	8.1
1,2,4-trichlorobenzene	9.80	8.38	9.28	9.15	7.8
1,2,3-trichlorobenzene	2.17	2.62	2.25	2.35	10.3
Total Trichlorobenzene	14.9	14.3	14.3	14.5	2.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.79	1.55	1.98	1.77	12.1
1,2,3,4-tetrachlorobenzene	<1.21	<1.20	<1.19	<1.20	0.7
Total Tetrachlorobenzene	<3.00	<2.75	<3.17	<2.98	7.0
Pentachlorobenzene	<1.21	<1.20	<1.19	<1.20	0.7
Hexachlorobenzene	<1.21	<1.20	<1.19	<1.20	0.7
Total Chlorobenzenes	<337	<426	<318	<360	16.0

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	431	588	400	473	21.3
1,3-Dichlorobenzene	51.3	49.5	52.8	51.2	3.2
1,4-Dichlorobenzene	27.2	29.7	28.7	28.5	4.4
1,2-Dichlorobenzene	30.5	30.5	31.2	30.7	1.3
Total Dichlorobenzene	109	110	113	110	1.8
1,3,5-trichlorobenzene	5.07	5.63	4.83	5.17	8.0
1,2,4-trichlorobenzene	16.7	14.4	16.0	15.7	7.6
1,2,3-trichlorobenzene	3.69	4.50	3.88	4.02	10.5
Total Trichlorobenzene	25.4	24.5	24.7	24.9	2.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	3.05	2.66	3.41	3.04	12.3
1,2,3,4-tetrachlorobenzene	<2.06	<2.06	<2.05	<2.06	0.2
Total Tetrachlorobenzene	<5.11	<4.72	<5.46	<5.10	7.3
Pentachlorobenzene	<2.06	<2.06	<2.05	<2.06	0.2
Hexachlorobenzene	<2.06	<2.06	<2.05	<2.06	0.2
Total Chlorobenzenes	<574	<731	<547	<617	16.0

* 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	339	460	307	368	21.8
1,3-Dichlorobenzene	40.4	38.7	40.4	39.8	2.5
1,4-Dichlorobenzene	21.4	23.2	22.0	22.2	4.1
1,2-Dichlorobenzene	24.0	23.9	23.9	23.9	0.3
Total Dichlorobenzene	85.8	85.8	86.4	86.0	0.4
1,3,5-trichlorobenzene	3.99	4.40	3.70	4.03	8.8
1,2,4-trichlorobenzene	13.1	11.2	12.2	12.2	7.8
1,2,3-trichlorobenzene	2.90	3.52	2.97	3.13	10.7
Total Trichlorobenzene	20.0	19.2	18.9	19.4	3.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.40	2.08	2.61	2.36	11.3
1,2,3,4-tetrachlorobenzene	<1.62	<1.61	<1.57	<1.60	1.6
Total Tetrachlorobenzene	<4.02	<3.69	<4.19	<3.97	6.3
Pentachlorobenzene	<1.62	<1.61	<1.57	<1.60	1.6
Hexachlorobenzene	<1.62	<1.61	<1.57	<1.60	1.6
Total Chlorobenzenes	<452	<571	<420	<481	16.6

* 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	364	497	336	399	21.5
1,3-Dichlorobenzene	43.4	41.8	44.3	43.2	2.9
1,4-Dichlorobenzene	23.0	25.1	24.1	24.1	4.3
1,2-Dichlorobenzene	25.8	25.8	26.2	25.9	0.9
Total Dichlorobenzene	92.2	92.7	94.6	93.1	1.4
1,3,5-trichlorobenzene	4.29	4.76	4.05	4.36	8.3
1,2,4-trichlorobenzene	14.1	12.1	13.4	13.2	7.5
1,2,3-trichlorobenzene	3.12	3.80	3.26	3.39	10.6
Total Trichlorobenzene	21.5	20.7	20.7	21.0	2.2
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	2.58	2.25	2.86	2.56	12.0
1,2,3,4-tetrachlorobenzene	<1.74	<1.74	<1.72	<1.74	0.7
Total Tetrachlorobenzene	<4.32	<3.99	<4.58	<4.30	6.9
Pentachlorobenzene	<1.74	<1.74	<1.72	<1.74	0.7
Hexachlorobenzene	<1.74	<1.74	<1.72	<1.74	0.7
Total Chlorobenzenes	<486	<617	<459	<521	16.3

* 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	6.37	8.64	6.05	7.02	20.1
1,3-Dichlorobenzene	0.76	0.73	0.80	0.76	4.6
1,4-Dichlorobenzene	0.40	0.44	0.43	0.42	4.5
1,2-Dichlorobenzene	0.45	0.45	0.47	0.46	2.7
Total Dichlorobenzene	1.61	1.61	1.70	1.64	3.1
1,3,5-trichlorobenzene	0.075	0.083	0.073	0.077	6.8
1,2,4-trichlorobenzene	0.25	0.21	0.24	0.23	8.2
1,2,3-trichlorobenzene	0.055	0.066	0.059	0.060	9.8
Total Trichlorobenzene	0.38	0.36	0.37	0.37	2.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	0.045	0.039	0.051	0.045	13.7
1,2,3,4-tetrachlorobenzene	<0.030	<0.030	<0.031	<0.031	1.2
Total Tetrachlorobenzene	<0.076	<0.069	<0.082	<0.076	8.6
Pentachlorobenzene	<0.030	<0.030	<0.031	<0.031	1.2
Hexachlorobenzene	<0.030	<0.030	<0.031	<0.031	1.2
Total Chlorobenzenes	<8.50	<10.7	<8.27	<9.17	14.9

TABLE 59
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Summary of Emission Data for Chlorobenzenes

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
Monochlorobenzene	276	473	368	399	7.02
1,3-Dichlorobenzene	29.9	51.2	39.8	43.2	0.76
1,4-Dichlorobenzene	16.7	28.5	22.2	24.1	0.42
1,2-Dichlorobenzene	17.9	30.7	23.9	25.9	0.46
Total Dichlorobenzene	64.5	110	86.0	93.1	1.64
1,3,5-trichlorobenzene	3.02	5.17	4.03	4.36	0.077
1,2,4-trichlorobenzene	9.15	15.7	12.2	13.2	0.23
1,2,3-trichlorobenzene	2.35	4.02	3.13	3.39	0.060
Total Trichlorobenzene	14.5	24.9	19.4	21.0	0.37
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	1.77	3.04	2.36	2.56	0.045
1,2,3,4-tetrachlorobenzene	<1.20	<2.06	<1.60	<1.74	<0.031
Total Tetrachlorobenzene	<2.98	<5.10	<3.97	<4.30	<0.076
Pentachlorobenzene	<1.20	<2.06	<1.60	<1.74	<0.031
Hexachlorobenzene	<1.20	<2.06	<1.60	<1.74	<0.031
Total Chlorobenzenes	<360	<617	<481	<521	<9.17

* 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	<10	<10
1,3-Dichlorobenzene	<10	<10
1,4-Dichlorobenzene	12.5	<10
1,2-Dichlorobenzene	<10	<10
Total Dichlorobenzene	<32.5	<30.0
1,3,5-trichlorobenzene	<10	<10
1,2,4-trichlorobenzene	<10	<10
1,2,3-trichlorobenzene	<10	<10
Total Trichlorobenzene	<30.0	<30.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<10	<10
1,2,3,4-tetrachlorobenzene	<10	<10
Total Tetrachlorobenzene	<20.0	<20.0
Pentachlorobenzene	<10	<10
Hexachlorobenzene	<10	<10
Total Chlorobenzenes	<113	<110

"<" 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. 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	<50	<6.05	<10.3	<8.11	<8.71	<0.15
3-monochlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
4-monochlorophenol	110	13.3	22.7	17.8	19.2	0.34
Total Monochlorophenols	<210	<25.4	<43.3	<34.1	<36.6	<0.64
2,6-dichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
2,4 & 2,5-dichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
3,5-dichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
2,3-dichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
3,4-dichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
Total Dichlorophenols	<250	<30.2	<51.5	<40.5	<43.6	<0.76
2,4,6-trichlorophenol	104	12.6	21.4	16.9	18.1	0.32
2,3,6-trichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
2,3,5-trichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
2,4,5-trichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
2,3,4-trichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
3,4,5-trichlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
Total Trichlorophenols	<354	<42.8	<72.9	<57.4	<61.7	<1.08
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
2,3,4,5-tetrachlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
Total Tetrachlorophenols	<100	<12.1	<20.6	<16.2	<17.4	<0.30
Pentachlorophenol	<50	<6.05	<10.3	<8.11	<8.71	<0.15
Total Chlorophenols	<964	<117	<199	<156	<168	<2.94

Dry Gas Volume Sampled (Rm^3*) :	4.854
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.5

* 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	90.7	10.9	18.7	14.6	15.8	0.27
3-monochlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
4-monochlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
Total Monochlorophenols	<191	<22.9	<39.3	<30.8	<33.2	<0.58
2,6-dichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,4 & 2,5-dichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
3,5-dichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,3-dichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
3,4-dichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
Total Dichlorophenols	<250	<30.1	<51.6	<40.3	<43.6	<0.76
2,4,6-trichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,3,6-trichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,3,5-trichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,4,5-trichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,3,4-trichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
3,4,5-trichlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
Total Trichlorophenols	<300	<36.1	<61.9	<48.4	<52.3	<0.91
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
2,3,4,5-tetrachlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
Total Tetrachlorophenols	<100	<12.0	<20.6	<16.1	<17.4	<0.30
Pentachlorophenol	<50	<6.01	<10.3	<8.06	<8.71	<0.15
Total Chlorophenols	<891	<107	<184	<144	<155	<2.70

Dry Gas Volume Sampled (Rm^3*) :	4.849
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.4

* 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	<50	<5.96	<10.3	<7.87	<8.61	<0.16
3-monochlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
4-monochlorophenol	67.8	8.09	13.9	10.7	11.7	0.21
Total Monochlorophenols	<168	<20.0	<34.5	<26.4	<28.9	<0.52
2,6-dichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,4 & 2,5-dichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
3,5-dichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,3-dichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
3,4-dichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
Total Dichlorophenols	<250	<29.8	<51.3	<39.3	<43.1	<0.78
2,4,6-trichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,3,6-trichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,3,5-trichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,4,5-trichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,3,4-trichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
3,4,5-trichlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
Total Trichlorophenols	<300	<35.8	<61.6	<47.2	<51.7	<0.93
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
2,3,4,5-tetrachlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
Total Tetrachlorophenols	<100	<11.9	<20.5	<15.7	<17.2	<0.31
Pentachlorophenol	<50	<5.96	<10.3	<7.87	<8.61	<0.16
Total Chlorophenols	<868	<103	<178	<137	<149	<2.69

Dry Gas Volume Sampled (Rm^3*) :	4.870
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.7
Wet Reference Flowrate (Rm^3/s*) :	18.0

* 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	<6.05	10.9	<5.96	<7.64	37.1
3-monochlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
4-monochlorophenol	13.3	<6.01	8.09	<9.14	41.1
Total Monochlorophenols	<25.4	<22.9	<20.0	<22.8	11.9
2,6-dichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
2,4 & 2,5-dichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
3,5-dichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
2,3-dichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
3,4-dichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
Total Dichlorophenols	<30.2	<30.1	<29.8	<30.0	0.7
2,4,6-trichlorophenol	12.6	<6.01	<5.96	<8.19	46.5
2,3,6-trichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
2,3,5-trichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
2,4,5-trichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
2,3,4-trichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
3,4,5-trichlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
Total Trichlorophenols	<42.8	<36.1	<35.8	<38.2	10.4
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
2,3,4,5-tetrachlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
Total Tetrachlorophenols	<12.1	<12.0	<11.9	<12.0	0.7
Pentachlorophenol	<6.05	<6.01	<5.96	<6.01	0.7
Total Chlorophenols	<117	<107	<103	<109	6.2

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	<10.3	18.7	<10.3	<13.1	37.1
3-monochlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
4-monochlorophenol	22.7	<10.3	13.9	<15.6	40.6
Total Monochlorophenols	<43.3	<39.3	<34.5	<39.0	11.3
2,6-dichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
2,4 & 2,5-dichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
3,5-dichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
2,3-dichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
3,4-dichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
Total Dichlorophenols	<51.5	<51.6	<51.3	<51.5	0.2
2,4,6-trichlorophenol	21.4	<10.3	<10.3	<14.0	45.9
2,3,6-trichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
2,3,5-trichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
2,4,5-trichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
2,3,4-trichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
3,4,5-trichlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
Total Trichlorophenols	<72.9	<61.9	<61.6	<65.5	9.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
2,3,4,5-tetrachlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
Total Tetrachlorophenols	<20.6	<20.6	<20.5	<20.6	0.2
Pentachlorophenol	<10.3	<10.3	<10.3	<10.3	0.2
Total Chlorophenols	<199	<184	<178	<187	5.7

* 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	<8.11	14.6	<7.87	<10.2	37.6
3-monochlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
4-monochlorophenol	17.8	<8.06	10.7	<12.2	41.5
Total Monochlorophenols	<34.1	<30.8	<26.4	<30.4	12.6
2,6-dichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
2,4 & 2,5-dichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
3,5-dichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
2,3-dichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
3,4-dichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
Total Dichlorophenols	<40.5	<40.3	<39.3	<40.1	1.6
2,4,6-trichlorophenol	16.9	<8.06	<7.87	<10.9	47.0
2,3,6-trichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
2,3,5-trichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
2,4,5-trichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
2,3,4-trichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
3,4,5-trichlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
Total Trichlorophenols	<57.4	<48.4	<47.2	<51.0	10.9
2,3,5,6/2,3,4,6-tetrachlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
2,3,4,5-tetrachlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
Total Tetrachlorophenols	<16.2	<16.1	<15.7	<16.0	1.6
Pentachlorophenol	<8.11	<8.06	<7.87	<8.01	1.6
Total Chlorophenols	<156	<144	<137	<146	6.9

* 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	<8.71	15.8	<8.61	<11.0	37.3
3-monochlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
4-monochlorophenol	19.2	<8.71	11.7	<13.2	40.9
Total Monochlorophenols	<36.6	<33.2	<28.9	<32.9	11.7
2,6-dichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
2,4 & 2,5-dichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
3,5-dichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
2,3-dichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
3,4-dichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
Total Dichlorophenols	<43.6	<43.6	<43.1	<43.4	0.7
2,4,6-trichlorophenol	18.1	<8.71	<8.61	<11.8	46.2
2,3,6-trichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
2,3,5-trichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
2,4,5-trichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
2,3,4-trichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
3,4,5-trichlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
Total Trichlorophenols	<61.7	<52.3	<51.7	<55.2	10.2
2,3,5,6/2,3,4,6-tetrachlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
2,3,4,5-tetrachlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
Total Tetrachlorophenols	<17.4	<17.4	<17.2	<17.4	0.7
Pentachlorophenol	<8.71	<8.71	<8.61	<8.68	0.7
Total Chlorophenols	<168	<155	<149	<158	6.0

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
2-monochlorophenol	<0.15	0.27	<0.16	<0.19	36.1
3-monochlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
4-monochlorophenol	0.34	<0.15	0.21	<0.23	40.4
Total Monochlorophenols	<0.64	<0.58	<0.52	<0.58	10.4
2,6-dichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
2,4 & 2,5-dichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
3,5-dichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
2,3-dichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
3,4-dichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
Total Dichlorophenols	<0.76	<0.76	<0.78	<0.77	1.2
2,4,6-trichlorophenol	0.32	<0.15	<0.16	<0.21	45.5
2,3,6-trichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
2,3,5-trichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
2,4,5-trichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
2,3,4-trichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
3,4,5-trichlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
Total Trichlorophenols	<1.08	<0.91	<0.93	<0.97	9.5
2,3,5,6/2,3,4,6-tetrachlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
2,3,4,5-tetrachlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
Total Tetrachlorophenols	<0.30	<0.30	<0.31	<0.31	1.2
Pentachlorophenol	<0.15	<0.15	<0.16	<0.15	1.2
Total Chlorophenols	<2.94	<2.70	<2.69	<2.78	5.1

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	<7.64	<13.1	<10.2	<11.0	<0.19
3-monochlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
4-monochlorophenol	<9.14	<15.6	<12.2	<13.2	<0.23
Total Monochlorophenols	<22.8	<39.0	<30.4	<32.9	<0.58
2,6-dichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
2,4 & 2,5-dichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
3,5-dichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
2,3-dichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
3,4-dichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
Total Dichlorophenols	<30.0	<51.5	<40.1	<43.4	<0.77
2,4,6-trichlorophenol	<8.19	<14.0	<10.9	<11.8	<0.21
2,3,6-trichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
2,3,5-trichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
2,4,5-trichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
2,3,4-trichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
3,4,5-trichlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
Total Trichlorophenols	<38.2	<65.5	<51.0	<55.2	<0.97
2,3,5,6/2,3,4,6-tetrachlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
2,3,4,5-tetrachlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
Total Tetrachlorophenols	<12.0	<20.6	<16.0	<17.4	<0.31
Pentachlorophenol	<6.01	<10.3	<8.01	<8.68	<0.15
Total Chlorophenols	<109	<187	<146	<158	<2.78

* 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	<50	<50
3-monochlorophenol	<50	<50
4-monochlorophenol	<50	<50
Total Monochlorophenols	<150	<150
2,6-dichlorophenol	<50	<50
2,4 & 2,5-dichlorophenol	<50	<50
3,5-dichlorophenol	<50	<50
2,3-dichlorophenol	<50	<50
3,4-dichlorophenol	<50	<50
Total Dichlorophenols	<250	<250
2,4,6-trichlorophenol	<50	<50
2,3,6-trichlorophenol	<50	<50
2,3,5-trichlorophenol	<50	<50
2,4,5-trichlorophenol	<50	<50
2,3,4-trichlorophenol	<50	<50
3,4,5-trichlorophenol	<50	<50
Total Trichlorophenols	<300	<300
2,3,5,6/2,3,4,6-tetrachlorophenol	<50	<50
2,3,4,5-tetrachlorophenol	<50	<50
Total Tetrachlorophenols	<100	<100
Pentachlorophenol	<50	<50
Total Chlorophenols	<850	<850

"<" 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	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Acenaphthylene	17.0	2.06	3.50	2.76	2.96	0.052
Anthracene	14.2	1.72	2.93	2.30	2.47	0.043
Benzo(a)anthracene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Benzo(b)fluoranthene	14.8	1.79	3.05	2.40	2.58	0.045
Benzo(k)fluoranthene	28.4	3.44	5.85	4.61	4.95	0.087
Benzo(a)fluorene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Benzo(b)fluorene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Benzo(g,h,i)perylene	448	54.2	92.3	72.7	78.1	1.37
Benzo(a)pyrene	20.2	2.44	4.16	3.28	3.52	0.062
Benzo(e)pyrene	97.6	11.8	20.1	15.8	17.0	0.30
Biphenyl	161	19.5	33.2	26.1	28.1	0.49
2-Chloronaphthalene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Chrysene/Triphenylene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Coronene	294	35.6	60.6	47.7	51.2	0.90
Dibenzo(a,h/a,c)anthracene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Dibenzo(a,e)pyrene	<50	<6.05	<10.3	<8.11	<8.71	<0.15
9,10-dimethylanthracene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
7,12-Dimethylbenzo(a)anthracene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Fluoranthene	92.6	11.2	19.1	15.0	16.1	0.28
Fluorene	51.2	6.19	10.5	8.30	8.92	0.16
Indeno(1,2,3-cd)pyrene	66.8	8.08	13.8	10.8	11.6	0.20
2-methylanthracene	17.9	2.17	3.69	2.90	3.12	0.055
3-Methylcholanthrene	<50	<6.05	<10.3	<8.11	<8.71	<0.15
1-Methylnaphthalene	26.7	3.23	5.50	4.33	4.65	0.081
2-Methylnaphthalene	48.1	5.82	9.91	7.80	8.38	0.15
1-Methylphenanthrene	17.5	2.12	3.61	2.84	3.05	0.053
9-Methylphenanthrene	25.7	3.11	5.29	4.17	4.48	0.078
Naphthalene	140	16.9	28.8	22.7	24.4	0.43
Perylene	<10	<1.21	<2.06	<1.62	<1.74	<0.030
Phenanthrene	222	26.9	45.7	36.0	38.7	0.68
Picene	<50	<6.05	<10.3	<8.11	<8.71	<0.15
Pyrene	186	22.5	38.3	30.2	32.4	0.57
Tetralin	118	14.3	24.3	19.1	20.6	0.36
m-terphenyl	<10	<1.21	<2.06	<1.62	<1.74	<0.030
o-Terphenyl	<10	<1.21	<2.06	<1.62	<1.74	<0.030
p-terphenyl	26.5	3.21	5.46	4.30	4.62	0.081
Total	<2404	<291	<495	<390	<419	<7.33

Dry Gas Volume Sampled (Rm³*) :	4.854
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.5

* 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	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Acenaphthylene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Anthracene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Benzo(a)anthracene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Benzo(b)fluoranthene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Benzo(k)fluoranthene	29.1	3.50	6.00	4.69	5.07	0.088
Benzo(a)fluorene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Benzo(b)fluorene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Benzo(g,h,i)perylene	211	25.4	43.5	34.0	36.8	0.64
Benzo(a)pyrene	11.6	1.40	2.39	1.87	2.02	0.035
Benzo(e)pyrene	45.5	5.47	9.38	7.34	7.93	0.14
Biphenyl	159	19.1	32.8	25.6	27.7	0.48
2-Chloronaphthalene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Chrysene/Triphenylene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Coronene	118	14.2	24.3	19.0	20.6	0.36
Dibenzo(a,h/a,c)anthracene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Dibenzo(a,e)pyrene	<50	<6.01	<10.3	<8.06	<8.71	<0.15
9,10-dimethylanthracene	11.4	1.37	2.35	1.84	1.99	0.035
7,12-Dimethylbenzo(a)anthracene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Fluoranthene	42.2	5.08	8.70	6.80	7.35	0.13
Fluorene	13.0	1.56	2.68	2.10	2.26	0.039
Indeno(1,2,3-cd)pyrene	28.0	3.37	5.77	4.52	4.88	0.085
2-methylanthracene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
3-Methylcholanthrene	<50	<6.01	<10.3	<8.06	<8.71	<0.15
1-Methylnaphthalene	13.5	1.62	2.78	2.18	2.35	0.041
2-Methylnaphthalene	22.2	2.67	4.58	3.58	3.87	0.067
1-Methylphenanthrene	15.5	1.86	3.20	2.50	2.70	0.047
9-Methylphenanthrene	11.4	1.37	2.35	1.84	1.99	0.035
Naphthalene	109	13.1	22.5	17.6	19.0	0.33
Perylene	<10	<1.20	<2.06	<1.61	<1.74	<0.030
Phenanthrene	93.9	11.3	19.4	15.1	16.4	0.28
Picene	<50	<6.01	<10.3	<8.06	<8.71	<0.15
Pyrene	74.4	8.95	15.3	12.0	13.0	0.23
Tetralin	180	21.7	37.1	29.0	31.4	0.55
m-terphenyl	<10	<1.20	<2.06	<1.61	<1.74	<0.030
o-Terphenyl	<10	<1.20	<2.06	<1.61	<1.74	<0.030
p-terphenyl	11.6	1.40	2.39	1.87	2.02	0.035
Total	<1500	<180	<309	<242	<261	<4.55

Dry Gas Volume Sampled (Rm³*) :	4.849
Actual Flowrate (m³/s) :	25.2
Dry Reference Flowrate (Rm³/s*) :	14.7
Dry Adjusted Flowrate (Rm³/s**) :	18.8
Wet Reference Flowrate (Rm³/s*) :	17.4

* 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	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Acenaphthylene	16.0	1.91	3.29	2.52	2.76	0.050
Anthracene	10.7	1.28	2.20	1.68	1.84	0.033
Benzo(a)anthracene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Benzo(b)fluoranthene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Benzo(k)fluoranthene	11.3	1.35	2.32	1.78	1.95	0.035
Benzo(a)fluorene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Benzo(b)fluorene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Benzo(g,h,i)perylene	272	32.4	55.9	42.8	46.9	0.84
Benzo(a)pyrene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Benzo(e)pyrene	96.7	11.5	19.9	15.2	16.7	0.30
Biphenyl	100	11.9	20.5	15.7	17.2	0.31
2-Chloronaphthalene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Chrysene/Triphenylene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Coronene	189	22.5	38.8	29.7	32.6	0.59
Dibenzo(a,h/a,c)anthracene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Dibenzo(a,e)pyrene	<50	<5.96	<10.3	<7.87	<8.61	<0.16
9,10-dimethylanthracene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
7,12-Dimethylbenzo(a)anthracene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Fluoranthene	74.9	8.93	15.4	11.8	12.9	0.23
Fluorene	24.7	2.95	5.07	3.89	4.25	0.077
Indeno(1,2,3-cd)pyrene	32.1	3.83	6.59	5.05	5.53	0.10
2-methylanthracene	14.9	1.78	3.06	2.35	2.57	0.046
3-Methylcholanthrene	<50	<5.96	<10.3	<7.87	<8.61	<0.16
1-Methylnaphthalene	14.9	1.78	3.06	2.35	2.57	0.046
2-Methylnaphthalene	23.4	2.79	4.80	3.68	4.03	0.073
1-Methylphenanthrene	16.4	1.96	3.37	2.58	2.83	0.051
9-Methylphenanthrene	21.6	2.58	4.44	3.40	3.72	0.067
Naphthalene	123	14.7	25.3	19.4	21.2	0.38
Perylene	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Phenanthrene	119	14.2	24.4	18.7	20.5	0.37
Picene	<50	<5.96	<10.3	<7.87	<8.61	<0.16
Pyrene	151	18.0	31.0	23.8	26.0	0.47
Tetralin	157	18.7	32.2	24.7	27.0	0.49
m-terphenyl	<10	<1.19	<2.05	<1.57	<1.72	<0.031
o-Terphenyl	<10	<1.19	<2.05	<1.57	<1.72	<0.031
p-terphenyl	<10	<1.19	<2.05	<1.57	<1.72	<0.031
Total	<1769	<211	<363	<278	<305	<5.48

Dry Gas Volume Sampled (Rm³*) :	4.870
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.1
Dry Adjusted Flowrate (Rm³/s**) :	19.7
Wet Reference Flowrate (Rm³/s*) :	18.0

* 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	<1.21	<1.20	<1.19	<1.20	0.7
Acenaphthylene	2.06	<1.20	1.91	<1.72	26.5
Anthracene	1.72	<1.20	1.28	<1.40	19.9
Benzo(a)anthracene	<1.21	<1.20	<1.19	<1.20	0.7
Benzo(b)fluoranthene	1.79	<1.20	<1.19	<1.40	24.5
Benzo(k)fluoranthene	3.44	3.50	1.35	2.76	44.4
Benzo(a)fluorene	<1.21	<1.20	<1.19	<1.20	0.7
Benzo(b)fluorene	<1.21	<1.20	<1.19	<1.20	0.7
Benzo(g,h,i)perylene	54.2	25.4	32.4	37.3	40.2
Benzo(a)pyrene	2.44	1.40	<1.19	<1.68	40.0
Benzo(e)pyrene	11.8	5.47	11.5	9.60	37.3
Biphenyl	19.5	19.1	11.9	16.8	25.3
2-Chloronaphthalene	<1.21	<1.20	<1.19	<1.20	0.7
Chrysene/Triphenylene	<1.21	<1.20	<1.19	<1.20	0.7
Coronene	35.6	14.2	22.5	24.1	44.7
Dibenzo(a,h/a,c)anthracene	<1.21	<1.20	<1.19	<1.20	0.7
Dibenzo(a,e)pyrene	<6.05	<6.01	<5.96	<6.01	0.7
9,10-dimethylanthracene	<1.21	1.37	<1.19	<1.26	7.8
7,12-Dimethylbenzo(a)anthracene	<1.21	<1.20	<1.19	<1.20	0.7
Fluoranthene	11.2	5.08	8.93	8.40	36.9
Fluorene	6.19	1.56	2.95	3.57	66.6
Indeno(1,2,3-cd)pyrene	8.08	3.37	3.83	5.09	51.0
2-methylanthracene	2.17	<1.20	1.78	<1.72	28.2
3-Methylcholanthrene	<6.05	<6.01	<5.96	<6.01	0.7
1-Methylnaphthalene	3.23	1.62	1.78	2.21	40.1
2-Methylnaphthalene	5.82	2.67	2.79	3.76	47.5
1-Methylphenanthrene	2.12	1.86	1.96	1.98	6.5
9-Methylphenanthrene	3.11	1.37	2.58	2.35	37.9
Naphthalene	16.9	13.1	14.7	14.9	12.9
Perylene	<1.21	<1.20	<1.19	<1.20	0.7
Phenanthrene	26.9	11.3	14.2	17.4	47.4
Picene	<6.05	<6.01	<5.96	<6.01	0.7
Pyrene	22.5	8.95	18.0	16.5	41.9
Tetralin	14.3	21.7	18.7	18.2	20.4
m-terphenyl	<1.21	<1.20	<1.19	<1.20	0.7
o-Terphenyl	<1.21	<1.20	<1.19	<1.20	0.7
p-terphenyl	3.21	1.40	<1.19	<1.93	57.4
Total	<291	<180	<211	<227	25.1

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	<2.06	<2.06	<2.05	<2.06	0.2
Acenaphthylene	3.50	<2.06	3.29	<2.95	26.3
Anthracene	2.93	<2.06	2.20	<2.39	19.4
Benzo(a)anthracene	<2.06	<2.06	<2.05	<2.06	0.2
Benzo(b)fluoranthene	3.05	<2.06	<2.05	<2.39	24.0
Benzo(k)fluoranthene	5.85	6.00	2.32	4.72	44.1
Benzo(a)fluorene	<2.06	<2.06	<2.05	<2.06	0.2
Benzo(b)fluorene	<2.06	<2.06	<2.05	<2.06	0.2
Benzo(g,h,i)perylene	92.3	43.5	55.9	63.9	39.7
Benzo(a)pyrene	4.16	2.39	<2.05	<2.87	39.5
Benzo(e)pyrene	20.1	9.38	19.9	16.4	37.2
Biphenyl	33.2	32.8	20.5	28.8	24.9
2-Chloronaphthalene	<2.06	<2.06	<2.05	<2.06	0.2
Chrysene/Triphenylene	<2.06	<2.06	<2.05	<2.06	0.2
Coronene	60.6	24.3	38.8	41.2	44.2
Dibenzo(a,h/a,c)anthracene	<2.06	<2.06	<2.05	<2.06	0.2
Dibenzo(a,e)pyrene	<10.3	<10.3	<10.3	<10.3	0.2
9,10-dimethylanthracene	<2.06	2.35	<2.05	<2.15	7.9
7,12-Dimethylbenzo(a)anthracene	<2.06	<2.06	<2.05	<2.06	0.2
Fluoranthene	19.1	8.70	15.4	14.4	36.5
Fluorene	10.5	2.68	5.07	6.10	66.1
Indeno(1,2,3-cd)pyrene	13.8	5.77	6.59	8.71	50.5
2-methylanthracene	3.69	<2.06	3.06	<2.94	27.9
3-Methylcholanthrene	<10.3	<10.3	<10.3	<10.3	0.2
1-Methylnaphthalene	5.50	2.78	3.06	3.78	39.5
2-Methylnaphthalene	9.91	4.58	4.80	6.43	46.9
1-Methylphenanthrene	3.61	3.20	3.37	3.39	6.1
9-Methylphenanthrene	5.29	2.35	4.44	4.03	37.6
Naphthalene	28.8	22.5	25.3	25.5	12.5
Perylene	<2.06	<2.06	<2.05	<2.06	0.2
Phenanthrene	45.7	19.4	24.4	29.8	46.9
Picene	<10.3	<10.3	<10.3	<10.3	0.2
Pyrene	38.3	15.3	31.0	28.2	41.6
Tetralin	24.3	37.1	32.2	31.2	20.7
m-terphenyl	<2.06	<2.06	<2.05	<2.06	0.2
o-Terphenyl	<2.06	<2.06	<2.05	<2.06	0.2
p-terphenyl	5.46	2.39	<2.05	<3.30	56.8
Total	<495	<309	<363	<389	24.6

* 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<1.62	<1.61	<1.57	<1.60	1.6
Acenaphthylene	2.76	<1.61	2.52	<2.30	26.3
Anthracene	2.30	<1.61	1.68	<1.87	20.3
Benzo(a)anthracene	<1.62	<1.61	<1.57	<1.60	1.6
Benzo(b)fluoranthene	2.40	<1.61	<1.57	<1.86	25.0
Benzo(k)fluoranthene	4.61	4.69	1.78	3.69	44.9
Benzo(a)fluorene	<1.62	<1.61	<1.57	<1.60	1.6
Benzo(b)fluorene	<1.62	<1.61	<1.57	<1.60	1.6
Benzo(g,h,i)perylene	72.7	34.0	42.8	49.8	40.6
Benzo(a)pyrene	3.28	1.87	<1.57	<2.24	40.6
Benzo(e)pyrene	15.8	7.34	15.2	12.8	37.0
Biphenyl	26.1	25.6	15.7	22.5	26.0
2-Chloronaphthalene	<1.62	<1.61	<1.57	<1.60	1.6
Chrysene/Triphenylene	<1.62	<1.61	<1.57	<1.60	1.6
Coronene	47.7	19.0	29.7	32.2	45.0
Dibenzo(a,h/a,c)anthracene	<1.62	<1.61	<1.57	<1.60	1.6
Dibenzo(a,e)pyrene	<8.11	<8.06	<7.87	<8.01	1.6
9,10-dimethylanthracene	<1.62	1.84	<1.57	<1.68	8.4
7,12-Dimethylbenzo(a)anthracene	<1.62	<1.61	<1.57	<1.60	1.6
Fluoranthene	15.0	6.80	11.8	11.2	36.9
Fluorene	8.30	2.10	3.89	4.76	67.1
Indeno(1,2,3-cd)pyrene	10.8	4.52	5.05	6.80	51.5
2-methylanthracene	2.90	<1.61	2.35	<2.29	28.3
3-Methylcholanthrene	<8.11	<8.06	<7.87	<8.01	1.6
1-Methylnaphthalene	4.33	2.18	2.35	2.95	40.6
2-Methylnaphthalene	7.80	3.58	3.68	5.02	48.0
1-Methylphenanthrene	2.84	2.50	2.58	2.64	6.7
9-Methylphenanthrene	4.17	1.84	3.40	3.14	37.9
Naphthalene	22.7	17.6	19.4	19.9	13.1
Perylene	<1.62	<1.61	<1.57	<1.60	1.6
Phenanthrene	36.0	15.1	18.7	23.3	47.9
Picene	<8.11	<8.06	<7.87	<8.01	1.6
Pyrene	30.2	12.0	23.8	22.0	41.9
Tetralin	19.1	29.0	24.7	24.3	20.4
m-terphenyl	<1.62	<1.61	<1.57	<1.60	1.6
o-Terphenyl	<1.62	<1.61	<1.57	<1.60	1.6
p-terphenyl	4.30	1.87	<1.57	<2.58	57.9
Total	<390	<242	<278	<303	25.4

* 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	<1.74	<1.74	<1.72	<1.74	0.7
Acenaphthylene	2.96	<1.74	2.76	<2.49	26.3
Anthracene	2.47	<1.74	1.84	<2.02	19.6
Benzo(a)anthracene	<1.74	<1.74	<1.72	<1.74	0.7
Benzo(b)fluoranthene	2.58	<1.74	<1.72	<2.01	24.3
Benzo(k)fluoranthene	4.95	5.07	1.95	3.99	44.4
Benzo(a)fluorene	<1.74	<1.74	<1.72	<1.74	0.7
Benzo(b)fluorene	<1.74	<1.74	<1.72	<1.74	0.7
Benzo(g,h,i)perylene	78.1	36.8	46.9	53.9	39.9
Benzo(a)pyrene	3.52	2.02	<1.72	<2.42	39.8
Benzo(e)pyrene	17.0	7.93	16.7	13.9	37.1
Biphenyl	28.1	27.7	17.2	24.3	25.3
2-Chloronaphthalene	<1.74	<1.74	<1.72	<1.74	0.7
Chrysene/Triphenylene	<1.74	<1.74	<1.72	<1.74	0.7
Coronene	51.2	20.6	32.6	34.8	44.4
Dibenzo(a,h/a,c)anthracene	<1.74	<1.74	<1.72	<1.74	0.7
Dibenzo(a,e)pyrene	<8.71	<8.71	<8.61	<8.68	0.7
9,10-dimethylanthracene	<1.74	1.99	<1.72	<1.82	8.1
7,12-Dimethylbenzo(a)anthracene	<1.74	<1.74	<1.72	<1.74	0.7
Fluoranthene	16.1	7.35	12.9	12.1	36.6
Fluorene	8.92	2.26	4.25	5.15	66.4
Indeno(1,2,3-cd)pyrene	11.6	4.88	5.53	7.35	50.7
2-methylanthracene	3.12	<1.74	2.57	<2.48	28.0
3-Methylcholanthrene	<8.71	<8.71	<8.61	<8.68	0.7
1-Methylnaphthalene	4.65	2.35	2.57	3.19	39.8
2-Methylnaphthalene	8.38	3.87	4.03	5.43	47.2
1-Methylphenanthrene	3.05	2.70	2.83	2.86	6.2
9-Methylphenanthrene	4.48	1.99	3.72	3.39	37.6
Naphthalene	24.4	19.0	21.2	21.5	12.6
Perylene	<1.74	<1.74	<1.72	<1.74	0.7
Phenanthrene	38.7	16.4	20.5	25.2	47.2
Picene	<8.71	<8.71	<8.61	<8.68	0.7
Pyrene	32.4	13.0	26.0	23.8	41.7
Tetralin	20.6	31.4	27.0	26.3	20.7
m-terphenyl	<1.74	<1.74	<1.72	<1.74	0.7
o-Terphenyl	<1.74	<1.74	<1.72	<1.74	0.7
p-terphenyl	4.62	2.02	<1.72	<2.79	57.1
Total	<419	<261	<305	<328	24.8

* 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	<0.030	<0.030	<0.031	<0.031	1.2
Acenaphthylene	0.052	<0.030	0.050	<0.044	26.9
Anthracene	0.043	<0.030	0.033	<0.036	19.2
Benzo(a)anthracene	<0.030	<0.030	<0.031	<0.031	1.2
Benzo(b)fluoranthene	0.045	<0.030	<0.031	<0.035	23.6
Benzo(k)fluoranthene	0.087	0.088	0.035	0.070	43.2
Benzo(a)fluorene	<0.030	<0.030	<0.031	<0.031	1.2
Benzo(b)fluorene	<0.030	<0.030	<0.031	<0.031	1.2
Benzo(g,h,i)perylene	1.37	0.64	0.84	0.95	39.4
Benzo(a)pyrene	0.062	0.035	<0.031	<0.043	39.0
Benzo(e)pyrene	0.30	0.14	0.30	0.25	37.9
Biphenyl	0.49	0.48	0.31	0.43	23.8
2-Chloronaphthalene	<0.030	<0.030	<0.031	<0.031	1.2
Chrysene/Triphenylene	<0.030	<0.030	<0.031	<0.031	1.2
Coronene	0.90	0.36	0.59	0.61	44.1
Dibenzo(a,h/a,c)anthracene	<0.030	<0.030	<0.031	<0.031	1.2
Dibenzo(a,e)pyrene	<0.15	<0.15	<0.16	<0.15	1.2
9,10-dimethylanthracene	<0.030	0.035	<0.031	<0.032	6.9
7,12-Dimethylbenzo(a)anthracene	<0.030	<0.030	<0.031	<0.031	1.2
Fluoranthene	0.28	0.13	0.23	0.21	36.8
Fluorene	0.16	0.039	0.077	0.091	65.7
Indeno(1,2,3-cd)pyrene	0.20	0.085	0.10	0.13	50.1
2-methylanthracene	0.055	<0.030	0.046	<0.044	28.2
3-Methylcholanthrene	<0.15	<0.15	<0.16	<0.15	1.2
1-Methylnaphthalene	0.081	0.041	0.046	0.056	39.2
2-Methylnaphthalene	0.15	0.067	0.073	0.096	46.5
1-Methylphenanthrene	0.053	0.047	0.051	0.050	6.4
9-Methylphenanthrene	0.078	0.035	0.067	0.060	37.9
Naphthalene	0.43	0.33	0.38	0.38	12.7
Perylene	<0.030	<0.030	<0.031	<0.031	1.2
Phenanthrene	0.68	0.28	0.37	0.44	46.6
Picene	<0.15	<0.15	<0.16	<0.15	1.2
Pyrene	0.57	0.23	0.47	0.42	41.8
Tetralin	0.36	0.55	0.49	0.46	20.5
m-terphenyl	<0.030	<0.030	<0.031	<0.031	1.2
o-Terphenyl	<0.030	<0.030	<0.031	<0.031	1.2
p-terphenyl	0.081	0.035	<0.031	<0.049	56.4
Total	<7.33	<4.55	<5.48	<5.79	24.5

TABLE 79
Covanta - Durham York Energy Centre
Boiler No. 2 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	<1.20	<2.06	<1.60	<1.74	<0.031
Acenaphthylene	<1.72	<2.95	<2.30	<2.49	<0.044
Anthracene	<1.40	<2.39	<1.87	<2.02	<0.036
Benzo(a)anthracene	<1.20	<2.06	<1.60	<1.74	<0.031
Benzo(b)fluoranthene	<1.40	<2.39	<1.86	<2.01	<0.035
Benzo(k)fluoranthene	2.76	4.72	3.69	3.99	0.070
Benzo(a)fluorene	<1.20	<2.06	<1.60	<1.74	<0.031
Benzo(b)fluorene	<1.20	<2.06	<1.60	<1.74	<0.031
Benzo(g,h,i)perylene	37.3	63.9	49.8	53.9	0.95
Benzo(a)pyrene	<1.68	<2.87	<2.24	<2.42	<0.043
Benzo(e)pyrene	9.60	16.4	12.8	13.9	0.25
Biphenyl	16.8	28.8	22.5	24.3	0.43
2-Chloronaphthalene	<1.20	<2.06	<1.60	<1.74	<0.031
Chrysene/Triphenylene	<1.20	<2.06	<1.60	<1.74	<0.031
Coronene	24.1	41.2	32.2	34.8	0.61
Dibenzo(a,h/a,c)anthracene	<1.20	<2.06	<1.60	<1.74	<0.031
Dibenzo(a,e)pyrene	<6.01	<10.3	<8.01	<8.68	<0.15
9,10-dimethylanthracene	<1.26	<2.15	<1.68	<1.82	<0.032
7,12-Dimethylbenzo(a)anthracene	<1.20	<2.06	<1.60	<1.74	<0.031
Fluoranthene	8.40	14.4	11.2	12.1	0.21
Fluorene	3.57	6.10	4.76	5.15	0.091
Indeno(1,2,3-cd)pyrene	5.09	8.71	6.80	7.35	0.13
2-methylanthracene	<1.72	<2.94	<2.29	<2.48	<0.044
3-Methylcholanthrene	<6.01	<10.3	<8.01	<8.68	<0.15
1-Methylnaphthalene	2.21	3.78	2.95	3.19	0.056
2-Methylnaphthalene	3.76	6.43	5.02	5.43	0.096
1-Methylphenanthrene	1.98	3.39	2.64	2.86	0.050
9-Methylphenanthrene	2.35	4.03	3.14	3.39	0.060
Naphthalene	14.9	25.5	19.9	21.5	0.38
Perylene	<1.20	<2.06	<1.60	<1.74	<0.031
Phenanthrene	17.4	29.8	23.3	25.2	0.44
Picene	<6.01	<10.3	<8.01	<8.68	<0.15
Pyrene	16.5	28.2	22.0	23.8	0.42
Tetralin	18.2	31.2	24.3	26.3	0.46
m-terphenyl	<1.20	<2.06	<1.60	<1.74	<0.031
o-Terphenyl	<1.20	<2.06	<1.60	<1.74	<0.031
p-terphenyl	<1.93	<3.30	<2.58	<2.79	<0.049
Total	<227	<389	<303	<328	<5.79

* 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	Laboratory Blank ng
Acenaphthene	<10	<10
Acenaphthylene	<10	<10
Anthracene	<10	<10
Benzo(a)anthracene	<10	<10
Benzo(b)fluoranthene	<10	<10
Benzo(k)fluoranthene	<10	<10
Benzo(a)fluorene	<10	<10
Benzo(b)fluorene	<10	<10
Benzo(g,h,i)perylene	65.0	<10
Benzo(a)pyrene	<10	<10
Benzo(e)pyrene	13.5	<10
Biphenyl	<10	<10
2-Chloronaphthalene	<10	<10
Chrysene/Triphenylene	<10	<10
Coronene	<50	<50
Dibenzo(a,h/a,c)anthracene	<10	<10
Dibenzo(a,e)pyrene	<50	<50
9,10-dimethylanthracene	<10	<10
7,12-Dimethylbenzo(a)anthracene	<10	<10
Fluoranthene	16.4	<10
Fluorene	<10	<10
Indeno(1,2,3-cd)pyrene	<10	<10
2-methylanthracene	<10	<10
3-Methylcholanthrene	<50	<50
1-Methylnaphthalene	<10	<10
2-Methylnaphthalene	<10	<10
1-Methylphenanthrene	11.4	<10
9-Methylphenanthrene	<10	<10
Naphthalene	92.4	51.1
Perylene	<10	<10
Phenanthrene	15.5	<10
Picene	<50	<50
Pyrene	47.1	<10
Tetralin	133	105
m-terphenyl	<10	<10
o-Terphenyl	<10	<10
p-terphenyl	<10	<10
Total	<844	<666

"<" 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 $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acetaldehyde Emission Rate mg/s
1	<0.045	0.0317	<0.83	<1.42	<1.09	<1.19	<0.021
2	NR	0.0283	NR	NR	NR	NR	NR
3	<0.045	0.0290	<0.90	<1.55	<1.19	<1.30	<0.023
Average			<0.86	<1.49	<1.14	<1.25	<0.022
Blank	<0.045						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Formaldehyde Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Formaldehyde Emission Rate mg/s
1	<0.22	0.0317	<4.03	<6.95	<5.32	<5.83	<0.10
2	NR	0.0283	NR	NR	NR	NR	NR
3	<0.22	0.0290	<4.41	<7.60	<5.82	<6.37	<0.11
Average			<4.22	<7.27	<5.57	<6.10	<0.11
Blank	<0.22						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm^3*	Acrolein Concentration Actual $\mu g/m^3$	Dry Reference $\mu g/Rm^3$*	Dry Adjusted $\mu g/Rm^3$**	Wet Reference $\mu g/Rm^3$*	Acrolein Emission Rate mg/s
1	0.078	0.0317	1.43	2.46	1.89	2.07	0.037
2	NR	0.0283	NR	NR	NR	NR	NR
3	0.20	0.0290	4.01	6.91	5.29	5.79	0.10
Average			2.72	4.68	3.59	3.93	0.071
Blank	0.16						

Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.
"NR" No Result - The sample was broken by the analytical laboratory.

Sampling was conducted at a single point. Volumetric flowrates from the 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 Analyses
Test No. 1

Compound	Cartridge Amount Collected			Average	Coefficient of Variation	Total Collected
	Run No. 2 Tube 18A/18B	Run No. 3 Tube 19A/19B	Run No. 4 Tube 20A/20B			
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	0.054	<0.05	<0.05	<0.051	4.9	<0.15
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.05	<0.05	<0.05	<0.050	-	<0.15
2-Butanone	0.011	0.019	<0.01	<0.013	39.5	<0.040
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	0.015	0.011	<0.01	<0.012	21.3	<0.035
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	<0.1	<0.1	<0.1	<0.10	-	<0.30
Styrene	<0.02	<0.02	<0.02	<0.020	-	<0.060
Tetrachloroethene	0.030	0.024	0.019	0.024	22.7	0.073
Toluene	0.16	0.16	0.11	0.14	19.9	0.43
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichlorotrifluoroethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	<0.03	<0.03	<0.03	<0.030	-	<0.090
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.98	<0.98	<0.91	<0.95	4.1	<2.86

Dry Gas Volume Sampled (Rm^3*) :

Run No. 2	0.0195
Run No. 3	0.0226
Run No. 4	0.0202

* At 25°C and 1 atmosphere.

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 Analyses
Test No. 2

Compound	Cartridge Amount Collected				Coefficient	Total
	Run No. 2 Tube 22A/22B	Run No. 3 Tube 23A/23B	Run No. 4 Tube 24A/24B	Average	of Variation	Collected
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	<0.05	0.054	<0.05	<0.051	4.8	<0.15
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.05	<0.05	<0.05	<0.050	-	<0.15
2-Butanone	<0.01	0.013	0.012	<0.012	12.4	<0.035
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	<0.1	<0.1	<0.1	<0.10	-	<0.30
Styrene	<0.02	<0.02	<0.02	<0.020	-	<0.060
Tetrachloroethene	0.012	0.021	0.021	0.018	29.0	0.055
Toluene	0.098	0.12	0.13	0.12	14.8	0.35
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	0.013	<0.011	14.0	<0.033
Trichlorotrifluoroethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	<0.03	<0.03	<0.03	<0.030	-	<0.090
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.89	<0.93	<0.94	<0.92	2.8	<2.76

Dry Gas Volume Sampled (Rm^3*) :

Run No. 2	0.0171
Run No. 3	0.0211
Run No. 4	0.0191

* At 25°C and 1 atmosphere.

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 Analyses
Test No. 3

Compound	Cartridge Amount Collected				Coefficient	Total
	Run No. 2 Tube 27A/27B	Run No. 3 Tube 28A/28B	Run No. 4 Tube 29A/29B	Average	of Variation	Collected
	µg	µg	µg	µg	%	µg
Acetone	<0.1	<0.1	<0.1	<0.10	-	<0.30
Benzene	0.055	0.050	0.059	0.055	8.4	0.16
Bromodichloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromoform	<0.01	<0.01	<0.01	<0.010	-	<0.030
Bromomethane	<0.09	<0.09	<0.09	<0.090	-	<0.27
1,3-Butadiene	<0.05	<0.05	<0.05	<0.050	-	<0.15
2-Butanone	0.016	0.021	0.013	0.016	24.0	0.049
Carbon Tetrachloride	<0.01	<0.01	<0.01	<0.010	-	<0.030
Chloroform	<0.01	0.017	0.013	<0.013	27.7	<0.040
Cumene (Isopropylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Dibromochloromethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Dichlorodifluoromethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
1,2-Dichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
trans,1,2-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,1-Dichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
1,2-Dichloropropane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylbenzene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Ethylene Dibromide	<0.02	<0.02	<0.02	<0.020	-	<0.060
Mesitylene (1,3,5-Trimethylbenzene)	<0.02	<0.02	<0.02	<0.020	-	<0.060
Methylene Chloride	<0.1	<0.1	<0.1	<0.10	-	<0.30
Styrene	<0.02	<0.02	<0.02	<0.020	-	<0.060
Tetrachloroethene	<0.01	0.015	0.013	<0.013	20.6	<0.039
Toluene	0.14	0.13	0.17	0.15	14.0	0.44
1,1,1-Trichloroethane	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Trichlorotrifluoroethane	<0.05	<0.05	<0.05	<0.050	-	<0.15
Trichlorofluoromethane	<0.02	<0.02	<0.02	<0.020	-	<0.060
M&P-Xylene	<0.03	<0.03	<0.03	<0.030	-	<0.090
O-Xylene	<0.01	<0.01	<0.01	<0.010	-	<0.030
Vinyl Chloride	<0.02	<0.02	<0.02	<0.020	-	<0.060
Total	<0.94	<0.95	<0.98	<0.95	2.3	<2.86

Dry Gas Volume Sampled (Rm^3*) :

Run No. 2	0.0195
Run No. 3	0.0196
Run No. 4	0.0195

* At 25°C and 1 atmosphere.

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 Emission Data
Test No. 1

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	<0.30	<2.83	<4.81	<3.79	<4.07	<0.071
Benzene	<0.15	<1.46	<2.48	<1.95	<2.10	<0.037
Bromodichloromethane	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Bromoform	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Bromomethane	<0.27	<2.55	<4.33	<3.41	<3.66	<0.064
1,3-Butadiene	<0.15	<1.41	<2.41	<1.90	<2.04	<0.036
2-Butanone	<0.040	<0.38	<0.64	<0.50	<0.54	<0.0095
Carbon Tetrachloride	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Chloroform	<0.035	<0.33	<0.57	<0.45	<0.48	<0.0084
Cumene (Isopropylbenzene)	<0.060	<0.57	<0.96	<0.76	<0.81	<0.014
Dibromochloromethane	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Dichlorodifluoromethane	<0.15	<1.41	<2.41	<1.90	<2.04	<0.036
1,2-Dichloroethane	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
trans,1,2-Dichloroethene	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
1,1-Dichloroethene	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
1,2-Dichloropropane	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Ethylbenzene	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Ethylene Dibromide	<0.060	<0.57	<0.96	<0.76	<0.81	<0.014
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.57	<0.96	<0.76	<0.81	<0.014
Methylene Chloride	<0.30	<2.83	<4.81	<3.79	<4.07	<0.071
Styrene	<0.060	<0.57	<0.96	<0.76	<0.81	<0.014
Tetrachloroethene	0.073	0.69	1.17	0.92	0.99	0.017
Toluene	0.43	4.04	6.88	5.41	5.81	0.10
1,1,1-Trichloroethane	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Trichloroethene/1,1,2-Trichloroethene	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Trichlorotrifluoroethane	<0.15	<1.41	<2.41	<1.90	<2.04	<0.036
Trichlorofluoromethane	<0.060	<0.57	<0.96	<0.76	<0.81	<0.014
M&P-Xylene	<0.090	<0.85	<1.44	<1.14	<1.22	<0.021
O-Xylene	<0.030	<0.28	<0.48	<0.38	<0.41	<0.0071
Vinyl Chloride	<0.060	<0.57	<0.96	<0.76	<0.81	<0.014
Total	<2.86	<27.0	<45.9	<36.1	<38.8	<0.68

Dry Gas Volume Sampled (Rm^3*) :	0.0623
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.5

* At 25°C and 1 atmosphere

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

TABLE 86
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Data
Test No. 2

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	<0.30	<3.08	<5.24	<4.13	<4.43	<0.078
Benzene	<0.15	<1.58	<2.70	<2.12	<2.28	<0.040
Bromodichloromethane	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Bromoform	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Bromomethane	<0.27	<2.77	<4.72	<3.71	<3.99	<0.070
1,3-Butadiene	<0.15	<1.54	<2.62	<2.06	<2.22	<0.039
2-Butanone	<0.035	<0.35	<0.60	<0.48	<0.51	<0.0089
Carbon Tetrachloride	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Chloroform	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Cumene (Isopropylbenzene)	<0.060	<0.62	<1.05	<0.83	<0.89	<0.016
Dibromochloromethane	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Dichlorodifluoromethane	<0.15	<1.54	<2.62	<2.06	<2.22	<0.039
1,2-Dichloroethane	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
trans,1,2-Dichloroethene	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
1,1-Dichloroethene	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
1,2-Dichloropropane	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Ethylbenzene	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Ethylene Dibromide	<0.060	<0.62	<1.05	<0.83	<0.89	<0.016
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.62	<1.05	<0.83	<0.89	<0.016
Methylene Chloride	<0.30	<3.08	<5.24	<4.13	<4.43	<0.078
Styrene	<0.060	<0.62	<1.05	<0.83	<0.89	<0.016
Tetrachloroethene	0.055	0.56	0.96	0.75	0.81	0.014
Toluene	0.35	3.63	6.18	4.87	5.23	0.092
1,1,1-Trichloroethane	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Trichloroethene/1,1,2-Trichloroethene	<0.033	<0.33	<0.57	<0.45	<0.48	<0.0084
Trichlorotrifluoroethane	<0.15	<1.54	<2.62	<2.06	<2.22	<0.039
Trichlorofluoromethane	<0.060	<0.62	<1.05	<0.83	<0.89	<0.016
M&P-Xylene	<0.090	<0.92	<1.57	<1.24	<1.33	<0.023
O-Xylene	<0.030	<0.31	<0.52	<0.41	<0.44	<0.0078
Vinyl Chloride	<0.060	<0.62	<1.05	<0.83	<0.89	<0.016
Total	<2.76	<28.3	<48.2	<38.0	<40.8	<0.71

Dry Gas Volume Sampled (Rm^3*) :	0.0572
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.5

* At 25°C and 1 atmosphere

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

TABLE 87
Covanta - Durham York Energy Centre
Boiler No. 2 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	<0.30	<2.98	<5.11	<4.00	<4.32	<0.075
Benzene	0.16	1.64	2.80	2.19	2.37	0.041
Bromodichloromethane	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Bromoform	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Bromomethane	<0.27	<2.68	<4.60	<3.60	<3.89	<0.068
1,3-Butadiene	<0.15	<1.49	<2.56	<2.00	<2.16	<0.038
2-Butanone	0.049	0.49	0.84	0.66	0.71	0.012
Carbon Tetrachloride	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Chloroform	<0.040	<0.40	<0.68	<0.54	<0.58	<0.010
Cumene (Isopropylbenzene)	<0.060	<0.60	<1.02	<0.80	<0.86	<0.015
Dibromochloromethane	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Dichlorodifluoromethane	<0.15	<1.49	<2.56	<2.00	<2.16	<0.038
1,2-Dichloroethane	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
trans,1,2-Dichloroethene	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
1,1-Dichloroethene	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
1,2-Dichloropropane	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Ethylbenzene	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Ethylene Dibromide	<0.060	<0.60	<1.02	<0.80	<0.86	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.060	<0.60	<1.02	<0.80	<0.86	<0.015
Methylene Chloride	<0.30	<2.98	<5.11	<4.00	<4.32	<0.075
Styrene	<0.060	<0.60	<1.02	<0.80	<0.86	<0.015
Tetrachloroethene	<0.039	<0.38	<0.66	<0.51	<0.56	<0.0097
Toluene	0.44	4.36	7.48	5.84	6.32	0.11
1,1,1-Trichloroethane	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Trichlorotrifluoroethane	<0.15	<1.49	<2.56	<2.00	<2.16	<0.038
Trichlorofluoromethane	<0.060	<0.60	<1.02	<0.80	<0.86	<0.015
M&P-Xylene	<0.090	<0.89	<1.53	<1.20	<1.30	<0.023
O-Xylene	<0.030	<0.30	<0.51	<0.40	<0.43	<0.0075
Vinyl Chloride	<0.060	<0.60	<1.02	<0.80	<0.86	<0.015
Total	<2.86	<28.5	<48.8	<38.1	<41.2	<0.72

Dry Gas Volume Sampled (Rm^3*) :	0.0587
Actual Flowrate (m^3/s) :	25.2
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	18.8
Wet Reference Flowrate (Rm^3/s*) :	17.4

* At 25°C and 1 atmosphere

** 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 Actual Concentrations

Compound	Actual Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/m^3	µg/m^3	µg/m^3	µg/m^3
Acetone	<2.83	<3.08	<2.98	<2.96
Benzene	<1.46	<1.58	1.64	<1.56
Bromodichloromethane	<0.28	<0.31	<0.30	<0.30
Bromoform	<0.28	<0.31	<0.30	<0.30
Bromomethane	<2.55	<2.77	<2.68	<2.67
1,3-Butadiene	<1.41	<1.54	<1.49	<1.48
2-Butanone	<0.38	<0.35	0.49	<0.41
Carbon Tetrachloride	<0.28	<0.31	<0.30	<0.30
Chloroform	<0.33	<0.31	<0.40	<0.35
Cumene (Isopropylbenzene)	<0.57	<0.62	<0.60	<0.59
Dibromochloromethane	<0.28	<0.31	<0.30	<0.30
Dichlorodifluoromethane	<1.41	<1.54	<1.49	<1.48
1,2-Dichloroethane	<0.28	<0.31	<0.30	<0.30
trans,1,2-Dichloroethene	<0.28	<0.31	<0.30	<0.30
1,1-Dichloroethene	<0.28	<0.31	<0.30	<0.30
1,2-Dichloropropane	<0.28	<0.31	<0.30	<0.30
Ethylbenzene	<0.28	<0.31	<0.30	<0.30
Ethylene Dibromide	<0.57	<0.62	<0.60	<0.59
Mesitylene (1,3,5-Trimethylbenzene)	<0.57	<0.62	<0.60	<0.59
Methylene Chloride	<2.83	<3.08	<2.98	<2.96
Styrene	<0.57	<0.62	<0.60	<0.59
Tetrachloroethene	0.69	0.56	<0.38	<0.54
Toluene	4.04	3.63	4.36	4.01
1,1,1-Trichloroethane	<0.28	<0.31	<0.30	<0.30
Trichloroethene/1,1,2-Trichloroethene	<0.28	<0.33	<0.30	<0.31
Trichlorotrifluoroethane	<1.41	<1.54	<1.49	<1.48
Trichlorofluoromethane	<0.57	<0.62	<0.60	<0.59
M&P-Xylene	<0.85	<0.92	<0.89	<0.89
O-Xylene	<0.28	<0.31	<0.30	<0.30
Vinyl Chloride	<0.57	<0.62	<0.60	<0.59
Total	<27.0	<28.3	<28.5	<27.9

TABLE 89
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Reference Concentrations

Compound	Dry Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*
Acetone	<4.81	<5.24	<5.11	<5.06
Benzene	<2.48	<2.70	2.80	<2.66
Bromodichloromethane	<0.48	<0.52	<0.51	<0.51
Bromoform	<0.48	<0.52	<0.51	<0.51
Bromomethane	<4.33	<4.72	<4.60	<4.55
1,3-Butadiene	<2.41	<2.62	<2.56	<2.53
2-Butanone	<0.64	<0.60	0.84	<0.69
Carbon Tetrachloride	<0.48	<0.52	<0.51	<0.51
Chloroform	<0.57	<0.52	<0.68	<0.59
Cumene (Isopropylbenzene)	<0.96	<1.05	<1.02	<1.01
Dibromochloromethane	<0.48	<0.52	<0.51	<0.51
Dichlorodifluoromethane	<2.41	<2.62	<2.56	<2.53
1,2-Dichloroethane	<0.48	<0.52	<0.51	<0.51
trans,1,2-Dichloroethene	<0.48	<0.52	<0.51	<0.51
1,1-Dichloroethene	<0.48	<0.52	<0.51	<0.51
1,2-Dichloropropane	<0.48	<0.52	<0.51	<0.51
Ethylbenzene	<0.48	<0.52	<0.51	<0.51
Ethylene Dibromide	<0.96	<1.05	<1.02	<1.01
Mesitylene (1,3,5-Trimethylbenzene)	<0.96	<1.05	<1.02	<1.01
Methylene Chloride	<4.81	<5.24	<5.11	<5.06
Styrene	<0.96	<1.05	<1.02	<1.01
Tetrachloroethene	1.17	0.96	<0.66	<0.93
Toluene	6.88	6.18	7.48	6.85
1,1,1-Trichloroethane	<0.48	<0.52	<0.51	<0.51
Trichloroethene/1,1,2-Trichloroethene	<0.48	<0.57	<0.51	<0.52
Trichlorotrifluoroethane	<2.41	<2.62	<2.56	<2.53
Trichlorofluoromethane	<0.96	<1.05	<1.02	<1.01
M&P-Xylene	<1.44	<1.57	<1.53	<1.52
O-Xylene	<0.48	<0.52	<0.51	<0.51
Vinyl Chloride	<0.96	<1.05	<1.02	<1.01
Total	<45.9	<48.2	<48.8	<47.6

* At 25°C and 1 atmosphere

TABLE 90
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Dry Adjusted Concentrations

Compound	Dry Adjusted Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*
Acetone	<3.79	<4.13	<4.00	<3.97
Benzene	<1.95	<2.12	2.19	<2.09
Bromodichloromethane	<0.38	<0.41	<0.40	<0.40
Bromoform	<0.38	<0.41	<0.40	<0.40
Bromomethane	<3.41	<3.71	<3.60	<3.57
1,3-Butadiene	<1.90	<2.06	<2.00	<1.99
2-Butanone	<0.50	<0.48	0.66	<0.55
Carbon Tetrachloride	<0.38	<0.41	<0.40	<0.40
Chloroform	<0.45	<0.41	<0.54	<0.47
Cumene (Isopropylbenzene)	<0.76	<0.83	<0.80	<0.79
Dibromochloromethane	<0.38	<0.41	<0.40	<0.40
Dichlorodifluoromethane	<1.90	<2.06	<2.00	<1.99
1,2-Dichloroethane	<0.38	<0.41	<0.40	<0.40
trans,1,2-Dichloroethene	<0.38	<0.41	<0.40	<0.40
1,1-Dichloroethene	<0.38	<0.41	<0.40	<0.40
1,2-Dichloropropane	<0.38	<0.41	<0.40	<0.40
Ethylbenzene	<0.38	<0.41	<0.40	<0.40
Ethylene Dibromide	<0.76	<0.83	<0.80	<0.79
Mesitylene (1,3,5-Trimethylbenzene)	<0.76	<0.83	<0.80	<0.79
Methylene Chloride	<3.79	<4.13	<4.00	<3.97
Styrene	<0.76	<0.83	<0.80	<0.79
Tetrachloroethene	0.92	0.75	<0.51	<0.73
Toluene	5.41	4.87	5.84	5.38
1,1,1-Trichloroethane	<0.38	<0.41	<0.40	<0.40
Trichloroethene/1,1,2-Trichloroethene	<0.38	<0.45	<0.40	<0.41
Trichlorotrifluoroethane	<1.90	<2.06	<2.00	<1.99
Trichlorofluoromethane	<0.76	<0.83	<0.80	<0.79
M&P-Xylene	<1.14	<1.24	<1.20	<1.19
O-Xylene	<0.38	<0.41	<0.40	<0.40
Vinyl Chloride	<0.76	<0.83	<0.80	<0.79
Total	<36.1	<38.0	<38.1	<37.4

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

TABLE 91
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Wet Reference Concentrations

Compound	Wet Reference Concentration			
	Test No. 1	Test No. 2	Test No. 3	Average
	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*	µg/Rm^3*
Acetone	<4.07	<4.43	<4.32	<4.28
Benzene	<2.10	<2.28	2.37	<2.25
Bromodichloromethane	<0.41	<0.44	<0.43	<0.43
Bromoform	<0.41	<0.44	<0.43	<0.43
Bromomethane	<3.66	<3.99	<3.89	<3.85
1,3-Butadiene	<2.04	<2.22	<2.16	<2.14
2-Butanone	<0.54	<0.51	0.71	<0.59
Carbon Tetrachloride	<0.41	<0.44	<0.43	<0.43
Chloroform	<0.48	<0.44	<0.58	<0.50
Cumene (Isopropylbenzene)	<0.81	<0.89	<0.86	<0.86
Dibromochloromethane	<0.41	<0.44	<0.43	<0.43
Dichlorodifluoromethane	<2.04	<2.22	<2.16	<2.14
1,2-Dichloroethane	<0.41	<0.44	<0.43	<0.43
trans,1,2-Dichloroethene	<0.41	<0.44	<0.43	<0.43
1,1-Dichloroethene	<0.41	<0.44	<0.43	<0.43
1,2-Dichloropropane	<0.41	<0.44	<0.43	<0.43
Ethylbenzene	<0.41	<0.44	<0.43	<0.43
Ethylene Dibromide	<0.81	<0.89	<0.86	<0.86
Mesitylene (1,3,5-Trimethylbenzene)	<0.81	<0.89	<0.86	<0.86
Methylene Chloride	<4.07	<4.43	<4.32	<4.28
Styrene	<0.81	<0.89	<0.86	<0.86
Tetrachloroethene	0.99	0.81	<0.56	<0.78
Toluene	5.81	5.23	6.32	5.79
1,1,1-Trichloroethane	<0.41	<0.44	<0.43	<0.43
Trichloroethene/1,1,2-Trichloroethene	<0.41	<0.48	<0.43	<0.44
Trichlorotrifluoroethane	<2.04	<2.22	<2.16	<2.14
Trichlorofluoromethane	<0.81	<0.89	<0.86	<0.86
M&P-Xylene	<1.22	<1.33	<1.30	<1.28
O-Xylene	<0.41	<0.44	<0.43	<0.43
Vinyl Chloride	<0.81	<0.89	<0.86	<0.86
Total	<38.8	<40.8	<41.2	<40.3

* At 25°C and 1 atmosphere

TABLE 92
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organic Emission Rates

Compound	Emission Rate			
	Test No. 1 mg/s	Test No. 2 mg/s	Test No. 3 mg/s	Average mg/s
Acetone	<0.071	<0.078	<0.075	<0.075
Benzene	<0.037	<0.040	0.041	<0.039
Bromodichloromethane	<0.0071	<0.0078	<0.0075	<0.0075
Bromoform	<0.0071	<0.0078	<0.0075	<0.0075
Bromomethane	<0.064	<0.070	<0.068	<0.067
1,3-Butadiene	<0.036	<0.039	<0.038	<0.037
2-Butanone	<0.0095	<0.0089	0.012	<0.010
Carbon Tetrachloride	<0.0071	<0.0078	<0.0075	<0.0075
Chloroform	<0.0084	<0.0078	<0.010	<0.0087
Cumene (Isopropylbenzene)	<0.014	<0.016	<0.015	<0.015
Dibromochloromethane	<0.0071	<0.0078	<0.0075	<0.0075
Dichlorodifluoromethane	<0.036	<0.039	<0.038	<0.037
1,2-Dichloroethane	<0.0071	<0.0078	<0.0075	<0.0075
trans,1,2-Dichloroethene	<0.0071	<0.0078	<0.0075	<0.0075
1,1-Dichloroethene	<0.0071	<0.0078	<0.0075	<0.0075
1,2-Dichloropropane	<0.0071	<0.0078	<0.0075	<0.0075
Ethylbenzene	<0.0071	<0.0078	<0.0075	<0.0075
Ethylene Dibromide	<0.014	<0.016	<0.015	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.014	<0.016	<0.015	<0.015
Methylene Chloride	<0.071	<0.078	<0.075	<0.075
Styrene	<0.014	<0.016	<0.015	<0.015
Tetrachloroethene	0.017	0.014	<0.0097	<0.014
Toluene	0.10	0.092	0.11	0.10
1,1,1-Trichloroethane	<0.0071	<0.0078	<0.0075	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.0071	<0.0084	<0.0075	<0.0077
Trichlorotrifluoroethane	<0.036	<0.039	<0.038	<0.037
Trichlorofluoromethane	<0.014	<0.016	<0.015	<0.015
M&P-Xylene	<0.021	<0.023	<0.023	<0.022
O-Xylene	<0.0071	<0.0078	<0.0075	<0.0075
Vinyl Chloride	<0.014	<0.016	<0.015	<0.015
Total	<0.68	<0.71	<0.72	<0.70

TABLE 93
Covanta - Durham York Energy Centre
Boiler No. 2 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	<2.96	<5.06	<3.97	<4.28	<0.075
Benzene	<1.56	<2.66	<2.09	<2.25	<0.039
Bromodichloromethane	<0.30	<0.51	<0.40	<0.43	<0.0075
Bromoform	<0.30	<0.51	<0.40	<0.43	<0.0075
Bromomethane	<2.67	<4.55	<3.57	<3.85	<0.067
1,3-Butadiene	<1.48	<2.53	<1.99	<2.14	<0.037
2-Butanone	<0.41	<0.69	<0.55	<0.59	<0.010
Carbon Tetrachloride	<0.30	<0.51	<0.40	<0.43	<0.0075
Chloroform	<0.35	<0.59	<0.47	<0.50	<0.0087
Cumene (Isopropylbenzene)	<0.59	<1.01	<0.79	<0.86	<0.015
Dibromochloromethane	<0.30	<0.51	<0.40	<0.43	<0.0075
Dichlorodifluoromethane	<1.48	<2.53	<1.99	<2.14	<0.037
1,2-Dichloroethane	<0.30	<0.51	<0.40	<0.43	<0.0075
trans,1,2-Dichloroethene	<0.30	<0.51	<0.40	<0.43	<0.0075
1,1-Dichloroethene	<0.30	<0.51	<0.40	<0.43	<0.0075
1,2-Dichloropropane	<0.30	<0.51	<0.40	<0.43	<0.0075
Ethylbenzene	<0.30	<0.51	<0.40	<0.43	<0.0075
Ethylene Dibromide	<0.59	<1.01	<0.79	<0.86	<0.015
Mesitylene (1,3,5-Trimethylbenzene)	<0.59	<1.01	<0.79	<0.86	<0.015
Methylene Chloride	<2.96	<5.06	<3.97	<4.28	<0.075
Styrene	<0.59	<1.01	<0.79	<0.86	<0.015
Tetrachloroethene	<0.54	<0.93	<0.73	<0.78	<0.014
Toluene	4.01	6.85	5.38	5.79	0.10
1,1,1-Trichloroethane	<0.30	<0.51	<0.40	<0.43	<0.0075
Trichloroethene/1,1,2-Trichloroethene	<0.31	<0.52	<0.41	<0.44	<0.0077
Trichlorotrifluoroethane	<1.48	<2.53	<1.99	<2.14	<0.037
Trichlorofluoromethane	<0.59	<1.01	<0.79	<0.86	<0.015
M&P-Xylene	<0.89	<1.52	<1.19	<1.28	<0.022
O-Xylene	<0.30	<0.51	<0.40	<0.43	<0.0075
Vinyl Chloride	<0.59	<1.01	<0.79	<0.86	<0.015
Total	<27.9	<47.6	<37.4	<40.3	<0.70

* At 25°C and 1 atmosphere

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

TABLE 94
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Volatile Organic Analyses

Compound	Field Blank Tube 25A/25B	Field Blank Tube 14A/14B	Method Blank
	µg	µg	µg
Acetone	<0.1	<0.1	<0.1
Benzene	<0.05	<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	<0.05	<0.05	<0.05
2-Butanone	<0.01	<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	<0.05	<0.05	<0.05
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)	<0.02	<0.02	<0.02
Methylene Chloride	<0.1	<0.1	<0.1
Styrene	<0.02	<0.02	<0.02
Tetrachloroethene	<0.01	<0.01	<0.01
Toluene	<0.05	<0.05	<0.05
1,1,1-Trichloroethane	<0.01	<0.01	<0.01
Trichloroethene/1,1,2-Trichloroethene	<0.01	<0.01	<0.01
Trichlorotrifluoroethane	<0.05	<0.05	<0.05
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	<0.84	<0.84	<0.84

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

Boiler No. 1 Quench Inlet
Data Tables
(34 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Test Schedule

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 25, 2017	9:08	13:04	180
2	May 25, 2017	15:35	19:10	180
3	May 26, 2017	8:20	12:11	180

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 23, 2017	10:47	11:47	60
2	May 23, 2017	11:57	12:57	60
3	May 23, 2017	13:08	14:08	60

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

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Stack Gas Sampling Parameters

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	0.849	1.008	6.03	3.279	99.6
2	0.849	1.008	6.03	3.272	100.0
3	0.849	1.008	6.03	3.240	99.9

* Dry at 25°C and 1 atmosphere

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Stack Gas Physical Parameters

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	167	14.7	19.0	-0.66	98.6	10.5	8.29
2	167	15.0	19.0	-0.66	98.4	10.4	8.25
3	167	14.8	18.6	-0.66	98.9	10.5	8.25
Average	167	14.8	18.9	-0.66	98.6	10.5	8.26

* Dry basis, measured by the DYEC CEMS

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Stack Gas Volumetric Flowrates

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	28.0	15.8	20.1	18.5
2	28.0	15.7	20.0	18.4
3	27.5	15.5	19.8	18.2
Average	27.9	15.6	20.0	18.4

* At 25°C and 1 atmosphere

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

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Total Hydrocarbons Analyses

Total Hydrocarbons as 1-Minute Average Data

Test No.	Parameter	Minimum	Average	Maximum
1	Total Hydrocarbons (ppm dry)	0.7	1.4	2.1
2	Total Hydrocarbons (ppm dry)	0.3	0.9	1.6
3	Total Hydrocarbons (ppm dry)	0.2	0.9	1.8
Average	Total Hydrocarbons (ppm dry)		1.1	

Total Hydrocarbons as 10-Minute Rolling Average Data

Test No.	Parameter	Minimum	Average	Maximum
1	Total Hydrocarbons (ppm dry)	1.1	1.4	1.6
2	Total Hydrocarbons (ppm dry)	0.7	0.9	1.2
3	Total Hydrocarbons (ppm dry)	0.7	0.8	1.0
Average	Total Hydrocarbons (ppm dry)		1.0	

Note: Total hydrocarbons reported on a dry basis as equivalent methane

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	11800	2.03	3.60	2.83	3.07	56.9
Pentachlorodibenzo-p-dioxins	10500	1.81	3.20	2.52	2.73	50.6
Hexachlorodibenzo-p-dioxins	7380	1.27	2.25	1.77	1.92	35.6
Heptachlorodibenzo-p-dioxins	6140	1.06	1.87	1.47	1.60	29.6
Octachlorodibenzo-p-dioxin	6090	1.05	1.86	1.46	1.59	29.3
Total	41910	7.21	12.8	10.0	10.9	202

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	171000	29.4	52.2	41.0	44.5	824
Pentachlorodibenzofurans	98500	17.0	30.0	23.6	25.7	475
Hexachlorodibenzofurans	43200	7.43	13.2	10.4	11.3	208
Heptachlorodibenzofurans	17100	2.94	5.22	4.10	4.45	82.4
Octachlorodibenzofuran	2560	0.44	0.78	0.61	0.67	12.3
Total	332360	57.2	101	79.7	86.6	1601

Dry Gas Volume Sampled (Rm^3*) :	3.279
Actual Flowrate (m^3/s) :	28.0
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	20.1
Wet Reference Flowrate (Rm^3/s*) :	18.5

* 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 Quench Inlet
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	13700	2.35	4.19	3.29	3.57	65.7
Pentachlorodibenzo-p-dioxins	12100	2.07	3.70	2.90	3.16	58.1
Hexachlorodibenzo-p-dioxins	9580	1.64	2.93	2.30	2.50	46.0
Heptachlorodibenzo-p-dioxins	7140	1.22	2.18	1.71	1.86	34.3
Octachlorodibenzo-p-dioxin	5850	1.00	1.79	1.40	1.53	28.1
Total	48370	8.29	14.8	11.6	12.6	232

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	185000	31.7	56.5	44.4	48.2	888
Pentachlorodibenzofurans	109000	18.7	33.3	26.2	28.4	523
Hexachlorodibenzofurans	51700	8.86	15.8	12.4	13.5	248
Heptachlorodibenzofurans	18500	3.17	5.65	4.44	4.82	88.8
Octachlorodibenzofuran	2620	0.45	0.80	0.63	0.68	12.6
Total	366820	62.9	112	88.0	95.7	1760

Dry Gas Volume Sampled (Rm^3*) :	3.272
Actual Flowrate (m^3/s) :	28.0
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	20.0
Wet Reference Flowrate (Rm^3/s*) :	18.4

* At 25°C and 1 atmosphere

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

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	8380	1.46	2.59	2.02	2.20	40.1
Pentachlorodibenzo-p-dioxins	12600	2.19	3.89	3.04	3.31	60.3
Hexachlorodibenzo-p-dioxins	9670	1.68	2.98	2.34	2.54	46.3
Heptachlorodibenzo-p-dioxins	7100	1.24	2.19	1.72	1.87	34.0
Octachlorodibenzo-p-dioxin	7380	1.28	2.28	1.78	1.94	35.3
Total	45130	7.85	13.9	10.9	11.9	216

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	181000	31.5	55.9	43.7	47.6	866
Pentachlorodibenzofurans	107000	18.6	33.0	25.9	28.1	512
Hexachlorodibenzofurans	55800	9.71	17.2	13.5	14.7	267
Heptachlorodibenzofurans	18600	3.24	5.74	4.49	4.89	89.0
Octachlorodibenzofuran	2490	0.43	0.77	0.60	0.65	11.9
Total	364890	63.5	113	88.2	95.9	1746

Dry Gas Volume Sampled (Rm^3*) :	3.240
Actual Flowrate (m^3/s) :	27.5
Dry Reference Flowrate (Rm^3/s*) :	15.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.2

* 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 Quench Inlet
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	2.03	2.35	1.46	1.95	23.2
Pentachlorodibenzo-p-dioxins	1.81	2.07	2.19	2.02	9.7
Hexachlorodibenzo-p-dioxins	1.27	1.64	1.68	1.53	14.8
Heptachlorodibenzo-p-dioxins	1.06	1.22	1.24	1.17	8.5
Octachlorodibenzo-p-dioxin	1.05	1.00	1.28	1.11	13.6
Total	7.21	8.29	7.85	7.78	7.0

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	29.4	31.7	31.5	30.9	4.1
Pentachlorodibenzofurans	17.0	18.7	18.6	18.1	5.4
Hexachlorodibenzofurans	7.43	8.86	9.71	8.67	13.3
Heptachlorodibenzofurans	2.94	3.17	3.24	3.12	4.9
Octachlorodibenzofuran	0.44	0.45	0.43	0.44	1.8
Total	57.2	62.9	63.5	61.2	5.7

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	3.60	4.19	2.59	3.46	23.4
Pentachlorodibenzo-p-dioxins	3.20	3.70	3.89	3.60	9.9
Hexachlorodibenzo-p-dioxins	2.25	2.93	2.98	2.72	15.0
Heptachlorodibenzo-p-dioxins	1.87	2.18	2.19	2.08	8.7
Octachlorodibenzo-p-dioxin	1.86	1.79	2.28	1.97	13.4
Total	12.8	14.8	13.9	13.8	7.3

Furans

Congener Group	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	52.2	56.5	55.9	54.9	4.3
Pentachlorodibenzofurans	30.0	33.3	33.0	32.1	5.6
Hexachlorodibenzofurans	13.2	15.8	17.2	15.4	13.3
Heptachlorodibenzofurans	5.22	5.65	5.74	5.54	5.1
Octachlorodibenzofuran	0.78	0.80	0.77	0.78	2.1
Total	101	112	113	109	5.8

* At 25°C and 1 atmosphere

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	2.83	3.29	2.02	2.71	23.5
Pentachlorodibenzo-p-dioxins	2.52	2.90	3.04	2.82	9.7
Hexachlorodibenzo-p-dioxins	1.77	2.30	2.34	2.13	14.9
Heptachlorodibenzo-p-dioxins	1.47	1.71	1.72	1.63	8.6
Octachlorodibenzo-p-dioxin	1.46	1.40	1.78	1.55	13.2
Total	10.0	11.6	10.9	10.9	7.2

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	41.0	44.4	43.7	43.0	4.2
Pentachlorodibenzofurans	23.6	26.2	25.9	25.2	5.5
Hexachlorodibenzofurans	10.4	12.4	13.5	12.1	13.1
Heptachlorodibenzofurans	4.10	4.44	4.49	4.34	4.9
Octachlorodibenzofuran	0.61	0.63	0.60	0.61	2.2
Total	79.7	88.0	88.2	85.3	5.7

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

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet Reference 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	3.07	3.57	2.20	2.95	23.5
Pentachlorodibenzo-p-dioxins	2.73	3.16	3.31	3.07	9.7
Hexachlorodibenzo-p-dioxins	1.92	2.50	2.54	2.32	14.9
Heptachlorodibenzo-p-dioxins	1.60	1.86	1.87	1.78	8.6
Octachlorodibenzo-p-dioxin	1.59	1.53	1.94	1.68	13.3
Total	10.9	12.6	11.9	11.8	7.2

Furans

Congener Group	Wet reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	44.5	48.2	47.6	46.8	4.2
Pentachlorodibenzofurans	25.7	28.4	28.1	27.4	5.5
Hexachlorodibenzofurans	11.3	13.5	14.7	13.1	13.2
Heptachlorodibenzofurans	4.45	4.82	4.89	4.72	5.0
Octachlorodibenzofuran	0.67	0.68	0.65	0.67	2.2
Total	86.6	95.7	95.9	92.7	5.7

* At 25°C and 1 atmosphere

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	56.9	65.7	40.1	54.2	24.0
Pentachlorodibenzo-p-dioxins	50.6	58.1	60.3	56.3	9.0
Hexachlorodibenzo-p-dioxins	35.6	46.0	46.3	42.6	14.3
Heptachlorodibenzo-p-dioxins	29.6	34.3	34.0	32.6	8.0
Octachlorodibenzo-p-dioxin	29.3	28.1	35.3	30.9	12.5
Total	202	232	216	217	7.0

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	824	888	866	859	3.8
Pentachlorodibenzofurans	475	523	512	503	5.0
Hexachlorodibenzofurans	208	248	267	241	12.5
Heptachlorodibenzofurans	82.4	88.8	89.0	86.7	4.3
Octachlorodibenzofuran	12.3	12.6	11.9	12.3	2.7
Total	1601	1760	1746	1702	5.2

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1.95	3.46	2.71	2.95	54.2
Pentachlorodibenzo-p-dioxins	2.02	3.60	2.82	3.07	56.3
Hexachlorodibenzo-p-dioxins	1.53	2.72	2.13	2.32	42.6
Heptachlorodibenzo-p-dioxins	1.17	2.08	1.63	1.78	32.6
Octachlorodibenzo-p-dioxin	1.11	1.97	1.55	1.68	30.9
Total	7.78	13.8	10.9	11.8	217

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	30.9	54.9	43.0	46.8	859
Pentachlorodibenzofurans	18.1	32.1	25.2	27.4	503
Hexachlorodibenzofurans	8.67	15.4	12.1	13.1	241
Heptachlorodibenzofurans	3.12	5.54	4.34	4.72	86.7
Octachlorodibenzofuran	0.44	0.78	0.61	0.67	12.3
Total	61.2	109	85.3	92.7	1702

* 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 Quench Inlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzo-p-dioxins	<1.9	<0.66
Pentachlorodibenzo-p-dioxins	<1.2	<1.1
Hexachlorodibenzo-p-dioxins	<1.2	<0.83
Heptachlorodibenzo-p-dioxins	2.06	<1.3
Octachlorodibenzo-p-dioxin	<2.6	<9.1
Total	<8.96	<13.0

Furans

Congener Group	Blank Train	Laboratory Blank
	pg	pg
Tetrachlorodibenzofurans	<1.9	2.36
Pentachlorodibenzofurans	<1.2	<0.7
Hexachlorodibenzofurans	2.02	<0.7
Heptachlorodibenzofurans	<0.54	0.85
Octachlorodibenzofuran	1.38	1.61
Total	<7.04	<6.19

"<" 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 16
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	896	154	273	215	233	4.32
12378-pentachlorodibenzo-p-dioxin	1460	251	445	350	380	7.04
123478-hexachlorodibenzo-p-dioxin	532	91.6	162	128	139	2.56
123678-hexachlorodibenzo-p-dioxin	578	99.5	176	139	151	2.79
123789-hexachlorodibenzo-p-dioxin	704	121	215	169	183	3.39
1234678-heptachlorodibenzo-p-dioxin	2930	504	894	702	763	14.1
Octachlorodibenzo-p-dioxin	6090	1048	1857	1460	1586	29.3
2378-tetrachlorodibenzofuran	5720	984	1744	1371	1490	27.6
12378-pentachlorodibenzofuran	7070	1217	2156	1695	1841	34.1
23478-pentachlorodibenzofuran	5470	941	1668	1311	1425	26.4
123478-hexachlorodibenzofuran	5150	886	1571	1235	1341	24.8
123678-hexachlorodibenzofuran	5240	902	1598	1256	1365	25.2
234678-hexachlorodibenzofuran	3420	589	1043	820	891	16.5
123789-hexachlorodibenzofuran	857	147	261	205	223	4.13
1234678-heptachlorodibenzofuran	11800	2031	3599	2829	3073	56.9
1234789-heptachlorodibenzofuran	1060	182	323	254	276	5.11
Octachlorodibenzofuran	2560	441	781	614	667	12.3
PCB 81	<310	<53.3	<94.5	<74.3	<80.7	<1.49
PCB 77	930	160	284	223	242	4.48
PCB 123	<840	<145	<256	<201	<219	<4.05
PCB 118	3180	547	970	762	828	15.3
PCB 114	<250	<43.0	<76.2	<59.9	<65.1	<1.20
PCB 105	1540	265	470	369	401	7.42
PCB 126	547	94.1	167	131	142	2.64
PCB 167	<260	<44.7	<79.3	<62.3	<67.7	<1.25
PCB 156	<260	<44.7	<79.3	<62.3	<67.7	<1.25
PCB 157	<140	<24.1	<42.7	<33.6	<36.5	<0.67
PCB 169	<170	<29.3	<51.8	<40.8	<44.3	<0.82
PCB 189	207	35.6	63.1	49.6	53.9	1.00
Total Dioxins & Furans Only	61537	10590	18767	14752	16028	297
Total PCBs Only	<8634	<1486	<2633	<2070	<2249	<41.6
Total Dioxins & Furans and PCBs	<70171	<12076	<21400	<16822	<18277	<338

Dry Gas Volume Sampled (Rm³*) :	3.279
Actual Flowrate (m³/s) :	28.0
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	20.1
Wet Reference Flowrate (Rm³/s*) :	18.5

* 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 17
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1080	185	330	259	282	5.18
12378-pentachlorodibenzo-p-dioxin	1940	332	593	465	506	9.31
123478-hexachlorodibenzo-p-dioxin	743	127	227	178	194	3.57
123678-hexachlorodibenzo-p-dioxin	834	143	255	200	217	4.00
123789-hexachlorodibenzo-p-dioxin	1190	204	364	285	310	5.71
1234678-heptachlorodibenzo-p-dioxin	3460	593	1057	830	902	16.6
Octachlorodibenzo-p-dioxin	5850	1002	1788	1403	1526	28.1
2378-tetrachlorodibenzofuran	8640	1481	2641	2073	2253	41.5
12378-pentachlorodibenzofuran	8220	1409	2512	1972	2144	39.4
23478-pentachlorodibenzofuran	6190	1061	1892	1485	1614	29.7
123478-hexachlorodibenzofuran	5950	1020	1818	1427	1552	28.5
123678-hexachlorodibenzofuran	6370	1092	1947	1528	1661	30.6
234678-hexachlorodibenzofuran	3870	663	1183	928	1009	18.6
123789-hexachlorodibenzofuran	1160	199	355	278	303	5.57
1234678-heptachlorodibenzofuran	12700	2176	3881	3047	3312	60.9
1234789-heptachlorodibenzofuran	1210	207	370	290	316	5.81
Octachlorodibenzofuran	2620	449	801	629	683	12.6
PCB 81	344	59.0	105	82.5	89.7	1.65
PCB 77	2880	494	880	691	751	13.8
PCB 123	1610	276	492	386	420	7.73
PCB 118	13500	2313	4126	3239	3520	64.8
PCB 114	<370	<63.4	<113	<88.8	<96.5	<1.78
PCB 105	4460	764	1363	1070	1163	21.4
PCB 126	523	89.6	160	125	136	2.51
PCB 167	<270	<46.3	<82.5	<64.8	<70.4	<1.30
PCB 156	455	78.0	139	109	119	2.18
PCB 157	191	32.7	58.4	45.8	49.8	0.92
PCB 169	<190	<32.6	<58.1	<45.6	<49.5	<0.91
PCB 189	172	29.5	52.6	41.3	44.9	0.83
Total Dioxins & Furans Only	72027	12343	22013	17280	18783	346
Total PCBs Only	<24965	<4278	<7630	<5989	<6510	<120
Total Dioxins & Furans and PCBs	<96992	<16621	<29643	<23270	<25293	<465

Dry Gas Volume Sampled (Rm³*) :	3.272
Actual Flowrate (m³/s) :	28.0
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	20.0
Wet Reference Flowrate (Rm³/s*) :	18.4

* 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 18
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1080	188	333	261	284	5.17
12378-pentachlorodibenzo-p-dioxin	1910	332	590	461	502	9.14
123478-hexachlorodibenzo-p-dioxin	723	126	223	175	190	3.46
123678-hexachlorodibenzo-p-dioxin	782	136	241	189	206	3.74
123789-hexachlorodibenzo-p-dioxin	1070	186	330	259	281	5.12
1234678-heptachlorodibenzo-p-dioxin	3460	602	1068	836	909	16.6
Octachlorodibenzo-p-dioxin	7380	1284	2278	1783	1940	35.3
2378-tetrachlorodibenzofuran	9650	1679	2978	2332	2537	46.2
12378-pentachlorodibenzofuran	8720	1517	2691	2107	2292	41.7
23478-pentachlorodibenzofuran	6770	1178	2090	1636	1780	32.4
123478-hexachlorodibenzofuran	6330	1101	1954	1529	1664	30.3
123678-hexachlorodibenzofuran	6770	1178	2090	1636	1780	32.4
234678-hexachlorodibenzofuran	4210	732	1299	1017	1107	20.1
123789-hexachlorodibenzofuran	1260	219	389	304	331	6.03
1234678-heptachlorodibenzofuran	13000	2262	4012	3141	3417	62.2
1234789-heptachlorodibenzofuran	1160	202	358	280	305	5.55
Octachlorodibenzofuran	2490	433	769	602	655	11.9
PCB 81	<320	<55.7	<98.8	<77.3	<84.1	<1.53
PCB 77	1250	217	386	302	329	5.98
PCB 123	<1100	<191	<340	<266	<289	<5.26
PCB 118	4550	792	1404	1099	1196	21.8
PCB 114	530	92.2	164	128	139	2.54
PCB 105	2180	379	673	527	573	10.4
PCB 126	816	142	252	197	214	3.90
PCB 167	<300	<52.2	<92.6	<72.5	<78.9	<1.44
PCB 156	357	62.1	110	86.3	93.8	1.71
PCB 157	<130	<22.6	<40.1	<31.4	<34.2	<0.62
PCB 169	<220	<38.3	<67.9	<53.2	<57.8	<1.05
PCB 189	254	44.2	78.4	61.4	66.8	1.22
Total Dioxins & Furans Only	76765	13354	23693	18547	20178	367
Total PCBs Only	<12007	<2089	<3706	<2901	<3156	<57.4
Total Dioxins & Furans and PCBs	<88772	<15443	<27399	<21449	<23334	<425

Dry Gas Volume Sampled (Rm³*) :	3.240
Actual Flowrate (m³/s) :	27.5
Dry Reference Flowrate (Rm³/s*) :	15.5
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.2

* 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 19
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	154	185	188	176	10.6
12378-pentachlorodibenzo-p-dioxin	251	332	332	305	15.3
123478-hexachlorodibenzo-p-dioxin	91.6	127	126	115	17.6
123678-hexachlorodibenzo-p-dioxin	99.5	143	136	126	18.5
123789-hexachlorodibenzo-p-dioxin	121	204	186	170	25.6
1234678-heptachlorodibenzo-p-dioxin	504	593	602	566	9.5
Octachlorodibenzo-p-dioxin	1048	1002	1284	1111	13.6
2378-tetrachlorodibenzofuran	984	1481	1679	1381	25.9
12378-pentachlorodibenzofuran	1217	1409	1517	1381	11.0
23478-pentachlorodibenzofuran	941	1061	1178	1060	11.2
123478-hexachlorodibenzofuran	886	1020	1101	1002	10.8
123678-hexachlorodibenzofuran	902	1092	1178	1057	13.4
234678-hexachlorodibenzofuran	589	663	732	661	10.9
123789-hexachlorodibenzofuran	147	199	219	188	19.6
1234678-heptachlorodibenzofuran	2031	2176	2262	2156	5.4
1234789-heptachlorodibenzofuran	182	207	202	197	6.6
Octachlorodibenzofuran	441	449	433	441	1.8
PCB 81	<53.3	59.0	<55.7	<56.0	5.0
PCB 77	160	494	217	290	61.4
PCB 123	<145	276	<191	<204	32.6
PCB 118	547	2313	792	1217	78.6
PCB 114	<43.0	<63.4	92.2	<66.2	37.3
PCB 105	265	764	379	470	55.7
PCB 126	94.1	89.6	142	109	26.7
PCB 167	<44.7	<46.3	<52.2	<47.7	8.2
PCB 156	<44.7	78.0	62.1	<61.6	27.0
PCB 157	<24.1	32.7	<22.6	<26.5	20.6
PCB 169	<29.3	<32.6	<38.3	<33.4	13.7
PCB 189	35.6	29.5	44.2	36.4	20.3
Total Dioxins & Furans Only	10590	12343	13354	12096	11.6
Total PCBs Only	<1486	<4278	<2089	<2618	56.1
Total Dioxins & Furans and PCBs	<12076	<16621	<15443	<14713	16.0

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

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	273	330	333	312	10.8
12378-pentachlorodibenzo-p-dioxin	445	593	590	543	15.5
123478-hexachlorodibenzo-p-dioxin	162	227	223	204	17.8
123678-hexachlorodibenzo-p-dioxin	176	255	241	224	18.7
123789-hexachlorodibenzo-p-dioxin	215	364	330	303	25.8
1234678-heptachlorodibenzo-p-dioxin	894	1057	1068	1006	9.7
Octachlorodibenzo-p-dioxin	1857	1788	2278	1974	13.4
2378-tetrachlorodibenzofuran	1744	2641	2978	2454	26.0
12378-pentachlorodibenzofuran	2156	2512	2691	2453	11.1
23478-pentachlorodibenzofuran	1668	1892	2090	1883	11.2
123478-hexachlorodibenzofuran	1571	1818	1954	1781	10.9
123678-hexachlorodibenzofuran	1598	1947	2090	1878	13.5
234678-hexachlorodibenzofuran	1043	1183	1299	1175	10.9
123789-hexachlorodibenzofuran	261	355	389	335	19.7
1234678-heptachlorodibenzofuran	3599	3881	4012	3831	5.5
1234789-heptachlorodibenzofuran	323	370	358	350	6.9
Octachlorodibenzofuran	781	801	769	783	2.1
PCB 81	<94.5	105	<98.8	<99.5	5.4
PCB 77	284	880	386	517	61.8
PCB 123	<256	492	<340	<363	33.0
PCB 118	970	4126	1404	2167	79.0
PCB 114	<76.2	<113	164	<118	37.3
PCB 105	470	1363	673	835	56.1
PCB 126	167	160	252	193	26.6
PCB 167	<79.3	<82.5	<92.6	<84.8	8.2
PCB 156	<79.3	139	110	<110	27.3
PCB 157	<42.7	58.4	<40.1	<47.1	21.0
PCB 169	<51.8	<58.1	<67.9	<59.3	13.7
PCB 189	63.1	52.6	78.4	64.7	20.1
Total Dioxins & Furans Only	18767	22013	23693	21491	11.7
Total PCBs Only	<2633	<7630	<3706	<4656	56.5
Total Dioxins & Furans and PCBs	<21400	<29643	<27399	<26147	16.3

* 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 21
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	215	259	261	245	10.7
12378-pentachlorodibenzo-p-dioxin	350	465	461	426	15.4
123478-hexachlorodibenzo-p-dioxin	128	178	175	160	17.7
123678-hexachlorodibenzo-p-dioxin	139	200	189	176	18.6
123789-hexachlorodibenzo-p-dioxin	169	285	259	238	25.7
1234678-heptachlorodibenzo-p-dioxin	702	830	836	789	9.6
Octachlorodibenzo-p-dioxin	1460	1403	1783	1549	13.2
2378-tetrachlorodibenzofuran	1371	2073	2332	1925	25.8
12378-pentachlorodibenzofuran	1695	1972	2107	1925	10.9
23478-pentachlorodibenzofuran	1311	1485	1636	1477	11.0
123478-hexachlorodibenzofuran	1235	1427	1529	1397	10.7
123678-hexachlorodibenzofuran	1256	1528	1636	1473	13.3
234678-hexachlorodibenzofuran	820	928	1017	922	10.7
123789-hexachlorodibenzofuran	205	278	304	263	19.5
1234678-heptachlorodibenzofuran	2829	3047	3141	3006	5.3
1234789-heptachlorodibenzofuran	254	290	280	275	6.8
Octachlorodibenzofuran	614	629	602	615	2.2
PCB 81	<74.3	82.5	<77.3	<78.1	5.3
PCB 77	223	691	302	405	61.8
PCB 123	<201	386	<266	<284	33.0
PCB 118	762	3239	1099	1700	79.0
PCB 114	<59.9	<88.8	128	<92.3	37.1
PCB 105	369	1070	527	655	56.1
PCB 126	131	125	197	151	26.3
PCB 167	<62.3	<64.8	<72.5	<66.5	8.0
PCB 156	<62.3	109	86.3	<85.9	27.3
PCB 157	<33.6	45.8	<31.4	<36.9	21.1
PCB 169	<40.8	<45.6	<53.2	<46.5	13.4
PCB 189	49.6	41.3	61.4	50.8	19.9
Total Dioxins & Furans Only	14752	17280	18547	16860	11.5
Total PCBs Only	<2070	<5989	<2901	<3653	56.5
Total Dioxins & Furans and PCBs	<16822	<23270	<21449	<20513	16.2

* 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 22
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	233	282	284	266	10.7
12378-pentachlorodibenzo-p-dioxin	380	506	502	463	15.4
123478-hexachlorodibenzo-p-dioxin	139	194	190	174	17.7
123678-hexachlorodibenzo-p-dioxin	151	217	206	191	18.7
123789-hexachlorodibenzo-p-dioxin	183	310	281	258	25.7
1234678-heptachlorodibenzo-p-dioxin	763	902	909	858	9.6
Octachlorodibenzo-p-dioxin	1586	1526	1940	1684	13.3
2378-tetrachlorodibenzofuran	1490	2253	2537	2093	25.9
12378-pentachlorodibenzofuran	1841	2144	2292	2092	11.0
23478-pentachlorodibenzofuran	1425	1614	1780	1606	11.1
123478-hexachlorodibenzofuran	1341	1552	1664	1519	10.8
123678-hexachlorodibenzofuran	1365	1661	1780	1602	13.3
234678-hexachlorodibenzofuran	891	1009	1107	1002	10.8
123789-hexachlorodibenzofuran	223	303	331	286	19.6
1234678-heptachlorodibenzofuran	3073	3312	3417	3267	5.4
1234789-heptachlorodibenzofuran	276	316	305	299	6.8
Octachlorodibenzofuran	667	683	655	668	2.2
PCB 81	<80.7	89.7	<84.1	<84.9	5.3
PCB 77	242	751	329	441	61.8
PCB 123	<219	420	<289	<309	33.0
PCB 118	828	3520	1196	1848	79.0
PCB 114	<65.1	<96.5	139	<100	37.1
PCB 105	401	1163	573	712	56.1
PCB 126	142	136	214	164	26.4
PCB 167	<67.7	<70.4	<78.9	<72.3	8.0
PCB 156	<67.7	119	93.8	<93.4	27.3
PCB 157	<36.5	49.8	<34.2	<40.1	21.0
PCB 169	<44.3	<49.5	<57.8	<50.6	13.5
PCB 189	53.9	44.9	66.8	55.2	20.0
Total Dioxins & Furans Only	16028	18783	20178	18330	11.5
Total PCBs Only	<2249	<6510	<3156	<3972	56.5
Total Dioxins & Furans and PCBs	<18277	<25293	<23334	<22301	16.2

* 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 23
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	4.32	5.18	5.17	4.89	10.1
12378-pentachlorodibenzo-p-dioxin	7.04	9.31	9.14	8.49	14.9
123478-hexachlorodibenzo-p-dioxin	2.56	3.57	3.46	3.20	17.2
123678-hexachlorodibenzo-p-dioxin	2.79	4.00	3.74	3.51	18.3
123789-hexachlorodibenzo-p-dioxin	3.39	5.71	5.12	4.74	25.4
1234678-heptachlorodibenzo-p-dioxin	14.1	16.6	16.6	15.8	9.0
Octachlorodibenzo-p-dioxin	29.3	28.1	35.3	30.9	12.5
2378-tetrachlorodibenzofuran	27.6	41.5	46.2	38.4	25.2
12378-pentachlorodibenzofuran	34.1	39.4	41.7	38.4	10.2
23478-pentachlorodibenzofuran	26.4	29.7	32.4	29.5	10.2
123478-hexachlorodibenzofuran	24.8	28.5	30.3	27.9	10.0
123678-hexachlorodibenzofuran	25.2	30.6	32.4	29.4	12.6
234678-hexachlorodibenzofuran	16.5	18.6	20.1	18.4	10.0
123789-hexachlorodibenzofuran	4.13	5.57	6.03	5.24	18.9
1234678-heptachlorodibenzofuran	56.9	60.9	62.2	60.0	4.6
1234789-heptachlorodibenzofuran	5.11	5.81	5.55	5.49	6.4
Octachlorodibenzofuran	12.3	12.6	11.9	12.3	2.7
PCB 81	<1.49	1.65	<1.53	<1.56	5.3
PCB 77	4.48	13.8	5.98	8.09	62.0
PCB 123	<4.05	7.73	<5.26	<5.68	33.0
PCB 118	15.3	64.8	21.8	34.0	79.2
PCB 114	<1.20	<1.78	2.54	<1.84	36.3
PCB 105	7.42	21.4	10.4	13.1	56.2
PCB 126	2.64	2.51	3.90	3.02	25.6
PCB 167	<1.25	<1.30	<1.44	<1.33	7.2
PCB 156	<1.25	2.18	1.71	<1.71	27.1
PCB 157	<0.67	0.92	<0.62	<0.74	21.3
PCB 169	<0.82	<0.91	<1.05	<0.93	12.7
PCB 189	1.00	0.83	1.22	1.01	19.3
Total Dioxins & Furans Only	297	346	367	336	10.8
Total PCBs Only	<41.6	<120	<57.4	<72.9	56.7
Total Dioxins & Furans and PCBs	<338	<465	<425	<409	15.9

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

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	176	312	245	266	4.89
12378-pentachlorodibenzo-p-dioxin	305	543	426	463	8.49
123478-hexachlorodibenzo-p-dioxin	115	204	160	174	3.20
123678-hexachlorodibenzo-p-dioxin	126	224	176	191	3.51
123789-hexachlorodibenzo-p-dioxin	170	303	238	258	4.74
1234678-heptachlorodibenzo-p-dioxin	566	1006	789	858	15.8
Octachlorodibenzo-p-dioxin	1111	1974	1549	1684	30.9
2378-tetrachlorodibenzofuran	1381	2454	1925	2093	38.4
12378-pentachlorodibenzofuran	1381	2453	1925	2092	38.4
23478-pentachlorodibenzofuran	1060	1883	1477	1606	29.5
123478-hexachlorodibenzofuran	1002	1781	1397	1519	27.9
123678-hexachlorodibenzofuran	1057	1878	1473	1602	29.4
234678-hexachlorodibenzofuran	661	1175	922	1002	18.4
123789-hexachlorodibenzofuran	188	335	263	286	5.24
1234678-heptachlorodibenzofuran	2156	3831	3006	3267	60.0
1234789-heptachlorodibenzofuran	197	350	275	299	5.49
Octachlorodibenzofuran	441	783	615	668	12.3
PCB 81	<56.0	<99.5	<78.1	<84.9	<1.56
PCB 77	290	517	405	441	8.09
PCB 123	<204	<363	<284	<309	<5.68
PCB 118	1217	2167	1700	1848	34.0
PCB 114	<66.2	<118	<92.3	<100	<1.84
PCB 105	470	835	655	712	13.1
PCB 126	109	193	151	164	3.02
PCB 167	<47.7	<84.8	<66.5	<72.3	<1.33
PCB 156	<61.6	<110	<85.9	<93.4	<1.71
PCB 157	<26.5	<47.1	<36.9	<40.1	<0.74
PCB 169	<33.4	<59.3	<46.5	<50.6	<0.93
PCB 189	36.4	64.7	50.8	55.2	1.01
Total Dioxins & Furans Only	12096	21491	16860	18330	336
Total PCBs Only	<2618	<4656	<3653	<3972	<72.9
Total Dioxins & Furans and PCBs	<14713	<26147	<20513	<22301	<409

* 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 Quench Inlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train	Laboratory Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<1.9	<0.66
12378-pentachlorodibenzo-p-dioxin	<1.2	<1.1
123478-hexachlorodibenzo-p-dioxin	<1.2	<0.83
123678-hexachlorodibenzo-p-dioxin	<0.95	<0.67
123789-hexachlorodibenzo-p-dioxin	<1.0	<0.92
1234678-heptachlorodibenzo-p-dioxin	2.06	<3.0
Octachlorodibenzo-p-dioxin	<2.6	<9.1
2378-tetrachlorodibenzofuran	<1.9	<1.1
12378-pentachlorodibenzofuran	<1.3	<1.7
23478-pentachlorodibenzofuran	<1.2	<0.70
123478-hexachlorodibenzofuran	<0.90	<0.56
123678-hexachlorodibenzofuran	<0.77	<0.56
234678-hexachlorodibenzofuran	<0.87	<0.54
123789-hexachlorodibenzofuran	1.41	<1.7
1234678-heptachlorodibenzofuran	<0.52	0.85
1234789-heptachlorodibenzofuran	<0.54	<0.63
Octachlorodibenzofuran	1.38	1.61
PCB 81	<36	<7.4
PCB 77	<38	23.2
PCB 123	<15	<17
PCB 118	133	<14
PCB 114	<14	<15
PCB 105	<47	<15
PCB 126	<15	<16
PCB 167	<14	<8.9
PCB 156	<14	<9.7
PCB 157	<16	<9.3
PCB 169	<17	<12
PCB 189	<5.6	<2.4
Total Dioxins & Furans Only	<21.7	<26.2
Total PCBs Only	<365	<150
Total Dioxins & Furans and PCBs	<386	<176

"<" 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 26
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1.000	154	185	188	176
12378-pentachlorodibenzo-p-dioxin	1.000	251	332	332	305
123478-hexachlorodibenzo-p-dioxin	0.100	9.16	12.7	12.6	11.5
123678-hexachlorodibenzo-p-dioxin	0.100	9.95	14.3	13.6	12.6
123789-hexachlorodibenzo-p-dioxin	0.100	12.1	20.4	18.6	17.0
1234678-heptachlorodibenzo-p-dioxin	0.010	5.04	5.93	6.02	5.66
Octachlorodibenzo-p-dioxin	0.0003	0.31	0.30	0.39	0.33
2378-tetrachlorodibenzofuran	0.100	98.4	148	168	138
12378-pentachlorodibenzofuran	0.030	36.5	42.3	45.5	41.4
23478-pentachlorodibenzofuran	0.300	282	318	353	318
123478-hexachlorodibenzofuran	0.100	88.6	102	110	100
123678-hexachlorodibenzofuran	0.100	90.2	109	118	106
234678-hexachlorodibenzofuran	0.100	58.9	66.3	73.2	66.1
123789-hexachlorodibenzofuran	0.100	14.7	19.9	21.9	18.8
1234678-heptachlorodibenzofuran	0.010	20.3	21.8	22.6	21.6
1234789-heptachlorodibenzofuran	0.010	1.82	2.07	2.02	1.97
Octachlorodibenzofuran	0.0003	0.13	0.13	0.13	0.13
PCB 81	0.0003	<0.016	0.018	<0.017	<0.017
PCB 77	0.0001	0.016	0.049	0.022	0.029
PCB 123	0.00003	<0.0043	0.0083	<0.0057	<0.0061
PCB 118	0.00003	0.016	0.069	0.024	0.037
PCB 114	0.00003	<0.0013	<0.0019	0.0028	<0.0020
PCB 105	0.00003	0.0080	0.023	0.011	0.014
PCB 126	0.100	9.41	8.96	14.2	10.9
PCB 167	0.00003	<0.0013	<0.0014	<0.0016	<0.0014
PCB 156	0.00003	<0.0013	0.0023	0.0019	<0.0018
PCB 157	0.00003	<0.00072	0.00098	<0.00068	<0.00079
PCB 169	0.030	<0.88	<0.98	<1.15	<1.00
PCB 189	0.00003	0.0011	0.00088	0.0013	0.0011
Total Dioxins & Furans Only		1134	1401	1486	1340
Total PCBs Only		<10.4	<10.1	<15.4	<12.0
Total Dioxins & Furans and PCBs		<1144	<1411	<1501	<1352

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 27
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1.000	273	330	333	312
12378-pentachlorodibenzo-p-dioxin	1.000	445	593	590	543
123478-hexachlorodibenzo-p-dioxin	0.100	16.2	22.7	22.3	20.4
123678-hexachlorodibenzo-p-dioxin	0.100	17.6	25.5	24.1	22.4
123789-hexachlorodibenzo-p-dioxin	0.100	21.5	36.4	33.0	30.3
1234678-heptachlorodibenzo-p-dioxin	0.010	8.94	10.6	10.7	10.1
Octachlorodibenzo-p-dioxin	0.0003	0.56	0.54	0.68	0.59
2378-tetrachlorodibenzofuran	0.100	174	264	298	245
12378-pentachlorodibenzofuran	0.030	64.7	75.4	80.7	73.6
23478-pentachlorodibenzofuran	0.300	500	568	627	565
123478-hexachlorodibenzofuran	0.100	157	182	195	178
123678-hexachlorodibenzofuran	0.100	160	195	209	188
234678-hexachlorodibenzofuran	0.100	104	118	130	118
123789-hexachlorodibenzofuran	0.100	26.1	35.5	38.9	33.5
1234678-heptachlorodibenzofuran	0.010	36.0	38.8	40.1	38.3
1234789-heptachlorodibenzofuran	0.010	3.23	3.70	3.58	3.50
Octachlorodibenzofuran	0.0003	0.23	0.24	0.23	0.23
PCB 81	0.0003	<0.028	0.032	<0.030	<0.030
PCB 77	0.0001	0.028	0.088	0.039	0.052
PCB 123	0.00003	<0.0077	0.015	<0.010	<0.011
PCB 118	0.00003	0.029	0.12	0.042	0.065
PCB 114	0.00003	<0.0023	<0.0034	0.0049	<0.0035
PCB 105	0.00003	0.014	0.041	0.020	0.025
PCB 126	0.100	16.7	16.0	25.2	19.3
PCB 167	0.00003	<0.0024	<0.0025	<0.0028	<0.0025
PCB 156	0.00003	<0.0024	0.0042	0.0033	<0.0033
PCB 157	0.00003	<0.0013	0.0018	<0.0012	<0.0014
PCB 169	0.030	<1.56	<1.74	<2.04	<1.78
PCB 189	0.00003	0.0019	0.0016	0.0024	0.0019
Total Dioxins & Furans Only		2010	2499	2636	2381
Total PCBs Only		<18.4	<18.0	<27.4	<21.3
Total Dioxins & Furans and PCBs		<2028	<2517	<2664	<2403

* 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 28
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	215	259	261	245
12378-pentachlorodibenzo-p-dioxin	1.000	350	465	461	426
123478-hexachlorodibenzo-p-dioxin	0.100	12.8	17.8	17.5	16.0
123678-hexachlorodibenzo-p-dioxin	0.100	13.9	20.0	18.9	17.6
123789-hexachlorodibenzo-p-dioxin	0.100	16.9	28.5	25.9	23.8
1234678-heptachlorodibenzo-p-dioxin	0.010	7.02	8.30	8.36	7.89
Octachlorodibenzo-p-dioxin	0.0003	0.44	0.42	0.53	0.46
2378-tetrachlorodibenzofuran	0.100	137	207	233	193
12378-pentachlorodibenzofuran	0.030	50.8	59.2	63.2	57.7
23478-pentachlorodibenzofuran	0.300	393	446	491	443
123478-hexachlorodibenzofuran	0.100	123	143	153	140
123678-hexachlorodibenzofuran	0.100	126	153	164	147
234678-hexachlorodibenzofuran	0.100	82.0	92.8	102	92.2
123789-hexachlorodibenzofuran	0.100	20.5	27.8	30.4	26.3
1234678-heptachlorodibenzofuran	0.010	28.3	30.5	31.4	30.1
1234789-heptachlorodibenzofuran	0.010	2.54	2.90	2.80	2.75
Octachlorodibenzofuran	0.0003	0.18	0.19	0.18	0.18
PCB 81	0.0003	<0.022	0.025	<0.023	<0.023
PCB 77	0.0001	0.022	0.069	0.030	0.041
PCB 123	0.00003	<0.0060	0.012	<0.0080	<0.0085
PCB 118	0.00003	0.023	0.097	0.033	0.051
PCB 114	0.00003	<0.0018	<0.0027	0.0038	<0.0028
PCB 105	0.00003	0.011	0.032	0.016	0.020
PCB 126	0.100	13.1	12.5	19.7	15.1
PCB 167	0.00003	<0.0019	<0.0019	<0.0022	<0.0020
PCB 156	0.00003	<0.0019	0.0033	0.0026	<0.0026
PCB 157	0.00003	<0.0010	0.0014	<0.00094	<0.0011
PCB 169	0.030	<1.22	<1.37	<1.59	<1.39
PCB 189	0.00003	0.0015	0.0012	0.0018	0.0015
Total Dioxins & Furans Only		1580	1961	2064	1868
Total PCBs Only		<14.4	<14.2	<21.4	<16.7
Total Dioxins & Furans and PCBs		<1594	<1976	<2085	<1885

* 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 28A
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1.000	215	259	261	245
12378-pentachlorodibenzo-p-dioxin	1.000	350	465	461	426
123478-hexachlorodibenzo-p-dioxin	0.100	12.8	17.8	17.5	16.0
123678-hexachlorodibenzo-p-dioxin	0.100	13.9	20.0	18.9	17.6
123789-hexachlorodibenzo-p-dioxin	0.100	16.9	28.5	25.9	23.8
1234678-heptachlorodibenzo-p-dioxin	0.010	7.02	8.30	8.36	7.89
Octachlorodibenzo-p-dioxin	0.0003	0.44	0.42	0.53	0.46
2378-tetrachlorodibenzofuran	0.100	137	207	233	193
12378-pentachlorodibenzofuran	0.030	50.8	59.2	63.2	57.7
23478-pentachlorodibenzofuran	0.300	393	446	491	443
123478-hexachlorodibenzofuran	0.100	123	143	153	140
123678-hexachlorodibenzofuran	0.100	126	153	164	147
234678-hexachlorodibenzofuran	0.100	82.0	92.8	102	92.2
123789-hexachlorodibenzofuran	0.100	20.5	27.8	30.4	26.3
1234678-heptachlorodibenzofuran	0.010	28.3	30.5	31.4	30.1
1234789-heptachlorodibenzofuran	0.010	2.54	2.90	2.80	2.75
Octachlorodibenzofuran	0.0003	0.18	0.19	0.18	0.18
PCB 81	0.0003	0.011	0.025	0.012	0.016
PCB 77	0.0001	0.022	0.069	0.030	0.041
PCB 123	0.00003	0.0030	0.012	0.0040	0.0062
PCB 118	0.00003	0.023	0.097	0.033	0.051
PCB 114	0.00003	0.00090	0.0013	0.0038	0.0020
PCB 105	0.00003	0.011	0.032	0.016	0.020
PCB 126	0.100	13.1	12.5	19.7	15.1
PCB 167	0.00003	0.00093	0.00097	0.0011	0.0010
PCB 156	0.00003	0.00093	0.0033	0.0026	0.0023
PCB 157	0.00003	0.00050	0.0014	0.00047	0.00078
PCB 169	0.030	0.61	0.68	0.80	0.70
PCB 189	0.00003	0.0015	0.0012	0.0018	0.0015
Total Dioxins & Furans Only		1580	1961	2064	1868
Total PCBs Only		13.8	13.5	20.6	16.0
Total Dioxins & Furans and PCBs		1594	1975	2084	1884

* 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 28B
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	215	259	261	245
12378-pentachlorodibenzo-p-dioxin	0.500	175	233	231	213
123478-hexachlorodibenzo-p-dioxin	0.100	12.8	17.8	17.5	16.0
123678-hexachlorodibenzo-p-dioxin	0.100	13.9	20.0	18.9	17.6
123789-hexachlorodibenzo-p-dioxin	0.100	16.9	28.5	25.9	23.8
1234678-heptachlorodibenzo-p-dioxin	0.010	7.02	8.30	8.36	7.89
Octachlorodibenzo-p-dioxin	0.001	1.46	1.40	1.78	1.55
2378-tetrachlorodibenzofuran	0.100	137	207	233	193
12378-pentachlorodibenzofuran	0.050	84.7	98.6	105.3	96.2
23478-pentachlorodibenzofuran	0.500	656	743	818	739
123478-hexachlorodibenzofuran	0.100	123	143	153	140
123678-hexachlorodibenzofuran	0.100	126	153	164	147
234678-hexachlorodibenzofuran	0.100	82.0	92.8	102	92.2
123789-hexachlorodibenzofuran	0.100	20.5	27.8	30.4	26.3
1234678-heptachlorodibenzofuran	0.010	28.3	30.5	31.4	30.1
1234789-heptachlorodibenzofuran	0.010	2.54	2.90	2.80	2.75
Octachlorodibenzofuran	0.001	0.61	0.63	0.60	0.61
Total Dioxins & Furans		1702	2067	2204	1991

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

NATO/CCMS (1989) Toxicity Equivalency Factors

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1.000	233	282	284	266
12378-pentachlorodibenzo-p-dioxin	1.000	380	506	502	463
123478-hexachlorodibenzo-p-dioxin	0.100	13.9	19.4	19.0	17.4
123678-hexachlorodibenzo-p-dioxin	0.100	15.1	21.7	20.6	19.1
123789-hexachlorodibenzo-p-dioxin	0.100	18.3	31.0	28.1	25.8
1234678-heptachlorodibenzo-p-dioxin	0.010	7.63	9.02	9.09	8.58
Octachlorodibenzo-p-dioxin	0.0003	0.48	0.46	0.58	0.51
2378-tetrachlorodibenzofuran	0.100	149	225	254	209
12378-pentachlorodibenzofuran	0.030	55.2	64.3	68.8	62.8
23478-pentachlorodibenzofuran	0.300	427	484	534	482
123478-hexachlorodibenzofuran	0.100	134	155	166	152
123678-hexachlorodibenzofuran	0.100	136	166	178	160
234678-hexachlorodibenzofuran	0.100	89.1	101	111	100
123789-hexachlorodibenzofuran	0.100	22.3	30.3	33.1	28.6
1234678-heptachlorodibenzofuran	0.010	30.7	33.1	34.2	32.7
1234789-heptachlorodibenzofuran	0.010	2.76	3.16	3.05	2.99
Octachlorodibenzofuran	0.0003	0.20	0.20	0.20	0.20
PCB 81	0.0003	<0.024	0.027	<0.025	<0.025
PCB 77	0.0001	0.024	0.075	0.033	0.044
PCB 123	0.00003	<0.0066	0.013	<0.0087	<0.0093
PCB 118	0.00003	0.025	0.11	0.036	0.055
PCB 114	0.00003	<0.0020	<0.0029	0.0042	<0.0030
PCB 105	0.00003	0.012	0.035	0.017	0.021
PCB 126	0.100	14.2	13.6	21.4	16.4
PCB 167	0.00003	<0.0020	<0.0021	<0.0024	<0.0022
PCB 156	0.00003	<0.0020	0.0036	0.0028	<0.0028
PCB 157	0.00003	<0.0011	0.0015	<0.0010	<0.0012
PCB 169	0.030	<1.33	<1.49	<1.73	<1.52
PCB 189	0.00003	0.0016	0.0013	0.0020	0.0017
Total Dioxins & Furans Only		1716	2132	2245	2031
Total PCBs Only		<15.7	<15.4	<23.3	<18.1
Total Dioxins & Furans and PCBs		<1732	<2147	<2268	<2049

* 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 30
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	1.000	4.32	5.18	5.17	4.89
12378-pentachlorodibenzo-p-dioxin	1.000	7.04	9.31	9.14	8.49
123478-hexachlorodibenzo-p-dioxin	0.100	0.26	0.36	0.35	0.32
123678-hexachlorodibenzo-p-dioxin	0.100	0.28	0.40	0.37	0.35
123789-hexachlorodibenzo-p-dioxin	0.100	0.34	0.57	0.51	0.47
1234678-heptachlorodibenzo-p-dioxin	0.010	0.14	0.17	0.17	0.16
Octachlorodibenzo-p-dioxin	0.0003	0.0088	0.0084	0.011	0.0093
2378-tetrachlorodibenzofuran	0.100	2.76	4.15	4.62	3.84
12378-pentachlorodibenzofuran	0.030	1.02	1.18	1.25	1.15
23478-pentachlorodibenzofuran	0.300	7.91	8.91	9.72	8.84
123478-hexachlorodibenzofuran	0.100	2.48	2.85	3.03	2.79
123678-hexachlorodibenzofuran	0.100	2.52	3.06	3.24	2.94
234678-hexachlorodibenzofuran	0.100	1.65	1.86	2.01	1.84
123789-hexachlorodibenzofuran	0.100	0.41	0.56	0.60	0.52
1234678-heptachlorodibenzofuran	0.010	0.57	0.61	0.62	0.60
1234789-heptachlorodibenzofuran	0.010	0.051	0.058	0.055	0.055
Octachlorodibenzofuran	0.0003	0.0037	0.0038	0.0036	0.0037
PCB 81	0.0003	<0.00045	0.00050	<0.00046	<0.00047
PCB 77	0.0001	0.00045	0.0014	0.00060	0.00081
PCB 123	0.00003	<0.00012	0.00023	<0.00016	<0.00017
PCB 118	0.00003	0.00046	0.0019	0.00065	0.0010
PCB 114	0.00003	<0.000036	<0.000053	0.000076	<0.000055
PCB 105	0.00003	0.00022	0.00064	0.00031	0.00039
PCB 126	0.100	0.26	0.25	0.39	0.30
PCB 167	0.00003	<0.000038	<0.000039	<0.000043	<0.000040
PCB 156	0.00003	<0.000038	0.000065	0.000051	<0.000051
PCB 157	0.00003	<0.000020	0.000027	<0.000019	<0.000022
PCB 169	0.030	<0.025	<0.027	<0.032	<0.028
PCB 189	0.00003	0.000030	0.000025	0.000036	0.000030
Total Dioxins & Furans Only		31.8	39.2	40.9	37.3
Total PCBs Only		<0.29	<0.28	<0.42	<0.33
Total Dioxins & Furans and PCBs		<32.0	<39.5	<41.3	<37.6

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 31
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	176	312	245	266	4.89
12378-pentachlorodibenzo-p-dioxin	305	543	426	463	8.49
123478-hexachlorodibenzo-p-dioxin	11.5	20.4	16.0	17.4	0.32
123678-hexachlorodibenzo-p-dioxin	12.6	22.4	17.6	19.1	0.35
123789-hexachlorodibenzo-p-dioxin	17.0	30.3	23.8	25.8	0.47
1234678-heptachlorodibenzo-p-dioxin	5.66	10.1	7.89	8.58	0.16
Octachlorodibenzo-p-dioxin	0.33	0.59	0.46	0.51	0.0093
2378-tetrachlorodibenzofuran	138	245	193	209	3.84
12378-pentachlorodibenzofuran	41.4	73.6	57.7	62.8	1.15
23478-pentachlorodibenzofuran	318	565	443	482	8.84
123478-hexachlorodibenzofuran	100	178	140	152	2.79
123678-hexachlorodibenzofuran	106	188	147	160	2.94
234678-hexachlorodibenzofuran	66.1	118	92.2	100	1.84
123789-hexachlorodibenzofuran	18.8	33.5	26.3	28.6	0.52
1234678-heptachlorodibenzofuran	21.6	38.3	30.1	32.7	0.60
1234789-heptachlorodibenzofuran	1.97	3.50	2.75	2.99	0.055
Octachlorodibenzofuran	0.13	0.23	0.18	0.20	0.0037
PCB 81	<0.017	<0.030	<0.023	<0.025	<0.00047
PCB 77	0.029	0.052	0.041	0.044	0.00081
PCB 123	<0.0061	<0.011	<0.0085	<0.0093	<0.00017
PCB 118	0.037	0.065	0.051	0.055	0.0010
PCB 114	<0.0020	<0.0035	<0.0028	<0.0030	<0.000055
PCB 105	0.014	0.025	0.020	0.021	0.00039
PCB 126	10.9	19.3	15.1	16.4	0.30
PCB 167	<0.0014	<0.0025	<0.0020	<0.0022	<0.000040
PCB 156	<0.0018	<0.0033	<0.0026	<0.0028	<0.000051
PCB 157	<0.00079	<0.0014	<0.0011	<0.0012	<0.000022
PCB 169	<1.00	<1.78	<1.39	<1.52	<0.028
PCB 189	0.0011	0.0019	0.0015	0.0017	0.000030
Total Dioxins & Furans Only	1340	2381	1868	2031	37.3
Total PCBs Only	<12.0	<21.3	<16.7	<18.1	<0.33
Total Dioxins & Furans and PCBs	<1352	<2403	<1885	<2049	<37.6

* 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 32
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
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	176	312	245	266	4.89
12378-pentachlorodibenzo-p-dioxin	305	543	426	463	8.49
123478-hexachlorodibenzo-p-dioxin	11.5	20.4	16.0	17.4	0.32
123678-hexachlorodibenzo-p-dioxin	12.6	22.4	17.6	19.1	0.35
123789-hexachlorodibenzo-p-dioxin	17.0	30.3	23.8	25.8	0.47
1234678-heptachlorodibenzo-p-dioxin	5.66	10.1	7.89	8.58	0.16
Octachlorodibenzo-p-dioxin	0.33	0.59	0.46	0.51	0.0093
2378-tetrachlorodibenzofuran	138	245	193	209	3.84
12378-pentachlorodibenzofuran	41.4	73.6	57.7	62.8	1.15
23478-pentachlorodibenzofuran	318	565	443	482	8.84
123478-hexachlorodibenzofuran	100	178	140	152	2.79
123678-hexachlorodibenzofuran	106	188	147	160	2.94
234678-hexachlorodibenzofuran	66.1	118	92.2	100	1.84
123789-hexachlorodibenzofuran	18.8	33.5	26.3	28.6	0.52
1234678-heptachlorodibenzofuran	21.6	38.3	30.1	32.7	0.60
1234789-heptachlorodibenzofuran	1.97	3.50	2.75	2.99	0.055
Octachlorodibenzofuran	0.13	0.23	0.18	0.20	0.0037
PCB 81	0.011	0.020	0.016	0.017	0.00032
PCB 77	0.029	0.052	0.041	0.044	0.00081
PCB 123	0.0044	0.0079	0.0062	0.0067	0.00012
PCB 118	0.037	0.065	0.051	0.055	0.0010
PCB 114	0.0015	0.0026	0.0020	0.0022	0.000040
PCB 105	0.014	0.025	0.020	0.021	0.00039
PCB 126	10.9	19.3	15.1	16.4	0.30
PCB 167	0.00072	0.0013	0.0010	0.0011	0.000020
PCB 156	0.0016	0.0029	0.0023	0.0025	0.000045
PCB 157	0.00056	0.00100	0.00078	0.00085	0.000016
PCB 169	0.50	0.89	0.70	0.76	0.014
PCB 189	0.0011	0.0019	0.0015	0.0017	0.000030
Total Dioxins & Furans Only	1340	2381	1868	2031	37.3
Total PCBs Only	11.5	20.4	16.0	17.4	0.32
Total Dioxins & Furans and PCBs	1352	2402	1884	2049	37.6

* 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.

APPENDIX 4

Boiler No. 2 Quench Inlet
Data Tables
(34 pages)

TABLE 1
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Test Schedule

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 25, 2017	9:08	13:05	180
2	May 25, 2017	15:49	19:15	180
3	May 26, 2017	8:19	12:11	180

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period		Sampling Time*
		Start	Finish	min
1	May 23, 2017	17:45	18:45	60
2	May 24, 2017	8:00	9:00	60
3	May 24, 2017	9:06	10:06	60

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

TABLE 2
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Stack Gas Sampling Parameters

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	0.846	0.982	5.97	2.940	98.0
2	0.846	0.982	5.95	2.886	98.1
3	0.846	0.982	5.95	2.947	97.9

* Dry at 25°C and 1 atmosphere

TABLE 3
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Stack Gas Physical Parameters

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	167	15.0	17.7	-0.62	98.6	10.7	8.00
2	168	15.5	17.6	-0.62	98.4	10.6	7.91
3	167	15.4	17.9	-0.57	99.0	11.0	7.81
Average	167	15.3	17.7	-0.61	98.7	10.8	7.91

* Dry basis, measured by the DYEC CEMS

TABLE 4
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Stack Gas Volumetric Flowrates

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	26.2	14.7	19.1	17.3
2	26.0	14.5	19.0	17.1
3	26.5	14.8	19.6	17.5
Average	26.2	14.6	19.2	17.3

* At 25°C and 1 atmosphere

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

TABLE 5
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Total Hydrocarbons Analyses

Total Hydrocarbons as 1-Minute Average Data

Test No.	Parameter	Minimum	Average	Maximum
1	Total Hydrocarbons (ppm dry)	0.2	0.6	1.0
2	Total Hydrocarbons (ppm dry)	0.2	0.9	1.7
3	Total Hydrocarbons (ppm dry)	0.3	0.9	1.3
Average	Total Hydrocarbons (ppm dry)		0.8	

Total Hydrocarbons as 10-Minute Rolling Average Data

Test No.	Parameter	Minimum	Average	Maximum
1	Total Hydrocarbons (ppm dry)	0.5	0.6	0.8
2	Total Hydrocarbons (ppm dry)	0.7	0.9	1.1
3	Total Hydrocarbons (ppm dry)	0.8	0.9	1.0
Average	Total Hydrocarbons (ppm dry)		0.8	

Note: Total hydrocarbons reported on a dry basis as equivalent methane

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	11100	2.12	3.78	2.91	3.21	55.5
Pentachlorodibenzo-p-dioxins	9980	1.90	3.39	2.61	2.88	49.9
Hexachlorodibenzo-p-dioxins	8210	1.57	2.79	2.15	2.37	41.1
Heptachlorodibenzo-p-dioxins	5770	1.10	1.96	1.51	1.67	28.9
Octachlorodibenzo-p-dioxin	5810	1.11	1.98	1.52	1.68	29.1
Total	40870	7.80	13.9	10.7	11.8	204

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	158000	30.2	53.7	41.4	45.7	790
Pentachlorodibenzofurans	86900	16.6	29.6	22.7	25.1	435
Hexachlorodibenzofurans	41100	7.84	14.0	10.8	11.9	206
Heptachlorodibenzofurans	15500	2.96	5.27	4.06	4.48	77.5
Octachlorodibenzofuran	2360	0.45	0.80	0.62	0.68	11.8
Total	303860	58.0	103	79.5	87.8	1519

Dry Gas Volume Sampled (Rm^3*) :	2.940
Actual Flowrate (m^3/s) :	26.2
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.3

* 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 Quench Inlet
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	12700	2.45	4.40	3.36	3.73	63.8
Pentachlorodibenzo-p-dioxins	12400	2.40	4.30	3.28	3.64	62.3
Hexachlorodibenzo-p-dioxins	10500	2.03	3.64	2.78	3.09	52.8
Heptachlorodibenzo-p-dioxins	6640	1.28	2.30	1.76	1.95	33.4
Octachlorodibenzo-p-dioxin	5350	1.03	1.85	1.41	1.57	26.9
Total	47590	9.20	16.5	12.6	14.0	239

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	153000	29.6	53.0	40.5	45.0	769
Pentachlorodibenzofurans	92000	17.8	31.9	24.3	27.0	462
Hexachlorodibenzofurans	47000	9.08	16.3	12.4	13.8	236
Heptachlorodibenzofurans	11700	2.26	4.05	3.09	3.44	58.8
Octachlorodibenzofuran	2030	0.39	0.70	0.54	0.60	10.2
Total	305730	59.1	106	80.8	89.8	1536

Dry Gas Volume Sampled (Rm^3*) :	2.886
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	14.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	17.1

* At 25°C and 1 atmosphere

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

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	10400	1.97	3.53	2.66	2.98	52.2
Pentachlorodibenzo-p-dioxins	9180	1.74	3.12	2.35	2.63	46.1
Hexachlorodibenzo-p-dioxins	7550	1.43	2.56	1.93	2.17	37.9
Heptachlorodibenzo-p-dioxins	6450	1.22	2.19	1.65	1.85	32.4
Octachlorodibenzo-p-dioxin	6110	1.16	2.07	1.57	1.75	30.7
Total	39690	7.52	13.5	10.2	11.4	199

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	144000	27.3	48.9	36.9	41.3	723
Pentachlorodibenzofurans	76100	14.4	25.8	19.5	21.8	382
Hexachlorodibenzofurans	39900	7.56	13.5	10.2	11.5	200
Heptachlorodibenzofurans	12600	2.39	4.28	3.23	3.62	63.3
Octachlorodibenzofuran	2470	0.47	0.84	0.63	0.71	12.4
Total	275070	52.1	93.3	70.5	78.9	1381

Dry Gas Volume Sampled (Rm^3*) :	2.947
Actual Flowrate (m^3/s) :	26.5
Dry Reference Flowrate (Rm^3/s*) :	14.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
Wet Reference Flowrate (Rm^3/s*) :	17.5

* 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 Quench Inlet
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	2.12	2.45	1.97	2.18	11.4
Pentachlorodibenzo-p-dioxins	1.90	2.40	1.74	2.01	17.0
Hexachlorodibenzo-p-dioxins	1.57	2.03	1.43	1.68	18.7
Heptachlorodibenzo-p-dioxins	1.10	1.28	1.22	1.20	7.7
Octachlorodibenzo-p-dioxin	1.11	1.03	1.16	1.10	5.7
Total	7.80	9.20	7.52	8.17	11.0

Furans

Congener Group	Actual Concentration Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzofurans	30.2	29.6	27.3	29.0	5.2
Pentachlorodibenzofurans	16.6	17.8	14.4	16.3	10.5
Hexachlorodibenzofurans	7.84	9.08	7.56	8.16	9.9
Heptachlorodibenzofurans	2.96	2.26	2.39	2.54	14.6
Octachlorodibenzofuran	0.45	0.39	0.47	0.44	9.1
Total	58.0	59.1	52.1	56.4	6.6

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	3.78	4.40	3.53	3.90	11.5
Pentachlorodibenzo-p-dioxins	3.39	4.30	3.12	3.60	17.1
Hexachlorodibenzo-p-dioxins	2.79	3.64	2.56	3.00	18.9
Heptachlorodibenzo-p-dioxins	1.96	2.30	2.19	2.15	8.0
Octachlorodibenzo-p-dioxin	1.98	1.85	2.07	1.97	5.6
Total	13.9	16.5	13.5	14.6	11.2

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	53.7	53.0	48.9	51.9	5.1
Pentachlorodibenzofurans	29.6	31.9	25.8	29.1	10.5
Hexachlorodibenzofurans	14.0	16.3	13.5	14.6	10.1
Heptachlorodibenzofurans	5.27	4.05	4.28	4.53	14.3
Octachlorodibenzofuran	0.80	0.70	0.84	0.78	8.9
Total	103	106	93.3	101	6.6

* At 25°C and 1 atmosphere

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	2.91	3.36	2.66	2.98	11.8
Pentachlorodibenzo-p-dioxins	2.61	3.28	2.35	2.75	17.4
Hexachlorodibenzo-p-dioxins	2.15	2.78	1.93	2.29	19.1
Heptachlorodibenzo-p-dioxins	1.51	1.76	1.65	1.64	7.5
Octachlorodibenzo-p-dioxin	1.52	1.41	1.57	1.50	5.2
Total	10.7	12.6	10.2	11.2	11.4

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	41.4	40.5	36.9	39.6	6.0
Pentachlorodibenzofurans	22.7	24.3	19.5	22.2	11.1
Hexachlorodibenzofurans	10.8	12.4	10.2	11.1	10.3
Heptachlorodibenzofurans	4.06	3.09	3.23	3.46	15.1
Octachlorodibenzofuran	0.62	0.54	0.63	0.60	8.7
Total	79.5	80.8	70.5	77.0	7.3

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

TABLE 12
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	3.21	3.73	2.98	3.31	11.6
Pentachlorodibenzo-p-dioxins	2.88	3.64	2.63	3.05	17.2
Hexachlorodibenzo-p-dioxins	2.37	3.09	2.17	2.54	19.0
Heptachlorodibenzo-p-dioxins	1.67	1.95	1.85	1.82	7.9
Octachlorodibenzo-p-dioxin	1.68	1.57	1.75	1.67	5.5
Total	11.8	14.0	11.4	12.4	11.2

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	45.7	45.0	41.3	44.0	5.3
Pentachlorodibenzofurans	25.1	27.0	21.8	24.7	10.6
Hexachlorodibenzofurans	11.9	13.8	11.5	12.4	10.2
Heptachlorodibenzofurans	4.48	3.44	3.62	3.84	14.5
Octachlorodibenzofuran	0.68	0.60	0.71	0.66	8.9
Total	87.8	89.8	78.9	85.5	6.8

* At 25°C and 1 atmosphere

TABLE 13
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	55.5	63.8	52.2	57.2	10.4
Pentachlorodibenzo-p-dioxins	49.9	62.3	46.1	52.8	16.1
Hexachlorodibenzo-p-dioxins	41.1	52.8	37.9	43.9	17.8
Heptachlorodibenzo-p-dioxins	28.9	33.4	32.4	31.5	7.5
Octachlorodibenzo-p-dioxin	29.1	26.9	30.7	28.9	6.6
Total	204	239	199	214	10.1

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	790	769	723	761	4.5
Pentachlorodibenzofurans	435	462	382	426	9.5
Hexachlorodibenzofurans	206	236	200	214	9.0
Heptachlorodibenzofurans	77.5	58.8	63.3	66.5	14.7
Octachlorodibenzofuran	11.8	10.2	12.4	11.5	9.9
Total	1519	1536	1381	1479	5.7

TABLE 14
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	2.18	3.90	2.98	3.31	57.2
Pentachlorodibenzo-p-dioxins	2.01	3.60	2.75	3.05	52.8
Hexachlorodibenzo-p-dioxins	1.68	3.00	2.29	2.54	43.9
Heptachlorodibenzo-p-dioxins	1.20	2.15	1.64	1.82	31.5
Octachlorodibenzo-p-dioxin	1.10	1.97	1.50	1.67	28.9
Total	8.17	14.6	11.2	12.4	214

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	29.0	51.9	39.6	44.0	761
Pentachlorodibenzofurans	16.3	29.1	22.2	24.7	426
Hexachlorodibenzofurans	8.16	14.6	11.1	12.4	214
Heptachlorodibenzofurans	2.54	4.53	3.46	3.84	66.5
Octachlorodibenzofuran	0.44	0.78	0.60	0.66	11.5
Total	56.4	101	77.0	85.5	1479

* 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 Quench Inlet
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<2.3	<0.66
Pentachlorodibenzo-p-dioxins	<1.1	<1.1
Hexachlorodibenzo-p-dioxins	<1.1	<0.83
Heptachlorodibenzo-p-dioxins	1.98	<1.3
Octachlorodibenzo-p-dioxin	<3.4	<9.1
Total	<9.88	<13.0

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	10.8	2.36
Pentachlorodibenzofurans	<1.1	<0.7
Hexachlorodibenzofurans	2.87	<0.7
Heptachlorodibenzofurans	<0.88	0.85
Octachlorodibenzofuran	<0.79	1.61
Total	<16.4	<6.19

"<" 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 16
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	822	157	280	215	238	4.11
12378-pentachlorodibenzo-p-dioxin	1380	263	469	361	399	6.90
123478-hexachlorodibenzo-p-dioxin	551	105	187	144	159	2.76
123678-hexachlorodibenzo-p-dioxin	646	123	220	169	187	3.23
123789-hexachlorodibenzo-p-dioxin	827	158	281	216	239	4.14
1234678-heptachlorodibenzo-p-dioxin	2830	540	963	741	818	14.2
Octachlorodibenzo-p-dioxin	5810	1109	1976	1521	1679	29.1
2378-tetrachlorodibenzofuran	7280	1389	2476	1906	2104	36.4
12378-pentachlorodibenzofuran	6340	1210	2156	1660	1832	31.7
23478-pentachlorodibenzofuran	5060	966	1721	1325	1462	25.3
123478-hexachlorodibenzofuran	4680	893	1592	1225	1353	23.4
123678-hexachlorodibenzofuran	4910	937	1670	1285	1419	24.6
234678-hexachlorodibenzofuran	3460	660	1177	906	1000	17.3
123789-hexachlorodibenzofuran	965	184	328	253	279	4.83
1234678-heptachlorodibenzofuran	10800	2061	3673	2827	3121	54.0
1234789-heptachlorodibenzofuran	1010	193	344	264	292	5.05
Octachlorodibenzofuran	2360	450	803	618	682	11.8
PCB 81	493	94.1	168	129	142	2.47
PCB 77	970	185	330	254	280	4.85
PCB 123	<510	<97.3	<173	<134	<147	<2.55
PCB 118	2450	468	833	641	708	12.3
PCB 114	<350	<66.8	<119	<91.6	<101	<1.75
PCB 105	1510	288	514	395	436	7.55
PCB 126	631	120	215	165	182	3.16
PCB 167	<200	<38.2	<68.0	<52.4	<57.8	<1.00
PCB 156	<310	<59.2	<105	<81.2	<89.6	<1.55
PCB 157	210	40.1	71.4	55.0	60.7	1.05
PCB 169	229	43.7	77.9	59.9	66.2	1.15
PCB 189	214	40.8	72.8	56.0	61.8	1.07
Total Dioxins & Furans Only	59731	11399	20317	15636	17263	299
Total PCBs Only	<8077	<1541	<2747	<2114	<2334	<40.4
Total Dioxins & Furans and PCBs	<67808	<12940	<23064	<17751	<19598	<339

Dry Gas Volume Sampled (Rm^3*) :	2.940
Actual Flowrate (m^3/s) :	26.2
Dry Reference Flowrate (Rm^3/s*) :	14.7
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	17.3

* 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 17
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	955	185	331	253	281	4.80
12378-pentachlorodibenzo-p-dioxin	1840	356	638	487	541	9.24
123478-hexachlorodibenzo-p-dioxin	763	147	264	202	224	3.83
123678-hexachlorodibenzo-p-dioxin	801	155	278	212	235	4.02
123789-hexachlorodibenzo-p-dioxin	1140	220	395	301	335	5.73
1234678-heptachlorodibenzo-p-dioxin	3220	622	1116	851	946	16.2
Octachlorodibenzo-p-dioxin	5350	1034	1854	1415	1572	26.9
2378-tetrachlorodibenzofuran	7700	1488	2668	2036	2262	38.7
12378-pentachlorodibenzofuran	6960	1345	2412	1840	2045	35.0
23478-pentachlorodibenzofuran	5770	1115	1999	1526	1695	29.0
123478-hexachlorodibenzofuran	5340	1032	1850	1412	1569	26.8
123678-hexachlorodibenzofuran	5860	1132	2030	1550	1722	29.4
234678-hexachlorodibenzofuran	3700	715	1282	978	1087	18.6
123789-hexachlorodibenzofuran	1090	211	378	288	320	5.48
1234678-heptachlorodibenzofuran	10700	2068	3708	2829	3144	53.8
1234789-heptachlorodibenzofuran	1030	199	357	272	303	5.17
Octachlorodibenzofuran	2030	392	703	537	596	10.2
PCB 81	<350	<67.6	<121	<92.6	<103	<1.76
PCB 77	1140	220	395	301	335	5.73
PCB 123	<1100	<213	<381	<291	<323	<5.53
PCB 118	3480	672	1206	920	1022	17.5
PCB 114	<230	<44.4	<80	<60.8	<67.6	<1.16
PCB 105	1420	274	492	375	417	7.13
PCB 126	628	121	218	166	185	3.16
PCB 167	<230	<44.4	<79.7	<60.8	<67.6	<1.16
PCB 156	<280	<54.1	<97.0	<74.0	<82.3	<1.41
PCB 157	150	29.0	52.0	39.7	44.1	0.75
PCB 169	309	59.7	107	81.7	90.8	1.55
PCB 189	203	39.2	70.3	53.7	59.6	1.02
Total Dioxins & Furans Only	64249	12416	22262	16990	18877	323
Total PCBs Only	<9520	<1840	<3299	<2517	<2797	<47.8
Total Dioxins & Furans and PCBs	<73769	<14255	<25561	<19507	<21675	<371

Dry Gas Volume Sampled (Rm^3*) :	2.886
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	14.5
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	17.1

* 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 18
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	711	135	241	182	204	3.57
12378-pentachlorodibenzo-p-dioxin	1260	239	428	323	362	6.33
123478-hexachlorodibenzo-p-dioxin	530	100	180	136	152	2.66
123678-hexachlorodibenzo-p-dioxin	596	113	202	153	171	2.99
123789-hexachlorodibenzo-p-dioxin	710	135	241	182	204	3.57
1234678-heptachlorodibenzo-p-dioxin	3180	603	1079	815	913	16.0
Octachlorodibenzo-p-dioxin	6110	1158	2073	1566	1753	30.7
2378-tetrachlorodibenzofuran	6580	1247	2233	1686	1888	33.0
12378-pentachlorodibenzofuran	5510	1044	1870	1412	1581	27.7
23478-pentachlorodibenzofuran	4820	913	1636	1235	1383	24.2
123478-hexachlorodibenzofuran	4530	858	1537	1161	1300	22.7
123678-hexachlorodibenzofuran	4600	872	1561	1179	1320	23.1
234678-hexachlorodibenzofuran	3530	669	1198	904	1013	17.7
123789-hexachlorodibenzofuran	983	186	334	252	282	4.94
1234678-heptachlorodibenzofuran	11500	2179	3902	2947	3300	57.8
1234789-heptachlorodibenzofuran	1060	201	360	272	304	5.32
Octachlorodibenzofuran	2470	468	838	633	709	12.4
PCB 81	<340	<64.4	<115	<87.1	<97.6	<1.71
PCB 77	881	167	299	226	253	4.42
PCB 123	<630	<119	<214	<161	<181	<3.16
PCB 118	3970	752	1347	1017	1139	19.9
PCB 114	<310	<58.7	<105	<79.4	<89.0	<1.56
PCB 105	1850	351	628	474	531	9.29
PCB 126	734	139	249	188	211	3.69
PCB 167	295	55.9	100	75.6	84.7	1.48
PCB 156	374	70.9	127	95.8	107	1.88
PCB 157	160	30.3	54.3	41.0	45.9	0.80
PCB 169	<170	<32.2	<57.7	<43.6	<48.8	<0.85
PCB 189	270	51.2	91.6	69.2	77.5	1.36
Total Dioxins & Furans Only	58680	11121	19912	15035	16840	295
Total PCBs Only	<9984	<1892	<3388	<2558	<2865	<50.1
Total Dioxins & Furans and PCBs	<68664	<13013	<23300	<17594	<19705	<345

Dry Gas Volume Sampled (Rm³*) :	2.947
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	19.6
Wet Reference Flowrate (Rm³/s*) :	17.5

* 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 19
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	157	185	135	159	15.7
12378-pentachlorodibenzo-p-dioxin	263	356	239	286	21.5
123478-hexachlorodibenzo-p-dioxin	105	147	100	118	22.0
123678-hexachlorodibenzo-p-dioxin	123	155	113	130	16.7
123789-hexachlorodibenzo-p-dioxin	158	220	135	171	25.9
1234678-heptachlorodibenzo-p-dioxin	540	622	603	588	7.3
Octachlorodibenzo-p-dioxin	1109	1034	1158	1100	5.7
2378-tetrachlorodibenzofuran	1389	1488	1247	1375	8.8
12378-pentachlorodibenzofuran	1210	1345	1044	1200	12.6
23478-pentachlorodibenzofuran	966	1115	913	998	10.5
123478-hexachlorodibenzofuran	893	1032	858	928	9.9
123678-hexachlorodibenzofuran	937	1132	872	980	13.8
234678-hexachlorodibenzofuran	660	715	669	681	4.3
123789-hexachlorodibenzofuran	184	211	186	194	7.6
1234678-heptachlorodibenzofuran	2061	2068	2179	2103	3.2
1234789-heptachlorodibenzofuran	193	199	201	198	2.2
Octachlorodibenzofuran	450	392	468	437	9.1
PCB 81	94.1	<67.6	<64.4	<75.4	21.6
PCB 77	185	220	167	191	14.2
PCB 123	<97.3	<213	<119	<143	42.7
PCB 118	468	672	752	631	23.3
PCB 114	<66.8	<44.4	<58.7	<56.7	20.0
PCB 105	288	274	351	304	13.3
PCB 126	120	121	139	127	8.3
PCB 167	<38.2	<44.4	55.9	<46.2	19.5
PCB 156	<59.2	<54.1	70.9	<61.4	14.0
PCB 157	40.1	29.0	30.3	33.1	18.3
PCB 169	43.7	59.7	<32.2	<45.2	30.5
PCB 189	40.8	39.2	51.2	43.7	14.8
Total Dioxins & Furans Only	11399	12416	11121	11645	5.9
Total PCBs Only	<1541	<1840	<1892	<1758	10.8
Total Dioxins & Furans and PCBs	<12940	<14255	<13013	<13403	5.5

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

TABLE 20
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	280	331	241	284	15.8
12378-pentachlorodibenzo-p-dioxin	469	638	428	512	21.7
123478-hexachlorodibenzo-p-dioxin	187	264	180	211	22.2
123678-hexachlorodibenzo-p-dioxin	220	278	202	233	16.9
123789-hexachlorodibenzo-p-dioxin	281	395	241	306	26.1
1234678-heptachlorodibenzo-p-dioxin	963	1116	1079	1052	7.6
Octachlorodibenzo-p-dioxin	1976	1854	2073	1968	5.6
2378-tetrachlorodibenzofuran	2476	2668	2233	2459	8.9
12378-pentachlorodibenzofuran	2156	2412	1870	2146	12.6
23478-pentachlorodibenzofuran	1721	1999	1636	1785	10.7
123478-hexachlorodibenzofuran	1592	1850	1537	1660	10.1
123678-hexachlorodibenzofuran	1670	2030	1561	1754	14.0
234678-hexachlorodibenzofuran	1177	1282	1198	1219	4.6
123789-hexachlorodibenzofuran	328	378	334	346	7.8
1234678-heptachlorodibenzofuran	3673	3708	3902	3761	3.3
1234789-heptachlorodibenzofuran	344	357	360	353	2.4
Octachlorodibenzofuran	803	703	838	781	8.9
PCB 81	168	<121	<115	<135	21.3
PCB 77	330	395	299	341	14.4
PCB 123	<173	<381	<214	<256	43.0
PCB 118	833	1206	1347	1129	23.5
PCB 114	<119	<80	<105	<101	19.7
PCB 105	514	492	628	544	13.4
PCB 126	215	218	249	227	8.4
PCB 167	<68.0	<79.7	100	<82.6	19.7
PCB 156	<105	<97.0	127	<110	14.0
PCB 157	71.4	52.0	54.3	59.2	17.9
PCB 169	77.9	107	<57.7	<80.9	30.7
PCB 189	72.8	70.3	91.6	78.2	14.9
Total Dioxins & Furans Only	20317	22262	19912	20830	6.0
Total PCBs Only	<2747	<3299	<3388	<3145	11.0
Total Dioxins & Furans and PCBs	<23064	<25561	<23300	<23975	5.8

* 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 21
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	215	253	182	217	16.2
12378-pentachlorodibenzo-p-dioxin	361	487	323	390	21.9
123478-hexachlorodibenzo-p-dioxin	144	202	136	161	22.4
123678-hexachlorodibenzo-p-dioxin	169	212	153	178	17.2
123789-hexachlorodibenzo-p-dioxin	216	301	182	233	26.4
1234678-heptachlorodibenzo-p-dioxin	741	851	815	802	7.0
Octachlorodibenzo-p-dioxin	1521	1415	1566	1500	5.2
2378-tetrachlorodibenzofuran	1906	2036	1686	1876	9.4
12378-pentachlorodibenzofuran	1660	1840	1412	1637	13.1
23478-pentachlorodibenzofuran	1325	1526	1235	1362	10.9
123478-hexachlorodibenzofuran	1225	1412	1161	1266	10.3
123678-hexachlorodibenzofuran	1285	1550	1179	1338	14.3
234678-hexachlorodibenzofuran	906	978	904	930	4.6
123789-hexachlorodibenzofuran	253	288	252	264	7.9
1234678-heptachlorodibenzofuran	2827	2829	2947	2868	2.4
1234789-heptachlorodibenzofuran	264	272	272	269	1.6
Octachlorodibenzofuran	618	537	633	596	8.7
PCB 81	129	<92.6	<87.1	<103	22.2
PCB 77	254	301	226	260	14.7
PCB 123	<134	<291	<161	<195	43.0
PCB 118	641	920	1017	860	22.7
PCB 114	<91.6	<60.8	<79.4	<77.3	20.1
PCB 105	395	375	474	415	12.6
PCB 126	165	166	188	173	7.5
PCB 167	<52.4	<60.8	75.6	<62.9	18.7
PCB 156	<81.2	<74.0	95.8	<83.7	13.3
PCB 157	55.0	39.7	41.0	45.2	18.8
PCB 169	59.9	81.7	<43.6	<61.7	31.0
PCB 189	56.0	53.7	69.2	59.6	14.0
Total Dioxins & Furans Only	15636	16990	15035	15887	6.3
Total PCBs Only	<2114	<2517	<2558	<2397	10.2
Total Dioxins & Furans and PCBs	<17751	<19507	<17594	<18284	5.8

* 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 22
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	238	281	204	241	15.9
12378-pentachlorodibenzo-p-dioxin	399	541	362	434	21.8
123478-hexachlorodibenzo-p-dioxin	159	224	152	179	22.2
123678-hexachlorodibenzo-p-dioxin	187	235	171	198	17.0
123789-hexachlorodibenzo-p-dioxin	239	335	204	259	26.2
1234678-heptachlorodibenzo-p-dioxin	818	946	913	892	7.5
Octachlorodibenzo-p-dioxin	1679	1572	1753	1668	5.5
2378-tetrachlorodibenzofuran	2104	2262	1888	2085	9.0
12378-pentachlorodibenzofuran	1832	2045	1581	1820	12.8
23478-pentachlorodibenzofuran	1462	1695	1383	1514	10.7
123478-hexachlorodibenzofuran	1353	1569	1300	1407	10.1
123678-hexachlorodibenzofuran	1419	1722	1320	1487	14.1
234678-hexachlorodibenzofuran	1000	1087	1013	1033	4.5
123789-hexachlorodibenzofuran	279	320	282	294	7.8
1234678-heptachlorodibenzofuran	3121	3144	3300	3188	3.1
1234789-heptachlorodibenzofuran	292	303	304	300	2.2
Octachlorodibenzofuran	682	596	709	662	8.9
PCB 81	142	<103	<97.6	<114	21.5
PCB 77	280	335	253	289	14.4
PCB 123	<147	<323	<181	<217	43.0
PCB 118	708	1022	1139	957	23.3
PCB 114	<101	<67.6	<89.0	<85.9	19.8
PCB 105	436	417	531	462	13.2
PCB 126	182	185	211	193	8.2
PCB 167	<57.8	<67.6	84.7	<70.0	19.4
PCB 156	<89.6	<82.3	107	<93.1	13.8
PCB 157	60.7	44.1	45.9	50.2	18.1
PCB 169	66.2	90.8	<48.8	<68.6	30.8
PCB 189	61.8	59.6	77.5	66.3	14.7
Total Dioxins & Furans Only	17263	18877	16840	17660	6.1
Total PCBs Only	<2334	<2797	<2865	<2666	10.8
Total Dioxins & Furans and PCBs	<19598	<21675	<19705	<20326	5.8

* 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 23
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/s	ng/s	ng/s	ng/s	%
2378-tetrachlorodibenzo-p-dioxin	4.11	4.80	3.57	4.16	14.8
12378-pentachlorodibenzo-p-dioxin	6.90	9.24	6.33	7.49	20.6
123478-hexachlorodibenzo-p-dioxin	2.76	3.83	2.66	3.08	21.1
123678-hexachlorodibenzo-p-dioxin	3.23	4.02	2.99	3.42	15.8
123789-hexachlorodibenzo-p-dioxin	4.14	5.73	3.57	4.48	25.0
1234678-heptachlorodibenzo-p-dioxin	14.2	16.2	16.0	15.4	7.2
Octachlorodibenzo-p-dioxin	29.1	26.9	30.7	28.9	6.6
2378-tetrachlorodibenzofuran	36.4	38.7	33.0	36.0	7.9
12378-pentachlorodibenzofuran	31.7	35.0	27.7	31.4	11.6
23478-pentachlorodibenzofuran	25.3	29.0	24.2	26.2	9.6
123478-hexachlorodibenzofuran	23.4	26.8	22.7	24.3	9.0
123678-hexachlorodibenzofuran	24.6	29.4	23.1	25.7	12.9
234678-hexachlorodibenzofuran	17.3	18.6	17.7	17.9	3.7
123789-hexachlorodibenzofuran	4.83	5.48	4.94	5.08	6.9
1234678-heptachlorodibenzofuran	54.0	53.8	57.8	55.2	4.1
1234789-heptachlorodibenzofuran	5.05	5.17	5.32	5.18	2.6
Octachlorodibenzofuran	11.8	10.2	12.4	11.5	9.9
PCB 81	2.47	<1.76	<1.71	<1.98	21.4
PCB 77	4.85	5.73	4.42	5.00	13.3
PCB 123	<2.55	<5.53	<3.16	<3.75	41.9
PCB 118	12.3	17.5	19.9	16.6	23.7
PCB 114	<1.75	<1.16	<1.56	<1.49	20.4
PCB 105	7.55	7.13	9.29	7.99	14.3
PCB 126	3.16	3.16	3.69	3.33	9.2
PCB 167	<1.00	<1.16	1.48	<1.21	20.3
PCB 156	<1.55	<1.41	1.88	<1.61	15.0
PCB 157	1.05	0.75	0.80	0.87	18.3
PCB 169	1.15	1.55	<0.85	<1.18	29.6
PCB 189	1.07	1.02	1.36	1.15	15.8
Total Dioxins & Furans Only	299	323	295	305	5.0
Total PCBs Only	<40.4	<47.8	<50.1	<46.1	11.1
Total Dioxins & Furans and PCBs	<339	<371	<345	<352	4.8

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

TABLE 24
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Summary of Dioxin and Furan Specific Isomer Emission Data

Specific Isomer	Actual Concentration pg/m³	Dry Reference Concentration pg/Rm³*	Dry Adjusted Concentration pg/Rm³**	Wet Reference Concentration pg/Rm³*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	159	284	217	241	4.16
12378-pentachlorodibenzo-p-dioxin	286	512	390	434	7.49
123478-hexachlorodibenzo-p-dioxin	118	211	161	179	3.08
123678-hexachlorodibenzo-p-dioxin	130	233	178	198	3.42
123789-hexachlorodibenzo-p-dioxin	171	306	233	259	4.48
1234678-heptachlorodibenzo-p-dioxin	588	1052	802	892	15.4
Octachlorodibenzo-p-dioxin	1100	1968	1500	1668	28.9
2378-tetrachlorodibenzofuran	1375	2459	1876	2085	36.0
12378-pentachlorodibenzofuran	1200	2146	1637	1820	31.4
23478-pentachlorodibenzofuran	998	1785	1362	1514	26.2
123478-hexachlorodibenzofuran	928	1660	1266	1407	24.3
123678-hexachlorodibenzofuran	980	1754	1338	1487	25.7
234678-hexachlorodibenzofuran	681	1219	930	1033	17.9
123789-hexachlorodibenzofuran	194	346	264	294	5.08
1234678-heptachlorodibenzofuran	2103	3761	2868	3188	55.2
1234789-heptachlorodibenzofuran	198	353	269	300	5.18
Octachlorodibenzofuran	437	781	596	662	11.5
PCB 81	<75.4	<135	<103	<114	<1.98
PCB 77	191	341	260	289	5.00
PCB 123	<143	<256	<195	<217	<3.75
PCB 118	631	1129	860	957	16.6
PCB 114	<56.7	<101	<77.3	<85.9	<1.49
PCB 105	304	544	415	462	7.99
PCB 126	127	227	173	193	3.33
PCB 167	<46.2	<82.6	<62.9	<70.0	<1.21
PCB 156	<61.4	<110	<83.7	<93.1	<1.61
PCB 157	33.1	59.2	45.2	50.2	0.87
PCB 169	<45.2	<80.9	<61.7	<68.6	<1.18
PCB 189	43.7	78.2	59.6	66.3	1.15
Total Dioxins & Furans Only	11645	20830	15887	17660	305
Total PCBs Only	<1758	<3145	<2397	<2666	<46.1
Total Dioxins & Furans and PCBs	<13403	<23975	<18284	<20326	<352

* 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 Quench Inlet
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank Train	Laboratory Blank
	pg	pg
2378-tetrachlorodibenzo-p-dioxin	<2.3	<0.66
12378-pentachlorodibenzo-p-dioxin	<1.1	<1.1
123478-hexachlorodibenzo-p-dioxin	<1.1	<0.83
123678-hexachlorodibenzo-p-dioxin	<0.90	<0.67
123789-hexachlorodibenzo-p-dioxin	<0.98	<0.92
1234678-heptachlorodibenzo-p-dioxin	1.98	<3.0
Octachlorodibenzo-p-dioxin	<3.4	<9.1
2378-tetrachlorodibenzofuran	<3.0	<1.1
12378-pentachlorodibenzofuran	<2.6	<1.7
23478-pentachlorodibenzofuran	<1.3	<0.70
123478-hexachlorodibenzofuran	<1.2	<0.56
123678-hexachlorodibenzofuran	<1.1	<0.56
234678-hexachlorodibenzofuran	<1.2	<0.54
123789-hexachlorodibenzofuran	1.87	<1.7
1234678-heptachlorodibenzofuran	<1.1	0.85
1234789-heptachlorodibenzofuran	<0.88	<0.63
Octachlorodibenzofuran	<0.79	1.61
PCB 81	<9.8	<7.4
PCB 77	<14	23.2
PCB 123	<38	<17
PCB 118	<190	<14
PCB 114	<33	<15
PCB 105	<84	<15
PCB 126	<36	<16
PCB 167	<6.4	<8.9
PCB 156	<6.5	<9.7
PCB 157	<6.5	<9.3
PCB 169	<7.3	<12
PCB 189	<5.9	<2.4
Total Dioxins & Furans Only	<26.8	<26.2
Total PCBs Only	<437	<150
Total Dioxins & Furans and PCBs	<464	<176

"<" 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 26
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	1.000	157	185	135	159
12378-pentachlorodibenzo-p-dioxin	1.000	263	356	239	286
123478-hexachlorodibenzo-p-dioxin	0.100	10.5	14.7	10.0	11.8
123678-hexachlorodibenzo-p-dioxin	0.100	12.3	15.5	11.3	13.0
123789-hexachlorodibenzo-p-dioxin	0.100	15.8	22.0	13.5	17.1
1234678-heptachlorodibenzo-p-dioxin	0.010	5.40	6.22	6.03	5.88
Octachlorodibenzo-p-dioxin	0.0003	0.33	0.31	0.35	0.33
2378-tetrachlorodibenzofuran	0.100	139	149	125	137
12378-pentachlorodibenzofuran	0.030	36.3	40.3	31.3	36.0
23478-pentachlorodibenzofuran	0.300	290	334	274	299
123478-hexachlorodibenzofuran	0.100	89.3	103	85.8	92.8
123678-hexachlorodibenzofuran	0.100	93.7	113	87.2	98.0
234678-hexachlorodibenzofuran	0.100	66.0	71.5	66.9	68.1
123789-hexachlorodibenzofuran	0.100	18.4	21.1	18.6	19.4
1234678-heptachlorodibenzofuran	0.010	20.6	20.7	21.8	21.0
1234789-heptachlorodibenzofuran	0.010	1.93	1.99	2.01	1.98
Octachlorodibenzofuran	0.0003	0.14	0.12	0.14	0.13
PCB 81	0.0003	0.028	<0.020	<0.019	<0.023
PCB 77	0.0001	0.019	0.022	0.017	0.019
PCB 123	0.00003	<0.0029	<0.0064	<0.0036	<0.0043
PCB 118	0.00003	0.014	0.020	0.023	0.019
PCB 114	0.00003	<0.0020	<0.0013	<0.0018	<0.0017
PCB 105	0.00003	0.0086	0.0082	0.011	0.0091
PCB 126	0.100	12.0	12.1	13.9	12.7
PCB 167	0.00003	<0.0011	<0.0013	0.0017	<0.0014
PCB 156	0.00003	<0.0018	<0.0016	0.0021	<0.0018
PCB 157	0.00003	0.0012	0.00087	0.00091	0.00099
PCB 169	0.030	1.31	1.79	<0.97	<1.36
PCB 189	0.00003	0.0012	0.0012	0.0015	0.0013
Total Dioxins & Furans Only		1220	1454	1127	1267
Total PCBs Only		<13.4	<14.0	<15.0	<14.1
Total Dioxins & Furans and PCBs		<1233	<1468	<1142	<1281

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 27
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	1.000	280	331	241	284
12378-pentachlorodibenzo-p-dioxin	1.000	469	638	428	512
123478-hexachlorodibenzo-p-dioxin	0.100	18.7	26.4	18.0	21.1
123678-hexachlorodibenzo-p-dioxin	0.100	22.0	27.8	20.2	23.3
123789-hexachlorodibenzo-p-dioxin	0.100	28.1	39.5	24.1	30.6
1234678-heptachlorodibenzo-p-dioxin	0.010	9.63	11.2	10.8	10.5
Octachlorodibenzo-p-dioxin	0.0003	0.59	0.56	0.62	0.59
2378-tetrachlorodibenzofuran	0.100	248	267	223	246
12378-pentachlorodibenzofuran	0.030	64.7	72.3	56.1	64.4
23478-pentachlorodibenzofuran	0.300	516	600	491	536
123478-hexachlorodibenzofuran	0.100	159	185	154	166
123678-hexachlorodibenzofuran	0.100	167	203	156	175
234678-hexachlorodibenzofuran	0.100	118	128	120	122
123789-hexachlorodibenzofuran	0.100	32.8	37.8	33.4	34.6
1234678-heptachlorodibenzofuran	0.010	36.7	37.1	39.0	37.6
1234789-heptachlorodibenzofuran	0.010	3.44	3.57	3.60	3.53
Octachlorodibenzofuran	0.0003	0.24	0.21	0.25	0.23
PCB 81	0.0003	0.050	<0.036	<0.035	<0.040
PCB 77	0.0001	0.033	0.040	0.030	0.034
PCB 123	0.00003	<0.0052	<0.011	<0.0064	<0.0077
PCB 118	0.00003	0.025	0.036	0.040	0.034
PCB 114	0.00003	<0.0036	<0.0024	<0.0032	<0.0030
PCB 105	0.00003	0.015	0.015	0.019	0.016
PCB 126	0.100	21.5	21.8	24.9	22.7
PCB 167	0.00003	<0.0020	<0.0024	0.0030	<0.0025
PCB 156	0.00003	<0.0032	<0.0029	0.0038	<0.0033
PCB 157	0.00003	0.0021	0.0016	0.0016	0.0018
PCB 169	0.030	2.34	3.21	<1.73	<2.43
PCB 189	0.00003	0.0022	0.0021	0.0027	0.0023
Total Dioxins & Furans Only		2174	2608	2018	2267
Total PCBs Only		<23.9	<25.1	<26.8	<25.3
Total Dioxins & Furans and PCBs		<2198	<2633	<2045	<2292

* 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 28
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	215	253	182	217
12378-pentachlorodibenzo-p-dioxin	1.000	361	487	323	390
123478-hexachlorodibenzo-p-dioxin	0.100	14.4	20.2	13.6	16.1
123678-hexachlorodibenzo-p-dioxin	0.100	16.9	21.2	15.3	17.8
123789-hexachlorodibenzo-p-dioxin	0.100	21.6	30.1	18.2	23.3
1234678-heptachlorodibenzo-p-dioxin	0.010	7.41	8.51	8.15	8.02
Octachlorodibenzo-p-dioxin	0.0003	0.46	0.42	0.47	0.45
2378-tetrachlorodibenzofuran	0.100	191	204	169	188
12378-pentachlorodibenzofuran	0.030	49.8	55.2	42.4	49.1
23478-pentachlorodibenzofuran	0.300	397	458	371	409
123478-hexachlorodibenzofuran	0.100	123	141	116	127
123678-hexachlorodibenzofuran	0.100	129	155	118	134
234678-hexachlorodibenzofuran	0.100	90.6	97.8	90.4	93.0
123789-hexachlorodibenzofuran	0.100	25.3	28.8	25.2	26.4
1234678-heptachlorodibenzofuran	0.010	28.3	28.3	29.5	28.7
1234789-heptachlorodibenzofuran	0.010	2.64	2.72	2.72	2.69
Octachlorodibenzofuran	0.0003	0.19	0.16	0.19	0.18
PCB 81	0.0003	0.039	<0.028	<0.026	<0.031
PCB 77	0.0001	0.025	0.030	0.023	0.026
PCB 123	0.00003	<0.0040	<0.0087	<0.0048	<0.0059
PCB 118	0.00003	0.019	0.028	0.031	0.026
PCB 114	0.00003	<0.0027	<0.0018	<0.0024	<0.0023
PCB 105	0.00003	0.012	0.011	0.014	0.012
PCB 126	0.100	16.5	16.6	18.8	17.3
PCB 167	0.00003	<0.0016	<0.0018	0.0023	<0.0019
PCB 156	0.00003	<0.0024	<0.0022	0.0029	<0.0025
PCB 157	0.00003	0.0016	0.0012	0.0012	0.0014
PCB 169	0.030	1.80	2.45	<1.31	<1.85
PCB 189	0.00003	0.0017	0.0016	0.0021	0.0018
Total Dioxins & Furans Only		1673	1990	1524	1729
Total PCBs Only		<18.4	<19.2	<20.2	<19.3
Total Dioxins & Furans and PCBs		<1691	<2009	<1544	<1748

* 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 28A
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	1.000	215	253	182	217
12378-pentachlorodibenzo-p-dioxin	1.000	361	487	323	390
123478-hexachlorodibenzo-p-dioxin	0.100	14.4	20.2	13.6	16.1
123678-hexachlorodibenzo-p-dioxin	0.100	16.9	21.2	15.3	17.8
123789-hexachlorodibenzo-p-dioxin	0.100	21.6	30.1	18.2	23.3
1234678-heptachlorodibenzo-p-dioxin	0.010	7.41	8.51	8.15	8.02
Octachlorodibenzo-p-dioxin	0.0003	0.46	0.42	0.47	0.45
2378-tetrachlorodibenzofuran	0.100	191	204	169	188
12378-pentachlorodibenzofuran	0.030	49.8	55.2	42.4	49.1
23478-pentachlorodibenzofuran	0.300	397	458	371	409
123478-hexachlorodibenzofuran	0.100	123	141	116	127
123678-hexachlorodibenzofuran	0.100	129	155	118	134
234678-hexachlorodibenzofuran	0.100	90.6	97.8	90.4	93.0
123789-hexachlorodibenzofuran	0.100	25.3	28.8	25.2	26.4
1234678-heptachlorodibenzofuran	0.010	28.3	28.3	29.5	28.7
1234789-heptachlorodibenzofuran	0.010	2.64	2.72	2.72	2.69
Octachlorodibenzofuran	0.0003	0.19	0.16	0.19	0.18
PCB 81	0.0003	0.039	0.014	0.013	0.022
PCB 77	0.0001	0.025	0.030	0.023	0.026
PCB 123	0.00003	0.0020	0.004	0.0024	0.0029
PCB 118	0.00003	0.019	0.028	0.031	0.026
PCB 114	0.00003	0.0014	0.00091	0.0012	0.0012
PCB 105	0.00003	0.012	0.011	0.014	0.012
PCB 126	0.100	16.5	16.6	18.8	17.3
PCB 167	0.00003	0.00079	0.00091	0.0023	0.0013
PCB 156	0.00003	0.0012	0.0011	0.0029	0.0017
PCB 157	0.00003	0.0016	0.0012	0.0012	0.0014
PCB 169	0.030	1.80	2.45	0.65	1.63
PCB 189	0.00003	0.0017	0.0016	0.0021	0.0018
Total Dioxins & Furans Only		1673	1990	1524	1729
Total PCBs Only		18.4	19.2	19.6	19.0
Total Dioxins & Furans and PCBs		1691	2009	1544	1748

* 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 28B
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	215	253	182	217
12378-pentachlorodibenzo-p-dioxin	0.500	181	243	161	195
123478-hexachlorodibenzo-p-dioxin	0.100	14.4	20.2	13.6	16.1
123678-hexachlorodibenzo-p-dioxin	0.100	16.9	21.2	15.3	17.8
123789-hexachlorodibenzo-p-dioxin	0.100	21.6	30.1	18.2	23.3
1234678-heptachlorodibenzo-p-dioxin	0.010	7.41	8.51	8.15	8.02
Octachlorodibenzo-p-dioxin	0.001	1.52	1.41	1.57	1.50
2378-tetrachlorodibenzofuran	0.100	191	204	169	188
12378-pentachlorodibenzofuran	0.050	83.0	92.0	70.6	81.9
23478-pentachlorodibenzofuran	0.500	662	763	618	681
123478-hexachlorodibenzofuran	0.100	123	141	116	127
123678-hexachlorodibenzofuran	0.100	129	155	118	134
234678-hexachlorodibenzofuran	0.100	90.6	97.8	90.4	93.0
123789-hexachlorodibenzofuran	0.100	25.3	28.8	25.2	26.4
1234678-heptachlorodibenzofuran	0.010	28.3	28.3	29.5	28.7
1234789-heptachlorodibenzofuran	0.010	2.64	2.72	2.72	2.69
Octachlorodibenzofuran	0.001	0.62	0.54	0.63	0.60
Total Dioxins & Furans		1792	2090	1639	1841

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

NATO/CCMS (1989) Toxicity Equivalency Factors

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	1.000	238	281	204	241
12378-pentachlorodibenzo-p-dioxin	1.000	399	541	362	434
123478-hexachlorodibenzo-p-dioxin	0.100	15.9	22.4	15.2	17.9
123678-hexachlorodibenzo-p-dioxin	0.100	18.7	23.5	17.1	19.8
123789-hexachlorodibenzo-p-dioxin	0.100	23.9	33.5	20.4	25.9
1234678-heptachlorodibenzo-p-dioxin	0.010	8.18	9.46	9.13	8.92
Octachlorodibenzo-p-dioxin	0.0003	0.50	0.47	0.53	0.50
2378-tetrachlorodibenzofuran	0.100	210	226	189	208
12378-pentachlorodibenzofuran	0.030	55.0	61.3	47.4	54.6
23478-pentachlorodibenzofuran	0.300	439	509	415	454
123478-hexachlorodibenzofuran	0.100	135	157	130	141
123678-hexachlorodibenzofuran	0.100	142	172	132	149
234678-hexachlorodibenzofuran	0.100	100	109	101	103
123789-hexachlorodibenzofuran	0.100	27.9	32.0	28.2	29.4
1234678-heptachlorodibenzofuran	0.010	31.2	31.4	33.0	31.9
1234789-heptachlorodibenzofuran	0.010	2.92	3.03	3.04	3.00
Octachlorodibenzofuran	0.0003	0.20	0.18	0.21	0.20
PCB 81	0.0003	0.043	<0.031	<0.029	<0.034
PCB 77	0.0001	0.028	0.033	0.025	0.029
PCB 123	0.00003	<0.0044	<0.0097	<0.0054	<0.0065
PCB 118	0.00003	0.021	0.031	0.034	0.029
PCB 114	0.00003	<0.0030	<0.0020	<0.0027	<0.0026
PCB 105	0.00003	0.013	0.013	0.016	0.014
PCB 126	0.100	18.2	18.5	21.1	19.3
PCB 167	0.00003	<0.0017	<0.0020	0.0025	<0.0021
PCB 156	0.00003	<0.0027	<0.0025	0.0032	<0.0028
PCB 157	0.00003	0.0018	0.0013	0.0014	0.0015
PCB 169	0.030	1.99	2.72	<1.46	<2.06
PCB 189	0.00003	0.0019	0.0018	0.0023	0.0020
Total Dioxins & Furans Only		1847	2211	1707	1922
Total PCBs Only		<20.3	<21.3	<22.6	<21.4
Total Dioxins & Furans and PCBs		<1867	<2233	<1730	<1943

* 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 30
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	1.000	4.11	4.80	3.57	4.16
12378-pentachlorodibenzo-p-dioxin	1.000	6.90	9.24	6.33	7.49
123478-hexachlorodibenzo-p-dioxin	0.100	0.28	0.38	0.27	0.31
123678-hexachlorodibenzo-p-dioxin	0.100	0.32	0.40	0.30	0.34
123789-hexachlorodibenzo-p-dioxin	0.100	0.41	0.57	0.36	0.45
1234678-heptachlorodibenzo-p-dioxin	0.010	0.14	0.16	0.16	0.15
Octachlorodibenzo-p-dioxin	0.0003	0.0087	0.0081	0.0092	0.0087
2378-tetrachlorodibenzofuran	0.100	3.64	3.87	3.30	3.60
12378-pentachlorodibenzofuran	0.030	0.95	1.05	0.83	0.94
23478-pentachlorodibenzofuran	0.300	7.59	8.70	7.26	7.85
123478-hexachlorodibenzofuran	0.100	2.34	2.68	2.27	2.43
123678-hexachlorodibenzofuran	0.100	2.46	2.94	2.31	2.57
234678-hexachlorodibenzofuran	0.100	1.73	1.86	1.77	1.79
123789-hexachlorodibenzofuran	0.100	0.48	0.55	0.49	0.51
1234678-heptachlorodibenzofuran	0.010	0.54	0.54	0.58	0.55
1234789-heptachlorodibenzofuran	0.010	0.051	0.052	0.053	0.052
Octachlorodibenzofuran	0.0003	0.0035	0.0031	0.0037	0.0034
PCB 81	0.0003	0.00074	<0.00053	<0.00051	<0.00059
PCB 77	0.0001	0.00049	0.00057	0.00044	0.00050
PCB 123	0.00003	<0.000077	<0.00017	<0.000095	<0.00011
PCB 118	0.00003	0.00037	0.00052	0.00060	0.00050
PCB 114	0.00003	<0.000053	<0.000035	<0.000047	<0.000045
PCB 105	0.00003	0.00023	0.00021	0.00028	0.00024
PCB 126	0.100	0.32	0.32	0.37	0.33
PCB 167	0.00003	<0.000030	<0.000035	0.000044	<0.000036
PCB 156	0.00003	<0.000047	<0.000042	0.000056	<0.000048
PCB 157	0.00003	0.000032	0.000023	0.000024	0.000026
PCB 169	0.030	0.034	0.047	<0.026	<0.036
PCB 189	0.00003	0.000032	0.000031	0.000041	0.000034
Total Dioxins & Furans Only		32.0	37.8	29.9	33.2
Total PCBs Only		<0.35	<0.36	<0.40	<0.37
Total Dioxins & Furans and PCBs		<32.3	<38.2	<30.3	<33.6

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 31
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	159	284	217	241	4.16
12378-pentachlorodibenzo-p-dioxin	286	512	390	434	7.49
123478-hexachlorodibenzo-p-dioxin	11.8	21.1	16.1	17.9	0.31
123678-hexachlorodibenzo-p-dioxin	13.0	23.3	17.8	19.8	0.34
123789-hexachlorodibenzo-p-dioxin	17.1	30.6	23.3	25.9	0.45
1234678-heptachlorodibenzo-p-dioxin	5.88	10.5	8.02	8.92	0.15
Octachlorodibenzo-p-dioxin	0.33	0.59	0.45	0.50	0.0087
2378-tetrachlorodibenzofuran	137	246	188	208	3.60
12378-pentachlorodibenzofuran	36.0	64.4	49.1	54.6	0.94
23478-pentachlorodibenzofuran	299	536	409	454	7.85
123478-hexachlorodibenzofuran	92.8	166	127	141	2.43
123678-hexachlorodibenzofuran	98.0	175	134	149	2.57
234678-hexachlorodibenzofuran	68.1	122	93.0	103	1.79
123789-hexachlorodibenzofuran	19.4	34.6	26.4	29.4	0.51
1234678-heptachlorodibenzofuran	21.0	37.6	28.7	31.9	0.55
1234789-heptachlorodibenzofuran	1.98	3.53	2.69	3.00	0.052
Octachlorodibenzofuran	0.13	0.23	0.18	0.20	0.0034
PCB 81	<0.023	<0.040	<0.031	<0.034	<0.00059
PCB 77	0.019	0.034	0.026	0.029	0.00050
PCB 123	<0.0043	<0.0077	<0.0059	<0.0065	<0.00011
PCB 118	0.019	0.034	0.026	0.029	0.00050
PCB 114	<0.0017	<0.0030	<0.0023	<0.0026	<0.000045
PCB 105	0.0091	0.016	0.012	0.014	0.00024
PCB 126	12.7	22.7	17.3	19.3	0.33
PCB 167	<0.0014	<0.0025	<0.0019	<0.0021	<0.000036
PCB 156	<0.0018	<0.0033	<0.0025	<0.0028	<0.000048
PCB 157	0.00099	0.0018	0.0014	0.0015	0.000026
PCB 169	<1.36	<2.43	<1.85	<2.06	<0.036
PCB 189	0.0013	0.0023	0.0018	0.0020	0.000034
Total Dioxins & Furans Only	1267	2267	1729	1922	33.2
Total PCBs Only	<14.1	<25.3	<19.3	<21.4	<0.37
Total Dioxins & Furans and PCBs	<1281	<2292	<1748	<1943	<33.6

* 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 32
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
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	159	284	217	241	4.16
12378-pentachlorodibenzo-p-dioxin	286	512	390	434	7.49
123478-hexachlorodibenzo-p-dioxin	11.8	21.1	16.1	17.9	0.31
123678-hexachlorodibenzo-p-dioxin	13.0	23.3	17.8	19.8	0.34
123789-hexachlorodibenzo-p-dioxin	17.1	30.6	23.3	25.9	0.45
1234678-heptachlorodibenzo-p-dioxin	5.88	10.5	8.02	8.92	0.15
Octachlorodibenzo-p-dioxin	0.33	0.59	0.45	0.50	0.0087
2378-tetrachlorodibenzofuran	137	246	188	208	3.60
12378-pentachlorodibenzofuran	36.0	64.4	49.1	54.6	0.94
23478-pentachlorodibenzofuran	299	536	409	454	7.85
123478-hexachlorodibenzofuran	92.8	166	127	141	2.43
123678-hexachlorodibenzofuran	98.0	175	134	149	2.57
234678-hexachlorodibenzofuran	68.1	122	93.0	103	1.79
123789-hexachlorodibenzofuran	19.4	34.6	26.4	29.4	0.51
1234678-heptachlorodibenzofuran	21.0	37.6	28.7	31.9	0.55
1234789-heptachlorodibenzofuran	1.98	3.53	2.69	3.00	0.052
Octachlorodibenzofuran	0.13	0.23	0.18	0.20	0.0034
PCB 81	0.016	0.029	0.022	0.024	0.00042
PCB 77	0.019	0.034	0.026	0.029	0.00050
PCB 123	0.0021	0.0038	0.0029	0.0033	0.000056
PCB 118	0.019	0.034	0.026	0.029	0.00050
PCB 114	0.00085	0.0015	0.0012	0.0013	0.000022
PCB 105	0.0091	0.016	0.012	0.014	0.00024
PCB 126	12.7	22.7	17.3	19.3	0.33
PCB 167	0.00097	0.0017	0.0013	0.0015	0.000026
PCB 156	0.0013	0.0023	0.0017	0.0019	0.000034
PCB 157	0.00099	0.0018	0.0014	0.0015	0.000026
PCB 169	1.20	2.14	1.63	1.81	0.031
PCB 189	0.0013	0.0023	0.0018	0.0020	0.000034
Total Dioxins & Furans Only	1267	2267	1729	1922	33.2
Total PCBs Only	14.0	25.0	19.0	21.2	0.37
Total Dioxins & Furans and PCBs	1281	2292	1748	1943	33.6

* 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.

APPENDIX 5

Pre-Test Notification Letter and
ECA No. 7306-8FDKNX
(87 pages)

If this information is required in an accessible format, please contact The Regional Municipality of Durham at 1-800-372-1102 extension 3560.

March 31, 2017

Celeste Dugas, Manager
York Durham District Office
Ministry of the Environment and Climate Change
230 Westney Road South, Floor 5
Ajax, ON L1S 7J5

and

Lubna Hussain, Manager
Technology Standards Section
40 St. Clair Avenue West, Floor 9
Toronto, ON M4V 1M2

Dear Ms. Dugas and Ms. Hussain:

RE: Voluntary Spring 2017 Source Testing
Durham York Energy Centre
Environmental Compliance Approval Number: 7306-8FDKNX

The Regional Municipalities of Durham and York (Regions) are planning to complete a voluntary source test at the Durham York Energy Centre (DYEC) commencing on May 23, 2017. The purpose of this source test is to measure DYEC emissions under a directive from Regional Municipality of Durham Council. Conduct of this source test is not a requirement of the Environmental Assessment (EA) approval or the Environmental Compliance Approval (ECA) for the facility.

ORTECH Consulting Inc. (ORTECH) is the contractor selected to conduct the source test. ORTECH will be following the 2016 Pre-Test Plan for Source Testing as approved by the Ministry of the Environment and Climate Change (MOECC) prior to the October/November 2016 source testing. The AMESA work plan approved by the MOECC will be continued with this source test.

Attached is the Organization Chart which depicts the test program organization for the spring 2017 voluntary source test.

The analytical laboratory will be ALS in Mississauga, Ontario. This lab is certified to conduct the analysis for all test parameters.

Please accept this courtesy notification of the planned voluntary source test. If you have any questions regarding this notification and the impending conduct of the DYEC Source Testing Program, please do not hesitate to contact the undersigned.

Sincerely,

Mirka Januszkiewicz, P.Eng.
Director, Waste Management Services

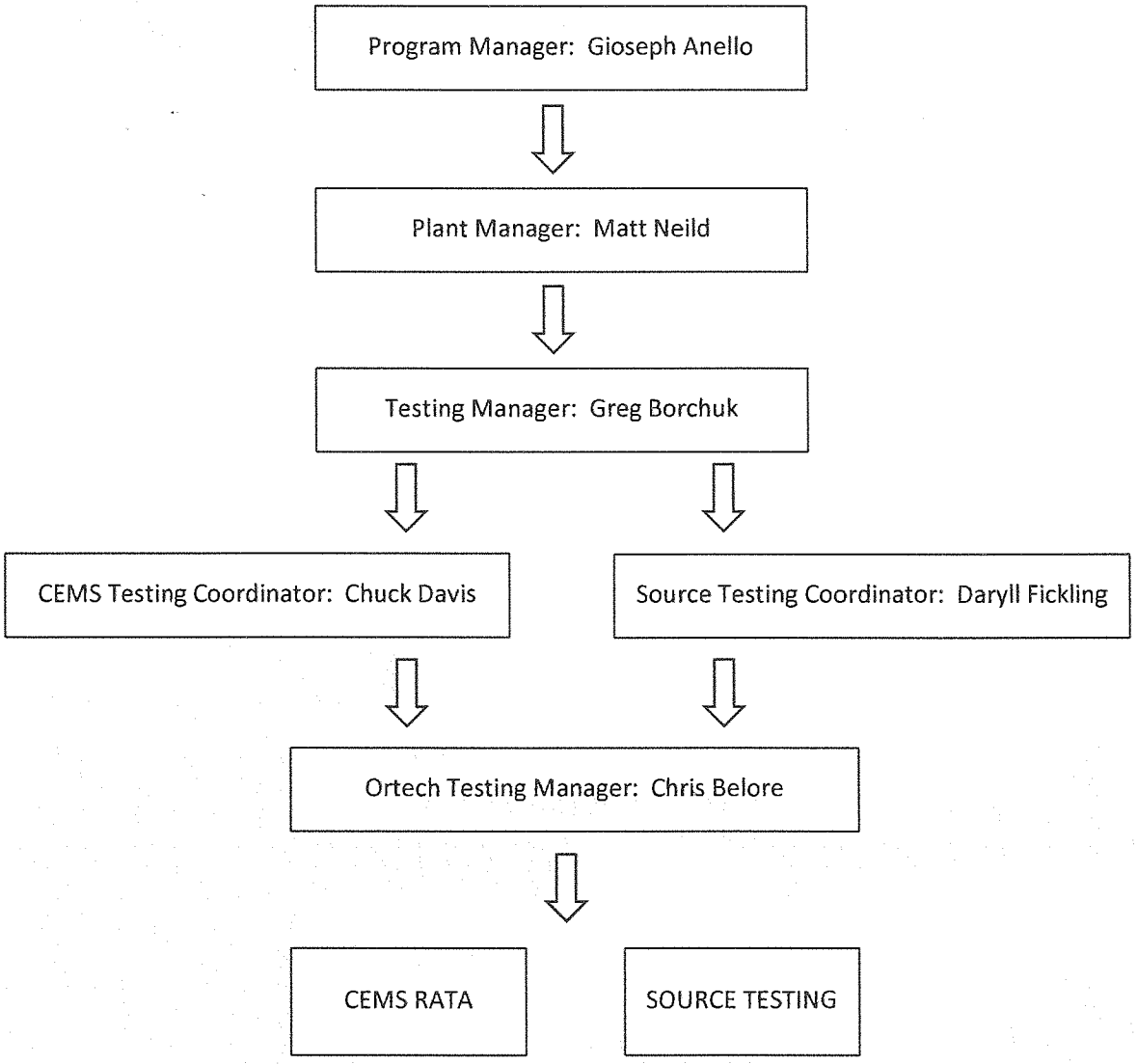
The Regional Municipality of Durham
905.668.7711 ext. 3464
Mirka.Januszkiewicz@durham.ca

Laura McDowell, P.Eng.
Director, Environmental Promotion and Protection
The Regional Municipality of York
905.830.4444 ext. 75077
Laura.McDowell@york.ca

c. G. Azocar, Source Assessment Specialist, Technology Standards Section, MOECC
S. Thomas, Issues Project Coordinator, York Durham District Office, MOECC
P. Dunn, Senior Environmental Officer, York Durham District Office, MOECC
P. Martin, Supervisor, Air, Pesticides, and Environmental Planning, MOECC
G. Battarino, Special Project Officer, Project Coordination, MOECC
E. O'Leary, Environmental Resource Planner and EA Coordinator, Air, Pesticides, and Environmental Planning, MOECC
L. Brasowski, Director, Environmental Engineering, Covanta
M. Neild, Facility Manager, Covanta
A. Huxter, Environmental Specialist, Covanta

Encl. (Figure 1)

Figure 1: Durham York Energy Centre Spring 2017 Test Program Organization



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

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 forWaste 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

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

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.

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.

APPENDIX 6

Particulate and Metals Field Data Sheets
(30 pages)

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals
Test Date	May 23, 2017
Test Location	APC Outlet No. 1 M29
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 3
Impinger Box No.:	13

Pitot Factor	~~0.978~~ .844	
DGMCF	0.978	
Barometric Pressure	29.59	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Reading Interval	2.5
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	3.3	mg
Probe	0.7	mg

Moisture Gain

CWTR	498.6	g
WCBDA	20.7	g

Combustion Gas Concentration

Oxygen	8.48	%
Carbon Dioxide	10.71	%
Carbon Monoxide	11.4	ppm

Measuring Device	MII Numbers
Probe / Pitot S7	B03768
Trendicator	
Control Box Team3	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	
Barometer	~~B03822~~ Env. Can
Calipers	B03922

Nozzle Measurements	
1	0.2525
2	0.2530
3	0.2530
4	0.2525
Average:	.2528

Site Diagram

Notes:

moist 498.6 20.7

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	879.342	.82	.76	285	253	245	65	98	73	73	2.1	3
	2.5	881.07	.84	.77	289	252	249	48	230	73	73	2.2	3
	5	883.03	.84	.77	288	254	250	47	234	73	73	2.2	3
2	7.5	885.00	.83	.77	288	254	250	47	235	73	73	2.2	3
	10	886.96	.81	.76	288	254	248	46	232	73	73	2.1	3
	12.5	888.80	.84	.77	288	254	246	47	230	73	73	2.2	3
3	15	890.84	.78	.74	288	254	245	47	228	73	73	2.0	3
	17.5	892.73	.78	.75	288	255	245	47	227	73	74	2.0	3
	20	894.60	.78	.75	287	254	245	47	227	73	74	2.0	3
4	22.5	896.50	.74	.73	287	254	246	47	227	73	74	1.9	3
	25	898.32	.74	.73	287	254	246	47	227	73	74	1.9	3
	27.5	900.12	.73	.72	287	254	246	47	227	73	74	1.9	3
5	30	901.94	.68	.70	287	254	246	46	227	73	75	1.8	3
	32.5	903.72	.66	.69	288	254	246	46	227	73	75	1.7	3
	35	905.45	.66	.69	287	254	245	46	226	73	75	1.7	3
6	37.5	907.17	.63	.67	287	254	245	46	226	74	75	1.6	3
	40	908.87	.61	.66	287	254	245	46	226	74	75	1.6	3
	42.5	910.54	.63	.67	288	254	245	46	226	74	75	1.6	3
7	45	912.25	.69	.70	288	254	245	45	226	74	75	1.8	3
	47.5	914.02	.71	.71	288	254	246	45	228	74	75	1.8	3
	50	915.80	.70	.71	288	254	245	45	228	74	75	1.8	3

Traverse: 1		0.005 17	
Start Time: 10:32	Initial Leak Check: ~~0.002~~	cfm@ ~~15~~	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21754

Operator : AS

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	917.57	.72	.72	288	254	245	45	227	74	75	1.9	3
	55	919.40	.73	.72	288	254	245	45	227	74	75	1.9	3
	57.5	921.20	.73	.72	288	254	245	44	227	74	76	1.9	3
9	60	923.01	.75	.73	288	253	245	44	227	74	76	2.0	3
	62.5	924.86	.74	.73	288	253	245	44	227	74	78	1.9	3
	65	926.69	.75	.73	288	253	245	44	228	74	76	1.9	3
10	67.5	928.52	.78	.75	288	254	245	44	228	74	76	2.0	3
	70	930.39	.80	.76	287	254	246	45	229	74	76	2.1	3
	72.5	932.32	.76	.74	288	255	246	45	229	75	76	2.0	3
11	75	934.20	.71	.71	288	254	245	45	228	74	76	1.9	3
	77.5	936.02	.71	.71	288	254	245	45	228	74	76	1.9	3
	80	937.83	.74	.73	288	254	244	45	228	74	76	2.0	3
12	82.5	939.68	.71	.71	288	253	244	45	228	74	76	1.9	3
	85	941.48	.70	.71	287	253	245	46	228	74	76	1.9	3
	87.5	943.26	.67	.69	288	253	245	46	228	75	76	1.8	3
	90	945.060											

Traverse: 1		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time: 12:02	Final Leak Check: .002	cfm@ 15 "Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	945.627	.81	.76	284	253	241	55	171	75	75	2.1	3
	2.5	947.56	.85	.78	288	253	246	48	225	75	76	2.2	3.5
	5	949.55	.87	.79	288	253	248	47	230	75	76	2.2	3.5
2	7.5	951.55	.87	.79	288	254	248	48	230	75	76	2.2	3.5
	10	953.53	.90	.80	288	254	247	49	229	75	76	2.3	3.5
	12.5	955.58	.89	.80	289	253	246	48	228	75	76	2.3	3.5
3	15	957.60	.85	.78	288	253	245	48	226	75	76	2.2	3.5
	17.5	959.60	.86	.79	288	253	245	48	225	75	77	2.2	3.5
	20	961.58	.84	.77	288	254	245	47	226	75	77	2.2	3.5
4	22.5	963.56	.81	.76	288	255	245	48	225	75	77	2.1	3.5
	25	965.50	.82	.77	288	254	244	47	225	75	77	2.1	3.5
	27.5	967.43	.80	.76	288	255	245	47	224	76	77	2.1	3.5
5	30	969.34	.72	.72	288	253	244	47	224	76	77	1.9	3
	32.5	971.16	.68	.70	290	254	245	47	225	76	77	1.8	3
	35	972.95	.68	.70	288	253	244	48	224	76	77	1.8	3
6	37.5	974.74	.60	.66	288	253	244	48	225	76	78	1.6	3
	40	976.41	.61	.66	288	253	244	48	225	76	77	1.6	3
	42.5	978.08	.61	.66	288	253	245	49	225	76	77	1.6	3
7	45	979.74	.62	.67	288	253	244	48	225	76	78	1.6	3
	47.5	981.43	.67	.69	289	253	244	49	224	76	78	1.8	3
	50	983.16	.66	.69	289	253	~~245~~ 242	47	226	76	78	1.8	3

Traverse: 2					
Start Time: 12:09	Initial Leak Check:	0.004	cfm@	15	"Hg
Finish Time:	Final Leak Check:		cfm@		"Hg

Project No.: 21754

Operator : AS

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	984.90	.69	.70	288	253	245	46	226	77	78	1.8	3
	55	986.70	.67	.69	288	253	244	46	226	77	78	1.8	3
	57.5	988.47	.70	.71	288	253	244	46	226	77	79	1.8	3
9	60	990.27	.69	.71	287	253	244	46	226	77	79	1.8	3
	62.5	992.08	.71	.72	287	253	244	46	226	77	79	1.8	3
	65	993.88	.71	.72	287	254	244	46	227	77	79	1.8	3
10	67.5	995.67	.70	.71	287	254	245	46	227	77	79	1.8	3
	70	997.46	.69	.71	287	255	244	47	227	77	79	1.8	3
	72.5	999.26	.69	.71	287	255	245	47	227	78	80	1.8	3
11	75	1001.04	.71	.72	287	255	244	47	228	78	80	1.9	3
	77.5	1002.85	.67	.70	287	255	244	47	228	78	80	1.8	3
	80	1004.63	.68	.70	287	255	244	47	228	78	80	1.8	3
12	82.5	1006.41	.68	.70	287	255	244	48	228	78	80	1.8	3
	85	1008.19	.66	.69	287	255	244	48	228	78	80	1.8	3
	87.5	1009.94	.66	.69	287	254	244	48	227	78	80	1.8	3
	90	1011.695											

Traverse: 2				
Start Time:	Initial Leak Check:		cfm@	"Hg
Finish Time: 13:39	Final Leak Check:	0.001	cfm@ 15	"Hg

Project No.: 21754

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	23 May 17
Test Location	APC Outlet No. 1 M29
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	
Meter Box No.:	
Impinger Box No.:	see T1

Pitot Factor	.844	
DGMCF	.9 78	
Barometric Pressure	29.53	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Particulate Gain

Filter	1.7	mg
Probe	0.1	mg

Moisture Gain

CWTR	474.8	g
WCBDA	91.6	g

Combustion Gas Concentration

Oxygen	8.49	%
Carbon Dioxide	10.58	%
Carbon Monoxide	15.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	see T1
Barometer	
Calipers	

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

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: MAY 23/17	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	12.550	.84	.78	283	254	242	66	180	80	80	2.2	4
	2.5	14.45	.85	.78	288	256	243	51	237	79	80	2.3	4
	5	16.46	.85	.78	288	255	243	48	243	79	79	2.3	4
2	7.5	18.48	.90	.81	289	255	243	49	244	79	80	2.3	4
	10	20.52	.87	.79	288	255	242	49	245	79	80	2.3	4
	12.5	22.56	.87	.79	288	255	242	48	247	80	80	2.3	4
3	15	24.58	.85	.79	288	255	243	49	247	80	80	2.3	4
	17.5	26.60	.85	.79	288	255	242	49	249	80	80	2.3	4
	20	28.60	.86	.79	288	255	243	49	249	80	80	2.3	4
4	22.5	30.60	.86	.79	288	255	243	49	250	80	80	2.3	4
	25	32.59	.78	.75	288	255	242	49	250	80	80	2.1	4
	27.5	34.53	.78	.75	288	255	243	48	250	80	81	2.1	3.5
5	30	36.46	.68	.70	288	255	243	48	250	80	81	1.8	3.5
	32.5	38.27	.70	.71	288	255	242	47	250	80	81	1.8	3.5
	35	40.05	.69	.71	288	254	242	47	249	80	81	1.8	3.5
6	37.5	41.83	.59	.65	288	255	243	47	250	80	81	1.6	3
	40	43.51	.60	.66	288	255	243	47	250	80	81	1.6	3
	42.5	45.18	.60	.66	288	255	243	47	249	81	82	1.6	3
7	45	46.85	.70	.71	288	254	243	47	249	80	82	1.9	3.5
	47.5	48.65	.69	.71	288	255	244	46	248	81	82	1.9	3.5
	50	50.46	.68	.70	288	255	243	46	249	81	82	1.9	3.5

Traverse: 1			
Start Time: 14:30	Initial Leak Check: 0.005	cfm@ 15	"Hg
Finish Time:	Final Leak Check: —	cfm@	"Hg

Project No.: 21754

Operator : 95

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	52.27	.71	.72	288	255	243	45	249	81	82	1.9	3.5
	55	54.09	.72	.72	288	254	243	45	249	81	82	1.9	3.5
	57.5	55.92	.71	.72	288	254	243	45	249	81	82	1.9	3.5
9	60	57.75	.70	.72	287	254	243	46	249	81	82	1.9	3.5
	62.5	59.58	.70	.72	287	254	243	46	249	81	82	1.9	3.5
	65	61.41	.70	.72	287	254	243	46	248	81	82	1.9	3.5
10	67.5	63.23	.69	.71	287	254	243	46	248	81	82	1.9	3.5
	70	65.05	.72	.73	287	254	243	46	248	81	82	1.9	3.5
	72.5	66.86	.72	.73	287	254	243	46	248	81	82	1.9	3.5
11	75	68.74	.68	.70	287	254	243	46	248	81	82	1.8	3.5
	77.5	70.56	.67	.70	287	255	243	47	248	81	82	1.8	3.5
	80	72.32	.66	.69	287	254	242	47	247	81	82	1.8	3.5
12	82.5	74.18	.67	.70	287	254	243	48	247	81	83	1.8	3.5
	85	75.95	0.65	.69	287	256	243	48	247	81	83	1.8	3.5
	87.5	77.76	0.66	.69	287	254	243	48	247	81	83	1.8	3.5
	90	79.557											

Traverse: 1				
Start Time:	Initial Leak Check:	cfm@	"Hg	
Finish Time: 16:00	Final Leak Check: 0.002	cfm@ 16	"Hg	

Project No.: 21754

Operator : AS

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	80.150	.74	.75	287	254	242	60	188	82	83	2	24
	2.5	81.97	.75	.74	287	254	244	51	239	81	82	2	4
	5	83.88	.79	.76	287	253	243	49	243	81	82	2.1	4
2	7.5	85.80	.82	.77	287	254	242	48	245	82	82	2.2	4
	10	87.80	.86	.79	287	254	242	47	247	81	82	2.3	4
	12.5	89.83	.84	.78	287	255	243	48	248	81	82	2.2	4
3	15	91.83	.81	.77	288	255	242	48	248	81	82	2.2	4
	17.5	93.80	.83	.78	288	255	242	48	248	81	82	2.2	4
	20	95.77	.82	.77	288	255	243	49	247	81	82	2.2	4
4	22.5	97.73	.76	.75	288	255	243	49	249	82	82	2.0	4
	25	99.65	.78	.76	288	255	242	50	248	82	83	2.1	4
	27.5	101.57	.77	.75	288	255	243	50	249	82	83	2.1	4
5	30	103.48	.76	.75	288	255	242	50	249	82	83	2.0	4
	32.5	105.39	.70	.71	289	255	243	50	249	82	83	2.0	4
	35	107.25	.70	.71	290	256	243	51	249	82	83	2.0	4
6	37.5	109.04	.64	.68	289	255	242	51	249	82	83	1.7	4
	40	110.85	.65	.69	289	255	243	51	248	82	83	1.7	4
	42.5	112.58	.63	.68	289	255	242	51	248	82	83	1.7	4
7	45	114.31	.68	.71	289	255	243	51	248	82	84	1.8	4
	47.5	116.07	.69	.71	289	255	243	51	248	82	84	1.8	4
	50	117.83	.68	.71	289	254	242	51	248	82	84	1.8	4

Traverse: 2			
Start Time: 16:11	Initial Leak Check: .002	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21754

Operator: AS/JF

Field Data Sheet

Date: May 23/17	Plant: Covanta DYEC	Test No.: 2 M29 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	119.61	0.70	0.72	284	254	242	51	249	82	84	1.8	4
	55	121.39	.70	.72	284	254	242	50	245	82	84	1.8	4
	57.5	123.16	.71	.72	284	254	242	49	244	83	84	1.8	4
9	60	124.94	.74	.74	284	254	242	48	245	83	84	2.0	4
	62.5	126.74	.74	.74	285	254	242	48	247	83	84	2.0	4
	65	128.65	.72	.73	284	254	242	48	248	83	84	2.0	4
10	67.5	130.52	.74	.74	284	254	242	48	248	83	84	2.0	4
	70	132.78	.80	.77	288	254	242	48	248	83	84	2.1	4
	72.5	134.28	.78	.76	288	254	242	48	248	83	84	2.1	4
11	75	136.21	.70	.72	288	254	242	48	249	83	84	1.9	4
	77.5	138.08	.73	.73	288	254	242	48	248	83	84	1.9	4
	80	139.92	.71	.72	288	254	242	48	248	83	84	1.9	4
12	82.5	141.78	.54	.63	288	254	242	49	248	83	84	1.4	4
	85	143.419	.57	.65	288	254	242	48	247	83	84	1.5	4
	87.5	145.02	.55	.64	288	253	242	49	246	83	84	1.5	4
	90	146.646											

Traverse: 2				
Start Time:	Initial Leak Check:	cfm@	"Hg	
Finish Time: 17:41	Final Leak Check: .003	cfm@ 15	"Hg	

Project No.: 21754

Operator: AS/JF

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals
Test Date	May 25/17
Test Location	APC Outlet No. 1 M29
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	6B
Meter Box No.:	Team 3
Impinger Box No.:	1

Pitot Factor	.844	
DGMCF	.978	
Barometric Pressure	29.32	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2553	inches
Stack Diameter	4.5	feet
Length	4	feet
Width		feet
Port length:	11	inches

Reading Interval	2.5
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	2.1	mg
Probe	2.2	mg

Moisture Gain

CWTR	473.8	g
WCBDA	242	g

Combustion Gas Concentration

Oxygen	8.62	%
Carbon Dioxide	10.41	%
Carbon Monoxide	11.7	ppm

Measuring Device	MII Numbers
Probe / Pitot S6	B03767
Trendicator	
Control Box Team 3	COE 20093
Incline Manometer	COE 20093
Comb.Gas.Analyzer	
Micromanometer	COE 20126
Barometer	Env. Can
Calipers	B03922

Nozzle Measurements	
1	.2560
2	.2535
3	.2560
4	.2555
Average:	.2553

Site Diagram

Notes:

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	275.837	.83	.79	284	260	252	~~260~~	135	76	76	2.2	3
	2.5	277.75	.82	.76	288	259	251	~~2300~~	237	76	76	2.2	3.5
	5	279.76	.85	.80	288	262	251	60	243	76	76	2.3	3.5
2	7.5	281.79	.82	.78	288	263	251	58	240	76	76	2.2	3.5
	10	283.82	.82	.76	288	261	251	58	239	76	76	2.2	3.5
	12.5	285.82	.81	.78	288	261	250	58	119	76	76	2.2	3.5
3	15	287.84	.72	.73	289	260	250	58	110	76	76	2.0	3
	17.5	289.72	.72	.75	289	257	250	64	80	76	76	2.1	3
	20	291.62	.73	.75	289	256	250	62	238	76	76	2.1	3
4	22.5	293.52	.67	.71	289	261	250	59	249	76	77	1.8	3
	25	295.34	.69	.72	289	259	250	58	249	76	77	1.8	3
	27.5	297.14	.68	.71	289	262	250	56	250	76	77	1.8	3
5	30	298.95	.62	.68	289	261	250	55	250	76	78	1.7	3
	32.5	300.71	.62	.68	289	258	250	55	251	77	78	1.7	3
	35	302.47	.63	.68	289	261	250	54	251	77	78	1.7	3
6	37.5	304.21	.66	.70	289	262	250	53	251	77	78	1.8	3
	40	306.00	.64	.69	289	262	250	53	251	77	78	1.8	3
	42.5	307.76	.63	.69	289	262	251	52	252	77	79	1.8	3
7	45	309.53	.68	.71	289	260	251	52	251	77	79	1.9	3
	47.5	311.35	.67	.71	289	255	250	52	251	77	79	1.9	3
	50	313.15	.66	.70	288	262	250	52	25	77	79	1.8	3

Traverse:	1					
Start Time:	9:01	Initial Leak Check:	.004	cfm@	16	"Hg
Finish Time:		Final Leak Check:		cfm@		"Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 m29	

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	314.96	.70	.73	288	258	251	52	250	77	79	1.9	3
	55	316.78	.71	.73	288	257	250	52	251	77	79	1.9	3
	57.5	318.64	.69	.72	288	256	250	52	251	77	79	1.9	3
9	60	320.47 ~~320.57~~	.64	.69	288	256	250	53	250	77	79	1.8	3
	62.5	322.27	.68	.72	288	262	249	53	250	78	79	1.9	3
	65	324.09	.69	.72	288	256	249	53	250	77	79	1.9	3
10	67.5	325.90	.63	.69	288	256	250	54	250	78	79	1.8	3
	70	327.69	.64	.69	288	258	250	54	250	78	79	1.8	3
	72.5	329.46	.65	~~70.86~~	288	260	250	54	249	78	79	1.8	3
11	75	331.25	.77	.76	288	262	249	55	249	79	79	2.1	3.5
	77.5	333.16	.56	.65	288	257	249	55	249	78	79	1.6	3
	80	334.85	.55	.64	288	262	250	56	247	78	79	1.5	3
12	82.5	336.50	.61	.68	288	257	249	57	246	78	79	1.7	3
	85	338.21	.60	.67	288	249	247	58	247	78	79	1.7	3
	87.5	339.93	.60	.67	288	263	249	58	247	78	79	1.7	3
	90	341.783											

Traverse: 1				
Start Time: ~~10:31~~	Initial Leak Check:		cfm@	"Hg
Finish Time: 10:31	Final Leak Check:	.002	cfm@ 17	"Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: T3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 M29	

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	342.349	.89	.82	286	256	250	70	170	77	77	2.4	4
	2.5	344.34	.89	.81	288	261	251	58	245	77	76	2.5	4
	5	346.45	.88	.81	288	256	250	55	250	76	78	2.4~~5~~	4
2	7.5	348.55	.92	.83	288	259	251	54	252	76	76	2.5	4
	10	350.66	.91	.82	288	261	251	53	252	76	76	2.5	4
	12.5	352.77	.91	.82	288	260	251	53	253	76	76	2.5	4
3	15	354.89	.86	.80	288	263	251	53	253	76	76	2.3	4
	17.5	356.98	.88	.81	288	260	250	53	253	76	77	2.3	4
	20	359.08	.88	.81	288	260	256	53	253	76	77	2.3	4
4	22.5	361.15	.83	.79	288	264	251	52	254	76	77	2.2	4
	25	363.10	.80	.77	288	258	250	55	254	76	77	2.2	4
	27.5	365.22	.82	.78	288	264	250	57	254	77	77	2.2	4
5	30	367.13	.76	.75	288	261	250	58	253	76	77	2.1	4
	32.5	369.06	.75	.75	288	258	251	57	242	76	77	2.1	4
	35	370.98	.73	.74	288	261	250	55	251	76	77	2.0	4
6	37.5	372.86	.64	.69	288	257	250	54	252	76	77	1.8	3.5
	40	374.70	.63	.68	288	257	250	53	252	76	77	1.7	3.5
	42.5	376.48	.65	.70	287	257	250	52	252	77	77	1.7	3.5
7	45	378.25	.72	.73	287	263	250	52	252	76	77	2.0	3.5
	47.5	380.11	.72	.73	287	257	251	51	253	77	78	2.0	3.5
	50	381.96	.71	.73	287	256	250	51	253	76	77	2.0	3.5

Traverse: 2			
Start Time: 11:26	Initial Leak Check: 0.04	cfm@ 17	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1 m29	

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	383.82	.74	.74	287	260	251	51	253	76	78	2.0	4
	55	385.70	.73	.74	287	257	250	51	253	76	77	2.0	4
	57.5	387.58	.72	.73	287	256	250	51	253	76	78	2.0	4
9	60	389.46	.73	.74	285	258	250	52	252	76	77	2.0	4
	62.5	391.35	.74	.74	286	257	250	52	253	76	78	2.0	4
	65	393.23	.72	.73	286	258	250	54	252	76	78	2.0	4
10	67.5	395.12	.75	.75	286	252	250	55	252	76	78	2.1	4
	70	397.03	.76	.75	284	262	250	56	252	76	78	2.1	4
	72.5	398.95	.78	.76	285	260	250	57	252	77	78	2.1	4
11	75	400.91	.70	.72	285	260	250	58	253	76	78	1.9	4
	77.5	402.80	.72	.73	285	258	250	59	252	77	78	1.9	4
	80	404.68	.71	.78	285	259	250	60	252	76	78	1.9	4
12	82.5	406.55	.61	.68	285	263	250	62	251	77	78	1.7	3.5
	85	408.31	.61	.68	285	262	250	62	250	77	78	1.7	3.5
	87.5	410.06	.61	.68	285	261	250	61	249	77	78	1.7	3.5
	90	411.898											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@	"Hg
Finish Time: 12:56	Final Leak Check: .002	cfm@ 17	"Hg

Project No.: 21754

Operator: AS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals
Test Date	May 24/17
Test Location	APC Outlet No. 2 M29
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	6A
Meter Box No.:	Team 4
Impinger Box No.:	13

Pitot Factor	.844	
DGMCF	0.979	
Barometric Pressure	29.43	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11.0	inches

Reading Interval	2.5	
Number of Ports	2	
Number of Points/Port	12	

Particulate Gain

Filter	5.5	mg
Probe	0.7	mg

Moisture Gain

CWTR	465.4	g
WCBDA	22.2	g

Combustion Gas Concentration

Oxygen	~~8.40~~ 8.26	%
Carbon Dioxide	10.73	%
Carbon Monoxide	14.8	ppm

Measuring Device	MII Numbers
Probe / Pitot S7	B03768
Trendicator	
Control Box Team 4	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	COE 20126
Barometer	Env. Can
Calipers	B03922

Nozzle Measurements	
1	.2530
2	.2525
3	.2530
4	.2525
Average:	.2528

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: May 24/17	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2 M29	

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	670.021 ~~669.753~~	.75	.74	278	256	249	72	103	76	76 ~~82~~	1.8	5
	2.5	671.91	.76	.74	281	256	255	52	234	75	75	1.8	5
	5	673.78	.74	.73	280	256	256	51	237	76	76	1.8	5
2	7.5	675.64	.79	.75	281	256	252	51	237	76	75	1.9	5
	10	677.56	.80	.76	281	257	250	51	234	76	75	1.9	5
	12.5	679.49	.82	.77	281	257	255	51	236	76	76	1.9	5
3	15	681.44	.79	.75	281	257	253	51	237	76	76	1.9	5
	17.5	683.47	.84	.78	281	257	249	51	235	76	77	2.0	5
	20	685.40	.80	.76	282	257	255	51	236	76	78	2.0	5
4	22.5	687.45	.82	.77	282	257	256	52	238	~~77~~ 77	78	2.0	5
	25	689.35	.79	.76	282	257	253	52	237	77	79	1.9 ~~2.0~~	5
	27.5	691.32	.80	.76	282	257	250	52	235	77	79	1.9	5
5	30	693.25	.71	.72	278	257	255	52	237	77	79	1.7	5
	32.5	695.10	.76	.74	283	258	253	53	236	77	80	1.8	5
	35	697.01	.71	.72	283	257	251	53	235	77	80	1.7	5
6	37.5	698.88	.64	.68	283	257	250	53	234	77	80	1.5	4
	40	700.62	.65	.69	283	257	255	54	235	77	80	1.5	4
	42.5	702.36	.65	.69	283	257	252	54	235	78	81	1.5	5
7	45	704.08	.67	.70	283	257	250	53	231	78	82	1.6	5
	47.5	705.83	.67	.70	283	257	255	53	235	78	82	1.6	5
	50	707.64	.69	.71	283	257	253	52	236	78	81	1.7	5

Traverse: 1					
Start Time: 08:18	Initial Leak Check:	.005	cfm@	15	"Hg
Finish Time:	Final Leak Check:		cfm@		"Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date:	May 24/17	Plant:	Covanta DYEC	Test No.:	1	Particulate/Metals	Page 3 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	M29	

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	709.44	.69	.71	283	257	254	53	234	80	81	1.7	5
	55	711.25	.69	.71	283	257	255	52	235	79	82	1.7	5
	57.5	713.05	.68	.70	283	257	253	52	236	79	82	1.7	5
9	60	714.84	.67	.70	283	257	250	52	234	79	82	1.7	5
	62.5	716.60	.72	.72	283	257	255	52	235	80	82	1.8	5.5
	65	718.48	.70	.71	283	257	251	51	235	80	82	1.7	5
10	67.5	720.32	.69	.71	283	256	254	51	235	79	82	1.7	5
	70	722.13	.71	.72	283	257	254	51	236	79	84	1.7	5
	72.5	723.98	.68	.71	283	257	250	51	235	79	84	1.7	5
11	75	725.78	.68	.71	283	257	255	51	227	79	82	1.7	5
	77.5	727.59	.71	.72	283	257	254	52	236	80	83	1.7	5
	80	729.42	.68	.70	283	257	250	51	235	80	82	1.7	5
12	82.5	731.24	.59	.66	283	257	256	52	236	81	83	1.4	4
	85	732.94	.60	.66	283	257	253	52	236	81	83	1.9	5
	87.5	734.58	.63	.68	283	256	250	52	234	80	83	1.5	5
	90	736.334											

Traverse:	1				
Start Time:	~~09:48~~	Initial Leak Check:		cfm@	"Hg
Finish Time:	09:48	Final Leak Check:	.002	cfm@ 15	"Hg

Project No.: 21754

Operator : AS

Field Data Sheet

Date: May 24/17	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2 M29	

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	736.863	.79	.76	280	256	255	60 ~~63~~	167	80	82	2.0	6
	2.5	738.76	.81	.77	284	257	251	54	228	80	81	2.0	6
	5	740.84	.80	.77	284	255	254	52	233	81	81	2.0	6
2	7.5	742.82	.84	.78	284	256	254	51	232	81	81	2.0	6
	10	744.88	.85	.79	284	256	256	51	235	80	82	2.0	6
	12.5	746.88	.84	.78	285	257	255	51	238	81	82	2.0	6
3	15	748.95	.81	.77	285	257	255	51	239	80	82	2.0	6
	17.5	750.92	.78	.76	285	257	254	51	239	80	83	1.9	5.5
	20	752.84	.79	.76	284	257	251	51	236	80	83	1.9	5.5
4	22.5	754.76	.74	.74	284	257	256	51	237	80	83	1.8	5.5
	25	756.64	.72	.73	284	257	254	51	235	80	84	1.7	5.5
	27.5	758.46	.71	.72	284	257	250	50	234	81	84	1.7	5.5
5	30	760.26	.68	.71	284	256	257	50	235	80	85	1.7	5.5
	32.5	762.05	.68	.71	284	257	255	50	236	81	85	1.7	5.5
	35	763.83	.70	.72	285	257	250	49	234	80	84	1.7	5.5
6	37.5	765.69	.65	.69	285	256	254	49	234	81	84	1.5	5
	40	767.43	.64	.69	283	257	256	49	237	81	84	1.5	5
	42.5	769.15	.65	.69	285	257	253	49	236	81	83	1.5	5
7	45	770.86	.64	.68	284	256	251	49	233	80	83	1.5	5
	47.5	772.57	.66	.70	284	256	255	46	237	80	83	1.5	5
	50	774.31	.67	.70	285	257	253	49	234	80	83	1.5	5

Traverse: 2			
Start Time: 9:57	Initial Leak Check: .002	cfm@ 16	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date:	May 24/17	Plant:	Covanta DYEC	Test No.:	1	Particulate/Metals	Page 5 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	M29	

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	776.08	.70	.72	284	257	251	49	233	80	82	1.7	6
	55	777.95	.73	.73	284	257	255	48	235	80	82	1.7	6
	57.5	779.80	.71	.72	284	257	253	48	235	81	82	1.7	6
9	60	781.62	.71	.72	284	257	249	49	233	80	84	1.7	5.5
	62.5	783.43	.71	.72	284	257	255	48	235	80	83	1.7	5.5
	65	785.23	.70	.72	284	257	252	49	234	80	82	1.7	6
10	67.5	787.03	.66	.69	284	256	251	49	233	80	82	1.5	5.5
	70	788.74	.69	.71	284	254	253	49	234	80	82	1.6	6
	72.5	790.55	.65	.69	284	257	251	49	234	80	81	1.5	5.5
11	75	792.30	.57	.65	284	257	255	49	233	79	82	1.3	5
	77.5	793.94	.57	.65	284	256	254	49	233	81	82	1.3	5
	80	795.56	.55	.63	284	256	251	49	232	81	81	1.3	5
12	82.5	797.20	.59	.66	284	256	253	49	231	79	81	1.4	5.5
	85	798.88	.58	.65	284	256	254	49	233	79 ~~82~~	~~79~~ 82	1.4	5.5
	87.5	800.55	.58	.65	284	255	250	50	232	79	82	1.4	5.5
	90	802.210											

Traverse:	2				
Start Time:		Initial Leak Check:		cfm@	"Hg
Finish Time:	11:27	Final Leak Check:	.002	cfm@	17 "Hg

Project No.: 21754

Operator : AS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	May 24/17
Test Location	APC Outlet No. 2 M29
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	64
Meter Box No.:	Team 4
Impinger Box No.:	1

Pitot Factor	.8441	
DGMCF	.979	
Barometric Pressure	29.40	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	.2528	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	4.4	mg
Probe	1.6	mg

Moisture Gain

CWTR	466.6	g
WCBDA	24.3	g

Combustion Gas Concentration

Oxygen	8.13	%
Carbon Dioxide	10.81	%
Carbon Monoxide	12.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

see T/U2

Nozzle Measurements	
1	
2	
3	
4	
Average:	

see T/U2

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: May 24/17	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2 m29	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot ΔP "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 ΔH "H_2O *	Pump Vacuum "Hg Gauge *
1	0	803.150	.78	.75	280	255	251	70	156	79	78	1.9	5
	2.5	805.09	.80	.76	283	257	264	64	249	79	79	2.0	5
	5	807.12	.81	.77	284	257	255	62	260	80	79	1.9	5
2	7.5	809.09	.85	.79	284	257	249	57	259	80	79	2.0	5
	10	811.11	.84	.78	282	256	255	52	263	80	80	2.0	5
	12.5	813.17	.83	.78	285	257	256	51	268	80	81	2.0	5
3	15	815.16	.78	.75	284	257	253	50	266	81	80	1.9	5
	17.5	817.10	.78	.75	284	256	249	49	262	80	82	1.9	5
	20	819.05	.78	.75	284	256	249	49	262	80	82	1.9	5
4	22.5	821.02	.77	.74	284	256	255	48	276	81	83	1.9	5
	25	822.93	.77	.75	284	257	252	48	274	81	83	1.9	5
	27.5	824.98	.75	.75	285	257	252	48	270	81	84	1.9	5
5	30	826.80	.71	.72	285	258	257	48	269	81	84	1.75	5
	32.5	828.67	.73	.73	285	258	257	48	269	81	84	1.75	5
	35	830.56	.73	.73	285	257	252	49	273	81	84	1.7	5
6	37.5	832.45	.65	.69	285	256	251	49	271	81	84	1.6	5
	40	834.22	.64	.69	285	257	258	49	264	81	84	1.5	5
	42.5	835.95	.64	.69	285	257	254	48	269	82	84	1.5	5
7	45	837.72	.63	.68	285	257	250	48	266	82	84	1.4	5
	47.5	839.40	.64	.69	284	257	257	49	276	82	85	1.5	5
	50	841.12	.63	.68	284	257	256	48	275	82	85	1.5	5

Traverse: B1			
Start Time: 12:04	Initial Leak Check: .002	cfm@ 15	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21754

Operator : AS

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date:	May 24/17	Plant:	Covanta DYEC	Test No.:	2	Particulate/Metals	Page 3 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	M29	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
8	52.5	842.85	.68	.71	284	257	250	48	270	82	85	1.6	5
	55	844.67	.67	.70	284	256	254	48	272	82	86	1.6	5
	57.5	846.47	.67	.70	284	257	258	49	278	83	86	1.6	5
9	60	848.29	.71	.73	283	257	253	49	271	83	85	1.7	5
	62.5	850.18	.70	.72	283	256	250	49	268	83	85	1.7	5
	65	852.02	.70	.72	283	257	257	49	274	83	86	1.7	5
10	67.5	853.86	.66	.70	283	257	257	50	277	83	86	1.6	5
	70	855.63	.67	.71	283	257	251	50	270	83	86	1.6	5
	72.5	857.40 ~~857.77~~	.67	.71	283	256	253	50	268	83	86	1.6	5
11	75	859.17	.66	.70	283	257	258	51	275	83	86	1.6	5
	77.5	860.93	.65	.69	283	257	254	51	273	83	86	1.6	5
	80	862.68	.66	.70	283	257	250	52	269	~~83~~ 83	86	1.6	5
12	82.5	864.43	.55	.64	283	256	258	53	276	87	86	1.3	5
	85	866.08	.54	.63	283	257	255	53	274	83	86	1.3	5
	87.5	867.89	.65	.69	283	256	251	53	270	83	87	1.2	5
	90	869.332											

Traverse:	1				
Start Time:		Initial Leak Check:		cfm@	"Hg
Finish Time:	13:34	Final Leak Check:	.002	cfm@	15 "Hg

Project No.: 21754

Operator : AS/JF

Field Data Sheet

Date:	May 24/17	Plant:	Covanta DYEC	Test No.:	T2	Particulate/Metals	Page 4 of 5
		Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No. 2 m29	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	870.094	.75	.75	283	255	257	60 ~~68~~	184	84	84	1.8	5.5
	2.5	871.98	.72	.72	284	257	254	54	255	84	84	1.7	5
	5	873.84	.70	.72	283	257	250	53	267	83	84	1.7	5
2	7.5	875.62	.75	.74	283	257	258	52	276	83	84	1.8	5.5
	10	877.59	.72	.73	283	257	257	52	278	83	84	1.7	5.5
	12.5	879.50	.73	.74	282	258	252	53	273	83	85	1.7	5
3	15	881.40	.73	.74	282	257	251	53	270	83	84	1.7	5.5
	17.5	883.29	.73	.74	282	257	256	53	278	83	85	1.7	5.5
	20	885.18	.72	.73	283	258	257	54	279	84	86	1.7	5.5
4	22.5	887.04	.73	.74	282	258	250	54	273	84	85	1.7	5.5
	25	888.89	.69	.72	283	257	257	54	273	84	85	1.6	5
	27.5	890.77	.70	.72	283	258	259	55	281	85	86	1.6	5.5
5	30	892.54	.63	.68	282	258	256	55	280	84	88	1.5	5
	32.5	894.27	.65	.70	283	258	249	56	271	84	87	1.5	5
	35	895.99	.61	.67	283	257	257	57	277	84	87	1.4	5
6	37.5	897.68	.58	.66	283	258	257	58	280	84	86	1.3	5
	40	899.31	.56	.65	283	257	257	59	275	84	86	1.3	5
	42.5	900.94	.57	.65	283	257	251	60	271	84	88	1.3	5
7	45	902.56	.60	.67	283	257	258	61	278	84	86	1.4	5
	47.5	904.23	.64	.69	283	257	258	62	278	84	86	1.5	5
	50	905.94	.63	.68	283	257	250	63	272	84	86	1.5	5

Traverse:					
Start Time:	13:45	Initial Leak Check:	.003	cfm@ 15	"Hg
Finish Time:		Final Leak Check:		cfm@	"Hg

Project No.: 21754

Operator : AS

Field Data Sheet

Date: May 24/17	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2 M29	

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	907.66	.64	.69	283	256	257	64	274	84	86	1.5	5
	55	909.36	.65	.70	283	257	259	65	280	84	83	1.5	5
	57.5	911.08	.63	.69	284	257	253	67	277	84	87	1.4	5
9	60	912.77	.63	.69	283	257	250	68	270	84	87	1.5	5
	62.5	914.54	.63	.69	283	257	257	65	252	84	87	1.5	5
	65	916.31	.64	.69	283	257	258	65	272	85	87	1.5	5
10	67.5	918.08	.66	.70	283	257	257	64	274	85	87	1.5	5.5
	70	919.85	.70	.72	283	257	257	63	271	85	87	1.6	5.5
	72.5	921.66	.65	.70	284	257	258	67	280	85	87	1.6	5.5
11	75	923.45	.68	.71	283	258	256	62	279	85	87	1.6	5.5
	77.5	925.26	.64	.69	283	258	250	62	272	85	87	1.6	5.5
	80	927.07	.65	.70	283	257	254	60	273	85	87	1.5	5.5
12	82.5	928.81	.64	.69	283	257	254	59	280	85	87	1.2	5
	85	930.47	.53	.63	283	257	254	59	275	85	87	1.2	5
	87.5	932.06	.51	.62	283	257	250	59	270	85	87	1.2	5
	90	933.682											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 15:15	Final Leak Check: .002	cfm@ 15	17 "Hg

Project No.: 21754

Operator: AS / JF

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particulate/Metals M29
Test Date	May 24/17
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	6B
Meter Box No.:	Team 4
Impinger Box No.:	13

Pitot Factor	.844	
DGMCF	.979	
Barometric Pressure	29.38	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	.2553	inches
Stack Diameter	4.500	feet
Length		feet
Width		feet
Port length:	1/	inches

Particulate Gain

Filter	2.4	mg
Probe	1.5	mg

Moisture Gain

CWTR	490.0	g
WCBDA	21.7	g

Combustion Gas Concentration

Oxygen	8.00	%
Carbon Dioxide	10.89	%
Carbon Monoxide	23.4	ppm

Measuring Device	MII Numbers
Probe / Pitot 36	B03767
Trendicator	
Control Box Team4	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	COE 20126
Barometer	Env. Can
Calipers	B03922

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	.2560
2	.2535
3	.2560
4	.2555
Average:	.2553

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: May 24/17	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2 m29	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	934.303	.91	.84	283	261	258	60 ~~74~~	166	84	84	2.3	6
	2.5	936.46	.96	.86	286	258	252	55	182	84	84	2.4	6
	5	938.71	.89	.83	285	265	258	52	190	84	84	2.2	5.5
2	7.5	940.82	.92	.84	285	266	257	51	196	84	84	2.2	5.5
	10	942.95	.84	.80	286	263	257	51	220	84	84	2.1	5.5
	12.5	945.0	.84	.80	286	264	255	51	219	84	85	2.0	5
3	15	947.00	.80	.78	285	267	254	51	220	84	85	2.0	5
	17.5	948.98	.82	.79	285	266	255	51	219	84	85	2.0	5
	20	950.97	.82	.79	286	267	256	52	220	84	86	2.0	5
4	22.5	952.96	.73	.75	286	267	256	52	220	84	86	1.8	5
	25	954.87	.73	.75	285	265	256	52	220	84	89	1.8	5
	27.5	956.81	.72	.75	285	263	256	52	222	84	87	1.8	5
5	30	958.79	.65	.71	285	267	255	52	219	84	87	1.7	5
	32.5	960.77	.65	.71	285	267	252	52	219	84	87	1.6	5
	35	962.40	.66	.72	285	267	257	52	221	85	87	1.6	5
6	37.5	964.22	.48	.61	285	265	251	52	218	84	87	1.2	4.8
	40	965.88	.50	.62	285	265	251	52	218	84	87	1.2	4.8
	42.5	967.43	.50	.62	284	263	255	53	219	85	87	1.2	4.8
7	45	968.99	.64	.64	284	263	257	53	219	85	87	1.6	5
	47.5	970.78	.63	.70	284	263	251	53	219	85	87	1.6	5
	50	972.61	.62	.69	284	265	258	53	222	85	87	1.6	5

Traverse:	1					
Start Time:	15:32	Initial Leak Check:	.004	cfm@	17	"Hg
Finish Time:		Final Leak Check:		cfm@		"Hg

Project No.: 21754

Operator : AS / CR.

Field Data Sheet

Date:	May 24/17	Plant:	Covanta DYEC	Test No.:	3	Particulate/Metals	Page 3 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2 m29		

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	974.42	.65	.71	284	262	258	53	224	85	87	1.6	5
	55	976.23	.67	.72	284	263	253	54	221	85	87	1.6	5
	57.5	978.03	.65	.71	284	266	253	54	220	85	87	1.6	5
9	60	979.81	.66	.72	284	263	258	54	224	85	87	1.6	5
	62.5	981.65	.67	.72	283	267	255	54	223	85	87	1.6	5
	65	983.49	.66	.72	283	260	251	54	220	85	87	1.6	5
10	67.5	985.26	.65	.71	281	263	258	55	222	85	87	1.6	5
	70	987.06	.65	.71	281	261	259	55	223	85	87	1.6	5
	72.5	988.85	.73	.75	280	261	253	55	221	85	87	1.9	5.5
11	75	990.80	.63	.70	280	265	254	55	221	85	87	1.6	5
	77.5	992.61	.59	.68	280	261	259	56	223	85	87	1.5	5
	80	994.34	.59	.68	280	266	254	56	225	85	87	1.5	5
12	82.5	996.05	.54	.65	280	263	251	56	218	85	87	1.3	5
	85	997.71	.56	.66	280	266	257	56	216	85	87	1.3	5
	87.5	999.37	.58	.67	280	265	253	57	211	85	87	1.4	5
	90	1001.023											

Traverse:	1				
Start Time:		Initial Leak Check:		cfm@	"Hg
Finish Time:	17:02	Final Leak Check:	.002	cfm@	15 "Hg

Project No.: 21754

Operator: AS

Field Data Sheet

Date:	May 24/17	Plant:	Covanta DYEC	Test No.:	3	Particulate/Metals	Page 5 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 2	D29	

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	1041.29	.67	.72	285	259	255	56	227	85	88	1.7	6
	55	1043.12	.68	.73	284	259	252	56	224	85	88	1.7	6
	57.5	1044.98	.68	.73	284	259	258	56	227	85	88	1.7	6
9	60	1046.81	.67	.72	284	262	259	56	228	85	88	1.7	6
	62.5	1048.66	.70	.74	284	258	255	57	226	85	88	1.8	6
	65	1050.55	.66	.72	284	262	252	57	225	86	88	1.7	6
10	67.5	1052.39	.66	.72	284	256	258	57	224	86	88	1.7	6
	70	1054.23	.65	.71	284	262	254	56	223	86	88	1.6	6
	72.5	1056.05	.68	.73	284	257	256	56	223	86	88	1.7	6
11	75	1057.91	.60	.68	284	259	259	56	225	86	88	1.5	5.5
	77.5	1059.63	.62	.69	284	256	256	56	223	86	88	1.5	5.5
	80	1061.48	.61	.69	284	258	252	56	221	86	88	1.5	5.5
12	82.5	1063.13	.55	.65	284	256	258	56	223	86	89	1.3	5
	85	1064.75	.54	.65	284	259	253	56	221	86	89	1.3	5
	87.5	1066.37	.55	.65	284	257	256	56	214	86	89	1.3	5
	90	1068.011											

Traverse:				
Start Time:	Initial Leak Check:		cfm@	"Hg
Finish Time: 18:40	Final Leak Check:	.003	cfm@ 15	"Hg

Project No.: 21754

Operator : AS

Field Data Sheet

Date: May 24/17	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2 M29	

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	1001.537	.77	.77	283	261	251	60	174	85	85	1.9	6
	2.5	1003.49	.78	.78	284	260	254	58	215	85	85	1.9	6
	5	1005.48	.77	.77	284	257	254	57	225	86	85	1.9	6
2	7.5	1007.47	.81	.79	284	260	254	57	226	85	86	2.0	6
	10	1009.48 ~~1009.58~~	.81	.79	284	262	255	58	227	85	86	2.0	6
	12.5	1011.51	.83	.80	284	257	256	58	228	85	87	2.1	6
3	15	1013.55	.77	.77	284	257	253	59	226	85	87	1.9	6
	17.5	1015.54	.80	.79	284	263	254	60	228	85	88	2.0	6
	20	1017.53	.76	.77	284	259	251	61	226	85	87	1.9	6
4	22.5	1019.47	.79	.78	283	258	258	63	229	85	87	2.0	6
	25	1021.45	.76	.77	285	261	256	62	223	85	87	1.9	6
	27.5	1023.38	.76	.77	284	263	251	60	221	85	87	1.9	6
5	30	1025.32	.69	.73	284	260	256	60	225	85	87	1.7	5.5
	32.5	1027.20	.67	.72	285	260	258	59	227	85	87	1.7	5.5
	35	1028.98	.67	.72	285	263	255	58	225	85	87	1.7	5.5
6	37.5	1030.78	.59	.68	285	257	250	57	221	85	87	1.4	5.
	40	1032.45	.59	.68	285	257	258	57	224	85	87	1.4	5
	42.5	1034.13	.61	.69	284	263	257	57	225	85	87	1.5	5.5
7	45	1035.86	.66	.71	285	262	253	56	224	85	87	1.6	5.5
	47.5	1037.67	.65	.71	285	260	256	56	226	85	88	1.6	5.5
	50	1039.48	.66	.72	285	263	260	56	228		88	1.6	5.5

Traverse: 2				
Start Time: 17:10	Initial Leak Check: .003	cfm@ 16	"Hg	
Finish Time:	Final Leak Check:	cfm@	"Hg	

Project No.: 21754

Operator : AS

APPENDIX 7

Particle Size Distribution Field Data Sheets
(12 pages)

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particle Size
Test Date	MAY 24 2017
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	21754
Page	1 of
Probe No.:	SB
Meter Box No.:	TEAM 3
Impinger Box No.:	8

Pitot Factor	0.840	
DGMCF	0.978	
Barometric Pressure	29.43	"Hg
Static Pressure	-11.0	"H2O
Nozzle Size	0.1770	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	152.9	g
WCBDA	10.7	g

Combustion Gas Concentration

Oxygen	8.54	%
Carbon Dioxide	10.53	%
Carbon Monoxide	14.2	ppm

Measuring Device	MII Numbers
Probe / Pitot	SB4
Trendicator	
Control Box	COE20093
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV.CAN
Calipers	B03922

Reading Interval	—
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.1780
2	0.1760
3	0.1770
4	0.1770
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: MAY 24/17	Plant: Covanta DYEC	Test No.: 1 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
	0	47.00	.92	.35	286	263	242	65	55	75	76	.4	3
	10.4	50.80	.89		287	262	243	63	54	76	76	.4	3
	20.7	54.51	.85		284	261	244	60	54	76	76	.4	3
	30.9	58.10	.84		286	260	243	61	53	77	79	.4	3
	40.6	61.39	.73		286	260	243	60	53	78	79	.4	3
	49.9	64.65	.75		289	260	243	60	53	78	80	.4	3
	59.2	67.79											
	0	67.79	.97		288	264	241	64	60	79	80	.4	3
	10.5	71.47	.99		289	263	244	66	63	79	80	.4	3
	21.4	75.20	.94		288	262	243	67	61	79	81	.4	3
	32.2	78.99	.85		290	260	243	67	61	79	81	.4	3
	42.4	82.47	.73		288	260	243	67	59	80	81	.4	3
	51.9	85.83	.68		289	261	243	65	60	80	82	.4	3
	60.9	88.98											

Traverse: 2				Traverse:			
Start Time: 8:18	Initial Leak Check: .007	cfm@ 15	"Hg	Start Time: 9:22	Initial Leak Check: /	cfm @ —	"Hg
Finish Time: 9:17	Final Leak Check:	cfm@	"Hg	Finish Time: 10:21	Final Leak Check:	cfm @ —	"Hg

Project No.: 21754

Operator : DH

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	MAY 24 2017
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	21754
Page	1 of
Probe No.:	SB
Meter Box No.:	TEAM 3
Impinger Box No.:	15

Pitot Factor	0.840	
DGMCF	0.978	
Barometric Pressure	29.42	"Hg
Static Pressure	-1.0	"H2O
Nozzle Size	0.170	inches
Stack Diameter	4.5	feet
Length	8	feet
Width	8	feet
Port length:	12	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	146.1	g
WCBDA	9.5	g

Combustion Gas Concentration

Oxygen	8.60	%
Carbon Dioxide	10.40	%
Carbon Monoxide	10.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	7657
Control Box	1
Incline Manometer	UNIT
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Reading Interval	—
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1 _____
2 _____
3 _____
4 _____
Average:

Probe Liner Glass / Metal /Teflon / Other AA

Nozzle Glass / (Metal) / Other_____

Union None / (Metal) / Teflon / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram

Notes:

Field Data Sheet

Date: MAY 24/17	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	89.19	.91	.35	287	262	245	71	76	78	79	.4	3
2	10.5	92.82	.87		287	262	245	66	67	79	80	.4	3
3	20.8	96.60	.80		286	262	245	63	46	79	80	.4	3
4	30.8	100.17	.75		286	260	245	62	47	80	82	.4	3
5	40.8	103.67	.72		286	259	245	61	46	81	82	.4	3
6	50.1	107.07	.66		287	259	245	60	48	81	83	.4	3
	59.5	110.41											
1	0	110.41	.84		287	262	245	66	53	82	83	.4	3
2	10.7	114.16	.92		287	261	245	66	61	82	83	.4	3
3	21.5	117.94	.92		288	261	245	66	61	82	83	.4	3
4	32.10	121.65	.88		288	261	244	66	59	83	83	.4	3
5	42.10	125.20	.77		288	261	244	66	56	83	83	.4	3
6	51.40	128.50	.65		289	260	245	65	57	83	84	.4	3
	60.4	131.79											

Traverse: 2			Traverse: 1		
Start Time: 1138	Initial Leak Check: .002 cfm@ 15 "Hg		Start Time: 1241	Initial Leak Check: cfm @ "Hg	
Finish Time: 1237	Final Leak Check: cfm@ "Hg		Finish Time: 1341	Final Leak Check: cfm @ "Hg	

Project No.: 21754

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	MAY 24, 2017
Test Location	APC Outlet No. 1
Operator Signature	DH MS

Project No.:	21754
Page	1 of
Probe No.:	SB
Meter Box No.:	TEAM 3
Impinger Box No.:	5

Pitot Factor	.840	
DGMCF	.979	
Barometric Pressure	29.38	"Hg
Static Pressure	-1.0	"H2O
Nozzle Size	.1770	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	150.9	g
WCBDA	7.9	g

Combustion Gas Concentration

Oxygen	8.50	%
Carbon Dioxide	10.46	%
Carbon Monoxide	14.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	SPT
Trendicator	SEE
Control Box	TEST
Incline Manometer	1
Comb.Gas.Analyzer	UNIT
Micromanometer	1
Barometer	
Calipers	

Reading Interval	—
Number of Ports	2
Number of Points/Port	12

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: MAY 24/17	Plant: Covanta DYEC	Test No.: 3	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	31.90	.89	.35	259	260	271	55	54	84	84	.4	3
2 35.66	10.6	35.66	.86		259	261	244	63	50	84	85	.4	3
3	21.0	39.43	.76		259	262	261	60	48	84	85	.4	3
4	31.0	43.00	.74		256	259	262	58	47	85	86	.4	3
5	40.6	46.41	.70		259	262	262	57	46	85	86	.4	3
6	50.0	49.82	.71		259	260	262	57	46	85	86	.4	3
	59.0	53.22											
1	0	53.22	.87		259	262	262	61	49	85	86	.4	3
2	10.4	56.94	.90		258	260	261	62	52	85	86	.4	3
3	21.1	60.84	.86		256	262	262	66	56	85	87	.4	3
4	31.8	64.75	.81		257	262	262	66	56	86	87	.4	3
5	42.2	68.60	.69		257	262	262	65	56	86	87	.4	3
6	52.0	72.24	.64		256	262	262	64	56	86	87	.4	3
	61.0	75.81											

Traverse: 2			Traverse: 1		
Start Time: 1506	Initial Leak Check:	cfm@ "Hg	Start Time: 1608	Initial Leak Check:	cfm @ "Hg
Finish Time: 1605	Final Leak Check:	cfm@ "Hg	Finish Time: 1709	Final Leak Check:	cfm @ "Hg

Project No.: 21754

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particle Size
Test Date	MAY 23, 2017
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 2
Probe No.:	5C
Meter Box No.:	TEAM 1
Impinger Box No.:	4

Pitot Factor	0.840	
DGMCF	0.983	
Barometric Pressure	29.60	"Hg
Static Pressure	-9.1	"H2O
Nozzle Size	0.1770	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Particulate Gain

Filter	mg
Probe	mg

Moisture Gain

CWTR	162.1	g
WCBDA	10.9	g

Combustion Gas Concentration

Oxygen	8.04	%
Carbon Dioxide	11.00	%
Carbon Monoxide	11.6	ppm

Measuring Device	MII Numbers
Probe / Pitot SRY	B04011
Trendicator	
Control Box	
Incline Manometer	COE 2004
Comb.Gas.Analyzer	
Micromanometer	—
Barometer	ENV. CAN
Calipers	B03922

Reading Interval	—
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.1770
2	0.1765
3	0.1775
4	0.1770
Average:	

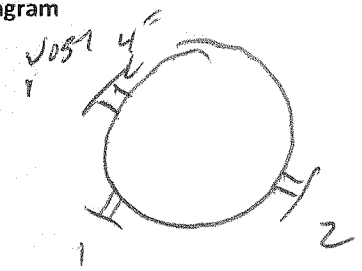
Probe Liner Glass / Metal /Teflon / Other PFA

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram



Notes:

Field Data Sheet

Date: MAY 23/17	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 m, s	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~~ FILTER °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
1	0	50.76	.88	.35	282	245	259	71	78	71	71	.38	3
2	10.7	54.63	.84		283	245	253	50	51	72	72	.38	3
3	21 42	58.38	.82		283	247	254	52	59	74	72	.38	3
4	31 54	62.15	.74		283	247	254	56	58	74	73	.38	3
5	42.12	65.91	.69		283	247	254	55	58	75	73	.38	3
6	52.00	69.44	.64		283	246	255	55	58	75	73	.38	3
	1.12	73.03											
1	0	73.03	.82		283	247	253	57	59	76	74	.38	3
2	10.12	76.62	.84		284	247	255	55	58	77	75	.38	3
3	20.24	80.29	.82		283	246	255	55	58	77	76	.38	3
4	30.24	83.85	.73		283	248	255	54	56	77	76	.38	3
5	40.12	87.31	.71		283	248	255	53	57	77	77	.38	3
6	49.42	90.67	.63		283	248	255	53	57	77	77	.38	3
	58.48	94.00											

Traverse: 1			Traverse: 2		
Start Time: 10 20	Initial Leak Check: .002 cfm@ 15 "Hg		Start Time: 11 25	Initial Leak Check: / cfm @ / "Hg	
Finish Time: 11 21	Final Leak Check: cfm@ "Hg		Finish Time: 12 24	Final Leak Check: cfm @ "Hg	

Project No.: 21754

Operator : DC

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	MAY 23, 2017
Test Location	APC Outlet No. 2
Operator Signature	DJ UG

Project No.:	21754
Page	1 of 2
Probe No.:	SC
Meter Box No.:	TEAM 1
Impinger Box No.:	15

Pitot Factor	0.840	
DGMCF	0.983	
Barometric Pressure	29.53	"Hg
Static Pressure	-9.1	"H2O
Nozzle Size	0.1770	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	156.4	g
WCBDA	10.1	g

Combustion Gas Concentration

Oxygen	8.21	%
Carbon Dioxide	10.83	%
Carbon Monoxide	21.3	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Reading Interval	T
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.1770
2	0.1765
3	0.1775
4	0.1770
Average:	0.1770

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: MAY 23/17	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 ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	94.31	.98	.35	282	264	254	66	67	79	78	.38	3
2	10.8	98.09	.98		283	266	255	62	61	79	78	.38	3
3	21.3	101.95	.93		283	267	255	60	61	81	79	.36	3
4	31.7	105.70	.76		282	267	255	60	61	81	79	.38	3
5	41.6	109.28	.71		282	267	255	60	61	83	81	.38	3
6	51.1	112.90	.60		281	267	255	60	61	83	80	.38	3
	60.3	116.16											
	0	116.16	.77		280	267	254	62	61	83	81	.38	3
	10.40	119.91	.77		280	267	254	61	60	83	82	.38	3
	20.9	123.63	.73		280	266	254	61	60	84	82	.38	3
	31.3	127.27	.72		281	266	254	61	60	84	83	.38	3
	41.1	130.90	.70		281	265	254	60	60	84	83	.38	3
	50.8	134.42	.61		281	265	255	60	61	86	84	.38	3
	59.9	137.82											

Traverse: 1419 2				Traverse: 1			
Start Time: 1419	Initial Leak Check: .101	cfm@ 15	"Hg	Start Time: 1523	Initial Leak Check:	cfm @	"Hg
Finish Time: 1519	Final Leak Check:	cfm@	"Hg	Finish Time: ~~1627~~ 1623	Final Leak Check:	cfm @	"Hg

M2G 498.6
20.7

Project No.: 21754

Operator: [illegible]

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Particle Size
Test Date	MAY 23, 2017
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of
Probe No.:	5C
Meter Box No.:	TEAM 1
Impinger Box No.:	8

Pitot Factor	0.840	
DGMCF	0.983	
Barometric Pressure	29.50	"Hg
Static Pressure	-9.1	"H2O
Nozzle Size	0.1770	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	158.2	g
WCBDA	10.2	g

Combustion Gas Concentration

Oxygen	7.95	%
Carbon Dioxide	~~21.8~~ 11.02	%
Carbon Monoxide	~~11.02~~ 21.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	
Calipers	

Reading Interval	—
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.1770
2	0.1765
3	0.1775
4	0.1770
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: MAY 23/17	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 ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	37.91	.85	0.35	282	267	258	69	56	84	83	.38	2
2	10.9	41.90	.75		281	267	254	63	53	84	83	.38	2
3	21.8	45.79	.72		281	267	255	61	54	85	84	.38	2
4	32.4	49.62	.67		281	267	255	60	55	86	84	.38	2
5	42.5	53.27	.64		280	267	255	60	55	85	84	.34	2
6	52.3	56.79	.60		282	267	255	60	54	85	84	.38	2
	61.3	60.05											
1	0	60.03	.80		281	267	255	60	54	87	85	.38	2
2	10.2	63.70	.85		282	265	256	59	54	87	85	.38	2
3	20.4	67.37	.84		283	265	257	58	54	87	85	.38	2
4	30.3	~~70.98~~ 70.92	.81		283	264	258	58	54	87	85	.38	2
5	40.1	74.45	.74		284	264	258	56	54	88	86	.38	2
6	49.8	78.05	.64		285	265	257	59	56	88	86	.38	2
	58.9	81.45											

Traverse: 2				Traverse: 1			
Start Time: 1727	Initial Leak Check: .007	cfm@	15 "Hg	Start Time: 1930	Initial Leak Check:	cfm @	"Hg
Finish Time: 1825	Final Leak Check:	cfm@	"Hg	Finish Time: 1929	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator :

APPENDIX 8

SVOC Data Sheets
(54 pages)

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Semi-Volatile Organic Compounds
Test Date	MAY 25, 17
Test Location	APC Outlet No. 1
Operator Signature	DT

Project No.:	21754
Page	1 of 4
Probe No.:	6A
Meter Box No.:	TAM 2
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	.986	
Barometric Pressure	29.31	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	618.9	g
WCBDA	17.4	g

Combustion Gas Concentration

Oxygen	8.56	%
Carbon Dioxide	10.46	%
Carbon Monoxide	11.4	ppm

Measuring Device	MII Numbers
Probe / Pitot ST	B03708
Trendicator	COE
Control Box	20092
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	COE 20126
Barometer	ENV CAN
Calipers	B03922

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	.2525
2	.2530
3	.2530
4	.2525
Average:	.2528

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: MAY 25, 17	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 4
	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	78.93	.65	.68	280	254	255	67	69	75	73	1.6	4.5
	5	82.47	.68	.70	273	254	258	58	43	74	73	1.65	5
2	10	85.89	.66	.69	273	255	257	53	43	74	73	1.65	5.2
	15	89.42	.66	.69	274	255	257	50	45	74	73	1.65	5.5
3	20	92.96	.60	.66	273	255	257	47	47	75	73	1.45	5.2
	25	96.34	.60	.66	288	255	257	46	48	75	73	1.45	5.2
4	30	99.72	.70	.71	289	255	257	45	49	75	74	1.7	5.7
	35	103.25	.70	.71	289	255	257	44	53	75	73	1.7	5.7
5	40	106.90	.73	.72	288	255	257	43	51	75	73	1.8	6
	45	110.51	.71	.71	288	255	257	43	57	75	74	1.8	6
6	50	114.21	.75	.73	288	255	257	44	43	76	74	1.8	6
	55	117.91	.75	.73	288	255	257	44	42	76	74	1.8	6
7	60	121.63	.65	.68	288	256	257	45	42	76	74	1.6	5.7
	65	125.04	.65	.68	289	257	257	45	41	76	74	1.6	5.7
8	70	128.65	.70	.71	289	256	257	45	41	76	74	1.8	6
	75	132.27	.70	.71	289	256	257	46	42	76	74	1.8	6
9	80	135.92	.75	.73	289	256	257	47	43	76	74	1.8	6
	85	139.65	.75	.73	289	256	257	47	43	76	74	1.8	6
10	90	143.21	.78	.75	289	256	257	48	43	76	74	1.9	6
	95	147.01	.78	.75	289	256	257	48	43	77	75	1.9	6
11	100	150.78	.80	.76	288	256	257	48	44	77	75	1.9	6

Traverse: 2					Traverse:				
Start Time: 9:06	Initial Leak Check: .007	cfm@ 16	"Hg		Start Time: X	Initial Leak Check: X	cfm @ X	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg		Finish Time: X	Final Leak Check: X	cfm @ X	"Hg

Project No.: 21754

Operator : DT

Field Data Sheet

Date: MAY 25, 17	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
	105	154.64	.78	.75	288	256	257	48	43	76	75	1.9	6
12	110	158.50	.78	.75	287	256	257	48	43	76	74	1.9	6
	115	162.30	.78	.75	288	256	257	48	44	76	74	1.9	6
	120	166.32											
1	0	166.84	.64	.68	288	254	256	67	43	75	74	1.5	5
	5	170.15	.64	.68	284	255	256	46	40	74	73	1.5	5
2	10	173.52	.60	.66	285	254	257	41	41	74	73	1.5	5
	15	176.91	.60	.66	285	253	256	41	41	74	74	1.5	5.5
3	20	180.31	.64	.68	286	253	256	42	41	74	74	1.5	5.5
	25	183.74	.60	.66	288	253	256	42	40	74	73	1.5	5.5
4	30	187.12	.74	.77	288	253	257	42	40	75	73	1.8	6
	35	190.77	.75	.73	278	254	256	42	42	75	73	1.8	6
5	40	194.48	.75	.73	279	254	256	41	42	75	73	1.8	6
	45	198.16	.75	.73	286	254	256	41	42	75	73	1.8	6
6	50	201.89	.73	.72	286	254	256	42	42	75	73	1.8	6
	55	205.60	.73	.72	286	254	256	42	48	75	74	1.8	6
7	60	209.28	.59	.65	286	254	256	42	43	75	73	1.4	5.5
	65	212.65	.59	.65	286	254	256	43	41	75	73	1.4	5.5
8	70	215.98	.72	.72	287	255	256	43	42	76	74	1.75	6
	75	219.60	.72	.72	287	255	256	43	42	76	74	1.75	6
9	80	223.25	.85	.78	287	254	256	44	43	76	74	2.05	7

Traverse: 2				Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	Start Time: 11:33	Initial Leak Check: .003	cfm @ 15	"Hg
Finish Time: 11:06	Final Leak Check: .008	cfm@ 15	"Hg	Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21754

Operator: DT

Field Data Sheet

Date: MAY 23, 17	Plant: Covanta DYEC	Test No.: / SVOC	Page 4 of 4
	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
	85	227.16	.85	.78	287	254	257	45	46	76	74	2.05	7
10	90	231.12	.93	.82	288	254	257	45	46	76	74	2.25	7.5
	95	235.25	.93	.82	287	254	257	46	46	76	74	2.25	7.5
11	100	239.39	.92	.81	288	254	257	49	48	76	74	2.25	7.5
	105	243.52	.92	.81	288	254	257	49	48	76	74	2.25	7.5
12	110	247.67	.92	.81	288	254	256	50	47	75	74	2.25	7.5
	115	251.80	.92	.81	288	254	256	52	48	75	73	2.25	7.5
	120	255.98											

Traverse: /				Traverse: X			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	Start Time: X	Initial Leak Check: X	cfm@ X	"Hg
Finish Time: 13:33	Final Leak Check: .005	cfm@ 18	"Hg	Finish Time:	Final Leak Check:	cfm@ X	"Hg

Project No.: 21754

Operator : DT

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	MAY 25, 17
Test Location	APC Outlet No. 1
Operator Signature	DT

Project No.:	21754
Page	1 of 4
Probe No.:	6A
Meter Box No.:	TEAM 2
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	.986	
Barometric Pressure	29.24	"Hg
Static Pressure	-10.8	"H2O
Nozzle Size	.2528	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	621.1	g
WCBDA	15.7	g

Combustion Gas Concentration

Oxygen	8.59	%
Carbon Dioxide	10.41	%
Carbon Monoxide	16.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	See
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	Test
Micromanometer	
Barometer	
Calipers	#1

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	See
2	
3	Test
4	
Average:	#1

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: May 25, 17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 4
	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	56.68	.8	.76	288	256	260	67	41	73	72	1.9	6.2
	5	60.36	.84	.77	289	257	255	47	36	73	72	2	7.5
2	10	64.22	.84	.77	288	256	256	45	38	73	72	2	7.5
	15	68.07	.84	.77	288	256	256	45	39	73	72	2	7.5
3	20	71.99	.84	.77	288	256	256	44	39	73	73	2	7.8
	25	75.89	.84	.77	288	256	256	43	39	74	72	2	7.8
4	30	79.78	.78	.75	288	256	256	43	39	74	72	1.9	7.8
	35	83.64	.78	.75	287	256	256	43	38	74	72	1.9	7.5
5	40	87.39	.72	.72	287	256	256	43	39	74	72	1.7	7
	45	91.13	.72	.72	287	258	256	44	38	74	72	1.7	7
6	50	94.75	.65	.68	287	255	256	44	38	74	72	1.6	6.5
	55	98.28	.65	.68	287	255	256	44	37	75	73	1.6	6.5
7	60	101.83	.70	.71	287	255	257	44	37	75	73	1.7	6.7
	65	105.43	.70	.71	287	254	256	42	37	75	73	1.7	6.7
8	70	109.04	.70	.71	286	255	257	41	36	75	73	1.7	6.7
	75	112.64	.70	.71	287	255	254	41	36	75	73	1.7	6.7
9	80	116.26	.69	.70	286	255	257	41	36	75	73	1.65	6.7
	85	119.80	.69	.70	287	255	257	42	36	75	73	1.65	6.7
10	90	123.35	.7	.71	287	255	257	42	36	76	73	1.65	6.7
	95	126.91	.7	.71	285	255	256	42	36	76	73	1.65	6.7
11	100	130.48	.7	.71	285	255	257	42	37	76	74	1.65	6.7

Traverse: 2			
Start Time: 15:01	Initial Leak Check: .008	cfm@ 15.5	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Traverse:			
Start Time: X	Initial Leak Check: X	cfm @ X	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : ST

Field Data Sheet

Date: MAY 25, 17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
	105	134.04	.7	.71	280	262	255	42	37	76	74	1.65	6.7
12	110	137.61	.7	.71	280	255	257	41	36	76	74	1.65	6.7
	115	141.15	.7	.71	280	254	257	41	37	76	74	1.65	6.7
	120	144.72											
1	0	145.15	.8	.76	280	253	255	67	50	74	72	2	9
	5	148.94	.8	.76	288	258	255	43	50	74	73	2	9
2	10	152.61	.88	.79	288	254	256	44	39	74	73	2.1	9
	15	156.57	.88	.79	288	254	256	44	39	74	73	2.1	9
3	20	160.51	.83	.77	288	255	257	46	41	74	73	2.1	9
	25	164.52	.83	.77	288	255	256	46	41	75	73	2.1	9
4	30	168.52	.77	.74	288	255	257	46	40	75	73	1.9	8.5
	35	172.38	.77	.74	288	255	257	46	40	75	73	1.9	8.5
5	40	176.17	.68	.70	287	255	258	46	40	75	73	1.6	7
	45	179.74	.68	.70	288	255	258	45	40	76	74	1.6	7
6	50	183.26	.58	.65	288	255	257	45	40	76	74	1.4	7
	55	186.63	.58	.65	288	255	257	46	40	76	74	1.4	7
7	60	189.93	.68	.70	288	255	257	46	40	76	74	1.6	7.5
	65	193.36	.68	.70	288	255	256	46	40	76	74	1.6	7.5
8	70	196.76	.75	.73	288	255	256	44	40	76	74	1.8	8.5
	75	200.43	.75	.73	289	255	257	44	41	76	74	1.8	8.5
9	80	204.15	.74	.73	288	255	257	44	41	77	74	1.8	8.5

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 17:01	Final Leak Check: .03	cfm@ 15	"Hg

Traverse: 1			
Start Time: 17:38	Initial Leak Check: .08	cfm @ 15	"Hg
Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21754

Operator: DT

Field Data Sheet

Date: MAY 25/17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 4
	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
	85	207.88	.74	.73	288	256	257	44	41	77	75	1.8	8.5
10	90	211.61	.75	.73	288	256	257	44	41	77	75	1.8	8.5
	95	215.33	.75	.73	288	255	256	44	41	77	75	1.8	8.5
11	100	219.00	.70	.71	288	255	256	45	42	77	75	1.7	8.0
	105	222.64	.7	.71	288	255	256	46	41	77	75	1.7	8
12	110	226.27	.7	.71	288	255	256	47	42	76	75	1.7	8
	115	229.92	.7	.71	288	255	256	48	41	76	75	1.7	8
	120	233.52											

Traverse:	1	Traverse:	X
Start Time: —	Initial Leak Check: — cfm@ — "Hg	Start Time: X	Initial Leak Check: X cfm @ X "Hg
Finish Time: 19:38	Final Leak Check: .008 cfm@ 15 "Hg	Finish Time:	Final Leak Check: X cfm @ "Hg

Project No.: 21754

Operator : DT

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 Semi-Volatile Organic Compounds
Test Date	MAY 26, 16
Test Location	APC Outlet No. 1
Operator Signature	DL

Project No.:	21754
Page	1 of 4
Probe No.:	6A
Meter Box No.:	TEAM 2
Impinger Box No.:	

Pitot Factor	.844	
DGMCF	.986	
Barometric Pressure	29.39	"Hg
Static Pressure	-10.22	"H2O
Nozzle Size	.2528	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	649.0	g
WCBDA	15.4	g

Combustion Gas Concentration

Oxygen	8.62	%
Carbon Dioxide	10.54	%
Carbon Monoxide	17.7	ppm

Measuring Device	MII Numbers
Probe / Pitot	See
Trendicator	
Control Box	
Incline Manometer	Test
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	# 1

Nozzle Measurements	
1	See
2	
3	Test
4	
Average:	# 1

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: MAY 26, 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 4
	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	34.02	.82	.77	286	255	255	67	47	74	74	2	6
	5	37.81	.82	.77	289	256	259	54	45	75	74	2	6
2	10	41.70	.84	.78	289	256	258	54	45	75	74	2.05	6.5
	15	45.61	.84	.78	289	256	258	54	45	76	74	2.05	6.5
3	20	49.47	.84	.78	289	256	259	52	45	76	75	2.05	6.5
	25	53.38	.84	.78	289	256	259	48	45	77	75	2.05	6.5
4	30	57.27	.81	.76	289	256	258	48	46	77	75	2	6.5
	35	61.11	.81	.76	289	256	259	46	45	77	75	2	6.5
5	40	65.10	.72	.72	289	256	259	46	44	78	75	1.75	6
	45	68.79	.72	.72	289	256	259	44	43	78	75	1.75	6
6	50	72.45	.62	.67	289	256	259	44	43	78	76	1.5	5.5
	55	75.88	.62	.67	289	256	259	44	42	78	76	1.5	5.5
7	60	79.27	.69	.71	290	256	259	44	42	78	76	1.7	6
	65	82.84	.69	.71	290	256	259	44	42	78	76	1.7	6
8	70	86.39	.74	.73	290	256	259	45	42	79	76	1.8	6
	75	90.08	.75	.74	291	256	259	44	44	79	77	1.8	6
9	80	93.80	.78	.75	290	256	259	44	43	79	77	1.9	6.5
	85	97.62	.78	.75	290	256	259	44	44	79	77	1.9	6.5
10	90	101.41	.78	.75	289	256	259	45	44	79	77	1.9	6.5
	95	105.23	.78	.75	289	256	259	45	45	79	77	1.9	6.5
11	100	109.05	.75	.74	289	256	259	45	45	80	77	1.8	6.5

Traverse:					
Start Time: 8:15	Initial Leak Check: .008	cfm@ 15	"Hg		
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg		

Traverse:					
Start Time: X	Initial Leak Check: X	cfm @ X	"Hg		
Finish Time:	Final Leak Check: X	cfm @ X	"Hg		

Project No.: 21754

Operator : DT

Field Data Sheet

Date: MAY 26, 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
	105	112.80	.75	.74	286	256	259	45	44	80	77	1.8	6.5
12	110	116.56	.68	.70	286	256	259	45	45	79	77	1.65	6
	115	120.15	.68	.70	286	256	259	45	45	80	78	1.65	6
	120	123.77											
1	0	124.42	.8	.77	282	255	258	69	46	78	77	2	6.5
	5	128.36	.8	.77	286	257	260	44	41	79	77	2	6.5
2	10	132.22	.81	.77	288	257	259	44	41	79	77	2	6.5
	15	136.05	.81	.77	287	257	260	44	42	78	78	2	6.5
3	20	139.89	.81	.77	288	257	260	45	42	78	77	2	6.5
	25	143.71	.81	.77	287	257	259	45	42	78	77	2	6.5
4	30	147.60	.78	.75	288	257	260	45	43	78	77	1.9	7
	35	151.43	.78	.75	288	257	259	45	43	78	77	1.9	7
5	40	155.26	.67	.7	288	257	259	45	43	78	77	1.6	6.5
	45	158.83	.67	.7	288	256	259	45	40	78	77	1.6	6.5
6	50	162.36	.62	.67	288	256	259	47	38	78	77	1.5	6
	55	165.73	.62	.67	288	256	259	47	38	78	77	1.5	6
7	60	169.20	.70	.71	287	257	259	47	38	78	76	1.7	6
	65	172.74	.70	.71	288	259	259	47	39	78	76	1.7	6.2
8	70	176.32	.70	.71	288	259	259	47	39	78	76	1.7	6.2
	75	179.95	.7	.71	288	256	259	47	40	78	76	1.7	6.2
9	80	183.50	.73	.73	289	256	259	48	41	78	76	1.8	7.0

Traverse: 1				Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg	Start Time: 10:33	Initial Leak Check: .005	cfm @ 15	"Hg
Finish Time: 10:15	Final Leak Check: .007	cfm@ 20	"Hg	Finish Time: —	Final Leak Check: —	cfm @ —	"Hg

Project No.: 21754

Operator : DT

Field Data Sheet

Date: MAY 26, 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
	85	187.15	.7	.71	289	256	259	48	40	78	76	1.7	6.5
10	90	190.79	.71	.72	288	256	259	49	40	78	76	1.7	6.5
	95	194.41	.74	.73	288	256	259	49	41	78	76	1.8	6.7
11	100	198.11	.78	.75	286	256	258	50	41	78	76	1.9	7
	105	201.89	.81	.77	289	256	259	51	42	78	76	2	7
12	110	205.77	.78	.76	280	256	259	52	42	78	76	1.9	7
	115	209.61	.78	.76	279	256	259	52	42	78	76	1.9	7
	120	213.43											

Traverse: 2				Traverse:			
Start Time: ~	Initial Leak Check: —	cfm@ —	"Hg	Start Time: X	Initial Leak Check: X	cfm @ X	"Hg
Finish Time: 12:33	Final Leak Check: .007	cfm@ 15	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : DT

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	May 25/17
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 4
Probe No.:	GC
Meter Box No.:	Team 4
Impinger Box No.:	Box 4 Train V

Pitot Factor	0.840	
DGMCF	0.979	
Barometric Pressure	29.31	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2565	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	636.4	g
WCBDA	15.1	g

Combustion Gas Concentration

Oxygen	8.28	%
Carbon Dioxide	10.68	%
Carbon Monoxide	17.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	53
Trendicator	
Control Box	Team 4 Coc 20090
Incline Manometer	in in
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	~~303922~~ 03906

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.2565
2	0.2570
3	0.2565
4	0.2560
Average:	0.2565

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: May 25/17	Plant: Covanta DYEC	Test No.: SVOC #1	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	68.67	0.77	0.77	280	251	251	69	51	74	74	2.0	7.5
	5	72.51	0.80	0.78	282	252	255	65	49	74	76	2.1	8
2	10	76.52	0.82	0.79	283	252	245	63	49	74	77	2.1	8
	15	80.55	0.88	0.82	283	253	255	58	47	75	76	2.3	8.5
3	20	84.48	0.83	0.80	284	253	252	54	50	76	81	2.3	8.5
	25	89.10	0.83	0.80	285	253	253	52	50	77	76	2.1	8
4	30	93.23	0.80	0.79	285	253	253	52	49	78	79	2.1	8
	35	97.37	0.75	0.75	285	253	254	51	49	78	77	1.9	7
5	40	100.99	0.66	0.72	285	253	253	52	48	79	80	1.7	7
	45	104.69	0.74	0.70	285	253	254	52	48	79	80	1.8	7.5
6	50	108.46	0.55	0.65	285	253	252	52	48	80	78	1.4	7
	55	112.00	0.54	0.65	284	254	254	52	47	80	79	1.4	7
7	60	115.47	0.53	0.64	283	252	252	52	46	80	78	1.4	7
	65	118.98	0.50	0.62	282	253	255	52	44	80	77	1.2	6.5
8	70	122.26	0.62	0.70	280	252	252	53	45	80	79	1.6	7
	75	125.80	0.64	0.71	282	253	255	53	45	81	78	1.6	7
9	80	129.37	0.66	0.72	281	252	253	53	44	81	78	1.6	7
	85	132.94	0.74	0.70	282	253	255	53	47	81	78	1.8	7.5
10	90	136.72	0.64	0.71	279	252	251	53	43	81	78	1.7	7.5
	95	140.43	0.64	0.71	278	252	255	53	45	81	79	1.7	7.5
11	100	144.12	0.46	0.60	277	252	251	53	45	81	78	1.1	6.5

Traverse: #1 (NW) FW					Traverse:			
Start Time: 9:04	Initial Leak Check: .006	cfm@	18	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 11:04	Final Leak Check: .008	cfm@	20	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

AN blank train - pulled 1 $left^3$.

Project No.: 21754

Operator: RW

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: SVOC #1	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
	105	147.30	0.48	0.61	277	252	253	54	44	81	78	1.1	6.5
12	110	150.48	0.55	0.66	278	251	252	54	46	81	78	1.4	6.5
	115	153.85	0.56	0.67	277	251	253	52	46	81	80	1.4	6.5
	120	157.23											
1	0	157.92	0.70	0.75	277	251	252	59	49	77	79	1.8	8.0
	5	161.75	0.71	0.74	284	251	251	47	46	76	79	1.8	8.0
2	10	165.58	0.78	0.78	284	253	258	47	48	76	78	2.0	8.0
	15	169.59	0.77	0.77	284	254	264	47	46	77	77	2.0	8.0
3	20	173.59	0.76	0.77	284	254	251	47	48	77	77	2.0	8.0
	25	177.56	0.78	0.78	285	254	256	47	45	78	77	2.0	8.0
4	30	181.53	0.76	0.77	285	254	253	47	48	78	77	2.0	8.0
	35	185.48	0.76	0.77	285	254	255	47	46	79	78	2.0	8.0
5	40	189.44	0.70	0.74	285	254	251	48	47	79	77	1.8	8.0
	45	193.27	0.68	0.73	284	254	255	48	46	79	77	1.8	8.0
6	50	197.06	0.62	0.70	284	253	249	48	47	79	77	1.6	7.5
	55	200.72	0.59	0.68	284	253	253	48	45	79	77	1.5	7
7	60	204.17	0.62	0.70	284	253	253	49	48	79	77	1.5	7
	65	207.66	0.62	0.70	284	253	257	49	45	79	77	1.5	7
8	70	211.18	0.62	0.70	283	255	255	49	45	79	77	1.5	7
	75	214.61	0.61	0.69	282	253	250	49	45	79	77	1.5	7
9	80	218.11	0.65	0.71	281	253	254	49	45	79	78	1.7	7.5

Traverse: #2 (NG) FW					Traverse:			
Start Time: 11:33	Initial Leak Check: .006	cfm@ 19	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 13:33	Final Leak Check: .008	cfm@ 18	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator :

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: SVOC #1	Page 4 of 4
	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
	85	221.80	0.65	0.71	280	252	250	49	44	79	77	1.7	7.5
10	90	225.51	0.68	0.71	279	253	251	49	45	79	77	1.7	7.5
	95	229.16	0.66	0.72	274	252	255	49	44	79	77	1.7	7.5
11	100	232.83	0.63	0.71	274	252	252	49	45	79	77	1.7	7.5
	105	236.49	0.60	0.69	274	252	256	50	44	79	77	1.6	7.5
12	110	240.16	0.60	0.69	277	251	250	50	44	79	77	1.6	7.5
	115	243.82	0.60	0.69	276	251	256	50	44	79	77	1.6	7.5
	120	247.48											

Traverse:				Traverse:			
Start Time:	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : R

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	May 25/17
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 4
Probe No.:	6C
Meter Box No.:	Team 4
Impinger Box No.:	#2 Train N

Pitot Factor	0.840	
DGMCF	0.979	
Barometric Pressure	29.24	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2565	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	648.0	g
WCBDA	10.7	g

Combustion Gas Concentration

Oxygen	8.26	%
Carbon Dioxide	10.62	%
Carbon Monoxide	21.1	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	53
Trendicator	
Control Box	COG 20098
Incline Manometer	"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	03906

Nozzle Measurements	
1	
2	See T1
3	
4	
Average:	

Notes:

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: SVOC #2	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	248.07	0.76	0.77	280	251	251	~~72~~68	62	73	75	2.0	6
	5	252.05	0.77	0.77	282	251	251	70	40	73	75	2.0	6
2	10	255.87	0.79	0.78	282	253	251	64	42	73	78	2.0	6.5
	15	259.92	0.79	0.78	282	253	248	59	43	74	75	2.0	6.5
3	20	263.97	0.80	0.79	281	254	251	55	42	75	75	2.0	6.5
	25	267.97	0.79	0.78	282	254	253	54	43	76	75	2.0	6.5
4	30	271.98	0.74	0.76	282	253	253	54	43	77	76	1.9	6
	35	275.90	0.75	0.76	282	253	251	54	42	77	75	1.9	6
5	40	279.76	0.65	0.71	283	253	250	54	43	78	76	1.7	6
	45	283.57	0.65	0.71	283	253	248	55	42	78	76	1.7	6
6	50	287.13	0.50	0.63	282	253	249	53	42	80	76	1.3	5.5
	55	290.66	0.52	0.64	282	253	251	50	41	79	76	1.3	5.5
7	60	293.93	0.60	0.68	282	253	253	49	41	79	76	1.6	6
	65	297.54	0.60	0.68	282	253	253	48	42	79	76	1.6	6
8	70	301.17	0.63	0.70	282	252	250	48	42	79	77	1.6	6
	75	304.78	0.63	0.70	282	252	248	48	43	79	77	1.6	6
9	80	308.39	0.66	0.72	282	253	249	49	43	79	77	1.7	6
	85	312.10	0.66	0.72	281	252	252	47	42	79	76	1.7	6
10	90	315.78	0.68	0.73	279	252	252	47	42	80	78	1.7	6
	95	319.47	0.69	0.74	279	251	252	47	42	80	77	1.8	6
11	100	323.33	0.66	0.72	280	251	251	46	42	80	76	1.7	6

Traverse: #1 (NW) FW					
Start Time: 15:00	Initial Leak Check: .005	cfm@	18	"Hg	
Finish Time: 17:00	Final Leak Check: .006	cfm@	16	"Hg	

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator :

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: SVOC #2	Page 3 of 4
	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	327.06	0.62	0.70	280	251	249	46	42	80	87	1.6	6
12	110	330.67	0.63	0.70	279	251	249	46	42	80	77	1.6	6
	115	334.28	0.62	0.70	279	251	251	46	43	80	77	1.6	6
	120	337.88											
1	0	338.56	0.62	0.70	280	252	253	46	40	74	76	1.6	6
	5	342.00	0.64	0.70	280	252	252	46	41	74	76	1.7	6
2	10	345.62	0.70	0.74	280	253	251	46	43	75	76	1.9	6.5
	15	349.46	0.73	0.75	281	254	249	46	44	76	76	1.9	6.5
3	20	353.29	0.73	0.75	281	254	252	47	45	77	76	1.9	6.5
	25	357.10	0.73	0.75	281	254	253	46	45	78	76	1.9	6.5
4	30	360.99	0.74	0.78	282	253	253	47	44	78	77	2.0	7
	35	364.89	~~0.67~~ 0.72	0.72	282	254	249	47	44	79	78	1.8	6.5
5	40	368.77	0.65	0.71	282	254	249	47	43	79	78	1.7	6.5
	45	372.46	0.64	0.71	282	253	251	48	43	79	76	1.7	6.5
6	50	376.15	0.57	0.67	282	253	253	48	43	79	77	1.5	6
	55	379.66	0.57	0.67	282	253	253	47	43	79	77	1.5	6
7	60	383.14	0.62	0.70	283	253	254	47	43	80	77	1.6	6
	65	386.73	0.62	0.70	283	253	249	47	43	80	77	1.6	6
8	70	390.32	0.67	0.73	283	253	250	47	43	79	80	1.8	6.5
	75	393.91	0.65	0.71	283	253	251	47	43	80	79	1.7	6.5
9	80	397.68	0.63	0.70	281	253	253	47	43	81	78	1.6	6

Traverse: #2 (NE) FW					
Start Time: 17:36	Initial Leak Check:	.006	cfm@	14	"Hg
Finish Time: 19:36	Final Leak Check:	.008	cfm@	16	"Hg

Traverse:				
Start Time:	Initial Leak Check:		cfm @	"Hg
Finish Time:	Final Leak Check:		cfm @	"Hg

Dropped my pen @ 10s

Project No.: 21754

Operator : R

Field Data Sheet

Date: May 25/17	Plant: Covanta DYEC	Test No.: SVOC # 2	Page 4 of 4
	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
	85	401.27	0.65	0.71	280	252	253	47	43	80	78	1.7	6.5
10	90	404.96	0.68	0.73	280	252	252	48	44	80	78	1.8	6.5
	95	408.71	0.68	0.73	279	252	249	47	44	80	78	1.8	6.5
11	100	412.47	0.63	0.70	280	252	250	48	45	80	77	1.6	6
	105	416.24	0.60	0.69	280	252	251	48	45	80	79	1.6	6
12	110	419.83	0.60	0.69	279	252	253	49	45	80	78	1.6	6
	115	423.41	0.61	0.69	279	252	251	49	45	80	77	1.6	6
	120	427.01											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"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.: 21754

Operator : [signature]

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	May 26, 17
Test Location	APC Outlet No. 2
Operator Signature	~~[illegible]~~ RW/AS

Project No.:	21754
Page	1 of 4
Probe No.:	6C
Meter Box No.:	Team 4 COC 20090
Impinger Box No.:	#4 Train V

Pitot Factor	0.840	
DGMCF	0.979	
Barometric Pressure	29.39	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2576	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	681.1	g
WCBDA	11.8	g

Combustion Gas Concentration

Oxygen	7.97	%
Carbon Dioxide	11.03	%
Carbon Monoxide	16.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	See T1
Control Box	COC 20090
Incline Manometer	1"
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	B03922

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	0.2535
2	0.2525
3	0.2535
4	0.2540
Average:	0.2536

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: May 26/17	Plant: Covanta DYEC	Test No.: SVOC #3	Page 2 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
1	0	427.68	0.70	0.71	280	251	251	60	33	75	77	1.7	8
	5	431.54	0.77	0.75	284	251	254	52	39	74	77	1.9	8
2	10	435.32	0.80	0.77	283	253	255	53	40	75	77	2.0	8.5
	15	439.24	0.84	0.79	283	253	251	50	41	75	77	2.1	9
3	20	443.27	0.82	0.78	284	254	256	50	43	76	77	2.0	9
	25	447.26	0.82	0.78	284	254	248	49	43	77	78	2.0	9
4	30	451.22	0.85	0.79	285	254	258	49	42	78	77	2.1	9
	35	455.17	0.80	0.77	285	254	249	49	43	78	80	2.0	9
5	40	459.12	0.75	0.75	286	254	257	50	43	79	77	1.9	9
	45	463.05	0.77	0.76	285	253	251	50	42	80	77	1.9	9
6	50	467.06	0.65	0.70	286	253	257	50	42	79	78	1.6	8.5
	55	470.65	0.64	0.69	286	253	251	51	41	80	80	1.6	8.5
7	60	474.32	0.65	0.70	285	253	256	51	41	80	79	1.6	8.5
	65	478.00	0.65	0.70	285	253	255	51	42	80	79	1.6	8.5
8	70	481.61	0.70	0.72	286	252	256	51	41	80	79	1.7	8.5
	75	485.50	0.72	0.73	286	252	253	50	41	81	80	1.7	8.5
9	80	489.10	0.70	0.72	286	252	256	50	41	81	80	1.7	8.5
	85	492.82	0.72	0.73	286	252	251	50	42	81	80	1.7	8.5
10	90	496.57	0.72	0.73	285	252	257	50	41	81	79	1.7	8.5
	95	500.31	0.70	0.72	284	252	251	50	42	81	79	1.7	8.5
11	100	504.05	0.63	0.69	283	253	257	51	42	81	80	1.6	8.5

Traverse: #1 (NE) FW					
Start Time: 9:15	Initial Leak Check: .007	cfm@	16	"Hg	
Finish Time: 10:15	Final Leak Check: .007	cfm@	16.5	"Hg	

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Train blank 1.6 scf AS

Project No.: 21754

Operator : R

Field Data Sheet

Date: May 26/17	Plant: Covanta DYEC	Test No.: SVOC #3	Page 3 of 4
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
	105	507.71	0.63	0.69	279	252	250	51	42	82	80	1.6	8.5
12	110	511.32	0.60	0.67	282	251	257	51	42	81	82	1.5	8
	115	514.86	0.59	0.67	281	251	249	51	42	82	81	1.5	8
	120	518.44											
1	0	519.05	.73	.74	283	253	258	67	46	79	83	1.8	9
	5	522.78	.71	.73	285	252	254	50	41	79	80	1.7	9
2	10	526.49	.83	.79	285	253	255	50	42	79	79	2.0	9.5
	15	530.50	.80	.77	285	254	257	50	43	79	79	1.9	9
3	20	534.43	.80	.77	284	253	249	51	43	79	79	1.9	9
	25	538.35	.80	.77	284	254	258	51	43	44 79	79	1.9	9
4	30	542.25	.73	.74	284	254	248	51	43	79	79	1.8	9
	35	546.06	.71	.73	285	254	258	51	43	79	79	~~1.7~~ 1.8	9
5	40	549.80	.68	.71	285	254	251	51	44	79	79	1.6	9
	45	553.42	.70	.72	285	254	258	51	41	79	79	1.6	8.5
6	50	557.04	.63	.64	285	254	255	51	41	78	80	1.5	8
	55	560.56	.61	.67	285	253	254	51	40	78	79	1.5	8
7	60	564.05	.65	.70	285	254	257	52	41	79	80	1.6	8
	65	567.60	.65	.70	285	253	248	52	42	79	79	1.6	8
8	70	571.15	.66	.70	286	253	260	52	42	79	79	1.6	8
	75	574.71	.68	.71	285	253	252	52	41	78	80	1.6	8
9	80	578.31			285	253	257	52	42	78	79	1.6	8.5

Traverse: #2 (NW) FW					Traverse:			
Start Time: 10:34	Initial Leak Check: .007	cfm@ 16.5	"Hg		Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: ~	Final Leak Check:	cfm@	"Hg		Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : BL / AS / JF

Field Data Sheet

Date: May 26/17	Plant: Covanta DYEC	Test No.: SVOC #3	Page 4 of 4
	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
	85	581.90	0.68	0.71	284	253	255	53	42	79	80	1.6	8.5
10	90	585.49	0.70	0.72	285	253	250	53	43	79	79	1.7	8.5
	95	589.14	0.70	0.72	283	253	255	53	44	78	80	1.7	8.5
11	100	592.78	0.70	0.72	284	252	249	54	45	79	79	1.7	9
	105	596.34	0.69	0.72	280	252	256	55	47	79	79	1.6	8.5
12	110	599.98	0.61	0.68	279	252	249	56	47	78	79	1.5	8
	115	603.42	0.60	0.70	277	252	256	57	47	78	79	1.5	8
	120	606.88											

Traverse:					Traverse:			
~~Start Time:~~	~~Initial Leak Check:~~		~~cfm@~~	~~"Hg~~	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 12:34	Final Leak Check:	.006	cfm@	19 "Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : JF

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Semi-Volatile Organic Compounds
Test Date	25 May 17
Test Location	Quench Inlet No. 1
Operator Signature	TS

Project No.:	21754
Page	1 of 5
Probe No.:	
Meter Box No.:	14
Impinger Box No.:	6

Pitot Factor	0.849	
DGMCF	1.008	
Barometric Pressure	29.31	"Hg
Static Pressure	-2.65	"H2O
Nozzle Size	0.2374	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5	
Number of Ports	2	
Number of Points/Port	12	

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	405.0	g
WCBDA	9.5	g

Combustion Gas Concentration

Oxygen	8.28	%
Carbon Dioxide	10.46	%
Carbon Monoxide	14.4	ppm

Measuring Device	MII Numbers
Probe / Pitot S/N	9 BD3769
Trendicator	
Control Box # 14	BD3701
Incline Manometer	#10 BD2107
Comb.Gas.Analyzer	NETCEM
Micromanometer	
Barometer	ENVCAN
Calipers	

Nozzle Measurements	
1	0.2375
2	0.2390
3	0.2360
4	0.2370
Average:	0.2374

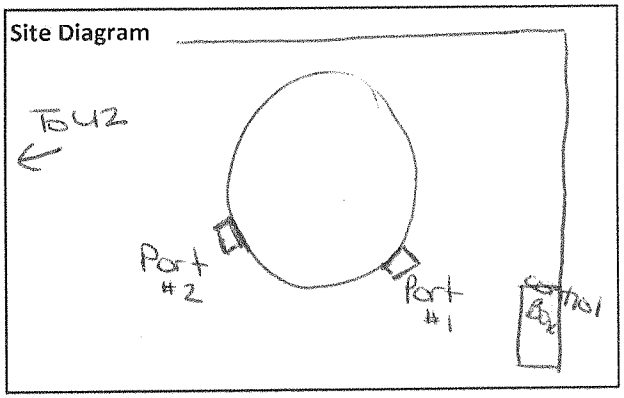
Probe Liner (Glass) / Metal /Teflon / Other_____

Nozzle (Glass) / Metal / Other_____

Union None /Metal / (Teflon) / Other_____

Pitot Leak Checked? (Yes) No

Site Diagram



Notes:

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	67.35	0.70	0.62	335	252	257	81	75	86	87	1.25	1
	2.5	68.97	0.71	0.62	336	253	261	70	49	86	88	1.25	1
	5	70.48	0.71	0.62	336	253	263	69	51	86	88	1.3	2
2	7.5	72.10	0.72	0.63	335	253	260	68	50	86	89	1.3	0.5
	10	73.72	0.73	0.63	335	254	261	65	50	86	91	1.3	3
	12.5	75.34	0.73	0.64	335	253	260	60	51	87	92	1.3	3
3	15	76.96	0.73	0.64	335	253	260	61	50	87	93	1.3	3.5
	17.5	78.56	0.72	0.63	335	254	259	59	49	88	94	1.25	3.5
	20	80.15	0.73	0.64	334	253	259	59	49	88	95	1.3	3.5
4	22.5	81.73	0.71	0.63	334	254	259	58	50	88	96	1.25	3.0
	25	83.33	0.71	0.63	335	254	259	58	49	89	97	1.25	4
	27.5	84.92	0.73	0.64	335	254	260	57	50	90	98	1.3	4
5	30	86.56	0.74	0.65	334	254	259	57	51	90	99	1.35	4.5
	32.5	88.19	0.75	0.65	335	254	259	56	50	91	100	1.4	4.5
	35	89.86	0.74	0.65	335	251	260	56	51	92	101	1.35	5
6	37.5	91.51	0.80	0.67	334	252	260	55	50	92	102	1.5	5.5
	40	93.24	0.80	0.68	333	252	260	55	51	93	104	1.5	6
	42.5	94.99	0.79	0.67	332	254	260	55	49	94	104	1.45	6
7	45	96.71	0.86	0.70	331	254	260	55	48	95	105	1.65	7.5
	47.5	98.52	0.85	0.70	332	252	260	55	50	95	106	1.6	7.5
	50	100.34	0.86	0.71	332	254	259	55	51	96	107	1.6	7.5

Traverse: 1-FW					
Start Time: 9:08	Initial Leak Check:	0.004	cfm@	14	"Hg
Finish Time: 10:38	Final Leak Check:	0.008	cfm@	15	"Hg

Traverse: /					
Start Time: /	Initial Leak Check:	/	cfm @	/	"Hg
Finish Time: /	Final Leak Check:	/	cfm @	/	"Hg

Project No.: 21754

Operator : TS

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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
8	52.5	102.13	0.88	0.71	332	254	260	55	51	97	108	1.7	8.5
	55	103.97	0.89	0.72	333	254	261	56	51	97	109	1.7	8.5
	57.5	105.80	0.90	0.72	332	253	261	57	52	98	110	1.7	9
9	60	107.63	0.88	0.72	331	254	260	56	54	99	111	1.65	9
	62.5	109.47	0.88	0.72	332	253	260	57	52	99	110	1.65	9
	65	111.29	0.88	0.72	332	253	259	55	49	100	112	1.65	9
10	67.5	113.10	0.87	0.72	332	253	259	55	49	100	112	1.6	9
	70	114.91	0.88	0.72	332	253	260	56	49	101	113	1.65	9.5
	72.5	116.74	0.88	0.72	332	253	260	55	49	101	113	1.65	9.5
11	75	118.56	0.83	0.70	330	251	260	55	48	102	114	1.5	9
	77.5	120.34	0.81	0.69	331	253	260	55	48	102	115	1.45	9
	80	122.09	0.81	0.69	331	254	259	56	48	103	115	1.45	9
12	82.5	123.84	0.79	0.69	330	254	260	55	48	103	115	1.45	9
	85	125.60	0.79	0.69	330	251	260	56	48	103	116	1.45	9
	87.5	127.31	0.78	0.68	331	251	260	55	48	104	116	1.45	9
	90	129.04											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"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.: 21754

Operator : TS

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	129.78	0.72	0.64	333	257	262	80	46	97	99	1.25	3
	2.5	131.41	0.72	0.64	332	257	262	60	44	96	98	1.2	3
	5	133.02	0.72	0.64	332	256	263	56	47	95	98	1.25	3
2	7.5	134.64	0.73	0.64	332	257	264	54	48	95	99	1.3	3.5
	10	136.28	0.73	0.64	333	257	262	53	48	95	100	1.3	3.5
	12.5	137.95	0.74	0.65	333	255	260	53	48	95	100	1.3	3.5
3	15	139.60	0.71	0.64	334	256	260	52	48	95	101	1.25	3.5
	17.5	141.23	0.70	0.63	333	256	261	52	46	95	102	1.25	4
	20	142.84	0.69	0.63	333	255	261	52	46	95	103	1.25	4
4	22.5	144.44	0.67	0.62	332	255	261	52	45	95	104	1.2	4
	25	146.02	0.66	0.62	332	256	261	52	45	96	104	1.2	4.5
	27.5	147.61	0.66	0.62	332	256	261	52	45	96	105	1.2	4.5
5	30	149.18	0.67	0.62	333	256	260	52	44	96	106	1.2	4.5
	32.5	150.78	0.66	0.62	332	257	260	52	46	97	106	1.15	4.5
	35	152.35	0.67	0.62	332	257	260	52	45	97	107	1.2	4.5
6	37.5	153.93	0.70	0.64	332	256	261	52	45	97	107	1.3	5
	40	155.58	0.70	0.64	332	256	260	51	46	98	108	1.25	5
	42.5	157.22	0.70	0.64	332	256	261	51	46	98	109	1.25	5
7	45	158.85	0.76	0.67	332	256	261	51	46	98	109	1.4	5.5
	47.5	160.58	0.77	0.67	332	255	261	52	47	99	110	1.4	5.5
	50	162.28	0.76	0.67	332	256	260	51	46	99	110	1.4	5.5

Traverse: 2-FW					
Start Time: 11:34	Initial Leak Check: 0.008	cfm@	15	"Hg
Finish Time: 13:04	Final Leak Check: 0.004	cfm@	14 1/2	"Hg

Traverse: /				
Start Time: /	Initial Leak Check: /	cfm @	/	"Hg
Finish Time: /	Final Leak Check: /	cfm @	/	"Hg

Project No.: 21754

Operator : JS

Field Data Sheet

Date: 05 May 17	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	1163.97	0.81	0.69	332	256	261	52	46	100	111	1.6	7
	55	165.74	0.82	0.69	332	256	261	52	48	100	112	1.6	7
	57.5	167.54	0.83	0.70	332	255	260	51	48	101	112	1.6	7.5
9	60	169.34	0.85	0.71	332	256	260	51	48	101	113	1.65	7.5
	62.5	171.16	0.85	0.71	332	256	259	51	48	101	113	1.65	7.5
	65	172.97	0.85	0.71	332	256	260	52	49	102	114	1.65	7.5
10	67.5	174.76	0.84	0.71	332	256	259	52	48	102	114	1.6	8
	70	176.54	0.84	0.71	333	256	259	52	48	102	115	1.6	8
	72.5	178.30	0.83	0.70	333	257	260	52	48	103	115	1.6	8
11	75	180.08	0.74	0.66	332	256	260	52	49	103	115	1.4	8
	77.5	181.80	0.73	0.66	331	256	259	52	48	103	115	1.3	8
	80	183.48	0.74	0.66	331	257	260	53	47	104	116	1.3	8
12	82.5	185.13	0.73	0.66	331	257	260	53	48	104	116	1.35	8
	85	186.81	0.74	0.66	331	257	260	53	48	104	116	1.35	8
	87.5	188.48	0.73	0.66	332	257	260	54	48	104	116	1.35	8
	90	190.12											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"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.: 21754

Operator : TD

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	25 May 16
Test Location	Quench Inlet No. 1
Operator Signature	TS

Project No.:	21754
Page	1 of 5
Probe No.:	
Meter Box No.:	14
Impinger Box No.:	5

Pitot Factor	0.849	
DGMCF	1.008	
Barometric Pressure	29.24	"Hg
Static Pressure	-2.65	"H2O
Nozzle Size	0.2374	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5
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	416.7	g
WCBDA	8.4	g

Combustion Gas Concentration

Oxygen	8.25	%
Carbon Dioxide	10.41	%
Carbon Monoxide	18.9	ppm

Measuring Device	MII Numbers
Probe / Pitot SB	See
Trendicator	Test
Control Box #14	#1
Incline Manometer	#10
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	See
2	Test #1
3	
4	
Average:	

Site Diagram

Notes:

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	90.71	0.69	0.61	334	255	258	78	73	87	88	~~1.0~~ 1.4	2.5
	2.5	92.45	0.70	0.62	335	254	259	70	70	89	88	1.2	2
	5	94.06	0.69	0.61	335	254	260	67	69	87	88	1.2	2
2	7.5	95.61	0.70	0.62	335	255	264	66	68	87	89	1.25	2.5
	10	97.22	0.69	0.62	334	253	260	65	65	87	91	1.25	2.5
	12.5	98.81	0.70	0.62	334	254	260	64	65	87	92	1.25	2.5
3	15	100.39	0.70	0.62	334	254	260	64	61	87	93	1.25	2.5
	17.5	102.01	0.71	0.63	334	255	260	63	54	87	94	1.25	~~2~~ 3
	20	103.63	0.69	0.62	334	255	260	61	53	88	95	1.25	3
4	22.5	105.23	0.69	0.62	334	255	260	59	54	88	96	1.25	3.5
	25	106.84	0.69	0.62	334	254	260	58	56	89	97	1.25	3.5
	27.5	108.42	0.70	0.63	334	255	260	57	53	89	98	1.25	3.5
5	30	109.98	0.72	0.64	334	254	260	57	54	90	99	1.3	4.5
	32.5	111.63	0.71	0.63	333	255	260	56	54	90	100	1.25	4.5
	35	113.26	0.72	0.64	333	256	260	55	57	91	101	1.3	5
6	37.5	114.87	0.75	0.65	332	255	260	53	50	92	102	1.4	6
	40	116.53	0.75	0.65	332	255	260	53	50	92	102	1.4	6
	42.5	118.17	0.75	0.66	331	255	260	52	51	93	103	1.4	7
7	45	119.85	0.81	0.68	331	256	260	51	50	94	104	1.5	7.5
	47.5	121.59	0.83	0.69	330	256	260	51	45	94	105	1.55	8
	50	123.36	0.83	0.69	331	256	259	51	43	95	106	1.55	8

Traverse: 1-FN					Traverse:			
Start Time: 15:35	Initial Leak Check: 0.007	cfm@	14 1/2	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: 17:05	Final Leak Check: 0.005	cfm@	17	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : TS

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	125.13	0.85	0.70	330	255	259	51	38	95	107	1.6	8
	55	126.93	0.86	0.71	331	255	258	50	35	96	107	1.6	8
	57.5	128.72	0.86	0.71	330	256	258	50	33	96	108	1.6	8
9	60	130.48	0.87	0.71	330	256	258	50	34	97	109	1.65	9
	62.5	132.29	0.87	0.71	330	257	258	50	34	98	110	1.65	9
	65	134.09	0.88	0.72	330	257	258	50	34	98	110	1.65	9
10	67.5	135.90	0.86	0.71	330	256	258	51	34	99	111	1.6	9
	70	137.68	0.86	0.71	330	256	257	51	34	99	111	1.6	9
	72.5	139.47	0.85	0.71	331	255	258	51	34	100	112	1.6	9
11	75	141.26	0.77	0.67	329	257	258	51	34	100	112	1.5	9
	77.5	143.02	0.76	0.67	328	257	258	51	34	101	113	1.5	9
	80	144.76	0.78	0.68	328	257	258	51	34	101	113	1.45	9
12	82.5	146.49	0.78	0.68	329	256	258	51	34	101	114	1.45	9
	85	148.21	0.78	0.68	329	256	257	51	34	100	114	1.45	9
	87.5	149.90	0.77	0.68	329	256	257	51	35	100	115	1.45	9
	90	151.62											

Traverse:			
Start Time:	Initial Leak Check:	cfm@	"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.: 21754

Operator : TS

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	152.30	0.70	0.63	333	252	255	74	37	98	101	1.0	2.5
	2.5	153.90	0.71	0.64	334	252	253	59	37	98	101	1.25	2.5
	5	155.51	0.71	0.64	334	254	256	53	37	97	100	1.25	2.5
2	7.5	157.13	0.71	0.64	334	254	258	51	36	97	100	1.25	3
	10	158.73	0.72	0.64	334	255	258	50	35	97	103	1.3	3
	12.5	160.37	0.71	0.64	333	255	257	49	35	97	104	1.3	3
3	15	162.00	0.68	0.63	333	256	258	49	35	97	105	1.25	3
	17.5	163.59	0.67	0.62	333	255	258	49	35	97	105	1.25	3
	20	165.16	0.66	0.62	333	256	259	49	35	97	106	1.2	3
4	22.5	166.72	0.66	0.62	333	256	260	49	35	97	106	1.2	3
	25	168.26	0.65	0.61	333	257	260	49	34	97	107	1.2	3.5
	27.5	169.82	0.65	0.61	333	257	259	49	35	98	107	1.2	3.5
5	30	171.41	0.65	0.61	333	256	259	49	34	98	108	1.2	3.5
	32.5	172.97	0.65	0.61	333	257	260	50	35	98	108	1.2	4
	35	174.56	0.66	0.62	333	257	260	50	35	99	109	1.2	4
6	37.5	176.13	0.69	0.63	334	256	258	50	35	99	109	1.3	4.5
	40	177.76	0.70	0.64	333	257	259	50	36	100	110	1.3	4.5
	42.5	179.37	0.69	0.64	333	257	258	50	36	100	110	1.3	4.5
7	45	181.01	0.79	0.68	333	257	259	50	34	100	111	1.5	5.5
	47.5	182.72	0.78	0.68	334	257	259	50	33	100	111	1.55	5.5
	50	184.49	0.79	0.68	334	256	258	50	33	101	112	1.5	6

Traverse: 2-PN					
Start Time: 17:40	Initial Leak Check: 0.007	cfm@	17	"Hg	
Finish Time: 19:10	Final Leak Check: 0.006	cfm@	16	"Hg	

Traverse: /					
Start Time: /	Initial Leak Check: /	cfm @	/	"Hg	
Finish Time:	Final Leak Check: /	cfm @	/	"Hg	

Project No.: 21754

Operator : TR

Field Data Sheet

Date: 25 May 17	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	186.26	0.84	0.70	334	257	259	50	33	101	113	1.55	6
	55	188.03	0.85	0.71	335	256	258	50	33	100	113	1.55	6.5
	57.5	189.80	0.84	0.70	335	257	256	50	33	100	113	1.6	6.5
9	60	191.58	0.86	0.71	335	257	258	50	33	100	114	1.6	7
	62.5	193.38	0.87	0.72	335	257	257	50	34	100	114	1.65	7
	65	195.20	0.88	0.72	335	257	258	50	34	103	115	1.7	8
10	67.5	197.05	0.92	0.74	336	257	259	50	34	103	115	1.8	9
	70	198.94	0.94	0.75	336	257	258	50	34	103	116	1.8	9.5
	72.5	200.85	0.90	0.74	337	257	258	50	35	104	116	1.75	9.5
11	75	202.74	0.84	0.71	335	257	259	50	37	104	116	1.6	9
	77.5	204.58	0.86	0.72	335	258	258	50	37	104	117	1.6	9
	80	206.40	0.85	0.71	335	257	258	50	38	105	117	1.6	9
12	82.5	208.20	0.85	0.71	336	257	258	50	39	105	118	1.6	9
	85	210.00	0.84	0.71	336	257	258	51	41	105	118	1.6	9
	87.5	211.76	0.84	0.71	336	256	257	51	43	106	118	1.6	9
	90	213.55											

Traverse:	
Start Time:	Initial Leak Check: / cfm@ / "Hg
Finish Time:	Final Leak Check: / cfm@ / "Hg

Traverse:	
Start Time:	Initial Leak Check: / cfm @ / "Hg
Finish Time:	Final Leak Check: / cfm @ / "Hg

Static -2.65.

Project No.: 21754

Operator : TS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	26 May 17
Test Location	Quench Inlet No. 1
Operator Signature	TS

Project No.:	21754
Page	1 of 5
Probe No.:	
Meter Box No.:	14
Impinger Box No.:	3

Pitot Factor	0.849	
DGMCF	1.008	
Barometric Pressure	29.39	"Hg
Static Pressure	-0.63	"H2O
Nozzle Size	0.2374	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	405.2	g
WCBDA	8.8	g

Combustion Gas Concentration

Oxygen	8.05	%
Carbon Dioxide	10.54	%
Carbon Monoxide	19.4	ppm

Measuring Device	MII Numbers
Probe / Pitot SB	
Trendicator	See
Control Box #14	Test #1
Incline Manometer #b	
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	
2	See
3	Test #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: 26 May 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	14.51	0.69	0.62	330	252	253	84	81	88	89	1.2	2
	2.5	16.05	0.69	0.62	334	251	254	67	69	88	89	1.2	2
	5	17.63	0.68	0.61	334	252	257	61	68	88	91	1.2	2
2	7.5	19.17	0.68	0.61	334	252	257	61	44	89	92	1.2	2
	10	20.72	0.68	0.61	334	251	255	58	44	89	93	1.25	2.5
	12.5	22.31	0.69	0.62	333	252	256	54	43	89	94	1.25	2.5
3	15	23.89	0.70	0.63	334	252	256	52	43	90	95	1.25	3
	17.5	25.47	0.70	0.63	334	253	255	51	43	90	96	1.3	3.5
	20	27.08	0.70	0.63	334	253	255	49	43	91	97	1.3	3.5
4	22.5	28.67	0.69	0.62	334	254	256	49	43	91	99	1.3	4
	25	30.27	0.68	0.62	334	253	256	48	43	92	100	1.25	4
	27.5	31.85	0.68	0.62	334	253	255	48	43	93	101	1.25	4
5	30	33.42	0.69	0.63	334	253	258	48	43	93	102	1.3	5
	32.5	35.03	0.69	0.63	334	253	257	48	43	94	103	1.3	5
	35	36.61	0.70	0.63	333	257	258	48	43	95	104	1.3	5.5
6	37.5	38.25	0.73	0.65	333	254	258	48	43	95	105	1.35	6
	40	39.90	0.74	0.65	333	254	258	48	43	96	106	1.4	6.5
	42.5	41.55	0.74	0.660	332	253	258	48	43	97	107	1.4	7
7	45	43.21	0.82	0.69	331	253	257	49	44	98	108	1.6	7.5
	47.5	44.95	0.83	0.70	332	254	257	49	44	99	109	1.65	7.5
	50	46.75	0.84	0.70	332	253	257	48	44	99	110	1.65	8

Traverse: 1 - FW					
Start Time: 8:20	Initial Leak Check: 0.004	cfm@	16	"Hg
Finish Time: 9:50	Final Leak Check: 0.005	cfm@	18	"Hg

Traverse:					
Start Time:		Initial Leak Check:	/	cfm @	/ "Hg
Finish Time:		Final Leak Check:	/	cfm @	/ "Hg

Project No.: 21754

Operator : TS

Field Data Sheet

Date: 26 May 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	48.54	0.85	0.71	330	255	257	48	44	100	111	1.65	8
	55	50.34	0.86	0.71	332	254	257	48	44	100	112	1.65	8.5
	57.5	52.15	0.85	0.71	332	254	258	49	44	101	113	1.65	8.5
9	60	53.92	0.86	0.71	331	254	257	49	45	102	113	1.65	9
	62.5	55.73	0.86	0.71	331	253	259	49	43	102	114	1.65	9
	65	57.54	0.87	0.72	331	253	258	49	43	103	114	1.65	9
10	67.5	59.34	0.86	0.72	331	254	257	49	45	103	115	1.65	9
	70	61.13	0.86	0.72	331	254	258	49	46	104	116	1.65	9
	72.5	62.95	0.85	0.71	332	253	259	49	44	104	116	1.6	9
11	75	64.74	0.79	0.69	331	255	259	50	44	105	117	1.55	9
	77.5	66.51	0.79	0.69	332	253	258	50	43	106	118	1.55	10
	80	68.29	0.77	0.68	333	253	258	50	43	106	118	1.5	10
12	82.5	70.05	0.78	0.68	333	253	258	50	43	106	118	1.5	10
	85	71.78	0.78	0.69	332	253	257	50	43	107	119	1.5	10
	87.5	73.50	0.78	0.69	332	255	257	51	44	107	119	1.5	10
	90	75.22											

Traverse:				
Start Time:	/	Initial Leak Check:	/ cfm@ /	"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.: 21754

Operator : TS

Field Data Sheet

Date: 26 May 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	75.73	0.68	0.63	329	255	256	74	49	101	103	1.2	2
	2.5	77.33	0.67	0.62	332	254	256	50	41	100	103	1.2	2.5
	5	78.96	0.68	0.63	331	255	256	47	40	100	103	1.2	2.5
2	7.5	80.57	0.68	0.63	331	254	257	47	40	99	104	1.2	3
	10	82.16	0.67	0.62	331	254	258	47	40	99	104	1.2	3
	12.5	83.73	0.67	0.62	331	255	259	47	40	99	105	1.2	3
3	15	85.33	0.65	0.61	331	256	259	47	40	99	106	1.15	3
	17.5	86.91	0.65	0.61	331	255	259	47	40	99	106	1.15	3.5
	20	88.47	0.65	0.62	331	255	259	47	40	99	107	1.2	3.5
4	22.5	90.03	0.66	0.62	331	255	259	47	40	99	107	1.2	3.5
	25	91.60	0.64	0.61	332	254	259	47	40	99	108	1.2	3.5
	27.5	93.17	0.65	0.62	331	255	259	48	40	99	108	1.2	4
5	30	94.73	0.63	0.61	332	254	259	48	40	100	109	1.15	4
	32.5	96.28	0.62	0.60	331	255	259	48	43	100	109	1.15	4
	35	97.83	0.61	0.60	330	255	259	48	43	100	110	1.15	4
6	37.5	99.37	0.67	0.63	331	255	259	48	43	100	110	1.25	4.5
	40	100.97	0.66	0.62	331	256	259	48	43	101	111	1.25	4.5
	42.5	102.57	0.66	0.62	331	256	259	48	42	101	112	1.25	4.5
7	45	104.16	0.65	0.62	331	254	259	49	42	101	112	1.25	4.5
	47.5	105.74	0.66	0.62	331	255	259	49	42	100	112	1.25	4.5
	50	107.31	0.65	0.62	331	254	258	49	42	100	112	1.25	4.5

Traverse: 2 - Pt				
Start Time: 10:41	Initial Leak Check: 0.002	cfm@ 17	"Hg
Finish Time: 12:11	Final Leak Check: 0.006	cfm@ 18	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator : TS

Field Data Sheet

Date: 26 May 17	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	108.93	0.82	0.69	332	254	259	49	42	100	113	1.55	6.5
	55	110.68	0.81	0.69	333	256	259	49	43	102	113	1.6	7
	57.5	112.46	0.81	0.69	333	256	259	49	43	103	114	1.6	7
9	60	114.24	0.82	0.70	333	254	259	50	42	103	114	1.6	7
	62.5	116.03	0.82	0.70	333	254	258	50	42	103	115	1.6	7
	65	117.82	0.81	0.69	332	256	258	50	42	104	115	1.55	7.5
10	67.5	119.60	0.85	0.71	330	255	258	50	43	104	116	1.65	8
	70	121.41	0.86	0.72	333	256	258	50	43	104	116	1.65	8
	72.5	123.24	0.86	0.72	334	255	258	50	44	105	117	1.65	8
11	75	125.06	0.84	0.71	333	255	258	50	44	105	117	1.6	8
	77.5	126.88	0.85	0.71	333	256	258	50	44	105	117	1.6	8
	80	128.70	0.84	0.71	332	255	258	50	44	106	118	1.6	8
12	82.5	130.49	0.84	0.71	331	256	258	50	45	106	118	1.6	8.5
	85	132.29	0.84	0.71	330	255	258	50	45	106	118	1.6	8.5
	87.5	134.10	0.85	0.72	331	255	258	51	46	106	119	1.6	8.5
	90	135.90											

Traverse:				
Start Time:	Initial Leak Check:		cfm@	"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.: 21754

Operator : TS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	May 25 2017
Test Location	Quench Inlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	box 7
Impinger Box No.:	1

Pitot Factor	.846	
DGMCF	.982	
Barometric Pressure	29.31	"Hg
Static Pressure	- 2.5	"H2O
Nozzle Size	0.2349	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5
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	371.4	g
WCBDA	9.3	g

Combustion Gas Concentration

Oxygen	8.00	%
Carbon Dioxide	10.68	%
Carbon Monoxide	19.6	ppm

Measuring Device	MII Numbers
Probe / Pitot S11	B03772
Trendicator	A09072
Control Box	A09072
Incline Manometer	COE 2017
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements	
1	.2355
2	.2345
3	.2341
4	.2350
Average:	.2349

Site Diagram

Notes:

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	38,49	.61	.57	330	261	245	76	52	80	81	1.0	1.5
	2.5	39,97	.61	.57	330	246	246	47	51	80	81	1.0	1.5
	5	41,36	.62	.57	331	260	248	50	52	80	82	1.0	2
2	7.5	42,79	.62	.57	332	260	249	49	53	80	83	1.0	2.5
	10	44,23	.65	.58	332	260	250	49	53	81	84	1.1	3
	12.5	45,70	.69	.60	333	260	250	49	54	81	85	1.2	3.5
3	15	47,27	.72	.62	333	260	250	48	55	81	86	1.25	4
	17.5	48,87	.72	.62	334	260	250	46	56	81	87	1.2	4
	20	50,42	.72	.62	334	261	249	47	57	82	87	1.2	4
4	22.5	51,96	.71	.61	335	261	249	47	58	82	88	1.15	4
	25	53,49	.71	.61	335	260	248	47	58	82	88	1.15	4
	27.5	55,02	.71	.61	335	260	248	47	59	83	89	1.15	4
5	30	56,55	.70	.61	333	261	248	47	60	83	90	1.2	5
	32.5	58,09	.71	.62	333	261	248	47	60	83	90	1.25	5.5
	35	59,71	.70	.61	333	261	249	46	58	83	90	1.2	5.5
6	37.5	61,25	.70	.61	333	261	248	47	52	84	91	1.2	5.5
	40	62,87	.70	.61	333	260	248	47	50	84	91	1.2	5.5
	42.5	64,41	.73	.62	333	261	247	47	49	84	91	1.3	6
7	45	66,05	.82	.66	333	260	248	47	49	84	91	1.5	7
	47.5	67,78	.93	.67	333	261	247	47	48	85	92	1.5	7.5
	50	69,56	.8	.66	333	260	247	46	49	85	93	1.35	7

Traverse:	.013				Traverse:			
Start Time: 9:08	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.: 21754

Operator :

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	71.25	.78	.65	331	260	247	46	49	85	93	1.3	6.5
	55	72.90	.76	.64	330	260	247	47	49	85	93	1.25	6.5
	57.5	74.53	.73	.63	330	261	247	47	49	86	93	1.2	6.5
9	60	76.10	.72	.63	328	260	247	47	47	86	94	1.2	7
	62.5	77.67	.74	.63	329	260	247	48	46	86	94	1.2	7
	65	79.27	.74	.63	329	261	247	48	46	86	94	1.2	7
10	67.5	80.81	.74	.63	329	260	247	48	46	86	94	1.2	7.5
	70	82.38	.76	.64	330	261	247	48	46	86	94	1.25	8
	72.5	84.02	.76	.64	330	260	247	48	47	87	95	1.25	8.5
11	75	85.65	.69	.61	330	260	247	48	47	87	95	1.15	8
	77.5	87.20	.72	.63	329	260	247	48	46	87	95	1.2	8.5
	80	88.77	.70	.62	330	260	247	49	46	87	95	1.15	8.5
12	82.5	90.33	.63	.59	325	260	247	49	46	87	95	1.05	8.5
	85	91.83	.63	.59	325	260	247	49	46	87	95	1.05	8.5
	87.5	93.32	.63	.59	325	261	247	50	46	87	95	1.05	8.5
	90	94.80											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 10:38	Final Leak Check: .01	cfm@ 15	"Hg

Traverse:			
Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator :

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	95.26	.54	.53	335	261	246	26	57	84	84	.85	2
	2.5	96.57	.56	.54	335	259	255	58	59	83	84	.9	2
	5	97.92	.56	.54	336	260	257	48	61	83	85	.9	2
2	7.5	99.30	.56	.54	336	260	225	46	58	83	85	.9	2
	10	100.69	.54	.53	336	260	259	46	49	82	86	.85	2
	12.5	102.01	.56	.54	335	260	262	46	48	83	87	.9	3
3	15	103.35	.56	.54	335	261	258	46	47	82	87	.95	3
	17.5	104.72	.57	.55	335	260	257	45	47	83	88	.95	3
	20	106.09	.54	.54	334	260	258	45	46	83	89	.9	3
4	22.5	107.45	.58	.55	335	260	256	46	48	83	89	1.0	3.5
	25	108.88	.57	.55	337	261	258	46	47	83	89	1.0	3.5
	27.5	110.31	.57	.55	337	260	261	46	47	83	90	1.0	3.5
5	30	111.72	.58	.56	337	260	261	46	46	84	90	1.0	4
	32.5	113.12	.57	.55	337	261	258	46	48	84	90	.95	4
	35	114.51	.57	.55	336	260	260	46	47	84	91	.95	4
6	37.5	115.89	.59	.56	336	260	255	46	48	84	91	1.0	4
	40	117.33	.57	.55	336	260	257	46	48	84	91	.95	4
	42.5	118.76	.57	.55	336	260	255	46	48	84	91	.95	4
7	45	120.11	.76	.64	335	260	255	47	49	85	91	1.25	5.5
	47.5	121.70	.77	.64	334	260	256	47	49	85	92	1.25	6
	50	123.32	.77	.64	334	260	257	46	49	85	93	1.25	6

Traverse: 2				
Start Time: 11:35	Initial Leak Check: 0.004	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.: 21754

Operator :

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	124.94	.77	.64	333	260	256	46	48	85	93	1.25	6
	55	126.58	.77	.64	333	260	257	46	48	85	93	1.25	6
	57.5	128.20	.76	.64	334	260	258	46	47	85	94	1.25	6.5
9	60	129.83	.78	.65	334	260	256	46	46	85	94	1.3	7
	62.5	131.48	.76	.64	334	260	255	47	46	86	94	1.3	7
	65	133.10	.75	.64	333	260	255	46	45	86	94	1.3	7
10	67.5	134.76	.76	.64	333	260	257	47	46	86	94	1.35	7
	70	136.37	.72	.62	333	260	257	47	46	86	94	1.25	7.5
	72.5	137.94	.72	.62	333	260	257	47	46	86	94	1.25	7.5
11	75	139.54	.72	.62	333	260	257	47	46	86	94	1.25	7.5
141.10	77.5	141.10	.72	.62	333	260	257	47	46	86	94	1.25	7.5
	80	142.70	.63	.59	329	260	255	47	49	86	95	1.05	6.5
12	82.5	144.15	.63	.59	329	260	255	47	49	86	95	1.05	6.5
	85	145.63	.62	.58	329	260	256	48	48	87	95	1.05	7
	87.5	147.10	.64	.59	329	260	257	48	51	87	95	1.05	7
	90	148.58											

Traverse: 2				Traverse:			
Start Time: 1	Initial Leak Check:	cfm@	"Hg	Start Time:	Initial Leak Check:	cfm @	"Hg
Finish Time: ~~13:03~~ 13:05	Final Leak Check: .006	cfm@ 15	"Hg	Finish Time:	Final Leak Check:	cfm @	"Hg

Project No.: 21754

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	May 25 2017
Test Location	Quench Inlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	7 series
Meter Box No.:	Box 7
Impinger Box No.:	

Pitot Factor	.846	
DGMCF	.982	
Barometric Pressure	29.24	"Hg
Static Pressure	- 2.5	"H2O
Nozzle Size	0.2343 ~~.2344~~	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	383.3	g
WCBDA	5.2	g

Combustion Gas Concentration

Oxygen	7.91	%
Carbon Dioxide	10.62	%
Carbon Monoxide	23.1	ppm

Measuring Device	MII Numbers
Probe / Pitot S/N	B03772
Trendicator	A09072
Control Box	A09072
Incline Manometer	CoE 2001 7
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements

1	0.0340
2	0.0335
3	0.0345
4	0.0350
Average:	0.0343

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: May 25, 2017	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	52,01	.57	.54	337	260	242	72	46	79	82	.9	2
	2.5	53,39	.59	.55	337	258	242	65	42	79	81	.95	2
	5	54,77	.57	.54	336	259	257	61	39	79	81	.9	2
2	7.5	56,16	.67	.59	337	260	259	58	39	79	82	1.1	3
	10	57,66	.67	.59	337	260	261	55	38	79	83	1.1	3
	12.5	59,18	.70	.60	337	260	261	53	39	79	84	1.1	3.5
3	15	60,71	.72	.61	337	261	261	52	39	80	84	1.2	4
	17.5	62,27	.70	.60	336	261	261	52	39	80	85	1.15	4
	20	63,82	.70	.60	335	261	260	51	39	80	86	1.15	4
4	22.5	65,33	.68	.59	335	261	259	51	39	80	87	1.1	4
	25	66,82	.71	.61	336	261	260	51	39	80	87	1.2	4.5
	27.5	68,36	.71	.61	336	261	259	51	39	81	88	1.2	4.5
5	30	69,93	.69	.60	336	261	260	50	40	81	88	1.05	4
	32.5	71,40	.67	.59	336	261	260	51	40	81	89	1.05	4
	35	72,88	.67	.59	335	261	260	51	40	81	89	1.1	4
6	37.5	74,40	.68	.60	335	261	260	51	41	82	89	1.15	5
	40	75,95	.69	.60	335	261	259	51	41	82	90	1.1	5
	42.5	77,48	.70	.61	335	261	260	51	42	82	90	1.15	5.5
7	45	79,04	.78	.64	335	262	259	52	42	82	90	1.25	6
	47.5	80,66	.74	.62	335	261	259	52	43	83	91	1.15	6
	50	82,23	.74	.62	335	261	259	52	44	83	91	1.15	6

Traverse:					
Start Time:	15:49	Initial Leak Check:	0.006	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.: 21754

Operator :

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	83.78	.72	.64	334	261	258	52	45	83	91	1.2	6.5
	55	85.38	.76	.63	333	261	258	53	46	83	91	1.2	6.5
	57.5	86.98	.76	.63	333	261	258	53	47	84	91	1.2	7
9	60	88.59	.80	.65	333	261	258	53	48	84	91	1.3	8
	62.5	90.26	.76	.63	334	260	258	52	50	84	92	1.2	7.5
	65	91.87	.77	.64	333	261	258	53	52	84	92	1.25	7.5
10	67.5	93.48	.77	.64	333	260	258	53	53	84	92	1.25	7.5
	70	95.09	.78	.64	333	260	258	53	55	85	92	1.25	7.5
	72.5	96.70	.78	.64	334	260	258	53	57	85	93	1.25	8
11	75	98.32	.69	.61	332	260	258	53	58	85	93	1.05	7.5
	77.5	99.84	.66	.60	326	260	258	54	59	85	93	1.05	7.5
	80	101.35	.66	.60	325	261	258	54	60	85	93	1.05	7.5
12	82.5	102.88	.65	.59	325	261	258	55	61	85	93	1.0	7.5
	85	104.35	.64	.59	324	261	258	55	62	85	93	1.0	7.5
	87.5	105.81	.64	.59	324	261	259	55	63	85	93	1.0	7.5
	90	107.29											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 12:19	Final Leak Check: .006	cfm@ 16	"Hg

Traverse:			
Start Time: /	Initial Leak Check: /	cfm @ /	"Hg
Finish Time: /	Final Leak Check: /	cfm @ /	"Hg

Project No.: 21754

Operator : fk

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	107.71	.48	.50	332	260	240	76	54	83	87	.75	1.5
	2.5	108.96	.46	.49	333	258	249	60	42	84	87	.7	1.5
	5	110.17	.48	.50	333	259	256	55	39	84	86	.75	1.5
2	7.5	111.39	.51	.52	334	260	259	52	39	84	87	.8	2
	10	112.72	.49	.51	334	260	259	51	39	84	87	.75	2
	12.5	113.94	.51	.52	334	260	259	51	39	83	88	.8	2
3	15	115.23	.52	.52	334	261	259	50	39	83	88	.85	2.5
	17.5	116.58	.53	.53	335	260	260	50	39	84	89	.9	2.5
	20	117.90	.52	.52	335	261	260	50	39	84	90	.9	3
4	22.5	119.24	.54	.53	335	261	260	50	39	84	90	.9	3
	25	120.57	.52	.52	335	261	260	50	39	84	90	.9	3
	27.5	121.90	.54	.53	335	260	259	50	39	84	91	.9	3
5	30	123.23	.53	.53	335	260	259	50	39	84	91	.9	3
	32.5	124.57	.51	.52	335	261	259	51	40	85	91	.8	3
	35	125.89	.53	.53	335	261	259	51	40	85	92	.9	3
6	37.5	127.23	.56	.54	335	261	259	51	40	85	92	.95	3.5
	40	128.63	.55	.54	335	261	259	51	41	85	92	.95	3.5
	42.5	~~129~~ 130.03	.55	.54	335	261	258	51	42	85	92	.95	3.5
7	45	131.37	.76	.64	335	261	258	51	43	86	93	1.2	5
	47.5	132.95	.77	.64	335	261	258	51	44	86	93	1.3	5.5
	50	134.59	.78	.64	335	260	258	50	47	86	94	1.3	5.5

Traverse: 2				
Start Time: 17:45	Initial Leak Check: 0.009	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.: 21754

Operator :

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	136.26	.79	.65	335	261	258	50	48	86	94	1.35	6
	55	137.96	.80	.65	335	260	258	51	51	86	94	1.3	6
	57.5	139.63	.79	.65	335	260	257	51	52	86	94	1.3	6
9	60	141.28	.79	.65	335	260	257	52	54	87	95	1.3	6
	62.5	142.94	.80	.65	335	260	257	52	47	87	95	1.3	6
	65	144.55	.81	.66	334	260	257	52	44	87	95	1.35	6.5
10	67.5	146.24	.78	.65	334	260	257	52	43	87	95	1.3	6.5
	70	147.91	.77	.64	334	260	258	52	42	87	95	1.25	6.5
	72.5	149.55	.76	.64	334	260	257	53	43	87	95	1.25	6.5
11	75	151.17	.66	.60	333	260	257	53	45	88	95	1.05	6
	77.5	152.69	.67	.60	333	259	257	53	46	88	95	1.05	6
	80	154.18	.70	.61	333	260	257	54	48	88	95	1.1	6.5
12	82.5	155.70	.68	.60	333	259	257	54	50	88	95	1.05	6.5
	85	157.22	.67	.60	333	260	258	54	52	88	95	1.05	6.5
	87.5	158.75	.71	.62	333	260	257	54	53	88	95	1.1	7
	90	160.26											

Traverse:					Traverse:			
Start Time:	—	Initial Leak Check:	—	cfm@ — "Hg	Start Time:	/	Initial Leak Check:	/ cfm @ "Hg
Finish Time:	19:15	Final Leak Check:	.004	cfm@ 16.5 "Hg	Finish Time:	/	Final Leak Check:	/ cfm @ "Hg

= 2.3

Project No.: 21754

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	May 26 2017
Test Location	Quench Inlet No. 2
Operator Signature	

Project No.:	21754
Page	1 of 5
Probe No.:	7 Series
Meter Box No.:	Box 7
Impinger Box No.:	

Pitot Factor	.846	
DGMCF	.982	
Barometric Pressure	29.39	"Hg
Static Pressure	-2.3	"H2O
Nozzle Size	.2343	inches
Stack Diameter	4.5	feet
Length		feet
Width		feet
Port length:		inches

Reading Interval	2.5
Number of Ports	2
Number of Points/Port	12

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	385.2	g
WCBDA	9.4	g

Combustion Gas Concentration

Oxygen	7.81	%
Carbon Dioxide	11.03	%
Carbon Monoxide	17.5	ppm

Measuring Device	MII Numbers
Probe / Pitot S11	B03772
Trendicator	A09072
Control Box	A09072
Incline Manometer	cal 2001?
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	

Nozzle Measurements	
1	
2	see T#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: May 26, 2017	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	60.83	.64	.58	330	260	254	78	52	81	82	1.0	2
	2.5	62.26	.63	.57	330	259	256	62	47	82	83	1.0	2
	5	63.71	.63	.57	330	260	257	58	74	82	83	1.0	2
2	7.5	65.10	.65	.58	330	260	257	57	42	82	85	1.05	2
	10	66.55	.66	.59	331	260	259	57	36	82	86	1.1	2.5
	12.5	68.03	.67	.59	331	260	259	56	37	82	86	1.1	2.5
3	15	69.51	.70	.61	331	260	258	55	37	82	87	1.15	3
	17.5	71.04	.69	.60	331	260	258	54	37	82	87	1.1	3
	20	72.55	.71	.61	331	261	258	54	37	83	88	1.2	3
4	22.5	74.11	.70	.61	332	260	258	53	37	83	89	1.15	3
	25	75.65	.70	.61	333	261	258	52	37	83	90	1.15	3
	27.5	77.18	.71	.61	333	260	257	52	37	83	90	1.15	3
5	30	78.71	.71	.61	333	260	257	52	37	84	91	1.15	3
	32.5	80.25	.71	.61	332	260	257	52	37	84	91	1.15	4
	35	81.78	.68	.60	333	260	256	52	38	84	92	1.15	4
6	37.5	83.30	.70	.61	337	260	256	52	38	85	92	1.15	4
	40	84.89	.70	.61	334	260	257	52	38	85	92	1.15	4
	42.5	86.40	.69	.61	334	260	257	52	38	85	93	1.15	4
7	45	87.93	.79	.65	337	260	256	52	38	85	93	1.3	5
	47.5	89.51	.80	.65	333	260	256	52	38	86	93	1.3	5
	50	91.15	.77	.64	333	260	256	52	38	86	94	1.25	5

Traverse: 1				
Start Time: 8:19	Initial Leak Check: .007	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.: 21754

Operator :

Field Data Sheet

Date: May 26, 2017	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	92,77	.80	.65	333	260	256	52	38	86	94	1.3	5
	55	94,44	.82	.66	333	260	256	52	39	86	94	1.35	5.5
	57.5	96,12	.82	.66	331	260	256	53	39	87	95	1.35	5.5
9	60	97,80	.86	.67	333	260	256	53	39	87	95	1.4	6
	62.5	99,53	.86	.68	332	260	255	53	40	87	95	1.4	6
	65	101,27	.87	.68	334	260	256	53	40	87	95	1.4	6
10	67.5	102,99	.85	.67	334	260	256	53	40	87	95	1.4	6
	70	104,73	.84	.67	334	260	255	53	40	88	95	1.4	6
	72.5	106,42	.84	.67	334	260	256	54	41	88	95	1.4	6
11	75	108,12	.73	.63	332	260	256	54	41	88	95	1.2	5.5
	77.5	109,69	.75	.64	332	260	256	54	41	88	95	1.2	5.5
	80	111,25	.76	.64	333	260	256	55	41	88	96	1.25	6
12	82.5	112,85	.71	.62	333	260	256	55	42	88	96	1.15	6
	85	114,41	.69	.61	332	260	256	55	42	88	96	1.15	6
	87.5	115,98	.72	.62	332	260	255	56	42	88	96	1.15	6
	90	117,52											

Traverse:					
Start Time:	—	Initial Leak Check:	—	cfm@	— "Hg
Finish Time:	9:49	Final Leak Check:	.006	cfm@	15 "Hg

Traverse:					
Start Time:		Initial Leak Check:		cfm @	"Hg
Finish Time:		Final Leak Check:		cfm @	"Hg

Project No.: 21754

Operator :

Field Data Sheet

Date: May 25, 2017	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	117.90	.49	.51	336	260	248	79	47	87	89	.8	2
	2.5	119.17	.50	.51	335	259	256	62	46	86	87	.8	2
	5	120.43	.52	.52	335	260	257	57	46	86	88	.85	3
2	7.5	121.74	.57	.55	334	260	257	55	48	86	89	.95	3.5
	10	123.13	.56	.54	334	260	256	53	48	85	89	.9	3.5
	12.5	124.48	.56	.54	334	260	257	53	48	85	89	.9	3.5
3	15	125.82	.58	.55	334	260	257	53	49	85	90	1.0	4
	17.5	127.24	.55	.54	334	260	256	52	50	85	90	.9	4
	20	128.61	.56	.54	334	260	256	52	51	85	90	.9	4
4	22.5	129.97	.55	.54	334	260	256	53	52	85	91	.9	4.5
	25	131.37	.58	.55	334	260	256	53	51	85	91	1.0	5
	27.5	132.75	.57	.55	334	260	256	53	50	85	91	1.0	5
5	30	134.18	.55	.54	334	260	256	52	51	85	91	.9	5
	32.5	135.56	.59	.56	334	260	255	53	51	85	91	1.0	6
	35	136.99	.58	.55	334	260	256	53	52	85	91	1.0	6
6	37.5	138.42	.59	.56	335	260	255	53	52	85	91	1.0	6
	40	139.82	.62	.57	335	260	257	53	52	85	92	1.0	6
	42.5	141.30	.62	.57	335	260	256	53	53	85	92	1.0	6
7	45	142.74	.62	.57	335	260	256	53	53	86	92	1.0	6
	47.5	144.20	.78	.64	334	260	256	53	47	86	92	1.25	7.5
	50	145.85	.79	.65	334	260	256	52	43	86	93	1.25	7.5

Traverse: 2			
Start Time: 1014	Initial Leak Check: 0.007	cfm@ 14 1/2	"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.: 21754

Operator:

Field Data Sheet

Date: May 26, 2017	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: Quench Inlet 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	147.39	.77	.64	333	260	256	52	43	86	93	1.25	8
	55	149.02	.77	.64	333	260	254	52	41	86	93	1.25	8
	57.5	150.58	.79	.65	334	260	255	52	39	86	93	1.3	9.5
9	60	152.23	.79	.65	334	260	255	52	38	86	94	1.3	9.5
	62.5	153.87	.78	.64	335	260	254	52	38	86	94	1.3	9.5
	65	155.51	.78	.65	334	259	254	53	39	87	94	1.3	9.5
10	67.5	157.15	.78	.65	334	259	254	52	38	87	94	1.3	9.5
	70	158.76	.77	.64	333	259	254	52	38	87	94	1.25	10
	72.5	160.38	.77	.64	333	259	254	53	38	87	94	1.25	10
11	75	161.99	.67	.60	331	260	253	53	39	87	94	1.05	9
	77.5	163.51	.67	.60	330	259	254	53	39	87	94	1.05	9
	80	165.02	.67	.60	331	260	254	54	39	87	95	1.05	9
12	82.5	166.53	.68	.60	331	260	254	55	40	87	95	1.05	9
	85	168.02	.67	.60	331	260	254	55	41	87	95	1.05	9
	87.5	169.53	.70	.61	332	259	254	55	42	87	95	1.1	10
	90	171.06											

Traverse:					
Start Time:	—	Initial Leak Check:	—	cfm@	— "Hg
Finish Time:	12:11	Final Leak Check:	.009	cfm@	16 "Hg

Traverse:					
Start Time:	/	Initial Leak Check:	/	cfm @	/ "Hg
Finish Time:	/	Final Leak Check:	/	cfm @	/ "Hg

Project No.: 21754

Operator :

APPENDIX 9

Acid Gas Field Data Sheets
(12 pages)

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 M26A
Test Date	MAY 23, 17
Test Location	APC Outlet No. 1
Operator Signature	DT

Project No.:	21754	
Page	1 of 2	
Probe No.:		
Meter Box No.:	TEAM 2	
Impinger Box No.:		

Measuring Device	MII Numbers
Probe / Pitot 58	B03769
Trendicator TEAM	e.OE 20092
Control Box 2	
Incline Manometer	COE 20092
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	B03922

Pitot Factor	.849	
DGMCF	.986	
Barometric Pressure	29.61	"Hg
Static Pressure	-10.70	"H2O
Nozzle Size	~~.2342~~ .2335	inches
Stack Diameter	4.500	feet
Length	0	feet
Width	0	feet
Port length:		inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	130.8	g
WCBDA	11.2	g

Combustion Gas Concentration

Oxygen	8.47	%
Carbon Dioxide	10.75	%
Carbon Monoxide	12.9	ppm

Nozzle Measurements	
1	.2325
2	.2340
3	.2345
4	.2330
Average:	~~.2342~~ .2335

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

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: MAY 23, 17	Plant: Covanta DYEC	Test No.: 1 ~~Particulate/Metals~~ 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 ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
~~1~~ S	0	68.34	.74	~~.61~~	285	254	258	69	64	64	64	1.2	2.5
~~2~~	5	71.02	.7	.6	289	255	256	51	253	64	64	1.1	2.5
~~3~~	10	73.98	.7	.6	288	255	255	52	253	64	64	1.1	2.5
~~4~~	15	76.88	.68	.59	288	267	259	52	259	64	64	1.1	2.5
~~5~~	20	79.80	.68	.59	287	267	259	51	259	64	64	1.1	2.5
~~6~~	25	82.72	.68	.59	288	266	276	51	251	64	64	1.1	2.5
~~7~~	30	85.64	.68	.59	288	265	282	51	241	64	64	1.1	2.5
~~8~~	35	88.55	.68	.59	288	267	255	51	232	64	64	1.1	2.5
~~9~~	40	91.47	.68	.59	288	267	253	51	230	64	64	1.1	2.5
~~10~~	45	94.38	.68	.59	288	267	254	51	234	64	64	1.1	2.5
~~11~~	50	97.26	.68	.59	288	267	255	51	237	64	64	1.1	2.5
~~12~~	55	100.14	.68	.59	288	267	256	51	238	64	64	1.1	2.5
	60	103.04											

Traverse:	2					
Start Time: 10:33	Initial Leak Check:	.006	cfm@	15	"Hg
Finish Time: 11:33	Final Leak Check:	.005	cfm@	15	"Hg

Traverse:	X					
Start Time:	X	Initial Leak Check:	X	cfm @	X	"Hg
Finish Time:		Final Leak Check:		cfm @		"Hg

Project No.: 21754

Operator : DT

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 M26A
Test Date	MAY 23, 17
Test Location	APC Outlet No. 1
Operator Signature	DT

Project No.:	21754
Page	1 of 2
Probe No.:	
Meter Box No.:	TEAM 2
Impinger Box No.:	

Pitot Factor	.849	
DGMCF	.986	
Barometric Pressure	29.57	"Hg
Static Pressure	-10.70	"H2O
Nozzle Size	~~.2342~~ .2335	inches
Stack Diameter	4.500	feet
Length		feet
Width		feet
Port length:		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	134.3	g
WCBDA	7.5	g

Combustion Gas Concentration

Oxygen	8.66	%
Carbon Dioxide	10.55	%
Carbon Monoxide	10.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	See
Trendicator	
Control Box	
Incline Manometer	Test
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	#1

Nozzle Measurements	
1	See
2	
3	Test
4	
Average:	#1

Site Diagram

Notes:

Field Data Sheet

Date: MAY 23, 17	Plant: Covanta DYEC	Test No.: 2 ~~Particulate/Metals~~ 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 ΔP "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 ΔH "H_2O	Pump Vacuum "Hg Gauge
~~1~~ 5	0	3.54	.72	.62	276	268	256	67	150	73	72	1.3	2.5
~~2~~	5	6.48	.74	.62	289	269	256	54	235	73	72	1.3	2.5
~~3~~	10	9.64	.7	.61	289	268	259	47	240	73	73	1.3	2.5
~~4~~	15	12.76	.73	.62	289	264	257	46	239	74	73	1.3	2.5
~~5~~	20	15.93	.72	.62	288	263	258	45	240	74	73	1.3	2.5
~~6~~	25	18.99	.70	.61	288	260	256	45	238	74	73	1.3	2.5
~~7~~	30	22.06	.70	.61	288	261	256	45	239	74	73	1.3	2.5
~~8~~	35	25.13	.73	.62	288	261	257	45	240	75	73	1.3	2.5
~~9~~	40	28.26	.73	.62	289	261	257	46	240	75	74	1.3	2.5
~~10~~	45	31.40	.66	.59	289	260	257	47	240	75	73	1.2	2.5
~~11~~	50	34.38	.68	.60	288	260	256	47	238	76	74	1.25	2.5
~~12~~	55	37.43	.66	.59	287	260	256	48	239	76	74	1.2	2.5
	60	40.47											

Traverse: 1					
Start Time: 12:17	Initial Leak Check:	.010	cfm@	15	"Hg
Finish Time: 13:17	Final Leak Check:	.012	cfm@	15	"Hg

Traverse: X					
Start Time: X	Initial Leak Check:	X	cfm @	X	"Hg
Finish Time:	Final Leak Check:	X	cfm @	X	"Hg

Project No.: 21754

Operator : ST

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 M26A
Test Date	MAY 23, 17
Test Location	APC Outlet No. 1
Operator Signature	DT

Project No.:	21754
Page	1 of 2
Probe No.:	
Meter Box No.:	TEAM 2
Impinger Box No.:	

Pitot Factor	.849	
DGMCF	.986	
Barometric Pressure	29.54	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	~~.2342~~ .2335	inches
Stack Diameter	4.50	feet
Length		feet
Width		feet
Port length:		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	108.8	g
WCBDA	7.7	g

Combustion Gas Concentration

Oxygen	8.60	%
Carbon Dioxide	10.55	%
Carbon Monoxide	13.9	ppm

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	See
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	Test
Micromanometer	
Barometer	
Calipers	#1

Nozzle Measurements	
1	See
2	
3	Test
4	
Average:	#1

Site Diagram

Notes:

Field Data Sheet

Date: MAY 23, 17	Plant: Covanta DYEC	Test No.: ~~Particulate/Metals~~ 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~~ S	0	42.33	.63	.58	280	260	257	65	130	77	76	1.1	2.2
~~2~~	5	45.29	.65	.59	289	261	258	54	244	78	76	1.2	2.2
~~3~~	10	48.28	.65	.59	288	261	259	49	243	78	76	1.2	2.2
~~4~~	15	51.27	.66	.59	289	260	260	48	243	78	79	1.2	2.2
~~5~~	20	54.26	.65	.59	289	261	257	49	240	78	77	1.2	2.2
~~6~~	25	57.23	.65	.59	289	260	258	48	242	78	77	1.2	2.2
~~7~~	30	60.18	.65	.59	289	260	257	49	242	78	77	1.2	2.2
~~8~~	35	63.14	.63	.58	288	261	258	49	242	79	77	1.2	2.2
~~9~~	40	66.13	.63	.58	288	261	258	50	241	78	77	1.2	2.2
~~10~~	45	69.10	.63	.58	288	261	258	50	241	79	77	1.2	2.2
~~11~~	50	72.05	.63	.58	288	261	257	51	242	79	77	1.2	2.2
~~12~~	55	75.03	.63	.58	288	260	258	53	242	79	77	1.2	2.2
	60	78.02											

Traverse:	/	Traverse:	X		
Start Time: 14:22	Initial Leak Check: .010 cfm@ 15 "Hg	Start Time:	X	Initial Leak Check: X	cfm @ X "Hg
Finish Time: 15:22	Final Leak Check: .010 cfm@ 15 "Hg	Finish Time:		Final Leak Check: X	cfm @ X "Hg

Project No.: 21754

Operator : AT

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 M26A
Test Date	MAY 24, 17
Test Location	APC Outlet No. 2
Operator Signature	DT

Project No.:	21754
Page	1 of 2
Probe No.:	
Meter Box No.:	TEAM 1
Impinger Box No.:	

Pitot Factor	.849	
DGMCF	.983	
Barometric Pressure	29.43	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	.2335	inches
Stack Diameter	4.50	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	136.2	g
WCBDA	10.0	g

Combustion Gas Concentration

Oxygen	8.25	%
Carbon Dioxide	10.74	%
Carbon Monoxide	19.2	ppm

Measuring Device	MII Numbers
Probe / Pitot S8	B03769
Trendicator	COE 20094
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	
Micromanometer	
Barometer	ENV CAN
Calipers	B03922

Nozzle Measurements	
1	.2325
2	.2340
3	.2345
4	.2330
Average:	.2335

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: MAY 24/17	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
	0	81.87	.69	.61	280	263	255	47	77	77	75	1.2	2
	5	85.07	.71	.62	280	264	257	48	178	77	76	1.2	2
	10	88.05	.72	.62	280	264	258	48	245	77	76	1.3	2
	15	91.21	.74	.63	280	264	257	48	243	77	76	1.3	2
	20	94.40	.74	.63	280	264	255	49	243	78	76	1.3	2
	25	97.56	.74	.63	281	264	254	49	242	79	76	1.3	2
	30	100.72	.72	.62	281	264	253	50	242	79	76	1.3	2
	35	103.90	.74	.63	281	264	253	50	242	80	77	1.3	2
	40	107.04	.74	.63	281	264	253	52	243	80	77	1.3	2
	45	110.21	.72	.62	281	264	250	53	244	81	78	1.3	2
	50	113.39	.73	.63	282	265	250	54	244	81	78	1.3	2
	55	116.55	.72	.62	282	264	252	57	244	82	79	1.3	2
	60	119.75											

Traverse: Z					Traverse: X				
Start Time: 8:19	Initial Leak Check:	.007	cfm@ 17	"Hg	Start Time:		Initial Leak Check:	X	cfm @ "Hg
Finish Time: 9:19	Final Leak Check:	.007	cfm@ 15	"Hg	Finish Time:		Final Leak Check:	X	cfm @ X "Hg

Project No.: 21754

Operator : DT

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	2 M26A
Test Date	MAY 24, 17
Test Location	APC Outlet No. 2
Operator Signature	DT

Project No.:	21754
Page	1 of 2
Probe No.:	
Meter Box No.:	TBAM1
Impinger Box No.:	

Pitot Factor	.849	
DGMCF	.983	
Barometric Pressure	29.43	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	.2335	inches
Stack Diameter	4.500	feet
Length	—	feet
Width	—	feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	134.8	g
WCBDA	7.6	g

Combustion Gas Concentration

Oxygen	8.36	%
Carbon Dioxide	10.63	%
Carbon Monoxide	12.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	See
Trendicator	
Control Box	
Incline Manometer	
Comb.Gas.Analyzer	Test
Micromanometer	
Barometer	
Calipers	#1

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements	
1	See
2	
3	Test
4	
Average:	#1

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: May 24, 17	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
	0	20.20	.68	.64	280	264	255	65	128	81	79	1.3	2
	5	23.41	.71	.62	282	255	256	56	239	81	80	1.3	2
	10	26.54	.69	.61	283	255	258	53	241	81	80	1.3	2
	15	29.75	.69	.61	283	256	257	52	239	82	80	1.3	2
	20	32.92	.68	.61	283	256	257	52	238	82	80	1.3	2
	25	36.08	.66	.60	282	255	255	52	237	82	80	1.2	2
	30	39.18	.69	.61	282	255	255	52	238	83	80	1.2	2
	35	42.28	.69	.61	283	256	255	52	238	83	80	1.2	2
	40	45.35	.70	.62	284	256	256	52	239	84	80	1.25	2
	45	48.52	.69	.61	283	255	256	53	239	84	81	1.25	2
	50	51.67	.67	.61	283	255	255	53	239	85	81	1.25	2
	55	54.78	.67	.61	283	256	256	53	238	84	81	1.25	2
	60	57.87											

Traverse: 1					Traverse: X				
Start Time: 10:00	Initial Leak Check:	.003	cfm@ 15	"Hg	Start Time:	Initial Leak Check:		cfm @ X	"Hg
Finish Time: 11:00	Final Leak Check:	.003	cfm@ 15	"Hg	Finish Time:	Final Leak Check:		cfm @ X	"Hg

Project No.: 21754

Operator : ST

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	MAY 24, 17
Test Location	APC Outlet No. 2
Operator Signature	DT

Project No.:	21754
Page	1 of 2
Probe No.:	
Meter Box No.:	TEAM 1
Impinger Box No.:	

Pitot Factor	.849	
DGMCF	.983	
Barometric Pressure	29.42	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	.2335	inches
Stack Diameter	4.500	feet
Length		feet
Width		feet
Port length:	11	inches

Particulate Gain

Filter	—	mg
Probe	—	mg

Moisture Gain

CWTR	133.5	g
WCBDA	8.0	g

Combustion Gas Concentration

Oxygen	8.13	%
Carbon Dioxide	10.78	%
Carbon Monoxide	136	ppm

Measuring Device	MII Numbers
Probe / Pitot	EOR
Trendicator	
Control Box	
Incline Manometer	Test
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	#1

Reading Interval	5
Number of Ports	2
Number of Points/Port	12

Nozzle Measurements

1	EOR
2	
3	Test
4	
Average:	#1

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: MAY 24, 17	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
	0	58.30	.65	.60	280	254	255	67	118	81	80	1.2	2
	5	61.32	.64	.59	282	254	258	52	218	82	81	1.2	2
	10	64.49	.66	.60	282	256	258	50	230	82	81	1.2	2
	15	67.46	.67	.61	283	255	257	49	230	82	81	1.2	2
	20	70.41	.67	.61	282	255	255	48	230	83	81	1.2	2
	25	73.34	.68	.61	282	255	255	49	230	83	81	1.2	2
	30	76.51	.68	.61	283	255	255	49	235	83	81	1.2	2
	35	79.60	.68	.61	283	256	255	49	239	84	81	1.2	2
	40	82.67	.72	.63	283	256	255	49	240	85	82	1.3	2
	45	85.91	.68	.61	284	257	255	50	240	85	82	1.2	2
	50	89.02	.66	.60	283	256	256	52	240	85	82	1.2	2
	55	92.14	.67	.61	283	257	255	53	240	85	82	1.2	2
	60	95.23											

Traverse: 1					
Start Time: 11:56	Initial Leak Check:	.005	cfm@	15	"Hg
Finish Time: 12:56	Final Leak Check:	.005	cfm@	15	"Hg

Traverse:					
Start Time: X	Initial Leak Check:	X	cfm @	X	"Hg
Finish Time:	Final Leak Check:		cfm @		"Hg

Project No.: 21754

Operator : DT

APPENDIX 10

VOST Field Data Sheets
(6 pages)

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Locatior Courtice, ON	Test No: 1	Control Box ID: VOSTS	
Test location: APC Outlet No. 1	DGMCF: 0.998	Operator: [redacted]	
Date: MAY 25, 2017	Barometric Pressure: 29.33 "Hg	Project No: 21754	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 5A, 5B L1919676-53	

Tube Pair 1 Start Time: 9:20	Initial Leak Check NDL @ 23 "Hg	Sample ID: 1A, 1B	
Tube Pair 1 End Time: 9:40	Final Leak Check NDL @ 12 "Hg	Lab ID: L1919676-49	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	13.95	126	142	23	24	1.4	2
5	18.7	127	142	7	24	1.4	2
10	24.0	127	142	6	25	1.4	2
15	29.3	127	142	6	25	1.4	2
20	34.5	127	142	6	25	1.4	2

Tube Pair 2 Start Time: 9:56	Initial Leak Check NDL @ 16 "Hg	Sample ID: 2A, 2B	
Tube Pair 2 End Time: 10:16	Final Leak Check NDL @ 13 "Hg	Lab ID: L1919676-50	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	34.65	127	142	6	25	1.4	2
5	39.8	127	142	6	25	1.4	2
10	44.9	127	142	6	25	1.4	2
15	49.8	127	142	6	25	1.4	2.5
20	54.8	127	142	6	25	1.4	2.5

Tube Pair 3 Start Time: 10:26	Initial Leak Check NDL @ 13 "Hg	Sample ID: 3A, 3B	
Tube Pair 3 End Time: 10:46	Final Leak Check NDL @ 6 "Hg	Lab ID: L1919676-51	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	55.4	127	142	6	26	1.4	2
5	60.7	129	142	7	26	1.4	2
10	65.9	130	142	7	26	1.4	2
15	71.0	130	142	8	26	1.4	2
20	75.8	131	142	8	26	1.4	2

ARCHIVE TUBE PAIR 4

Tube Pair 4 Start Time: 10:57	Initial Leak Check NDL @ 12 "Hg	Sample ID: 4A, 4B	
Tube Pair 4 End Time: 11:17	Final Leak Check NDL @ 7 "Hg	Lab ID: L1919676-52	

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	76.4	131	141	10	26	1.4	2
5	81.5	132	141	10	26	1.4	2
10	87.0	131	141	10	26	1.4	2
15	91.9	131	142	10	26	1.4	2
20	96.75	131	142	10	26	1.4	2

ORTECH Environmental

Vost Data Sheet

TRIP BLANK 30 A,B

Plant: Covanta DYEC	Test Condition: COMPLIANCE	
Plant Locatior Courtice, ON	Test No: 2	Control Box ID: VOST 5
Test location: APC Outlet No. 1	DGMCF: 0.998 ✓	Operator: DJ LS
Date: MAY 25, 2017	Barometric Pressure: 29.29 "Hg	Project No: 21754
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 25A, 25B

Tube Pair 1 Start Time: 1139			Initial Leak Check NDL @ 15 "Hg			Sample ID: 6A, 6B	
Tube Pair 1 End Time: 1159			Final Leak Check NDL @ 8 "Hg			Lab ID: L1919676-54	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	97.0	131	141	12	25	1.4	2
5	102.1	131	141	9	26	1.4	2.5
10	107.4	131	141	5	26	1.4	2.5
15	113.0	131	141	4	26	1.4	2.5
20	118.1	131	142	4	26	1.4	2.5

Tube Pair 2 Start Time: 1207			Initial Leak Check NDL @ 10 "Hg			Sample ID: 7A, 7B	
Tube Pair 2 End Time: 1227			Final Leak Check NDL @ 7 "Hg			Lab ID: L1919676-55	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	19.4	131	141	4	26	1.4	2
5	23.7	131	141	4	26	1.4	2
10	29.2	131	141	4	26	1.4	2
15	34.7	131	141	4	26	1.4	2
20	40.3	131	141	4	26	1.4	2

Tube Pair 3 Start Time: 1300			Initial Leak Check NDL @ 14 "Hg			Sample ID: 8A, 8B	
Tube Pair 3 End Time: 1320			Final Leak Check NDL @ 11.5 "Hg			Lab ID: L1919676-56	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	40.5	131	141	5	25	1.4	2
5	45.9	131	141	5	25	1.4	2
10	51.0	131	141	5	25	1.4	2
15	56.0	131	141	5	25	1.4	2
20	61.8	131	141	5	25	1.4	2

ARCHIVE

Tube Pair 4 Start Time: 1502			Initial Leak Check NDL @ 12 "Hg			Sample ID: 9A, 9B	
Tube Pair 4 End Time: 1522			Final Leak Check NDL @ 9 "Hg			Lab ID: L1919676-57	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	62.1	131	142	4	24	1.4	2
5	67.2	131	142	4	24	1.4	2
10	73.4	131	141	5	24	1.4	2
15	78.8	131	142	5	24	1.4	2
20	84.0	131	142	5	24	1.4	2

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Locatior Courtice, ON	Test No: 3	Control Box ID: VOST 5	
Test location: APC Outlet No. 1	DGMCF: 0.998	Operator: CPD DL	
Date: MAY 25, 2017	Barometric Pressure: 29.25 "Hg	Project No: 21754	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 14A/14B	

Tube Pair 1 Start Time: 1553	Initial Leak Check NDL @ 12 "Hg	Sample ID: 10A 10B					
Tube Pair 1 End Time: 1553	Final Leak Check NDL @ 6 "Hg	Lab ID: L191676-58					
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	84.1	131	141	5	25	1.4	2
5	89.1	131	141	5	25	1.4	2
10	94.1	131	141	5	25	1.4	2
15	99.0	131	141	5	25	1.4	2.5
20	104.9	131	141	5	25	1.4	2.5

Tube Pair 2 Start Time: 1604	Initial Leak Check NDL @ 12 "Hg	Sample ID: 11A/11B					
Tube Pair 2 End Time: 1624	Final Leak Check NDL @ 8 "Hg	Lab ID: L191676-59					
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	6.3	131	141	6	25	1.4	2
5	11.9	131	141	5	25	1.4	2
10	17.1	131	141	5	25	1.4	2
15	22.4	131	141	5	25	1.4	2
20	27.6	131	141	5	25	1.4	2

Tube Pair 3 Start Time: 1634	Initial Leak Check NDL @ 13 "Hg	Sample ID: 12A 12B					
Tube Pair 3 End Time: 1654	Final Leak Check NDL @ 6 "Hg	Lab ID: L191676-60					
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	27.8	131	141	9	25	1.4	2
5	28.3	131	141	9	25	1.4	2
10	38.9	131	140	8	25	1.4	2
15	43.7	131	141	5	25	1.4	2
20	48.9	131	141	5	25	1.4	2

ARCHIVE

Tube Pair 4 Start Time: 1701	Initial Leak Check NDL @ 13 "Hg	Sample ID: 13A 13B					
Tube Pair 4 End Time: 1721	Final Leak Check NDL @ 8 "Hg	Lab ID: L191676-61					
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	49.0	131	142	11	25	1.4	2
5	54.0	131	142	10	25	1.4	2
10	59.0	131	142	10	26	1.4	2
15	64.0	131	142	10	26	1.4	2
20	69.0	131	142	10	26	1.4	2

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: compliance		M/I # 1210
Plant Locatior Courtice, ON	Test No: 1		Control Box ID: VOST #2
Test location: APC Outlet No. 2	DGMCF: 1.000 ✓		Operator: CB.
Date: MAY 25, 2017	Barometric Pressure: 29.33 "Hg		Project No: 21754
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak		Field Blank Pair ID: 5A + 5B

(during first traverse of test #1 SVOC)

Tube Pair 1 Start Time: 09:14	Initial Leak Check NDL @ 22 "Hg				Sample ID: 17A + 17B
Tube Pair 1 End Time: 09:34	Final Leak Check NDL @ 22 "Hg				Lab ID: L1919676-65

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	79.53	121	139	11	23	1	2.5
5	76.15	121	139	8	26	1	2.5
10	81.78	123	139	8	27	1	2.5
15	87.11	124	140	7	28	1	2.5
20	93.12	124	140	7	28	1	2.5

ARCHIVE

Tube Pair 2 Start Time: 09:48	Initial Leak Check NDL @ 22 "Hg				Sample ID: 18A + 18B
Tube Pair 2 End Time: 10:04	Final Leak Check NDL @ 22 "Hg				Lab ID: -66

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	93.84	123	139	9	26	1	2.5
5	99.04	124	139	6	26	1	2.5
10	103.95	125	139	7	26	1	2.5
15	108.83	125	139	7	28	1	2.5
20	113.85	125	138	6	28	1	2.5

Tube Pair 3 Start Time: 10:23	Initial Leak Check NDL @ 22 "Hg				Sample ID: 19A + 19B
Tube Pair 3 End Time: 10:43	Final Leak Check NDL @ 22 "Hg				Lab ID: -67

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	114.61	123	136	6	27	1	2.5
5	121.00	124	137	6	28	1	2.5
10	127.72	124	137	6	29	1	2.5
15	132.42	125	137	7	30	1	2.5
20	137.88	125	138	7	31	1	2.8

Tube Pair 4 Start Time: 10:52	Initial Leak Check NDL @ 22 "Hg				Sample ID: 20A + 20B
Tube Pair 4 End Time: 11:12	Final Leak Check NDL @ 22 "Hg				Lab ID: -68

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	138.48	123	137	7	27	1	2.2
5	143.65	124	138	7	28	1	2.2
10	148.80	124	138	7	28	1	2.2
15	153.98	125	138	8	29	1	2.2
20	159.25	125	138	8	29	1	2.3

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: compliance	M11 # 12010
Plant Locatior Courtice, ON	Test No: 2	Control Box ID: VOST #3
Test location: APC Outlet No. 2	DGMCF: 1.000	Operator: CB.
Date: MAY 25, 2017	Barometric Pressure: 29.30 "Hg	Project No: 21754
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 25A + 25B

(during second traverse of Test #1 SVOC)

ARCHIVE

Tube Pair 1 Start Time: 11:41	Initial Leak Check NDL @ 22 "Hg	Sample ID: 21A + 21B
Tube Pair 1 End Time: 12:01	Final Leak Check @ "Hg	Lab ID: L191976 - 69

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	60.05	122	138	11	26	1	2.3
5	65.66	123	139	12	26	1	2.3
10	71.11	124	139	12	27	1	2.3
15	76.80	124	139	12	27	1	2.3
20	82.21	124	139	12	27	1	2.3

Tube Pair 2 Start Time: 12:10	Initial Leak Check NDL @ 21 "Hg	Sample ID: 22A + 22B
Tube Pair 2 End Time: 12:30	Final Leak Check NDL @ 22 "Hg	Lab ID: -70

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	82.56	123	138	14	28	1	2.6
5	87.99	124	139	9	27	1	2.5
10	91.28	124	138	8	27	1	2.5
15	95.62	124	138	7	27	1	2.5
20	100.08	124	138	7	27	1	2.5

Tube Pair 3 Start Time: 12:39	Initial Leak Check NDL @ 22 "Hg	Sample ID: 23A + 23B
Tube Pair 3 End Time: 12:59	Final Leak Check NDL @ 22 "Hg	Lab ID: -71

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	0.80	123	137	7	28	1	2.6
5	6.46	125	138	7	30	1	2.6
10	12.18	125	138	8	32	1	2.5
15	17.53	125	137	7	32	1	2.5
20	22.68	125	138	8	32	1	2.5

Tube Pair 4 Start Time: 13:08	Initial Leak Check NDL @ 22 "Hg	Sample ID: 24A + 24B
Tube Pair 4 End Time: 13:28	Final Leak Check @ "Hg	Lab ID: -72

Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	23.31	123	137	11	29	1	2
5	28.56	124	137	10	30	1	2
10	33.55	125	138	11	30	1	2
15	38.48	125	138	11	30	1	2
20	43.06	125	139	11	30	1	2

ORTECH Environmental

Vost Data Sheet

MU # 1210

Plant: Covanta DYEC	Test Condition: compliance		
Plant Location: Courtice, ON	Test No: 3	Control Box ID: VOST #3	
Test location: APC Outlet No. 2	DGMCF: 1.000	Operator: CB.	
Date: MAY 25, 2017	Barometric Pressure: 29.25 "Hg	Project No: 21754	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 14A + 14B	

ARCHIVE

Tube Pair 1 Start Time: 15:18	Initial Leak Check NDL @ 22 "Hg	Sample ID: 26A + 26B	
Tube Pair 1 End Time: 15:38	Final Leak Check NDL @ 21 "Hg	Lab ID: 919676-74	

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	44.24	120	138	13	21	1	2
5	49.22	121	137	9	23	1	2
10	53.82	123	138	10	24	1	2
15	59.10	124	138	10	25	1	2
20	63.28	124	138	10	25	1	2

Tube Pair 2 Start Time: 15:46	Initial Leak Check NDL @ 22 "Hg	Sample ID: 27A + 27B
Tube Pair 2 End Time: 16:06	Final Leak Check NDL @ 22 "Hg	Lab ID: -75

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	64.00	123	137	11	25	1	2
5	69.05	124	138	12	26	1	2
10	74.10	124	138	12	26	1	2
15	79.33	125	137	11	27	1	2
20	84.00	125	137	11	26	1	2

Tube Pair 3 Start Time: 16:16	Initial Leak Check NDL @ 22 "Hg	Sample ID: 28A + 28B
Tube Pair 3 End Time: 16:36	Final Leak Check NDL @ 22 "Hg	Lab ID: -76

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	84.73	122	136	12	27	1	2.2
5	89.96	124	137	12	28	1	2.2
10	95.08	125	137	13	29	1	2.2
15	100.00	125	136	13	29	1	2.2
20	104.97	125	137	13	30	1	2.2

Tube Pair 4 Start Time: 16:46	Initial Leak Check NDL @ 22 "Hg	Sample ID: 29A + 29B
Tube Pair 4 End Time: 17:06	Final Leak Check NDL @ 22 "Hg	Lab ID: -77

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	105.71	123	135	13	28	1	2.8
5	111.28	123	135	13	29	1	3
10	116.56	124	136	14	29	1	3
15	122.06	125	136	14	29	1	3
20	125.90	125	137	15	30	1	3

Rev: May 10, 2016

TRIP BLANK 30A + 30B (-78)

APPENDIX 11

Aldehydes Field Data Sheets
(6 pages)

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 1
Date:	MAY 26, 2017
Project No.:	21754

Measuring Device	MII Number
Control Module	COE 200194
Barometer	ENV. CAN

Barometric Pressure: 29.37 "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	71.7	132	141	130	23	24	.8	1
5	74.7	130	141	135	20	25	.8	1
10	77.0	130	141	132	19	25	.8	1
15	79.4	130	141	131	16	25	.8	1
20	81.9	129	141	127	16	26	.8	1
25	84.6	129	142	127	16	26	.8	1
30	87.1	129	142	130	16	26	.8	1
35	89.5	129	142	131	16	26	.8	1
40	92.4	129	142	130	16	26	.8	1
45	94.9	129	142	130	16	26	.8	1
50	97.1	129	142	130	16	26	.8	1
55	99.2	130	142	131	16	26	.8	1
60	101.7	130	142	131	16	26	.8	1

Start Time:	8:17		
Finish Time:	9:17		
Initial Leak Check:	<.01	Lpm @ 6	" Hg
Final Leak Check:	<.01	Lpm @ 5	" Hg

DGMCF:	1.015 ✓
Sample Volume:	30.0
Average DGM Temp:	25.6
Average DGM Δ H:	.8

Comments: TRAIN B

: sample @ ~0.5 lpm for 60 minutes.

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	MAY 26, 2017
Project No.:	21754

Measuring Device	MII Number
Control Module	CME 20019
Barometer	ENV. CAN

Barometric Pressure: 29.38 "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	1.9	128	143	130	22	27	0.8	1
5	4.5	126	143	127	22	27	0.8	1
10	7.0	130	143	126	22	27	0.8	1
15	9.4	130	143	126	23	27	0.8	1
20	12.0	130	143	126	23	28	0.8	1
25	14.6	130	142	127	23	28	0.8	1
30	17.4	130	142	125	23	28	0.8	1
35	20.0	130	142	120	23	28	0.8	1
40	22.5	130	142	130	23	28	0.8	1
45	25.0	130	142	133	23	28	0.8	1
50	27.7	130	142	133	23	28	0.8	1
55	30.4	130	142	126	23	28	0.8	1
60	33.0	130	142	126	23	28	0.8	1

Start Time:	9:27
Finish Time:	10:27
Initial Leak Check:	<0.01 Lpm @ 5 " Hg
Final Leak Check:	<0.01 Lpm @ 6 " Hg

DGMCF:	1.015
Sample Volume:	31.1
Average DGM Temp:	27.7
Average DGM Δ H:	0.8

Comments: C TRAIN
full of ice + WATER AMBIENT + GAS SAMPLE RATE

: sample @ ~0.5 lpm for 60 minutes.

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 1
Date:	MAY 26, 2017
Project No.:	21754

Measuring Device	MII Number
Control Module	COE 20019
Barometer	ENV.CAN

Barometric Pressure:	29.40	"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	33.5	130	142	124	23	27	0.8	1
5	36.4	130	142	127	22	27	0.8	1
10	38.5	131	141	127	22	27	0.8	1
15	41.0	130	141	127	22	27	0.8	1
20	44.3	131	141	127	22	27	0.8	1
25	47.0	131	141	127	22	27	0.8	1
30	49.5	131	141	127	22	27	0.8	1
35	52.7	131	141	128	22	27	0.8	1
40	55.3	130	141	124	22	27	0.8	1
45	58.2	130	141	126	22	27	0.8	1
50	60.7	130	141	126	22	27	0.8	1
55	63.3	130	142	129	22	27	0.8	1
60	66.0	130	142	126	22	27	0.8	1
	65.6							

Start Time:	10 54		
Finish Time:	11 54		
Initial Leak Check:	<.01	Lpm @ 6	" Hg
Final Leak Check:	<.01	Lpm @ 6	" Hg

DGMCF:	1.015
Sample Volume:	32.1
Average DGM Temp:	27
Average DGM Δ H:	0.8

Comments:

lots of ice + water

: sample @ ~0.5 lpm for 60 minutes.

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 2
Date:	MAY 26, 2017
Project No.:	21754

Measuring Device	MII Number
Control Module	VOST #3 12016
Barometer	

Barometric Pressure: 29.37 "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	739.79	122	132	139	22	24	.5	1
5	736.47	123	140	137	20	27	.5	1
10	738.00	124	140	139	20	29	.5	1
15	741.26	124	139	140	20	29	.5	1
20	744.44	125	140	133	20	29	.5	1
25	746.68	125	140	139	20	30	.5	1
30	749.18	126	140	138	20	31	.5	1
35	751.44	126	140	138	20	31	.5	1
40	753.86	125	140	139	20	32	.5	1
45	756.18	125	140	140	20	32	.5	1
50	758.61	125	140	140	20	32	.5	1
55	761.05	126	139	139	20	32	.5	1
60	763.30	126	140	138	20	33	.5	1

Start Time:	08:23		
Finish Time:	09:23		
Initial Leak Check:	.008	Lpm @ 6	" Hg
Final Leak Check:	.008	Lpm @ 7	" Hg

DGMCF:	1.005
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments: TEST 1+2+3 ALDEHYDES PERFORMED DURING TEST #3 SUMC

: sample @ ~0.5 lpm for 60 minutes.

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	MAY 26, 2017
Project No.:	21754

Measuring Device	MII Number
Control Module	VOST #3 12010
Barometer	

Barometric Pressure:	29.38	"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	64.00	124	139	137	21	30	.5	1
5	66.25	125	140	132	20	32	.5	1
10	68.72	125	140	140	21	32	.5	1
15	71.32	126	139	138	20	32	.5	1
20	73.68	125	139	139	20	32	.5	1
25	76.35	126	139	139	20	33	.5	1
30	78.78	126	139	141	20	33	.5	1
35	81.18	126	139	141	20	33	.5	1
40	83.60	126	139	141	20	34	.5	1
45	86.12	126	139	141	20	34	.5	1
50	88.62	126	139	140	20	34	.5	1
55	91.14	126	139	141	20	34	.5	1
60	93.38	126	139	141	20	34	.5	1

Start Time:	09:39		
Finish Time:	10:39		
Initial Leak Check:	.008	Lpm @ 7	" Hg
Final Leak Check:	.01	Lpm @ 7	" Hg

DGMCF:	1.005
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 2
Date:	May 26 2016
Project No.:	21754

Measuring Device	MII Number
Control Module	VOST #3 12010
Barometer	

Barometric Pressure:	29.40	"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	93.78	123	138	143	22	30	.5	1
5	96.30	124	139	140	20	31	.5	1
10	98.68	125	139	141	19	32	.5	1
15	101.38	125	139	142	18	32	.5	1
20	103.76	125	139	142	18	32	.5	1
25	106.18	125	139	142	18	32	.5	1
30	108.60	125	139	142	18	32	.5	1
35	110.96	125	139	142	18	32	.5	1
40	113.58	125	139	141	18	32	.5	1
45	116.06	125	139	141	18	33	.5	1
50	118.67	125	139	141	18	33	.5	1
55	121.22	126	139	140	17	32	.5	1
60	123.75	126	139	140	17	32	.5	1

Start Time:	10:59		
Finish Time:	11:59		
Initial Leak Check:	.01	Lpm @	7 " Hg
Final Leak Check:	.01	Lpm @	7 " Hg

DGMCF:	1.005 ✓
Sample Volume:	
Average DGM Temp:	
Average DGM Δ H:	

Comments:

: sample @ ~0.5 lpm for 60 minutes.

APPENDIX 12

ORTECH Sample Log/Chain of Custody Forms
(16 pages)

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

L1931222

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train recovery
Job Assigned To: ALS
Quote/ PO: Ortech PO# : 21754 - J 2352

ORTECH Sample ID 17-21754-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
1	MAY 24/17	# 1 APC Outlet	Test 1 Nozzle & PM10 cyclone rinse	Acetone	Particulate
2			Test 1 PM 2.5 cyclone Rinse	Acetone	Particulate
3			Test 1 PM 2.5 exit & connectors	Acetone	Particulate
5			Test 1 Impinger Soln & rinse	water	Particulate
7			Test 1 Impinger Rinse	Acetone/HEXANE	Particulate
8	MAY 24/17	# 1 APC Outlet	Test 2 Nozzle & PM10 cyclone rinse	Acetone	Particulate
9			Test 2 PM 2.5 cyclone Rinse	Acetone	Particulate
10			Test 2 PM 2.5 exit & connectors	Acetone	Particulate
12			Test 2 Impinger Soln & rinse	water	Particulate
14			Test 2 Impinger Rinse	Acetone/HEXANE	Particulate
15	MAY 24/17	# 1 APC Outlet	Test 3 Nozzle & PM10 cyclone rinse	Acetone	Particulate
16			Test 3 PM 2.5 cyclone Rinse	Acetone	Particulate
17			Test 3 PM 2.5 exit & connectors	Acetone	Particulate
19			Test 3 Impinger Soln & rinse	water	Particulate
21			Test 3 Impinger Rinse	Acetone/HEXANE	Particulate

RELINQUISHED BY: Angela Mola DATE: May 25/17

RELINQUISHED TO: AARON BURTON DATE: 25-May-2017
12:25
12.8°C

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train recovery
Job Assigned To: ALS
Quote/ PO: Ortech PO# : 21754 - J 2352

ORTECH Sample ID 17-21754-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
22	MAY 23/17	# 2 APC Outlet	Test 1 Nozzle & PM10 cyclone rinse	Acetone	Particulate
23			Test 1 PM 2.5 cyclone Rinse	Acetone	Particulate
24			Test 1 PM 2.5 exit & connectors	Acetone	Particulate
26			Test 1 Impinger Soln & rinse	water	Particulate
28			Test 1 Impinger Rinse	Acetone/HEXANE	Particulate
29	MAY 23/17	# 2 APC Outlet	Test 2 Nozzle & PM10 cyclone rinse	Acetone	Particulate
30			Test 2 PM 2.5 cyclone Rinse	Acetone	Particulate
31			Test 2 PM 2.5 exit & connectors	Acetone	Particulate
33			Test 2 Impinger Soln & rinse	water	Particulate
35			Test 2 Impinger Rinse /	Acetone/HEXANE	Particulate
36	MAY 23/17	#2 APC Outlet	Test 3 Nozzle & PM10 cyclone rinse	Acetone	Particulate
37			Test 3 PM 2.5 cyclone Rinse	Acetone	Particulate
38			Test 3 PM 2.5 exit & connectors	Acetone	Particulate
40			Test 3 Impinger Soln & rinse	water	Particulate
42			Test 3 Impinger Rinse	Acetone/HEXANE	Particulate

RELINQUISHED BY: Angela Mola DATE: MAY 25/17

RELINQUISHED TO: AARon BURTON DATE: 25-May-2017 12:25

12.8°C

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 21754
Received By: Dan Turton
How Received: Train recovery
Job Assigned To: ALS
Quote/ PO: Ortech PO# : 21754 - J 2352

ORTECH Sample ID 17-21754-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
4	24-May-17	# 1 APC Outlet	Test 1 back up Filter	filter	see note
11	24-May-17		Test 2 back up Filter	filter	see note
18	24-May-17		Test 3 back up Filter	filter	see note
46	24-May-17		Blank 1 back up Filter	filter	see note
25	23-May-17	# 2 APC Outlet	Test 1 back up Filter	filter	see note
32	23-May-17		Test 2 back up Filter	filter	see note
39	23-May-17		Test 3 back up Filter	filter	see note
53	24-May-17		Blank 2 back up Filter	filter	see note

Note: To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished By: Angela Nolan Date: MAY 25/17

Relinquished To: Aaron Burton Date: 25-May-2017 12:25

12.8°C

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 21754
Received By: Dan Turton
How Received: Train recovery
Job Assigned To: ALS
Quote/ PO: Ortech PO# : 21754 - J 2352

ORTECH Sample ID 17-21754-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
- 6	MAY 24/17	# 1 APC Outlet	Test 1 Secondary Filter	filter	see note
13			Test 2 Secondary Filter	filter	see note
20			Test 3 Secondary Filter	filter	see note
48			Blank 1 Secondary Filter	filter	see note
27		# 2 APC Outlet	Test 1 Secondary Filter	filter	see note
34	MAY 23/17		Test 2 Secondary Filter	filter	see note
41			Test 3 Secondary Filter	filter	see note
55			Blank 2 Secondary Filter	filter	see note

Note: To be included in condensible particulate analysis as per US EPA Method 202.

Relinquished By: Angela Nolan Date: May 25/17

Relinquished To: Aaron Burton Date: 25-May-2017

12:25

12.8°C

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train recovery
Job Assigned To: ALS
Quote/ PO: Ortech PO# : 21754 - J 2352

ORTECH Sample ID 17-21754-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
43	MAY 24/17	APC # 1	Blank # 1 Nozzle & PM10 cyclone rinse	Acetone	Particulate
44			Blank # 1 PM 2.5 cyclone Rinse	Acetone	Particulate
45			Blank # 1 PM 2.5 exit & connectors	Acetone	Particulate
47			Blank # 1 Impinger Soln & rinse	water	Particulate
49			Blank # 1 Impinger Rinse	Acetone/Hexane	Particulate
50	MAY 24/17	APC # 2	Blank # 2 Nozzle & PM10 cyclone rinse	Acetone	Particulate
51			Blank # 2 PM 2.5 cyclone Rinse	Acetone	Particulate
52			Blank # 2 PM 2.5 exit & connectors	Acetone	Particulate
54			Blank # 2 Impinger Soln & rinse	water	Particulate
56			Blank # 2 Impinger Rinse	Acetone/Hexane	Particulate

Relinquished By: Angela Nolan Date: MAY 25/17

Relinquished To: AARON BURTON Date: 25-May-2017

12:25

12.8°C

ORTECH Environmental Sample Log

Acid Gases

Covanta

L1931232

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO #: Ortech PO# : 21754 - J 2352

ORTECH Sample ID 17-21754-M26A-	Sample Date	Location		Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	MAY 23/17	APC Outlet # 1	T1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	478	HCl, HF & Ammonia
2	↓	APC Outlet # 1	T2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	428	HCl, HF & Ammonia
3	↓	APC Outlet # 1	T3	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	445	HCl, HF & Ammonia
4	MAY 24/17	APC Outlet # 2	T1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	469	HCl, HF & Ammonia
5	↓	APC Outlet # 2	T2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	437	HCl, HF & Ammonia
6	↓	APC Outlet # 2	T3	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	506	HCl, HF & Ammonia
BLANK #1	MAY 23/17	APC # 1	BLANK1	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	315	HCl, HF & Ammonia
BLANK #2	MAY 24/17	APC # 2	BLANK2	Impinger Soln & rinse	0.1N H_2SO_4 + DH_2O	200	308	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: Angela Melan Date: MAY 25/17

Relinquished To: AARON BURTON Date: 25-May-2017 12:25

12.8°C

ORTECH Environmental Sample Log
Particulate and Metals Samples
Covanta

L1931238

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train recovery
Job Assigned To: ALS
QUOTE #: Ortech PO# : 21754 - J2352

	ORTECH Sample ID 17-21754-PM-	Sample Date	Sample Description	Location	Sample Media	Sample Analysis
1	1	MAY 23, 17	Test 1 Probe Rinse Acetone	#1 APC Outlet	Acetone	Particulate & Metals
	2		Test 1 Probe Rinse Nitric		0.1N Nitric	Metals
	3		Test 1 Filter		Particulate	Particulate & Metals
	4		Test 1 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	5		Test 1 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	6		Test 1 Impinger 4, 5 Rinse		8N HCl	Mercury
2	7	MAY 23, 17	Test 2 Probe Rinse Acetone	#1 APC Outlet	Acetone	Particulate & Metals
	8		Test 2 Probe Rinse Nitric		0.1N Nitric	Metals
	9		Test 2 Filter		Particulate	Particulate & Metals
	10		Test 2 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	11		Test 2 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	12		Test 2 Impinger 4, 5 Rinse		8N HCl	Mercury
3	19	MAY 23, 17	Blank 1 Probe Rinse Acetone	Blank	Acetone	Particulate & Metals
	20		Blank 1 Probe Rinse Nitric		0.1N Nitric	Metals
	21		Blank 1 Filter		Particulate	Particulate & Metals
	22		Blank 1 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	23		Blank 1 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	24		Blank 1 Impinger 4, 5 Rinse		8N HCl	Mercury

RELINQUISHED BY: Angela Mora DATE: May 25/17

RELINQUISHED TO: Aaron Burton DATE: 25-May-2017 12:25

12.8°C

ORTECH

ORTECH Environmental Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train recovery
Job Assigned To: ALS
QUOTE #: Ortech PO# : 21754 - J2352

	ORTECH Sample ID 17-21754-PM-	Sample Date	Sample Description	Location	Sample Media	Sample Analysis
4	25	MAY 24, 17	Test 1 Probe Rinse Acetone	#2 APC Outlet	Acetone	Particulate & Metals
	26		Test 1 Probe Rinse Nitric		0.1N Nitric	Metals
	27		Test 1 Filter		Particulate	Particulate & Metals
	28		Test 1 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	29		Test 1 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	30		Test 1 Impinger 4, 5 Rinse		8N HCl	Mercury
5	31	MAY 24, 17	Test 2 Probe Rinse Acetone	#2 APC Outlet	Acetone	Particulate & Metals
	32		Test 2 Probe Rinse Nitric		0.1N Nitric	Metals
	33		Test 2 Filter		Particulate	Particulate & Metals
	34		Test 2 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	35		Test 2 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	36		Test 2 Impinger 4, 5 Rinse		8N HCl	Mercury
6	37	MAY 24, 17	Test 3 Probe Rinse Acetone	#2 APC Outlet	Acetone	Particulate & Metals
	38		Test 3 Probe Rinse Nitric		0.1N Nitric	Metals
	39		Test 3 Filter		Particulate	Particulate & Metals
	40		Test 3 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	41		Test 3 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	42		Test 3 Impinger 4, 5 Rinse		8N HCl	Mercury
7	43	MAY 24, 17	Blank # 2 Probe Rinse Acetone	Blank	Acetone	Particulate & Metals
	44		Blank # 2 Probe Rinse Nitric		0.1N Nitric	Metals
	45		Blank # 2 Filter		Particulate	Particulate & Metals
	46		Blank # 2 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
	47		Blank # 2 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
	48		Blank # 2 Impinger 4, 5 Rinse		8N HCl	Mercury

Relinquished By: Angela McLean
Date: MAY 25/17

Relinquished To: Arran Burton
Date: 25-May-2017
12:25 12.8°C

ORTECH

ORTECH Environmental Sample Log
Particulate and Metals Samples
Covanta

L1931238

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train recovery
Job Assigned To: ALS
QUOTE #: Ortech PO# : 21754 - J2352

ORTECH Sample ID 17-21754-PM-	Sample Date	Sample Description	Location	Sample Media	Sample Analysis
✓13	MAY 25/17	Test 3 Probe Rinse Acetone	#1 APC Outlet	Acetone	Particulate & Metals
✓14		Test 3 Probe Rinse Nitric		0.1N Nitric	Metals
✓15		Test 3 Filter		Particulate	Particulate & Metals
✓16		Test 3 Impinger 1,2,3 Solution		Nitric/Peroxide	Metals
✓17		Test 3 Impinger 4, 5 Solution		Acid. KMnO4	Mercury
✓18		Test 3 Impinger 4, 5 Rinse		8N HCl	Mercury

8

Relinquished By: Angela Mola
Date: MAY 26/17

Relinquished To: AARON BURTON
Date: 26-May-2017 12:25

10.8°C

ORTECH

ORTECH Sample Log
VOCs

Client: Covanta
Project Number: 21754
Received By:
Job Assigned To: ALS
Quote / PO : ORTECH PO: 21754 - J2352

L1931917

Test Location	Test Number	Pair Number	ORTECH Sample ID 17-21754-VOST-	Sample Date	Sample Description	Sample Analysis
# 1 APC Outlet	1	1	1A, 1B	MAY 25/17	Tenax and Tenax/Charcoal	VOCs 1
		2	2A, 2B		Tenax and Tenax/Charcoal	VOCs 2
		3	3A, 3B		Tenax and Tenax/Charcoal	VOCs 3
		4	4A, 4B		Archived @ ~~ORTECH~~	4
		Field Blank	5A, 5B / 25A, 25B		Tenax and Tenax/Charcoal	VOCs 5
	2	1	6A, 6B		Tenax and Tenax/Charcoal	VOCs 6
		2	7A, 7B		Tenax and Tenax/Charcoal	VOCs 7
		3	8A, 8B		Tenax and Tenax/Charcoal	VOCs 8
		4	9A, 9B		Archived @ ~~ORTECH~~	9
	3	1	10A, 10B		Tenax and Tenax/Charcoal	VOCs 10
		2	11A, 11B		Tenax and Tenax/Charcoal	VOCs 11
		3	12A, 12B		Tenax and Tenax/Charcoal	VOCs 12
		4	13A, 13B		Archived @ ~~ORTECH~~	13
		Trip Blank	30A + 30B		Tenax and Tenax/Charcoal	VOCs 14
	Combined Condesate				Archived @ ~~ORTECH~~	15
# 2 APC Outlet	1	1	17A, 17B	MAY 25/17 ARCHIVE	~~Tenax and Tenax/Charcoal~~	VOCs 16
		2	18A, 18B		Tenax and Tenax/Charcoal	VOCs 17
		3	19A, 19B		Tenax and Tenax/Charcoal	VOCs 18
		4	20A, 20B		" ~~Archived @ ORTECH~~	19
		Field Blank	5A, 5B		Tenax and Tenax/Charcoal	VOCs 20
	2	1	21A, 21B	ARCHIVE	~~Tenax and Tenax/Charcoal~~	VOCs 21
		2	22A, 22B		Tenax and Tenax/Charcoal	VOCs 22
		3	23A, 23B		Tenax and Tenax/Charcoal	VOCs 23
		4	24A, 24B		" ~~Archived @ ORTECH~~	VOCs 24
	3	1	26A, 26B	ARCHIVE	~~Tenax and Tenax/Charcoal~~	VOCs 25
		2	27A, 27B		Tenax and Tenax/Charcoal	VOCs 26
		3	28A, 28B		Tenax and Tenax/Charcoal	VOCs 27
		4	29A, 29B		" ~~Archived @ ORTECH~~	VOCs 28
		Field Blank	14A, 14B.		Tenax and Tenax/Charcoal	29
	Combined Condesate				Archived @ ORTECH	30

Refer to request letter dated May 1, 2017 for lists of analytes.

Custody Relinquished by: Angela Mora Date: MAY 26/17

Custody Received by: AARON BURTON Date: 26-May-2017

12:25 10.8°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	

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

L1932116

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: Ortech PO# : 21754 - J2352

	ORTECH Sample ID 17 - 21754 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1	1	MAY 25,17	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	MAY 25,17	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	MAY 26,17	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	MAY 25,17	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

11.4°C
16:20

Refer to request letter dated May 1, 2017 for lists of analytes.

Relinquished To: AARON BURTON Date: 26-May-2017

Relinquished By: Angela Mela Date: May 26/17

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: Ortech PO# : 21754 - J2352

ORTECH Sample ID 17 - 21754 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis	
21	MAY 25/17	Test 1 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC	5
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	
26	MAY 25, 17	Test 2 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC	6
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	
31	MAY 26, 17	Test 3 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC	7
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	
36	MAY 26, 17	Blank 2 Probe Rinse	Blank	Hexane/Acetone	SVOC	8
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	

11.4°C

16:20

Refer to request letter dated May 1, 2017 for lists of analytes.

Relinquished To: AARON BURTON Date: 26-May-2017

Relinquished By: Angela Vela Date: May 26/17

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: Ortech PO# : 21754 - J2352

	ORTECH Sample ID 17 - 21754 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
9	101	May 25, 17	Test 1 Probe Rinse	# 1 Quench Inlet	Hexane/Acetone	SVOC
	102		Test 1 Filter		Particulate	SVOC
	103		Test 1 XAD-II Trap		N.A.	SVOC
	104		Test 1 Impinger Solution		Ethylene Glycol	SVOC
	105		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
10	106	May 25, 17	Test 2 Probe Rinse	# 1 Quench Inlet	Hexane/Acetone	SVOC
	107		Test 2 Filter		Particulate	SVOC
	108		Test 2 XAD-II Trap		N.A.	SVOC
	109		Test 2 Impinger Solution		Ethylene Glycol	SVOC
	110		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
11	111	May 26, 17	Test 3 Probe Rinse	# 1 Quench Inlet	Hexane/Acetone	SVOC
	112		Test 3 Filter		Particulate	SVOC
	113		Test 3 XAD-II Trap		N.A.	SVOC
	114		Test 3 Impinger Solution		Ethylene Glycol	SVOC
	115		Test 3 Impinger Rinse		Hexane/Acetone	SVOC

11.4°C

16:20

Refer to request letter dated May 1, 2017 for lists of analytes.

Relinquished To: Aaron Burton Date: 26-May-2017

Relinquished By: Angela McEa Date: May 26/17

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21754
Received By:
How Received: Train Recovery
Job Assigned To: ALS
Quote / PO: Ortech PO# : 21754 - J2352

	ORTECH Sample ID 17 - 21754 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
12	131	MAY 25,17	Test 1 Probe Rinse	# 2 Quench Inlet	Hexane/Acetone	SVOC
	132		Test 1 Filter		Particulate	SVOC
	133		Test 1 XAD-II Trap		N.A.	SVOC
	134		Test 1 Impinger Solution		Ethylene Glycol	SVOC
	13S		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
13	136	MAY 25,17	Test 2 Probe Rinse	# 2 Quench Inlet	Hexane/Acetone	SVOC
	137		Test 2 Filter		Particulate	SVOC
	138		Test 2 XAD-II Trap		N.A.	SVOC
	139		Test 2 Impinger Solution		Ethylene Glycol	SVOC
	140		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
14	141	MAY 26,17	Test 3 Probe Rinse	# 2 Quench Inlet	Hexane/Acetone	SVOC
	142		Test 3 Filter		Particulate	SVOC
	143		Test 3 XAD-II Trap		N.A.	SVOC
	144		Test 3 Impinger Solution		Ethylene Glycol	SVOC
	14S		Test 3 Impinger Rinse		Hexane/Acetone	SVOC

Refer to request letter dated May 1, 2017 for lists of analytes.

11.4°C 16:20

Relinquished To: Aaron Burton Date: 26-May-2017

Relinquished By: [signature] Date: May 26/17

L1932633

ORTECH Sample Log
Method 430 Samples
Covanta

Client: Covanta
Project Number: 21754
Received By: CHRIS
How Received: Train recovery
Job Assigned To: ALS
QUOTE/P.O.: Ortech P.O. : 21754 - J2352

Test Location	Test Number	ORTECH Sample ID 17-21754-M430-	Sample Date	Sample Media
#1 APC Outlet	1	1	May 26, 17	DNPH & Toluene
	2	2	↓	DNPH & Toluene
	3	3		DNPH & Toluene
	Blank 1	Blank 1		DNPH & Toluene
#2 APC Outlet	1	4	May 26, 17	DNPH & Toluene
	2	5	↓	DNPH & Toluene
	3	6		DNPH & Toluene
	Blank 2	Blank 2		DNPH & Toluene
	Trip Spike	9		

Analyse for: **Formaldehyde**
Acetaldehyde
Acrolein

11.4°C

16:20

Relinquished To: AARON BURTON Date: 26-May-2017

Relinquished By: Angela Wilson Date: May 26/17

ORTECH

APPENDIX 13

Particulate and Metals Train Recovery Data Sheets
(8 pages)

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 23/17
Test No.:	1
Test Location:	UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

Filter

Filter ID: 189920-1

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.3
After Act. Rinse:	369.9
Total TS1:	86.6

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.5
After 0.1N HNO_3 Rinse:	470.7
Total TS2:	189.2

MARK FLUID LEVEL

SEAL AND LABEL TS2

CONTAINER TS3

Initial Wt:	0.6291
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	662.4
Final Wt:	941.0
1 Gain:	278.6 ✓
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	478.1
Final Wt:	614.2
2 Gain:	136.1 ✓
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	655.9
Initial Wt:	758.4
Final Wt:	820.0
3 Gain:	61.6 ✓
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	1006.7
Initial Wt:	775.4
Final Wt:	791.9
4 Gain:	16.5 ✓
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	637.7
Final Wt:	640.5
5 Gain:	2.8 ✓
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	406.3
w/ Imp. 1-5 Soln:	1111.0
Imp. 1 to 5 Volume:	704.7
After HNO_3 Rinse:	1338.9
Total TS4:	932.6

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	573.7
Initial Wt:	696.3
Final Wt:	697.8
6 Gain:	1.5 ✓
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	646.3
Initial Wt:	756.7
Final Wt:	792.2
7 Gain:	1.5 ✓
Colour:	PURPLE

CWTR = I to 7: 498.6

WCBDA= 8: 20.7

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	407.3
With Imp. 6&7 Soln:	634.1
Imp. 6&7 Volume:	226.8
After $KMnO_4$ Rinse:	752.6
After100g H_2O Rinse:	876.8
Total TS5-A:	469.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.6
With 150 mL DI H_2O:	478.0
After HCl Rinse:	522.8
After DI H_2O Rinse:	651.6
Total TS5-B:	369.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	840.2
Final Wt:	860.9
8 Gain:	20.7 ✓

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	1
TS2 (Probe Rinse-0.1N HNO_3)	2
TS3 (Filter)	3
TS4 (Impinger 1-5 Sol'n-HNO_3)	4
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	5
TS5-B (Impinger 6, 7 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

BOX 13

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 23/17

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 23/17
Test No.:	2
Test Location:	UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

Filter

Filter ID: 1899/20-2

Impingers 1, 2, 3, 4 and 5

Impinger 6 & 7

Impinger 6 & 7

Impinger 8

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.7
After Act. Rinse:	393.1
Total TS1:	109.4

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.5
After 0.1N HNO_3 Rinse:	515.2
Total TS2:	231.7

MARK FLUID LEVEL

SEAL AND LABEL TS2

CONTAINER TS3

Initial Wt:	.6275
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	666.9
Final Wt:	937.0
1 Gain:	270.1
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	615.7
Final Wt:	724.1
2 Gain:	108.4
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	6816.0
Initial Wt:	795.8
Final Wt:	869.9
3 Gain:	74.1
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	675.3
Initial Wt:	779.9
Final Wt:	796.0
4 Gain:	16.1
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	671.2
Final Wt:	674.1
5 Gain:	2.9
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	406.5
w/ Imp. 1-5 Soln:	1083.1
Imp. 1 to 5 Volume:	676.6
After HNO_3 Rinse:	1324.7
Total TS4:	918.2

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	687.7
Initial Wt:	805.3
Final Wt:	804.6
6 Gain:	-0.7
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	679.6
Initial Wt:	792.5
Final Wt:	796.4
7 Gain:	3.9
Colour:	PURPLE

CWTR = 1 to 7: 474.8

WCBDA= 8: 21.6

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	410.0
With Imp. 6&7 Soln:	638.0
Imp. 6&7 Volume:	228.0
After $KMnO_4$ Rinse:	760.7
After100g H_2O Rinse:	849.7
Total TS5-A:	439.7

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	287.7
With 150 mL DI H_2O:	437.7
After HCl Rinse:	489.5
After DI H_2O Rinse:	672.3
Total TS5-B:	334.6

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger #8 Silica Gel	
Initial Wt:	820.2
Final Wt:	841.8
8 Gain:	21.6

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	7
TS2 (Probe Rinse-0.1N HNO_3)	8
TS3 (Filter)	9
TS4 (Impinger 1-5 Sol'n-HNO_3)	10
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	11
TS5-B (Impinger 6, 7 Rinse-HCl)	12

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

BOX 1

Train Loaded By: AN
Train Recovered By: AN/JT
Recovery Witnessed By:
Date: MAY 23/17

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 25/17
Test No.:	3
Test Location:	UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.3
After Act. Rinse:	444.1
Total TS1:	162.8

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.6
After 0.1N HNO_3 Rinse:	549.9
Total TS2:	268.3

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: #8

CONTAINER TS3

Initial Wt:	.5908
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	13
TS2 (Probe Rinse-0.1N HNO_3)	14
TS3 (Filter)	15
TS4 (Impinger 1-5 Sol'n-HNO_3)	16
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	17
TS5-B (Impinger 6, 7 Rinse-HCl)	18

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	667.5
Final Wt:	929.5
1 Gain:	262.0
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	615.8
Final Wt:	739.2
2 Gain:	123.4
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	687.8
Initial Wt:	798.7
Final Wt:	868.1
3 Gain:	69.4
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	675.7
Initial Wt:	780.8
Final Wt:	798.4
4 Gain:	17.6
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	670.4
Final Wt:	675.7
5 Gain:	5.3
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	423.5
w/ Imp. 1-5 Soln:	1110.7
Imp. 1 to 5 Volume:	687.2
After HNO_3 Rinse:	1099.6
Total TS4:	846.1

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	690.9
Initial Wt:	802.5
Final Wt:	797.8
6 Gain:	-4.7
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	681.5
Initial Wt:	795.0
Final Wt:	795.8
7 Gain:	0.8
Colour:	PURPLE

CWTR = 1 to 7: 473.8

WCBDA= 8: 24.2

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	425.7
With Imp. 6&7 Soln:	642.1
Imp. 6&7 Volume:	216.4
After $KMnO_4$ Rinse:	757.3
After100g H_2O Rinse:	864.6
Total TS5-A:	438.9

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.9
With 150 mL DI H_2O:	443.4
After HCl Rinse:	492.6
After DI H_2O Rinse:	621.5
Total TS5-B:	339.6

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

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	820.5
Final Wt:	844.7
8 Gain:	24.2

Box 1

Train Loaded By: AN / DT
Train Recovered By: AN/AS
Recovery Witnessed By:
Date: MAY 25/17

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 23/17
Test No.:	BLANK 1
Test Location:	—

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

Filter

Filter ID: L1899120-5

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.9
After Act. Rinse:	418.0
Total TS1:	136.1

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.3
After 0.1N HNO_3 Rinse:	476.2
Total TS2:	194.9

MARK FLUID LEVEL

SEAL AND LABEL TS2

CONTAINER TS3

Initial Wt:	0.5847
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	19
TS2 (Probe Rinse-0.1N HNO_3)	20
TS3 (Filter)	21
TS4 (Impinger 1-5 Sol'n-HNO_3)	22
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	23
TS5-B (Impinger 6, 7 Rinse-HCl)	24

Train Loaded By: AN

Train Recovered By: AN

Recovery Witnessed By:

Date: MAY 23/17

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	663.1
Final Wt:	663.1
1 Gain:	0
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	479.0
Final Wt:	479.0
2 Gain:	0
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	670.1
Initial Wt:	765.3
Final Wt:	765.3
3 Gain:	0
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	666.3
Initial Wt:	781.8
Final Wt:	781.8
4 Gain:	0
Colour:	~~BLUE~~ CLEAR

Impinger #5 Empty	
Empty Wt:	641.2
Final Wt:	641.2
5 Gain:	0
Colour:	—

CONTAINER TS4 WEIGHTS	
Empty Wt:	406.8
w/ Imp. 1-5 Soln:	615.3
Imp. 1 to 5 Volume:	208.5
After HNO_3 Rinse:	741.9
Total TS4:	335.1

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	574.8
Initial Wt:	682.2
Final Wt:	682.2
6 Gain:	0
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	647.7
Initial Wt:	755.5
Final Wt:	755.5
7 Gain:	0
Colour:	PURPLE

CWTR = 1 to 7: 0

WCBDA= 8: 0

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	405.8
With Imp. 6&7 Soln:	627.1
Imp. 6&7 Volume:	221.3
After $KMnO_4$ Rinse:	743.6
After100g H_2O Rinse:	841.8
Total TS5-A:	436.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	280.7
With 150 mL DI H_2O:	442.5
After HCl Rinse:	480.3
After DI H_2O Rinse:	591.5
Total TS5-B:	310.8

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

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	890.1
Final Wt:	890.1
8 Gain:	0

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 24/17
Test No.:	1
Test Location:	UNIT 2 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

Filter

Filter ID: L1899120-4

Impingers 1, 2, 3, 4 and 5

Impinger 6 & 7

Impinger 6 & 7

Impinger 8

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	284.0
After Act. Rinse:	374.6
Total TS1:	90.6

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	284.1
After 0.1N HNO_3 Rinse:	519.2
Total TS2:	235.1

MARK FLUID LEVEL

SEAL AND LABEL TS2

CONTAINER TS3

Initial Wt:	0.6051
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	663.4
Final Wt:	903.1
1 Gain:	239.7
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	478.0
Final Wt:	631.1
2 Gain:	153.1
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	654.6
Initial Wt:	766.9
Final Wt:	823.7
3 Gain:	56.8
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	666.1
Initial Wt:	766.8
Final Wt:	779.2
4 Gain:	12.4
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	636.9
Final Wt:	638.7
5 Gain:	1.8
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	410.6
w/ Imp. 1-5 Soln:	1083.1
Imp. 1 to 5 Volume:	672.5
After HNO_3 Rinse:	1314.5
Total TS4:	903.9

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	575.2
Initial Wt:	694.8
Final Wt:	696.3
6 Gain:	1.5
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	647.6
Initial Wt:	756.6
Final Wt:	756.7
7 Gain:	0.1
Colour:	PURPLE

CWTR = 1 to 7: 465.4 ✓

WCBDA= 8: 20.2

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	421.8
With Imp. 6&7 Soln:	646.7
Imp. 6&7 Volume:	224.9
After $KMnO_4$ Rinse:	767.2
After100g H_2O Rinse:	865.0
Total TS5-A:	443.2

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.6
With 150 mL DI H_2O:	444.6
After HCl Rinse:	493.5
After DI H_2O Rinse:	630.6
Total TS5-B:	349.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger #8 Silica Gel	
Initial Wt:	815.7
Final Wt:	835.9
8 Gain:	20.2

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

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	25
TS2 (Probe Rinse-0.1N HNO_3)	26
TS3 (Filter)	27
TS4 (Impinger 1-5 Sol'n-HNO_3)	28
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	29
TS5-B (Impinger 6, 7 Rinse-HCl)	30

BOX 13

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 24/17

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 24/17
Test No.:	2
Test Location:	UNIT 2 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

Filter

Filter ID: L1899126-12

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	281.4
After Act. Rinse:	381.4
Total TS1:	100.0

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.5
After 0.1N HNO_3 Rinse:	~~480.9~~
Total TS2:	~~283.5~~ 197.4

MARK FLUID LEVEL

SEAL AND LABEL TS2

CONTAINER TS3

Initial Wt:	0.5947
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	669.0
Final Wt:	953.6
1 Gain:	284.6
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	616.1
Final Wt:	758.9
2 Gain:	142.8
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	688.4
Initial Wt:	806.6
Final Wt:	844.1
3 Gain:	37.5
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	676.0
Initial Wt:	775.1
Final Wt:	779.4
4 Gain:	4.3
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	670.6
Final Wt:	671.7
5 Gain:	1.1
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	422.1
w/ Imp. 1-5 Soln:	1106.2
Imp. 1 to 5 Volume:	684.1
After HNO_3 Rinse:	1323.9
Total TS4:	901.8

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	690.7
Initial Wt:	796.5
Final Wt:	792.0
6 Gain:	-4.5
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	681.5
Initial Wt:	803.7
Final Wt:	804.5
7 Gain:	0.8
Colour:	CLEAR

CWTR = 1 to 7: 406.6 ✓

WCBDA= 8: 24.3

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	423.9
With Imp. 6&7 Soln:	647.5
Imp. 6&7 Volume:	223.6
After $KMnO_4$ Rinse:	760.7
After100g H_2O Rinse:	841.2
Total TS5-A:	417.3

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.8
With 150 mL DI H_2O:	447.0
After HCl Rinse:	491.3
After DI H_2O Rinse:	645.1
Total TS5-B:	363.3

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	796.5
Final Wt:	820.8
8 Gain:	24.3

SAMPLE IDENTIFICATION	17-2754-PM-
TS1 (Probe Rinse-Acetone)	31
TS2 (Probe Rinse-0.1N HNO_3)	32
TS3 (Filter)	33
TS4 (Impinger 1-5 Sol'n-HNO_3)	34
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	35
TS5-B (Impinger 6, 7 Rinse-HCl)	36

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

Box 1

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 24/17

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	May 24/17
Test No.:	2
Test Location:	UNIT 2 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	292.6
After Act. Rinse:	431.7
Total TS1:	149.1

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.1
After 0.1N HNO_3 Rinse:	403.9
Total TS2:	122.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: 2

CONTAINER TS3

Initial Wt:	6120
Final Wt:	
Gain:	
Colour:	

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	1663.3
Final Wt:	933.0
1 Gain:	269.7 ✓
Colour:	CLEAR

Impinger #2 Empty (Knock-out)	
Empty Wt:	478.1
Final Wt:	646.0
2 Gain:	167.9 ✓
Colour:	CLEAR

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	654.6
Initial Wt:	761.6
Final Wt:	808.0
3 Gain:	46.4 ✓
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	666.3
Initial Wt:	770.2
Final Wt:	778.2
4 Gain:	8.0 ✓
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	636.6
Final Wt:	638.2
5 Gain:	1.6 ✓
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	423.5
w/ Imp. 1-5 Soln:	1126.3
Imp. 1 to 5 Volume:	702.8
After HNO_3 Rinse:	1311.2
Total TS4:	887.7

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	573.9
Initial Wt:	687.4
Final Wt:	684.9
6 Gain:	−2.5 ✓
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	647.9
Initial Wt:	759.5
Final Wt:	758.4
7 Gain:	−1.1 ✓
Colour:	PURPLE

CWTR = 1 to 7: 490.0 ✓

WCBDA= 8: 21.7 ✓ MM

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	424.5
With Imp. 6&7 Soln:	1644.3
Imp. 6&7 Volume:	219.8
After $KMnO_4$ Rinse:	751.6
After100g H_2O Rinse:	884.7
Total TS5-A:	460.2

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.3
With 150 mL DI H_2O:	427.4
After HCl Rinse:	470.9
After DI H_2O Rinse:	583.0
Total TS5-B:	301.7

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	835.5
Final Wt:	857.2
8 Gain:	21.7

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	37
TS2 (Probe Rinse-0.1N HNO_3)	38
TS3 (Filter)	39
TS4 (Impinger 1-5 Sol'n-HNO_3)	40
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	41
TS5-B (Impinger 6, 7 Rinse-HCl)	42

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

Box 13

Train Loaded By:	AN/BA
Train Recovered By:	AN/DT/AS
Recovery Witnessed By:	
Date:	May 24/17

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Date:	MAY 24/17
Test No.:	BLANK 2
Test Location:	—

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3, 4 and 5	Impinger 6 & 7	Impinger 6 & 7	Impinger 8
	Filter ID: L189920-6				

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.9
After Act. Rinse:	433.3
Total TS1:	152.4

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	281.7
After 0.1N HNO_3 Rinse:	435.9
Total TS2:	154.2

MARK FLUID LEVEL

SEAL AND LABEL TS2

CONTAINER TS3

Initial Wt:	0.6812
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	660.5
Final Wt:	660.5
1 Gain:	0
Colour:	—

Impinger #2 Empty (Knock-out)	
Empty Wt:	474.4
Final Wt:	474.4
2 Gain:	0
Colour:	—

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	668.2
Initial Wt:	770.8
Final Wt:	770.8
3 Gain:	0
Colour:	CLEAR

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	605.5
Initial Wt:	763.9
Final Wt:	763.9
4 Gain:	0
Colour:	CLEAR

Impinger #5 Empty	
Empty Wt:	640.4
Final Wt:	640.4
5 Gain:	0
Colour:	—

CONTAINER TS4 WEIGHTS	
Empty Wt:	415.3
w/ Imp. 1-5 Soln:	626.4
Imp. 1 to 5 Volume:	211.1
After HNO_3 Rinse:	731.2
Total TS4:	315.9

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	595.0
Initial Wt:	681.2
Final Wt:	681.2
6 Gain:	0
Colour:	PURPLE

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	650.8
Initial Wt:	753.1
Final Wt:	753.1
7 Gain:	0
Colour:	PURPLE

CWTR = 1 to 7: 0

WCBDA= 8: 0

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	411.8
With Imp. 6&7 Soln:	639.6
Imp. 6&7 Volume:	227.8
After $KMnO_4$ Rinse:	752.6
After100g H_2O Rinse:	851.9
Total TS5-A:	440.1

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	281.9
With 150 mL DI H_2O:	431.9
After HCl Rinse:	460.6
After DI H_2O Rinse:	558.9
Total TS5-B:	277.0

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger #8 Silica Gel	
Initial Wt:	903.7
Final Wt:	903.7
8 Gain:	0

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

SAMPLE IDENTIFICATION	17-21754-PM-
TS1 (Probe Rinse-Acetone)	43
TS2 (Probe Rinse-0.1N HNO_3)	44
TS3 (Filter)	45
TS4 (Impinger 1-5 Sol'n-HNO_3)	46
TS5-A (Impinger 6, 7 Sol'n-$KMnO_4$)	47
TS5-B (Impinger 6, 7 Rinse-HCl)	48

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 24/17

ORTECH Enivronmental

APPENDIX 14

Inorganics Analytical Reports
(28 pages)

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Envrionmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1931238 Revision 1		Mississauga, ON L5J 2Y4
Date of Report	1-Jun-17		Canada
Date of Sample Receipt	25-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 5 (SR 30-May-2017)

REVISION 1: The acetone fraction from sample L1931238-4 had previously been assigned a J-flag, even though the result is above the LOR. This report has been revised to remove the incorrect flag. **PE 1-Jun-2017**

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: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(7 THRU 12) TEST#2 #1 APC OUTLET	17-21754-PM-(19 THRU 24) BLANK#1	17-21754-PM-(25 THRU 30) TEST#1 #2 APC OUTLET	17-21754-PM-(31 THRU 36) TEST#2 #2 APC OUTLET
ALS Sample ID		L1931238-1	L1931238-2	L1931238-3	L1931238-4	L1931238-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		23-May-17	23-May-17	23-May-17	24-May-17	24-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis	LOR					
Method 5	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	3.3	1.7	2.8	5.5	4.4
Acetone Particulate Matter	0.4	2.7	2.1	<0.1	0.7	1.6
	g	g	g	g	g	g
Acetone Mass	0.02	86.5	109	136	90.4	99.1

ALS Environmental

Sample Analysis Summary Report

Sample Name		17-21754-PM-(37 THRU 42) TEST#3 #2 APC OUTLET		17-21754-PM-(43 THRU 48) BLANK#2		17-21754-PM-(13 THRU 18) TEST#3 #1 APC OUTLET		MB	
ALS Sample ID		L1931238-6		L1931238-7		L1931238-8		L1931238-MB	
Matrix		Stack		Stack		Stack		n/a	
Analysis type		Sample		Sample		Sample		Sample	
Sampling Date/Time		24-May-17		24-May-17		25-May-17		n/a	
Date of Receipt		25-May-17		25-May-17		26-May-17		n/a	
PM via Gravimetric Analysis	**LOR**								
Method 5	**mg**	**mg**		**mg**		**mg**		**mg**	
Filter Particulate Matter	0.8	2.4		2.7		2.1		<0.1	
Acetone Particulate Matter	0.4	1.5		0.1	J	2.2		0.3	J
	g	**g**		**g**		**g**		**g**	
Acetone Mass	0.02	149		152		163		31.4	

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:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1931222		Mississauga, ON L5J 2Y4
Date of Report	5-Jun-17		Canada
Date of Sample Receipt	25-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS:

Sample Particulate Analysis via Gravimetric USEPA Method 201A (SR 1-Jun-2017)
Sample Particulate Analysis via Gravimetric USEPA Method 202 (SR 5-Jun-2017)

ANALYST COMMENTS:

Filter samples L1931222-4, -19, and -29 show significant loss of mass during sampling. Analyst noted these filters appear to have been damaged, with portions missing. Samples processed in the lab as per protocols, after client informed. **PE 5-Jun-17**

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: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-1 TEST#1 #1 APC OUTLET	2.5-10 17-21754-M201A-2 TEST#1 #1 APC OUTLET	<2.5 17-21754-M201A-3 TEST#1 #1 APC OUTLET	backup 17-21754-M201A-4 TEST#1 #1 APC OUTLET	17-21754-M201A-(5 THRU 7) TEST#1 #1 APC OUTLET
ALS Sample ID		L1931222-1	L1931222-2	L1931222-3	L1931222-4	L1931222-5
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		24-May-17	24-May-17	24-May-17	24-May-17	24-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.8	<0.1	<0.1	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	56.0	48.2	30.3	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensible Particulates	0.4	-	-	-	-	1.6
Non-Extractale Condensible Particulates	0.4	-	-	-	-	7.7
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	411

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-8 TEST#2 #1 APC OUTLET		2.5-10 17-21754-M201A-9 TEST#2 #1 APC OUTLET		<2.5 17-21754-M201A-10 TEST#2 #1 APC OUTLET	backup 17-21754-M201A-11 TEST#2 #1 APC OUTLET	17-21754-M201A-(12 THRU 14) TEST#2 #1 APC OUTLET
ALS Sample ID		L1931222-6		L1931222-7		L1931222-8	L1931222-9	L1931222-10
Matrix		Stack		Stack		Stack	Stack	Stack
Analysis type		Sample		Sample		Sample	Sample	Sample
Sampling Date/Time		24-May-17		24-May-17		24-May-17	24-May-17	24-May-17
Date of Receipt		25-May-17		25-May-17		25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR							
	mg	mg		mg		mg	mg	mg
Filter Particulate Matter	0.8	-		-		-	<0.1	-
Acetone Particulate Matter	0.4	<0.1		0.2	J	0.8	-	-
	g	g		g		g	g	g
Acetone Mass	0.02	58.1		32.2		24.6	-	-
PM via Gravimetric Analysis Method 202	LOR							
	mg	mg		mg		mg	mg	mg
Extractable Condensible Particulates	0.4	-		-		-	-	1.4
Non-Extractale Condensible Particulates	0.4	-		-		-	-	7.3
	g	g		g		g	g	g
Water Mass	0.02	-		-		-	-	397

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-15 TEST#3 #1 APC OUTLET	2.5-10 17-21754-M201A-16 TEST#3 #1 APC OUTLET	<2.5 17-21754-M201A-17 TEST#3 #1 APC OUTLET	backup 17-21754-M201A-18 TEST#3 #1 APC OUTLET	17-21754-M201A-(19 THRU 21) TEST#3 #1 APC OUTLET
ALS Sample ID		L1931222-11	L1931222-12	L1931222-13	L1931222-14	L1931222-15
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		24-May-17	24-May-17	24-May-17	24-May-17	24-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	<0.1	0.6	0.4	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	40.6	45.2	20.6	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensible Particulates	0.4	-	-	-	-	1.5
Non-Extractale Condensible Particulates	0.4	-	-	-	-	8.1
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	412

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-22 TEST#1 #2 APC OUTLET	2.5-10 17-21754-M201A-23 TEST#1 #2 APC OUTLET	<2.5 17-21754-M201A-24 TEST#1 #2 APC OUTLET	Backup 17-21754-M201A-25 TEST#1 #2 APC OUTLET	17-21754-M201A-(26 THRU 28) TEST#1 #2 APC OUTLET
ALS Sample ID		L1931222-16	L1931222-17	L1931222-18	L1931222-19	L1931222-20
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		23-May-17	23-May-17	23-May-17	23-May-17	23-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.8	<0.1	<0.1	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	37.9	26.5	22.6	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensible Particulates	0.4	-	-	-	-	2.1
Non-Extractale Condensible Particulates	0.4	-	-	-	-	2.8
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	368

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-29 TEST#2 #2 APC OUTLET	2.5-10 17-21754-M201A-30 TEST#2 #2 APC OUTLET	<2.5 17-21754-M201A-31 TEST#2 #2 APC OUTLET	backup 17-21754-M201A-32 TEST#2 #2 APC OUTLET	17-21754-M201A-(33 THRU 35) TEST#2 #2 APC OUTLET
ALS Sample ID		L1931222-21	L1931222-22	L1931222-23	L1931222-24	L1931222-25
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		23-May-17	23-May-17	23-May-17	23-May-17	23-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.8	0.2 J	0.5	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	58.1	28.9	21.5	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensible Particulates	0.4	-	-	-	-	1.8
Non-Extractale Condensible Particulates	0.4	-	-	-	-	<0.1
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	389

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-36 TEST#3 #2 APC OUTLET	2.5-10 17-21754-M201A-37 TEST#3 #2 APC OUTLET	<2.5 17-21754-M201A-38 TEST#3 #2 APC OUTLET	Backup 17-21754-M201A-39 TEST#3 #2 APC OUTLET	17-21754-M201A-(40 THRU 42) TEST#3 #2 APC OUTLET
ALS Sample ID		L1931222-26	L1931222-27	L1931222-28	L1931222-29	L1931222-30
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		23-May-17	23-May-17	23-May-17	23-May-17	23-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	0.4	<0.1	0.5	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	65.0	45.0	19.3	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensible Particulates	0.4	-	-	-	-	1.9
Non-Extractale Condensible Particulates	0.4	-	-	-	-	<0.1
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	372

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-43 BLANK#1 APC#1	2.5-10 17-21754-M201A-44 BLANK#1 APC#1	<2.5 17-21754-M201A-45 BLANK#1 APC#1	backup 17-21754-M201A-46 BLANK#1 APC#1	17-21754-M201A-(47 THRU 49) BLANK#1 APC#1
ALS Sample ID		L1931222-31	L1931222-32	L1931222-33	L1931222-34	L1931222-35
Matrix		Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Sample	Sample	Sample	Sample
Sampling Date/Time		24-May-17	24-May-17	24-May-17	24-May-17	24-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
PM via Gravimetric Analysis Method 5	LOR					
	mg	mg	mg	mg	mg	mg
Filter Particulate Matter	0.8	-	-	-	<0.1	-
Acetone Particulate Matter	0.4	<0.1	0.3 J	<0.1	-	-
	g	g	g	g	g	g
Acetone Mass	0.02	35.2	37.0	37.8	-	-
PM via Gravimetric Analysis Method 202	LOR					
	mg	mg	mg	mg	mg	mg
Extractable Condensible Particulates	0.4	-	-	-	-	0.4
Non-Extractale Condensible Particulates	0.4	-	-	-	-	2.9
	g	g	g	g	g	g
Water Mass	0.02	-	-	-	-	198

ALS Environmental

Sample Analysis Summary Report

Sample Name		>10 17-21754-M201A-50 BLANK#2 APC#2	2.5-10 17-21754-M201A-51 BLANK#2 APC#2	<2.5 17-21754-M201A-52 BLANK#2 APC#2	backup 17-21754-M201A-53 BLANK#2 APC#2		17-21754-M201A-(54 THRU 56) BLANK#2 APC#2
ALS Sample ID		L1931222-36	L1931222-37	L1931222-38	L1931222-39		L1931222-40
Matrix		Stack	Stack	Stack	Stack		Stack
Analysis type		Sample	Sample	Sample	Sample		Sample
Sampling Date/Time		24-May-17	24-May-17	24-May-17	24-May-17		24-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17		25-May-17
PM via Gravimetric Analysis Method 5	LOR						
	mg	mg	mg	mg	mg		mg
Filter Particulate Matter	0.8	-	-	-	0.2	J	-
Acetone Particulate Matter	0.4	<0.1	0.6	<0.1	-		-
	g	g	g	g	g		g
Acetone Mass	0.02	38.2	35.7	37.5	-		-
PM via Gravimetric Analysis Method 202	LOR						
	mg	mg	mg	mg	mg		mg
Extractable Condensible Particulates	0.4	-	-	-	-		0.6
Non-Extractale Condensible Particulates	0.4	-	-	-	-		2.4
	g	g	g	g	g		g
Water Mass	0.02	-	-	-	-		205

ALS Environmental

Sample Analysis Summary Report

Sample Name	MB
ALS Sample ID	L1931222-MB
Matrix	n/a
Analysis type	Sample
Sampling Date/Time	n/a
Date of Receipt	n/a

PM via Gravimetric Analysis Method 5	LOR	
	mg	mg
Filter Particulate Matter	0.8	<0.1
Acetone Particulate Matter	0.4	0.5
	g	g
Acetone Mass	0.02	31.7

PM via Gravimetric Analysis Method 202	LOR	
	mg	mg
Extractable Condensible Particulates	0.4	<0.1
Non-Extractale Condensible Particulates	0.4	<0.1
	g	g
Water Mass	0.02	244

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Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1931232		Mississauga, ON L5J 2Y4
Date of Report	31-May-17		(905)822-4120
Date of Sample Receipt	25-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS:

Cl as HCl Anion Analysed via Ion Chromatography USEPA Method 26A (FE 29-May-2017)
F as HF Anion Analysed via Ion Chromatography USEPA Method 26A (FE 29-May-2017)
Ammonia, Total (as NH_3) via Ion Chromatography USEPA Method CTM-027 (FE 31-May-2017)

LOR = Limit of Reporting
LCB = 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)
CVS = Calibration Verification Standard (limits: 90-110%)

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name	17-21754-M26A-1 TEST#1 #1 APC OUTLET	17-21754-M26A-2 TEST#2 #1 APC OUTLET	17-21754-M26A-3 TEST#3 #1 APC OUTLET	17-21754-M26A-4 TEST#1 #2 APC OUTLET	17-21754-M26A-5 TEST#2 #2 APC OUTLET
ALS Sample ID	L1931232-1	L1931232-2	L1931232-3	L1931232-4	L1931232-5
Matrix	Stack	Stack	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample	Sample	Sample
Sampling Date/Time	23-May-17	23-May-17	23-May-17	24-May-17	24-May-17
Date of Receipt	25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
Ion Chromatography Analysis USEPA Method 26	**mg**	**mg**	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.174	<0.156	<0.163	<0.170	<0.160
Analysis 1	<0.174	<0.156	<0.163	<0.170	<0.160
Analysis 2	<0.174	<0.156	<0.163	<0.170	<0.160
Total Cl^- as HCl (ave)	5.36	5.64	5.48	4.33	4.79
Analysis 1	5.33	5.62	5.49	4.33	4.79
Analysis 2	5.38	5.66	5.47	4.33	4.79
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**mg**	**mg**
Total Ammonia as NH_3	1.38	1.15	1.16	1.09	0.852

ALS Environmental

Sample Analysis Summary Report

Sample Name	17-21754-M26A-6 TEST#3 #2 APC OUTLET	17-21754-M26A-BLANK #1 #1 APC	17-21754-M26A-BLANK #2 #2 APC
ALS Sample ID	L1931232-6	L1931232-7	L1931232-8
Matrix	Stack	Stack	Stack
Analysis type	Sample	Sample	Sample
Sampling Date/Time	24-May-17	23-May-17	24-May-17
Date of Receipt	25-May-17	25-May-17	25-May-17
Ion Chromatography Analysis USEPA Method 26	**mg**	**mg**	**mg**
Total F^- as HF (ave)	<0.184	<0.117	<0.114
Analysis 1	<0.184	<0.117	<0.114
Analysis 2	<0.184	<0.117	<0.114
Total Cl^- as HCl (ave)	4.60	<0.689	<0.669
Analysis 1	4.60	<0.689	<0.669
Analysis 2	4.60	<0.689	<0.669
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**
Total Ammonia as NH_3	0.931	<0.297	<0.288

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Sample QC Summary Report

Sample Name	LCB	LCS	LCS
ALS Sample ID	LCB	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	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	0.0319	0.563	101%
Analysis 1	0.0313	0.568	
Analysis 2	0.0325	0.559	
Total Cl^- as HCl (ave)	<0.103	0.774	98%
Analysis 1	<0.103	0.779	
Analysis 2	<0.103	0.770	
Ion Chromatography Analysis			
USEPA Method CTM-027 Ammonia	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	<0.0472	0.504	107%

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Sample QC Summary Report

Sample Name	17-21754-M26A-1 TEST#1 #1 APC OUTLET	17-21754-M26A-1 TEST#1 #1 APC OUTLET	17-21754-M26A-1 TEST#1 #1 APC OUTLET	17-21754-M26A-1 TEST#1 #1 APC OUTLET
ALS Sample ID	L1931232-1	L1931232-1DUP	L1931232-1MS	L1931232-1MS
Matrix	Stack	Stack	Stack	Stack
Analysis type	Sample	Duplicate	Matrix Spike	Matrix Spike
Sampling Date/Time	23-May-17	23-May-17	23-May-17	23-May-17
Date of Receipt	25-May-17	25-May-17	25-May-17	25-May-17
Ion Chromatography Analysis USEPA Method 26	**mg**	**mg**	**mg**	**% Rec**
Total F^- as HF (ave)	<0.174	<0.174	5.16	99%
Analysis 1	<0.174	<0.174	5.17	
Analysis 2	<0.174	<0.174	5.15	
Total Cl^- as HCl (ave)	5.36	5.32	12.8	97%
Analysis 1	5.33	5.32	12.8	
Analysis 2	5.38	5.33	12.8	
Ion Chromatography Analysis USEPA Method CTM-027 Ammonia	**mg**	**mg**	**mg**	**% Rec**
Ammonia, Total (as NH_3)	1.38	1.50	6.15	106%

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Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1931238		Mississauga, ON L5J 2Y4
Date of Report	31-May-17		(905)822-4120
Date of Sample Receipt	25-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS:

Metals analysed via ICP-MS Method USEPA 6020A (SA 30-May-2017)

Sample Preparation via USEPA Method 29 (SR 30-May-2017)

ANALYST COMMENTS:

1A

Mo, and Ni observed in the method blank (MB) at levels >3x LOR. These targets are not observed in the reagent blank (RB) at significant levels. Client data may be biased as a result of this potential background.

2A

Mo observed in the reagent blank (RB) at a level >3x LOR. This may point to a potential high bias in this target

PE 31-May-17

LCB = Laboratory Control Blank

LCS = Laboratory Control Sample

LCSD = Laboratory Control Sample Duplicate

LOR = Limit of Reporting

Certified by: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name		17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(7 THRU 12) TEST#2 #1 APC OUTLET	17-21754-PM-(19 THRU 24) BLANK#1	17-21754-PM-(25 THRU 30) TEST#1 #2 APC OUTLET	17-21754-PM-(31 THRU 36) TEST#2 #2 APC OUTLET	17-21754-PM-(37 THRU 42) TEST#3 #2 APC OUTLET
ALS Sample ID		L1931238-1	L1931238-2	L1931238-3	L1931238-4	L1931238-5	L1931238-6
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis Type		Sample	Sample	Sample	Sample	Sample	Sample
Sampling Date		23-May-17	23-May-17	23-May-17	24-May-17	24-May-17	24-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	0.258	0.334	<	<	0.454	0.275
Arsenic	1	<	<	<	<	<	<
Barium	5	9.64	11.9	10.3	10.9	10.2	9.31
Beryllium	0.2	<	<	<	<	<	<
Cadmium	0.1	0.236	0.702	<	0.207	0.257	0.327
Chromium	1	4.06	5.04	2.13	4.12	4.12	3.91
Cobalt	0.2	0.681	1.10	0.880	0.661	0.726	0.795
Copper	1	1.87	1.49	<	1.27	1.31	1.78
Lead	0.5	0.964	0.896	<	0.505	1.11	1.32
Manganese	0.5	1.82	1.53	<	1.11	1.40	1.15
Molybdenum	0.2	18.2	19.9	17.6	19.3	18.0	18.3
Nickel	0.2	5.08	6.51	3.14	5.05	5.27	4.91
Selenium	2	<	<	<	<	<	<
Silver	0.2	<	<	<	<	<	<
Thallium	0.2	0.201	<	<	<	<	<
Vanadium	1	<	<	<	<	<	<
Zinc	6	13.8	12.0	<	8.05	15.5	9.46
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	<	<	<	<
Arsenic	0.2	<	<	<	<	<	<
Barium	0.5	0.736	1.08	<	0.891	1.13	1.23
Beryllium	0.1	<	<	<	<	<	<
Cadmium	0.05	0.273	0.0885	<	0.104	0.0579	<
Chromium	0.15	0.699	0.932	0.340	0.481	0.557	0.390
Cobalt	0.1	<	<	<	<	<	<
Copper	0.3	4.45	5.57	2.80	3.46	1.17	0.546
Lead	0.05	0.396	0.546	0.153	0.283	0.364	0.242
Manganese	0.15	0.698	1.10	0.227	1.15	7.73	0.295
Molybdenum	0.1	0.232	0.434	0.143	0.138	0.103	<
Nickel	0.1	1.44	1.31	0.194	0.495	1.61	0.957
Selenium	1	<	<	<	<	<	<
Silver	0.1	<	<	<	<	<	<
Thallium	0.05	<	<	<	<	<	<
Vanadium	0.1	<	<	<	<	<	<
Zinc	3	4.89	6.99	<	4.61	6.11	<

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Sample Analysis Summary Report

Sample Name		17-21754-PM-(43 THRU 48) BLANK#2	17-21754-PM-(13 THRU 18) TEST#3 #1 APC OUTLET
ALS Sample ID		L1931238-7	L1931238-8
Matrix		Stack	Stack
Analysis Type		Sample	Sample
Sampling Date		24-May-17	25-May-17
Date of Receipt		25-May-17	26-May-17
Multi-Metals via ICP-MS	**LOR ug**	**ug**	**ug**
Front Half HF Fraction 1A			
Antimony	0.2	<	<
Arsenic	1	<	<
Barium	5	10.5	11.8
Beryllium	0.2	<	<
Cadmium	0.1	<	0.339
Chromium	1	2.26	2.73
Cobalt	0.2	0.977	0.833
Copper	1	<	1.99
Lead	0.5	<	0.776
Manganese	0.5	0.536	1.24
Molybdenum	0.2	19.9	18.8
Nickel	0.2	3.71	3.94
Selenium	2	<	<
Silver	0.2	<	<
Thallium	0.2	<	<
Vanadium	1	<	<
Zinc	6	<	12.9
Back Half (HNO3 / H2O2) Fraction 2A			
Antimony	0.1	<	<
Arsenic	0.2	<	<
Barium	0.5	0.756	1.25
Beryllium	0.1	<	<
Cadmium	0.05	<	<
Chromium	0.15	0.403	0.469
Cobalt	0.1	<	<
Copper	0.3	4.21	0.966
Lead	0.05	0.200	0.227
Manganese	0.15	0.577	1.38
Molybdenum	0.1	<	<
Nickel	0.1	0.243	0.343
Selenium	1	<	<
Silver	0.1	<	<
Thallium	0.05	<	<
Vanadium	0.1	<	<
Zinc	3	<	4.23

ALS Environmental

Sample QC Summary Report

Sample Name		RB	LCS	LCS	LCSD	LCSD	MB
ALS Sample ID		RB	LCS	LCS	LCSD	LCSD	MB
Matrix		STACK	STACK	STACK	STACK	STACK	STACK
Analysis Type		Blank	LCS	LCS	LCS	LCS	Blank
Sampling Date		n/a	n/a	n/a	n/a	n/a	n/a
Date of Receipt		n/a	n/a	n/a	n/a	n/a	n/a
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**% Rec**	**ug**	**% Rec**	**ug**
Front Half HF Fraction 1A							
Antimony	0.2	<	11.1	92	12.0	100	0.259
Arsenic	1	<	55.1	92	59.7	100	<
Barium	5	<	57.4	96	63.0	105	<
Beryllium	0.2	<	52.7	88	57.2	95	<
Cadmium	0.1	<	27.6	92	30.6	102	<
Chromium	1	<	54.8	91	59.8	100	<
Cobalt	0.2	<	55.4	92	60.7	101	<
Copper	1	<	55.2	92	59.7	100	<
Lead	0.5	<	56.5	94	62.3	104	<
Manganese	0.5	<	55.5	93	60.0	101	<
Molybdenum	0.2	0.557	27.6	90	29.6	97	9.54
Nickel	0.2	<	54.6	91	59.2	99	1.70
Selenium	2	<	57.1	95	61.6	103	<
Silver	0.2	<	27.7	92	30.4	101	<
Thallium	0.2	<	58.4	97	64.2	107	<
Vanadium	1	<	54.6	91	59.0	98	<
Zinc	6	<	112	94	121	101	<
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	11.7	97	10.7	89	
Arsenic	0.2	<	59.4	99	55.5	93	
Barium	0.5	<	64.7	108	59.9	100	
Beryllium	0.1	<	59.6	99	56.8	95	
Cadmium	0.05	<	28.6	95	26.7	89	
Chromium	0.15	0.222	60.6	101	57.5	95	
Cobalt	0.1	<	61.1	102	56.8	95	
Copper	0.3	<	61.3	102	57.2	95	
Lead	0.05	<	60.1	100	56.7	95	
Manganese	0.15	<	57.9	97	53.9	90	
Molybdenum	0.1	0.541	31.3	103	29.0	95	
Nickel	0.1	0.158	60.1	100	56.4	94	
Selenium	1	<	57.5	96	52.3	87	
Silver	0.1	<	32.1	107	30.4	101	
Thallium	0.05	<	62.7	105	59.2	99	
Vanadium	0.1	<	61.6	103	58.3	97	
Zinc	3	<	117	97	107	89	

ALS Environmental

Sample QC Summary Report

Sample Name		17-21754-PM (1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM (1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM (1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM (1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM (1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM (1 THRU 6) TEST#1 #1 APC OUTLET
ALS Sample ID		L1931238-1	L1931238-1	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		23-May-17	23-May-17	23-May-17	23-May-17	23-May-17	23-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
Multi-Metals via ICP-MS	**LOR**						
	ug	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Front Half HF Fraction 1A							
Antimony	0.2	0.258	0.250	23.0	95	22.7	93
Arsenic	1	<	<	109	91	108	90
Barium	5	9.64	9.45	66.3	94	63.8	90
Beryllium	0.2	<	<	110	92	105	88
Cadmium	0.1	0.236	0.267	57.0	95	56.8	94
Chromium	1	4.06	3.81	117	94	115	92
Cobalt	0.2	0.681	0.662	113	94	111	92
Copper	1	1.87	1.76	112	91	110	90
Lead	0.5	0.964	0.954	99.4	82	97.1	80
Manganese	0.5	1.82	1.48	115	94	113	93
Molybdenum	0.2	18.2	18.0	71.8	89	72.0	90
Nickel	0.2	5.08	4.88	115	92	113	90
Selenium	2	<	<	111	92	110	92
Silver	0.2	<	<	56.9	95	56.5	94
Thallium	0.2	0.201	<	123	102	120	100
Vanadium	1	<	<	112	93	109	91
Zinc	6	13.8	13.2	242	95	238	93
Back Half (HNO3 / H2O2) Fraction 2A							
Antimony	0.1	<	<	11.3	94	11.6	96
Arsenic	0.2	<	<	57.2	95	58.4	97
Barium	0.5	0.736	0.727	33.0	107	31.6	103
Beryllium	0.1	<	<	57.7	96	57.8	96
Cadmium	0.05	0.273	0.265	28.3	93	28.7	95
Chromium	0.15	0.699	0.688	60.7	100	60.9	100
Cobalt	0.1	<	<	60.1	100	60.8	101
Copper	0.3	4.45	4.33	64.0	99	65.1	101
Lead	0.05	0.396	0.380	50.0	83	50.0	83
Manganese	0.15	0.698	0.678	58.4	96	59.0	97
Molybdenum	0.1	0.232	0.159	29.8	99	30.4	100
Nickel	0.1	1.44	1.36	60.4	98	61.1	99
Selenium	1	<	<	55.6	92	55.9	93
Silver	0.1	<	<	30.8	102	31.3	104
Thallium	0.05	<	<	61.8	103	61.6	103
Vanadium	0.1	<	<	60.4	101	60.2	100
Zinc	3	4.89	4.65	117	93	118	94

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Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1931238		Mississauga, ON L5J 2Y4
Date of Report	31-May-17		CANADA
Date of Sample Receipt	25-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS:

Mercury Analysis via CVAA using Method USEPA 7470A (NOB 2017-05-30)

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: R. Stolys

Rachael Stolys
Account Manager

ALS Environmental

Sample Analysis Summary Report

Sample Name			17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(7 THRU 12) TEST#2 #1 APC OUTLET	17-21754-PM-(19 THRU 24) BLANK#1	17-21754-PM-(25 THRU 30) TEST#1 #2 APC OUTLET	17-21754-PM-(31 THRU 36) TEST#2 #2 APC OUTLET
ALS Sample ID			L1931238-1	L1931238-2	L1931238-3	L1931238-4	L1931238-5
Matrix			Stack	Stack	Stack	Stack	Stack
Analysis type			Sample	Sample	Sample	Sample	Sample
Sampling Date/Time			23-May-17	23-May-17	23-May-17	24-May-17	24-May-17
Date of Receipt			25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
Mercury via CVAA		**LOR**					
	Method 29	**ug**	**ug**	**ug**	**ug**	**ug**	**ug**
	Analytical Fraction 1B	0.015	0.0405	0.0387	0.0324	0.0324	0.0333
	Analytical Fraction 2B	0.050	0.234	0.216	<	0.171	0.144
	Analytical Fraction 3B	0.025	0.196	0.156	<	<	0.0285
	Analytical Fraction 3C	0.025	0.260	0.260	0.160	0.255	0.245

ALS Environmental

Sample Analysis Summary Report

Sample Name		17-21754-PM-(37 THRU 42) TEST#3 #2 APC OUTLET	17-21754-PM-(43 THRU 48) BLANK#2	17-21754-PM-(13 THRU 18) TEST#3 #1 APC OUTLET
ALS Sample ID		L1931238-6	L1931238-7	L1931238-8
Matrix		Stack	Stack	Stack
Analysis type		Sample	Sample	Sample
Sampling Date/Time		24-May-17	24-May-17	25-May-17
Date of Receipt		25-May-17	25-May-17	26-May-17
Mercury via CVAA	LOR			
Method 29	**ug**	**ug**	**ug**	**ug**
Analytical Fraction 1B	0.015	0.0357	0.0207	0.0297
Analytical Fraction 2B	0.050	0.0968	<	0.272
Analytical Fraction 3B	0.025	0.0875	<	0.180
Analytical Fraction 3C	0.025	0.240	0.175	0.250

ALS Environmental

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	<	0.293	94%	0.297	96%
Analytical Fraction 2B	0.050	<	0.951	95%	0.939	94%
Analytical Fraction 3B	0.025	<	0.474	94%	0.477	95%
Analytical Fraction 3C	0.025	<	0.480	96%	0.479	95%

ALS Environmental

Sample QC Summary Report

Sample Name		17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET	17-21754-PM-(1 THRU 6) TEST#1 #1 APC OUTLET
ALS Sample ID		L1931238-1	L1931238-1DUP	L1931238-1MS	L1931238-1MS	L1931238-1MSD	L1931238-1MSD
Matrix		Stack	Stack	Stack	Stack	Stack	Stack
Analysis type		Sample	Duplicate	Matrix Spike	Matrix Spike	Matrix Spike Dup	Matrix Spike Dup
Sampling Date/Time		23-May-17	23-May-17	23-May-17	23-May-17	23-May-17	23-May-17
Date of Receipt		25-May-17	25-May-17	25-May-17	25-May-17	25-May-17	25-May-17
Mercury via CVAA	LOR						
Method 29	**ug**	**ug**	**ug**	**ug**	**% Rec**	**ug**	**% Rec**
Analytical Fraction 1B	0.015	0.0405	0.0420	0.339	100%	0.324	95%
Analytical Fraction 2B	0.050	0.234	0.225	8.09	87%	7.81	84%
Analytical Fraction 3B	0.025	0.196	0.203	0.640	89%	0.625	86%
Analytical Fraction 3C	0.025	0.260	0.270	4.96	94%	4.95	94%

APPENDIX 15

Particle Size Distribution Train Recovery Data Sheets
(8 pages)

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 24/17

Test No.: 1
Test Location: UNIT 1 OUTLET

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

Filter ID: Q2361D

Impingers 1, 2, 3, 4

CONTAINER TS5 & TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Container TS1 Weights	Container TS2 Weights	Container TS3 Weights	
Empty Wt: 282.7	Empty Wt: 283.9	Empty Wt: 294.4	Initial Wt:
After Act. Rinse: 332.6	After Act. Rinse: 332.5	After Act. Rinse: 314.8	Final Wt:
Total TS1: 49.1	Total TS2: 48.6	Total TS3: 20.4	Gain:
			Colour: WHITE

Impinger #1 Knock Out	
Empty Wt:	492.5
Final Wt:	648.8
1 Gain:	156.3
Colour:	CLEAR

Impinger #2 Empty	
Empty Wt:	668.1
Final Wt:	665.4
2 Gain:	-2.7
Colour:	—

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:	10:42
Purge Off:	11:42

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

Acetone/Hexane Rinse	
Empty Wt:	413.9
After Acetone Rinse:	601.0
After Hexane Rinse:	650.2

Mark Fluid Level and Seal and Label Container

Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Beaker Initial Wt:	Beaker Initial Wt:	Beaker Initial Wt:	
Final Wt:	Final Wt:	Final Wt:	
Gain:	Gain:	Gain:	

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	591.1
Initial Wt:	773.8
Final Wt:	773.1
3 Gain:	-0.7
Colour:	CLEAR

CONTAINER TS5	
Empty Wt:	413.3
With Imp 2:	591.9
After H_2O Rinse:	824.6
Total Volume TS5:	411.3

Impinger #4 Silica Gel	
Initial Wt:	836.2
Final Wt:	846.9
4 Gain:	10.7
% Spent:	5

CONTAINER TS6
Secondary Filter

Filter ID:	TF3723
Initial Wt:	
Final Wt:	
TS6 Gain:	
Colour:	WHITE

SAMPLE IDENTIFICATION	~~16-21672-M201A~~ 17-21754-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_20 and rinse)	5
TS6 (Secondary Filter)	6
TS7 (Acetone / Hexane rinse)	7

CWTR=1+2+3:	152.9
WCBDA=4:	10.7

Train Loaded By: AN/DM
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY24/17

Box 8

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 24/17

Test No.: 2
Test Location: UNIT 1 OUTLET

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

Filter ID: Q23673

Impingers 1, 2, 3, 4

CONTAINER TS5 & TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Container TS1 Weights	Container TS2 Weights	Container TS3 Weights	Initial Wt:
Empty Wt: 252.5	Empty Wt: 252.6	Empty Wt: 252.1	Final Wt:
After Act. Rinse: 340.8	After Act. Rinse: 345.0	After Act. Rinse: 360.5	Gain:
Total TS1: 58.3	Total TS2: 32.4	Total TS3: 24.7	Colour: WHITE

	Impinger #1 Knock Out
	Empty Wt: 475.0
	Final Wt: 623.6
1	Gain: 148.6
	Colour: CLEAR

	Impinger #2 Empty
	Empty Wt: 635.3
	Final Wt: 633.0
2	Gain: -2.3
	Colour: —

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:	14:01
Purge Off:	15:01

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

Acetone/Hexane Rinse	
Empty Wt:	422.1
After Acetone Rinse:	624.1
After Hexane Rinse:	678.9

Mark Fluid Level and Seal and Label Container

Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Beaker Initial Wt:	Beaker Initial Wt:	Beaker Initial Wt:	
Final Wt:	Final Wt:	Final Wt:	
Gain:	Gain:	Gain:	

Secondary Filter

	Impinger #3 H_2O
	Empty Wt: 646.5
	Initial Wt: 748.7
	Final Wt: 748.5
3	Gain: -0.2
	Colour: CLEAR

CONTAINER TS5	
Empty Wt:	422.1
With Imp 2:	570.0
After H_2O Rinse:	820.1
Total Volume TS5:	398.0

	Impinger #4 Silica Gel
	Initial Wt: 853.3
	Final Wt: 862.8
4	Gain: 9.5
	% Spent: 20

CONTAINER TS6 Secondary Filter	
Filter ID:	TF 3722
Initial Wt:	
Final Wt:	
TS6 Gain:	
Colour:	WHITE

SAMPLE IDENTIFICATION	~~16-21672-M201A-~~ 17-21754-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_20 and rinse)	12
TS6 (Secondary Filter)	13
TS7 (Acetone / Hexane rinse)	14

CWTR=1+2+3:	46.1
WCBDA=4:	9.5

✓

Train Loaded By: AN/DT
Train Recovered By: AN/DM
Recovery Witnessed By:
Date: MAY 24/17

Box 15

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 24/17

Test No.: 3
Test Location: UNIT 1 OUTLET

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
			Filter ID: 3674	Impinger #1 Knock Out Empty Wt: 492.5 Final Wt: 645.9 1 Gain: 153.4 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
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #2 Empty Empty Wt: 667.9 Final Wt: 665.4 2 Gain: -2.5 Colour: —	Purge On: 17:30 Purge Off: 18:30	
Container TS1 Weights Empty Wt: 284.0 After Act. Rinse: 322.9 Total TS1: 38.9	Container TS2 Weights Empty Wt: 284.6 After Act. Rinse: 330.1 Total TS2: 45.5	Container TS3 Weights Empty Wt: 283.3 After Act. Rinse: 301.1 Total TS3: 20.8	Initial Wt: Final Wt: Gain: Colour: WHITE		Rinse all glassware from filter to 2nd u-tube with di H2O into TS3	Acetone/Hexane Rinse Empty Wt: 424.6 After Acetone Rinse: 619.0 After Hexane Rinse: 692.4 Mark Fluid Level and Seal and Label Container
Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4	Secondary Filter		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #3 H_2O Empty Wt: 623.7 Initial Wt: 772.9 Final Wt: 772.9 3 Gain: 0 Colour: CLEAR	CONTAINER TS5 Empty Wt: 423.4 With Imp 2: 577.6 After H_2O Rinse: 836.7 Total Volume TS5: 413.3	
Beaker Initial Wt: Final Wt: Gain:	Beaker Initial Wt: Final Wt: Gain:	Beaker Initial Wt: Final Wt: Gain:		Impinger #4 Silica Gel Initial Wt: 846.8 Final Wt: 854.7 4 Gain: 7.9 % Spent: 10	CONTAINER TS6 Secondary Filter Filter ID: TF3726 Initial Wt: Final Wt: TS6 Gain: Colour: WHITE	

SAMPLE IDENTIFICATION	~~16-21672-M201A-~~ 17-21754-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_20 and rinse)	19
TS6 (Secondary Filter)	20
TS7 (Acetone / Hexane rinse)	21

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 24/17

CWTR=1+2+3:	150.9
WCBDA=4:	7.9

BOX 8

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 24/17

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
			Filter ID: 82371 (#6)	Impinger #1 Knock Out Empty Wt: 490.9 Final Wt: 490.9 1 Gain: 0 Colour: —	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
CONTAINER TS1	**CONTAINER TS2**	**CONTAINER TS3**	**CONTAINER TS4**			
Container TS1 Weights Empty Wt: 290.2 After Act. Rinse: 329.0 Total TS1: 38.8	Container TS2 Weights Empty Wt: 288.6 After Act. Rinse: 324.9 Total TS2: 36.3	Container TS3 Weights Empty Wt: 281.8 After Act. Rinse: 319.8 Total TS3: 38.0	Initial Wt: Final Wt: Gain: Colour: WHITE	Impinger #2 Empty Empty Wt: 605.3 Final Wt: 605.3 2 Gain: 0 Colour: —	Purge On: Purge Off:	Acetone/Hexane Rinse Empty Wt: 413.0 After Acetone Rinse: 552.2 After Hexane Rinse: 666.1
					Rinse all glassware from filter to 2nd u-tube with di H2O into TS3	Mark Fluid Level and Seal and Label Container
Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4	Secondary Filter		
CONTAINER TS1	**CONTAINER TS2**	**CONTAINER TS3**	**CONTAINER TS4**	Impinger #3 H_2O Empty Wt: 664.0 Initial Wt: 764.0 Final Wt: 764.0 3 Gain: 0 Colour: —	**CONTAINER TS5** Empty Wt: 415.3 With Imp 2: 515.7 After H_2O Rinse: 615.3 Total Volume TS5: 200.0	
Beaker Initial Wt: Final Wt: Gain:	Beaker Initial Wt: Final Wt: Gain:	Beaker Initial Wt: Final Wt: Gain:		Impinger #4 Silica Gel Initial Wt: 881.8 Final Wt: 881.8 4 Gain: 0 % Spent: 0	**CONTAINER TS6** **Secondary Filter** Filter ID: TF 3724 TEFLON #6 Initial Wt: Final Wt: TS6 Gain: Colour: WHITE	

SAMPLE IDENTIFICATION	~~16-21672-M201A-~~ 17-21754-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_20 and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 24/17

CWTR=1+2+3:	0
WCBDA=4:	0

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 23/17

Test No.: 1
Test Location: UNIT 2 OUTLET

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

Filter ID: QZ3667

Impingers 1, 2, 3, 4

CONTAINER TS5 & TS6

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Container TS1 Weights	Container TS2 Weights	Container TS3 Weights	
Empty Wt: 285.2	Empty Wt: 285.9	Empty Wt: 284.7	Initial Wt:
After Act. Rinse: 324.3	After Act. Rinse: 312.8	After Act. Rinse: 307.6	Final Wt:
Total TS1: 39.1	Total TS2: 26.9	Total TS3: 22.9	Gain:
			Colour: WHITE

	Impinger #1 Knock Out
	Empty Wt: 490.9
	Final Wt: 654.3
1	Gain: 163.4
	Colour: CLEAR

	Impinger #2 Empty
	Empty Wt: 665.3
	Final Wt: 665.3
2	Gain: 0
	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.*

Purge On: 13:03
Purge Off: 14:03

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

Acetone/Hexane Rinse	
Empty Wt:	411.4
After Acetone Rinse:	545.7
After Hexane Rinse:	699.6

Mark Fluid Level and Seal and Label Container

Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Beaker Initial Wt:	Beaker Initial Wt:	Beaker Initial Wt:	
Final Wt:	Final Wt:	Final Wt:	
Gain:	Gain:	Gain:	

Secondary Filter

	Impinger #3 H_2O
	Empty Wt: 664.0
	Initial Wt: 775.9
	Final Wt: 774.6
3	Gain: -1.3
	Colour: CLEAR

CONTAINER TS5	
Empty Wt:	406.6
With Imp 2:	569.6
After H_2O Rinse:	777.4
Total Volume TS5:	370.8

	Impinger #4 Silica Gel
	Initial Wt: 881.8
	Final Wt: 892.7
4	Gain: 10.9
	% Spent: 10

CONTAINER TS6
Secondary Filter

Filter ID:	TF3719
Initial Wt:	
Final Wt:	
TS6 Gain:	
Colour:	WHITE

SAMPLE IDENTIFICATION	~~16-21672-M201A~~ 17-21754-M201A
TS1 (Part. > 10)	22
TS2 (Part. > 2.5)	23
TS3 (Part. < 2.5)	24
TS4 (Back Up Filter, <2.5)	25
TS5 (Imp 2 H_20 and rinse)	26
TS6 (Secondary Filter)	27
TS7 (Acetone / Hexane rinse)	28

CWTR=1+2+3:	162.1 ✓
WCBDA=4:	10.9

Train Loaded By: DM
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 23/17

8

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 23/17

Test No.: 2
Test Location: UNIT 2 OUTLET

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.9
After Act. Rinse:	342.5
Total TS1:	59.6

Seal and label container TS1

CONTAINER TS1

Beaker Initial Wt:	
Final Wt:	
Gain:	

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

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	283.5
After Act. Rinse:	342.5
Total TS2:	59.0

Seal and label container TS2

CONTAINER TS2

Beaker Initial Wt:	
Final Wt:	
Gain:	

Exit Stem, and Connecting Tubing to Filter, and Filter Top

CONTAINER TS3

Container TS3 Weights	
Empty Wt:	282.6
After Act. Rinse:	303.6
Total TS3:	21.0

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 023668

CONTAINER TS4

Initial Wt:	
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	475.0
Final Wt:	631.1
1 Gain:	156.1
Colour:	CLEAR

Impinger #2 Empty	
Empty Wt:	633.0
Final Wt:	633.7
2 Gain:	0.7
Colour:	CLEAR

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	646.5
Initial Wt:	749.1
Final Wt:	748.7
3 Gain:	-0.4
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	843.5
Final Wt:	853.6
4 Gain:	10.1
% Spent:	10%

CWTR=1+2+3:	156.4
WCBDA=4:	10.1

✓

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:	16:45
Purge Off:	17:45

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	411.0
With Imp 2:	~~566 [illegible]~~ 567.0
After H_2O Rinse:	803.2
Total Volume TS5:	392.2

CONTAINER TS6 Secondary Filter	
Filter ID:	TF3720
Initial Wt:	
Final Wt:	
TS6 Gain:	
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to front half 2nd filter with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	406.8
After Acetone Rinse:	475.1
After Hexane Rinse:	633.3

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	~~16-21672-M201A-~~ 17-2754-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

Train Loaded By: AN/DM
Train Recovered By: AN/DM/DT
Recovery Witnessed By:
Date: MAY 23/17

Box 15

ORTECH Environmental

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 23/17

Test No.: 3
Test Location: UNIT 2 OUTLET

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
			Filter ID: Q2360b9
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Container TS1 Weights	Container TS2 Weights	Container TS3 Weights	
Empty Wt: 292.9	Empty Wt: 291.4	Empty Wt: 292.4	Initial Wt:
After Act. Rinse: 348.8	After Act. Rinse: 327.3	After Act. Rinse: 302.4	Final Wt:
Total TS1: 55.9	Total TS2: 45.9	Total TS3: 20.8	Gain:
			Colour: WHITE
Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4
Beaker Initial Wt:	Beaker Initial Wt:	Beaker Initial Wt:	
Final Wt:	Final Wt:	Final Wt:	
Gain:	Gain:	Gain:	

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: 492.6		* *if there is no gain purge is not required.*	
Final Wt: 654.2			
1 Gain: 161.6			
Colour: CLEAR			
Impinger #2 Empty		Purge On: ~~7:46~~ 19:46	Acetone/Hexane Rinse
Empty Wt: 1063.1		Purge Off: 20:46	Empty Wt: 406.8
Final Wt: 665.5			After Acetone Rinse: 618.2
2 Gain: -2.6		Rinse all glassware from filter to 2nd u-tube with di H2O into TS3	After Hexane Rinse: 677.5
Colour: —			Mark Fluid Level and Seal and Label Container
Secondary Filter			
Impinger #3 H_2O		CONTAINER TS5	
Empty Wt: 664.0		Empty Wt: 409.6	
Initial Wt: 774.6		With Imp 2: 571.3	
Final Wt: 773.8		After H_2O Rinse: ~~782.9~~	
3 Gain: -0.8		Total Volume TS5: 583.3	
Colour: CLEAR			
Impinger #4 Silica Gel		CONTAINER TS6	
Initial Wt: 892.3		Secondary Filter	
Final Wt: 902.5		Filter ID: TF# 3721	
4 Gain: 10.2		Initial Wt:	
% Spent: 20		Final Wt:	
		TS6 Gain:	
		Colour: WHITE	

SAMPLE IDENTIFICATION	~~16-21672-M201A~~ 17-21754-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: AN
Train Recovered By: AN / DL
Recovery Witnessed By:
Date: MAY 23/17

CWTR=1+2+3:	158.2 ✓
WCBDA=4:	10.2

Box 8

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21754
Date: MAY 24/17

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 2.5 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
			Filter ID: 023472 (#7)	Impinger #1 Knock Out Empty Wt: 490.9 Final Wt: 490.9 1 Gain: 0 Colour: —	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
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4			
Container TS1 Weights Empty Wt: 283.5 After Act. Rinse: 319.2 Total TS1: 35.7	Container TS2 Weights Empty Wt: 283.4 After Act. Rinse: 320.9 Total TS2: 37.5	Container TS3 Weights Empty Wt: 282.9 After Act. Rinse: 321.1 Total TS3: 38.2	Initial Wt: Final Wt: Gain: Colour: WHITE	Impinger #2 Empty Empty Wt: 665.3 Final Wt: 665.3 2 Gain: 0 Colour: —	Purge On: Purge Off:	Acetone/Hexane Rinse Empty Wt: 412.2 After Acetone Rinse: 556.0 After Hexane Rinse: 698.0
					Rinse all glassware from filter to 2nd u-tube with di H2O into TS3	Mark Fluid Level and Seal and Label Container
Seal and label container TS1	Seal and label container TS2	Seal and label container TS3	Seal and label container TS4	Secondary Filter		
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	Impinger #3 H_2O Empty Wt: 664.0 Initial Wt: 764.0 Final Wt: 764.0 3 Gain: 0 Colour: CLEAR	CONTAINER TS5 Empty Wt: 410.0 With Imp 2: 515.8 After H_2O Rinse: 617.8 Total Volume TS5: 207.8	
Beaker Initial Wt: Final Wt: Gain:	Beaker Initial Wt: Final Wt: Gain:	Beaker Initial Wt: Final Wt: Gain:		Impinger #4 Silica Gel Initial Wt: 881.8 Final Wt: 881.8 4 Gain: 0 % Spent: 0	CONTAINER TS6 Secondary Filter Filter ID: TF3725 (#7) Initial Wt: Final Wt: TS6 Gain: Colour: WHITE	

SAMPLE IDENTIFICATION	~~16-21672-M201A-~~ 17-21754-M201A-
TS1 (Part. > 10)	S0
TS2 (Part. > 2.5)	S1
TS3 (Part. < 2.5)	S2
TS4 (Back Up Filter, <2.5)	S3
TS5 (Imp 2 H_20 and rinse)	S4
TS6 (Secondary Filter)	S5
TS7 (Acetone / Hexane rinse)	S6

CWTR=1+2+3:	0
WCBDA=4:	0

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 24/17

APPENDIX 16

SVOC Train Recovery Data Sheets
(14 pages)

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: ~~16~~-21754-SVOC-17

Test No.: 1
Test Date: MAY 25/17
Test Location: UNIT 1 INLET

Sample ID 101 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	423.1
After Acetone/ Hexane Rinse:	849.4
Total TS1:	426.3

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 102 — Filter — CONTAINER TS2

Colour: LIGHT GREY

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 103 — XAD-II Trap — CONTAINER TS3

Initial Wt:	339.6
Final Wt:	331.3
1 Gain:	-8.3
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 104 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	666.7
Final Wt:	997.8
2 Gain:	~~407.9~~ 331.1
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	649.2
Initial Wt:	748.4
Final Wt:	829.9
3 Gain:	81.5
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	530.0
Final Wt:	530.7
4 Gain:	0.7
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	423.4
With Imp Soln:	917.2
Imp Volume:	493.8
After ~100g H_2O Rinse:	1074.5
Total TS4:	651.1

CWTR = 1 + 2 + 3 + 4: ~~244.8~~ 405.0

WCBDA=5: 9.5

Sample ID 105 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	423.4
After Acetone Rinse:	524.1
After Hexane Rinse:	595.4
Total TS5:	172.0

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 6

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	930.1
Final Wt:	939.6
5 Gain:	9.5
% Spent:	40

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	U
Trap ID:	11
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 25/17

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: ~~16~~-21754-SVOC-17

Test No.: 2
Test Date: MAY 25/17
Test Location: UNIT 1 INLET

Sample ID 106	Sample ID 107	Sample ID 108	Sample ID 109	Sample ID 110	
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	CONTAINER TS6 (Impinger)
Empty Wt: 423.8	Colour: LIGHT GREY	Initial Wt: 395.8	Impinger #1 Empty	Empty Wt: 423.2	Initial Wt: 917.2
After Acetone/ Hexane Rinse: 867.4	FOLD IN FOIL	1 Final Wt: 394.4	Empty Wt: 536.7	After Acetone Rinse: 530.9	Final Wt: 925.6
Total TS1: 443.6	SEAL AND LABEL CONTAINER TS2	Gain: -1.4	Final Wt: 898.3	After Hexane Rinse: 603.3	5 Gain: 8.4
MARK FLUID LEVEL		Colour: WHITE	2 Gain: 361.6	Total TS5: 180.1	% Spent: 20
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: CLEAR	*Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*	
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 609.8		
			Initial Wt: 716.6		
			Final Wt: 773.3		
			3 Gain: 56.7		
			Colour: CLEAR		
			Impinger #3 Empty		
			Empty Wt: 652.8		
			Final Wt: 652.6		
			4 Gain: -0.2		
			Colour: —		

Impinger Box ID: 5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	0
Trap ID:	12
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	423.8
With Imp Soln:	936.0
Imp Volume:	512.2
After ~100g H_2O Rinse:	1088.3
Total TS4:	664.5

CWTR = 1 + 2 + 3 + 4: 416.7

WCBDA=5: 8.4

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 26/17

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 17-21754-SVOC-

Test No.: 3
Test Date: MAY 26/17
Test Location: UNIT 1 INLET

Sample ID 111	Sample ID 112	Sample ID 113	Sample ID 114	Sample ID 115	
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	CONTAINER TS6 (Impinger)
Empty Wt: 423.3	Colour: LIGHT GREY	Initial Wt: ~~486.2~~ 428.2	Impinger #1 Empty	Empty Wt: 421.0.1	Initial Wt: 802.4
After Acetone/ Hexane Rinse: 895.3	FOLD IN FOIL	Final Wt: 421.7	Empty Wt: 568.0	After Acetone Rinse: 541.5	Final Wt: 811.2
Total TS1: 472.0	SEAL AND LABEL CONTAINER TS2	1 Gain: -6.5 ✓	Final Wt: 941.6	After Hexane Rinse: 590.3	5 Gain: 8.8
MARK FLUID LEVEL	SEAL TRAP	Colour: WHITE	2 Gain: 373.6 ✓	Total TS5: Not. 2	% Spent: 30
SEAL AND LABEL CONTAINER TS1	WRAP IN FOIL		Colour: CLEAR	Use 100 - 150g acetone total & 100- 150g of hexane total for rinses	
	LABEL AS CONTAINER TS3		Impinger #2 Ethylene Glycol		
			Empty Wt: 538.3		
			Initial Wt: 641.5		
			Final Wt: 681.3		
			3 Gain: 39.8 ✓		
			Colour: CLEAR		
			Impinger #3 Empty		
			Empty Wt: 647.4		
			Final Wt: 645.7		
			4 Gain: -1.7 ✓		
			Colour: —		

Impinger Box ID: 3

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	P
Trap ID:	4
HPLC Batch No.:	ALS
Ethylene Glycol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	425.6
With Imp Soln:	930.5
Imp Volume:	504.9
After ~100g H_2O Rinse:	1065.7
Total TS4:	640.1

Train Loaded By: AS
Train Recovered By: AM
Recovery Witnessed By:
Date: MAY 26/17

CWTR = 1 + 2 + 3 + 4: 405.2 ✓
WCBDA=5: 8.8

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: ~~16~~-21754-SVOC-17

Test No.: 1
Test Date: MAY 25/17
Test Location: UNIT 1 OUTLET

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	CONTAINER TS6 (Impinger)
Empty Wt: 425.5 After Acetone/ Hexane Rinse: 615.7 Total TS1: 190.2	Colour: WHITE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	Initial Wt: 372.4 Final Wt: 368.6 1 Gain: -3.8 Colour: WHITE SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3	Impinger #1 Empty Empty Wt: 768.4 Final Wt: 1355.7 2 Gain: 587.3 Colour: CLEAR Impinger #2 Ethylene Glycol Empty Wt: 654 Initial Wt: 756.2 Final Wt: 790.0 3 Gain: 34.8 Colour: CLEAR Impinger #3 Empty Empty Wt: 655.8 Final Wt: 656.4 4 Gain: 0.6 Colour: CLEAR	Empty Wt: 423.8 After Acetone Rinse: 550.8 After Hexane Rinse: 643.5 Total TS5: 219.7 *Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*	Initial Wt: 788.3 Final Wt: 805.7 5 Gain: 17.4 % Spent: 40

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	L
Trap ID:	S 17
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Train Loaded By: JF/AM
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 25/17

Container TS4 Weights	
Empty Wt:	423.0
With Imp Soln:	1133.0
Imp Volume:	710.0
After ~100g H_2O Rinse:	1382.6
Total TS4:	959.6

CWTR = 1 + 2 + 3 + 4: 618.9

WCBDA=5: 17.4

Impinger Box ID: 12

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 16-21754-SVOC-

Test No.: 2
Test Date: May 25/17
Test Location: Unit 1 outlet

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	CONTAINER TS6 (Impinger)
Empty Wt: 424.4	Colour: white	Initial Wt: 388.4	Impinger #1 Empty	Empty Wt: 423.5	Initial Wt: [redacted] 84
After Acetone/ Hexane Rinse: 685.1	FOLD IN FOIL	Final Wt: 385.8	Empty Wt: 767.0	After Acetone Rinse: 544.0	Final Wt: 855.9
Total TS1: 260.7		1 Gain: -2.6	Final Wt: 1358.7	After Hexane Rinse: 615.0	5 Gain: 15.7
	SEAL AND LABEL CONTAINER TS2	Colour: white	2 Gain: 590.8	Total TS5: 191.6	% Spent: 30
		SEAL TRAP	Colour: clear		
MARK FLUID LEVEL		WRAP IN FOIL	Impinger #2 Ethylene Glycol	*Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*	
SEAL AND LABEL CONTAINER TS1		LABEL AS CONTAINER TS3	Empty Wt: 653.0		
			Initial Wt: 777.4		
			Final Wt: 810.2		
			3 Gain: 32.8		
			Colour: clear		
			Impinger #3 Empty	Impinger Box ID: 10	
			Empty Wt: 557.1		
			Final Wt: 557.2		
			4 Gain: 0.1		
			Colour: clear		
			Container TS4 Weights		
			Empty Wt: 423.9		
			With Imp Soln: 1164.2		
			Imp Volume: 740.9		
			After ~100g H_2O Rinse: 1307.0		
			Total TS4: 883.1		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	M
Trap ID:	9
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159 109
Hexane Batch No.:	161914
Acetone Batch No.:	161989

Train Loaded By: JF/AM
Train Recovered By: AS
Recovery Witnessed By:
Date: May 26/17

CWTR = 1 + 2 + 3 + 4: 621.1 ✓
WCBDA=5: 15.7

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 17-21754-SVOC-

Test No.: ~~May 26/17~~ 3 SVOC
Test Date: May 26/17
Test Location: Unit 1 outlet

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	CONTAINER TS6 (Impinger)
Empty Wt: 426.0 After Acetone/ Hexane Rinse: 696.5 Total TS1: 270.5	Colour: White FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	Initial Wt: 418.2 Final Wt: 420.0 1 Gain: 1.8 Colour: White SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3	Impinger #1 Empty Empty Wt: 772.1 Final Wt: 1386.2 2 Gain: 614.1 Colour: clear Impinger #2 Ethylene Glycol Empty Wt: 547.3 Initial Wt: 656.9 Final Wt: 659.7 3 Gain: 32.8 Colour: clear Impinger #3 Empty Empty Wt: 548.6 Final Wt: 548.9 4 Gain: 0.3 Colour: clear	Empty Wt: 423.7 After Acetone Rinse: 509.4 After Hexane Rinse: 604.1 Total TS5: 180.4 *Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*	Initial Wt: 800.9 Final Wt: 816.3 5 Gain: 15.4 % Spent: 5
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1					

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	X
Trap ID:	7
HPLC Batch No.:	ALS
Ethylene Glycol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Impinger Box ID: 12

Container TS4 Weights	
Empty Wt:	424.2
With Imp Soln:	1174.0
Imp Volume:	749.8
After ~100g H_2O Rinse:	1318.2
Total TS4:	894.0

Train Loaded By: AN
Train Recovered By: AS
Recovery Witnessed By:
Date: May 26/17

CWTR = 1 + 2 + 3 + 4: 649.0

WCBDA=5: 15.4

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 16-21754-SVOC-

Test No.: BLANK 1
Test Date: MAY 25/17
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	CONTAINER TS6 (Impinger)
Empty Wt: 424.0 After Acetone/ Hexane Rinse: 728.4 Total TS1: 304.4	Colour: WHITE FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	Initial Wt: 348.1 Final Wt: 348.1 1 Gain: 0 Colour: WHITE SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3	Impinger #1 Empty Empty Wt: 545.3 Final Wt: 545.3 2 Gain: 0 Colour: — Impinger #2 Ethylene Glycol Empty Wt: 676.2 Initial Wt: 777.6 Final Wt: 777.6 3 Gain: 0 Colour: CLEAR Impinger #3 Empty Empty Wt: 562.6 Final Wt: 562.6 4 Gain: 0 Colour: —	Empty Wt: 423.5 After Acetone Rinse: 518.3 After Hexane Rinse: 578.9 Total TS5: 155.4 *Use 100 - 150g acetone total & 100- 150g of hexane total for rinses* Impinger Box ID: 16	Initial Wt: 850.1 Final Wt: 850.1 5 Gain: 0 % Spent: 0
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1					

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	K
Trap ID:	20
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	423.9
With Imp Soln:	512.1
Imp Volume:	88.2
After ~100g H_2O Rinse:	672.4
Total TS4:	248.5

CWTR = 1 + 2 + 3 + 4: 0

WCBDA=5: 0

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 25/17

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: ~~16~~-21754-SVOC-17

Test No.: 1 unit 2
Test Date: May 25/17
Test Location: Covanta u2 inlet

Sample ID 131	Sample ID 132	Sample ID 133	Sample ID 134	Sample ID 135	
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	CONTAINER TS6 (Impinger)
Empty Wt: 424.7	Colour: white/grey	Initial Wt: 400.4	Impinger #1 Empty	Empty Wt: 423.6	Initial Wt: 793.7
After Acetone/ Hexane Rinse: 810.7	FOLD IN FOIL	Final Wt: 395.5	Empty Wt: 536.7	After Acetone Rinse: 494.7	Final Wt: 802.6
Total TS1: 386		1 Gain: -4.9 ~~-5.1~~	Final Wt: 688.3	After Hexane Rinse: 580.6	5 Gain: 9.3
	SEAL AND LABEL CONTAINER TS2	Colour: White	2 Gain: 352.0	Total TS5: 157.0	% Spent: 15
		SEAL TRAP	Colour: clear		
MARK FLUID LEVEL		WRAP IN FOIL	Impinger #2 Ethylene Glycol	Use 100 - 150g acetone total & 100- 150g of hexane total for rinses	
SEAL AND LABEL CONTAINER TS1		LABEL AS CONTAINER TS3	Empty Wt: 566.1		
			Initial Wt: 681.2		
			Final Wt: 706.5		
			3 Gain: 24.3 ~~+10.4~~		
			Colour: clear		
			Impinger #3 Empty	Impinger Box ID: 3	
			Empty Wt: 645.5		
			Final Wt: 645.5		
			4 Gain: 0.0		
			Colour: clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	P
Trap ID:	10
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	423.0
With Imp Soln:	902.1
Imp Volume:	479.1
After ~100g H_2O Rinse:	1073.3
Total TS4:	650.3
	371.4
CWTR = 1 + 2 + 3 + 4:	~~487.3~~
WCBDA=S:	9.3

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: JF/AM
Train Recovered By: AS
Recovery Witnessed By:
Date: May 25/17

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 16-21754-SVOC-

Test No.: T2
Test Date: may 25/17
Test Location: Unit 2 Inlet

Sample ID 136	Sample ID 137	Sample ID 138	Sample ID 139	Sample ID 140	
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	CONTAINER TS6 (Impinger)
Empty Wt: 423.5 After Acetone/ Hexane Rinse: 916.0 Total TS1: 492.5	Colour: grey FOLD IN FOIL SEAL AND LABEL CONTAINER TS2	Initial Wt: 354.1 Final Wt: 353.8 1 Gain: -0.3 Colour: white SEAL TRAP WRAP IN FOIL LABEL AS CONTAINER TS3	Impinger #1 Empty Empty Wt: 565.3 Final Wt: 921.0 2 Gain: 355.7 Colour: clear Impinger #2 Ethylene Glycol Empty Wt: 676.2 Initial Wt: ~~722.6~~ 779.4 Final Wt: 807.3 3 Gain: 27.9 ~~+57.2~~ Colour: clear Impinger #3 Empty Empty Wt: 562.6 Final Wt: 562.6 4 Gain: 0.0 Colour: clear	Empty Wt: 432.2 After Acetone Rinse: 545.5 After Hexane Rinse: 625.3 Total TS5: 193.1 *Use 100 - 150g acetone total & 100- 150g of hexane total for rinses* Impinger Box ID: 16	Initial Wt: 850.1 Final Wt: 855.3 5 Gain: 5.2 % Spent: 30
MARK FLUID LEVEL SEAL AND LABEL CONTAINER TS1					

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	K
Trap ID:	14
HPLC Batch No.:	465
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	424.2
With Imp Soln:	900.8
Imp Volume:	476.6
After ~100g H_2O Rinse:	1041.2
Total TS4:	617.0

383.3
CWTR = 1 + 2 + 3 + 4: ~~480.7~~

WCBDA=5: 5.2

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: AN/AM/JF
Train Recovered By: AS
Recovery Witnessed By: ~~may 2~~
Date: may 26/17

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: ~~16~~-21754-SVOC-17

Test No.: 3
Test Date: MAY 26/17
Test Location: UNIT 2 INLET

Sample ID 136/171	Sample ID 137/172	Sample ID 138/173	Sample ID 139/174	Sample ID 140/175	
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	CONTAINER TS6 (Impinger)
Empty Wt: 426.1	Colour: LIGHT GREY	Initial Wt: 364.5	Impinger #1 Empty	Empty Wt: 425.9	Initial Wt: 939.1
After Acetone/ Hexane Rinse: 1020.7	FOLD IN FOIL	Final Wt: 362.1	Empty Wt: 669.7	After Acetone Rinse: 546.7	Final Wt: 948.5
Total TS1: 594.6	SEAL AND LABEL CONTAINER TS2	1 Gain: -2.4	Final Wt: 959.3	After Hexane Rinse: 628.4	5 Gain: 9.4
MARK FLUID LEVEL		Colour: WHITE	2 Gain: 289.6	Total TS5: 202.5	% Spent: 60
SEAL AND LABEL CONTAINER TS1		SEAL TRAP	Colour: CLEAR	*Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*	
		WRAP IN FOIL	Impinger #2 Ethylene Glycol		
		LABEL AS CONTAINER TS3	Empty Wt: 652.0		
			Initial Wt: 751.2		
			Final Wt: 852.0		
			3 Gain: 100.8		
			Colour: CLEAR		
			Impinger #3 Empty		
			Empty Wt: 533.1		
			Final Wt: 530.3		
			4 Gain: -2.8		
			Colour:		

Impinger Box ID: 6

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	4
Trap ID:	6
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	425.4
With Imp Soln:	901.8
Imp Volume:	476.4
After ~100g H_2O Rinse:	1022.8
Total TS4:	597.4

CWTR = 1 + 2 + 3 + 4: 385.2 ✓

WCBDA=5: 9.4

Train Loaded By: AN
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 26/17

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 16-21754-SVOC-

Test No.: 1
Test Date: May 25/17
Test Location: unit 2 outlet

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	CONTAINER TS6 (Impinger)

Empty Wt:	425.8	Colour:	white	Initial Wt:	409.0	Impinger #1 Empty		Empty Wt:	423.6	Initial Wt:	806.8
After Acetone/ Hexane Rinse:	667.3	FOLD IN FOIL		Final Wt:	402.0	Empty Wt:	708.1	After Acetone Rinse:	~~534.4~~ 551.0	Final Wt:	821.9
Total TS1:	241.5			1 Gain:	-7.0	Final Wt:	1319.4	After Hexane Rinse:	647.7	5 Gain:	15.1
		SEAL AND LABEL CONTAINER TS2		Colour:	~~clear~~ white	2 Gain:	611.3	Total TS5:	224.7	% Spent:	2
MARK FLUID LEVEL				SEAL TRAP		Colour:	clear				
SEAL AND LABEL CONTAINER TS1				WRAP IN FOIL		Impinger #2 Ethylene Glycol		*Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*			
				LABEL AS CONTAINER TS3		Empty Wt:	658.0				
						Initial Wt:	769.5				
						Final Wt:	801.4				
						3 Gain:	31.9				
						Colour:	clear				
						Impinger #3 Empty					
						Empty Wt:	662.0				
						Final Wt:	667.2				
						4 Gain:	0.2				
						Colour:	clear				

Impinger Box ID: 4

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	✓
Trap ID:	15
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	424.3
With Imp Soln:	1169.9
Imp Volume:	745.6
After ~100g H_2O Rinse:	1285.1
Total TS4:	360.8

CWTR = 1 + 2 + 3 + 4: 636.4

WCBDA=5: 15.1

Train Loaded By: JF/AM
Train Recovered By: AS
Recovery Witnessed By:
Date: ~~May 24~~ May 25/17

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: ~~16~~-21754-SVOC-17

Test No.: 2
Test Date: MAY 25/17
Test Location: UNIT 2 OUTLET

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	Impinger 4 Silica Gel
CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	CONTAINER TS4	CONTAINER TS5	CONTAINER TS6 (Impinger)
Empty Wt: 425.2	Colour: WHITE	Initial Wt: 389.7	Impinger #1 Empty	Empty Wt: 423.3	Initial Wt: ~~840.2~~ 800.0
After Acetone/ Hexane Rinse: 582.4	FOLD IN FOIL	Final Wt: ~~382.3~~ 382.5	Empty Wt: 699.2	After Acetone Rinse: 552.7	Final Wt: [illegible]
Total TS1: 157.2	SEAL AND LABEL CONTAINER TS2	1 Gain: -7.2	Final Wt: 1321.9	After Hexane Rinse: 635.3	5 Gain: 10.7
MARK FLUID LEVEL	SEAL TRAP	Colour: WHITE	2 Gain: 622.7	Total TS5: 212.0	% Spent: 40
SEAL AND LABEL CONTAINER TS1	WRAP IN FOIL	LABEL AS CONTAINER TS3	Colour: CLEAR	*Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*	
			Impinger #2 Ethylene Glycol		
			Empty Wt: 534.2		
			Initial Wt: 647.7		
			Final Wt: 680.5		
			3 Gain: 32.8		
			Colour: CLEAR		
			Impinger #3 Empty		
			Empty Wt: 557.9		
			Final Wt: 557.6		
			4 Gain: -0.3		
			Colour: -		

Impinger Box ID: 2

Train & Proofing Identification	
Glassware Train Proofing Provided By:	~~Maxxam~~ ALS
Glassware Train ID:	N
Trap ID:	3
HPLC Batch No.:	ALS
Ethylene Gylcol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	423.0
With Imp Soln:	1209.1
Imp Volume:	786.1
After ~100g H_2O Rinse:	1381.8
Total TS4:	901.8

CWTR = 1 + 2 + 3 + 4: 1648.0 ✓

WCBDA=5: 10.7

Train Loaded By: RT
Train Recovered By: AN
Recovery Witnessed By:
Date: MAY 26/17

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 17-21754-SVOC-

Test No.: 3
Test Date: May 26/17
Test Location: Outlet 2

Sample ID 31	Sample ID 32	Sample ID 33	Sample ID 34	Sample ID 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	CONTAINER TS6 (Impinger)
Empty Wt: 424.4	Colour: White	Initial Wt: 415.9	Impinger #1 Empty	Empty Wt: 407.4	Initial Wt: 821.8
After Acetone/ Hexane Rinse: 659.9	FOLD IN FOIL	Final Wt: 414.5	Empty Wt: 710.2	After Acetone Rinse: 467.9	Final Wt: 833.6
Total TS1: 235.5	SEAL AND LABEL CONTAINER TS2	1 Gain: ~~-1.5~~ -1.4	Final Wt: 1361.9	After Hexane Rinse: 584.6	5 Gain: 11.8
MARK FLUID LEVEL	SEAL TRAP	Colour: White	2 Gain: 651.7	Total TS5: 177.2	% Spent: 20
SEAL AND LABEL CONTAINER TS1	WRAP IN FOIL	LABEL AS CONTAINER TS3	Colour: clear	Use 100 - 150g acetone total & 100- 150g of hexane total for rinses	
			Impinger #2 Ethylene Glycol		
			Empty Wt: 659.5		
			Initial Wt: 779.0		
			Final Wt: 812.1		
			3 Gain: 33.1		
			Colour: clear		
			Impinger #3 Empty		
			Empty Wt: 669.3	Impinger Box ID: 4	
			Final Wt: 667.0		
			4 Gain: -2.3		
			Colour: clear		

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	✓
Trap ID:	13
HPLC Batch No.:	ALS
Ethylene Glycol Batch No.:	159109
Hexane Batch No.:	161914
Acetone Batch No.:	161989

Container TS4 Weights	
Empty Wt:	426.0
With Imp Soln:	1223.9
Imp Volume:	797.9
After ~100g H_2O Rinse:	1368.3
Total TS4:	940.3

681.1
CWTR = 1 + 2 + 3 + 4: ~~681.0~~

WCBDA=5: 11.8

Train Loaded By: AS
Train Recovered By: AS
Recovery Witnessed By:
Date: May 26/17

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21754
Sample Batch No.: 17-21754-SVOC-

Test No.: Blank 2
Test Date: May 26/17
Test Location:

Sample ID	36	Sample ID	37	Sample ID	38	Sample ID	39	Sample ID	40	
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		CONTAINER TS6 (Impinger)
Empty Wt:	423.3	Colour:	WHITE	Initial Wt:	406.2	Impinger #1 Empty		Empty Wt:	422.4	Initial Wt: 855.7
After Acetone/ Hexane Rinse:	701.0	FOLD IN FOIL		Final Wt:	406.2	Empty Wt:	660.4	After Acetone Rinse:	497.1	Final Wt: 855.7
Total TS1:	277.7	SEAL AND LABEL CONTAINER TS2		1 Gain:	0	Final Wt:	660.4	After Hexane Rinse:	552.9	5 Gain: 0
MARK FLUID LEVEL				Colour:	WHITE	2 Gain:	0	Total TSS:	130.5	% Spent: 0
SEAL AND LABEL CONTAINER TS1				SEAL TRAP		Colour:	—			
				WRAP IN FOIL		Impinger #2 Ethylene Glycol		*Use 100 - 150g acetone total & 100- 150g of hexane total for rinses*		
				LABEL AS CONTAINER TS3		Empty Wt:	657.6			
						Initial Wt:	776.7			
						Final Wt:	776.7			
						3 Gain:	0			
						Colour:	CLEAR			
						Impinger #3 Empty		Impinger Box ID:	10	
						Empty Wt:	658.3			
						Final Wt:	658.3	Volume:	2.01 CF	
						4 Gain:	0			
						Colour:	—			

Train & Proofing Identification	
Glassware Train Proofing Provided By:	ALS
Glassware Train ID:	W
Trap ID:	5
HPLC Batch No.:	ALS
Ethylene Glycol Batch No.:	159109
Hexane Batch No.:	101914
Acetone Batch No.:	101989

Container TS4 Weights	
Empty Wt:	423.1
With Imp Soln:	529.0
Imp Volume:	105.9
After ~100g H_2O Rinse:	638.9
Total TS4:	215.8

CWTR = 1 + 2 + 3 + 4: 0

WCBDA=S: 0

Train Loaded By: AS
Train Recovered By: AM
Recovery Witnessed By:
Date: MAY 26/17

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 17

SVOC Analytical Report
(87 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:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Rd.
ALS WO#:	L1932116		Mississauga, ON
Date of Report	5-Jun-17		L5J 2Y4
Date of Sample Receipt	26-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS: **PCDD/F by EPA M23**

The samples were received in good condition at 11.6 degrees C, which is above the method-recommended transportation and storage temperature. The short period at above the recommended temperature is not expected to have a negative impact on sample results.

The liquid portions of the samples were extracted with dichloromethane (DCM) via liquid/liquid extraction. The solid portions were extracted with DCM via Soxhlet, followed by DCM acidified with ~100uL of trifluoroacetic acid. The combined extracts were prepared for analysis by GC/HRMS using acidified silica, Florisil and carbon column chromatography.

The lab QC sample WG2535724-1 is a method blank consisting of 1L laboratory water, and taken through all method steps.
The lab QC sample WG2535724-4 is a media blank consisting of XAD-2 resin, and taken through all method steps.

There were low levels of selected targets detected in the method blank that were within the method control limits. Low level sample results may be elevated, as identified on the sample reports.

For the 17-21754-SVOC #1 APC OUTLET and 17-21754-SVOC #2 APC OUTLET, the values for the targets: 123478-HxCDF, 123678-HxCDF, OCDF have been reported as estimated maximum possible concentrations (EMPCs) due to coeluting peaks at the mass of the parent ion of the potentially interfering chlorinated diphenylether.

For the sample 17-21754-SVOC-(111 THRU 115) TEST#3 #1 QUENCH INLET, the recovery of the labelled extraction standard 13C12-2,3,7,8-TCDF was below the method control limit. As a result, the estimated detection limit (EDL) may be elevated, the native target result, calculated by isotope dilution is not expected to be biased.

For the sample 17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET, as well as the method blanks, the results have been reported from a reanalysis of the extract. The original analysis of the extract apparently resulted in an incomplete introduction of the sample, as evidenced by low peak areas. The recovery of the labelled standard 13C12-OCDD for the pre-run continuing calibration verification (CCV) was marginally above the method control limit. The recovery was within limits for the post-run CCV, as well the samples. The native target data are not expected to be biased as a result.

Steve Kennedy
Technical Supervisor

ALS Life sciences

Sample Analysis summary Report

Sample Name	17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET	17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET	17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET	17-21754-SVOC-(16 THRU 20) BLANK#1	17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET	17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET
ALS Sample ID	L1932116-1	L1932116-2	L1932116-3	L1932116-4	L1932116-5	L1932116-6
Sample Size	1	1	1	1	1	1
Sample size units	Train	Train	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	25-May-17	25-May-17	26-May-17	25-May-17	25-May-17	25-May-17
Extraction Date	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	2.35	<2.1	<2.9	<1.9	<1.0	<2.7
1,2,3,7,8-PeCDD	7.16	6.04	6.73	<1.2	5.09	4.39
1,2,3,4,7,8-HxCDD	12.5	13.9	<16	<1.2	17.0	20.8
1,2,3,6,7,8-HxCDD	31.9	32.9	36.5	<0.95	38.0	36.6
1,2,3,7,8,9-HxCDD	21.3	20.7	22.1	<1.0	24.4	22.0
1,2,3,4,6,7,8-HpCDD	467	451	529	2.06	1480	1390
OCDD	1240	1270	1370	<2.6	6120	5680
2,3,7,8-TCDF	10.4	<2.7	<3.1	<1.9	3.58	4.00
1,2,3,7,8-PeCDF	<3.6	6.30	6.51	<1.3	<5.5	4.70
2,3,4,7,8-PeCDF	12.4	<11	15.1	<1.2	9.53	7.54
1,2,3,4,7,8-HxCDF	<11	<9.8	<13	<0.90	<13	<8.2
1,2,3,6,7,8-HxCDF	<10	<12	<14	<0.77	<13	<8.8
2,3,4,6,7,8-HxCDF	19.3	19.5	23.0	<0.87	<25	19.2
1,2,3,7,8,9-HxCDF	4.79	7.91	<9.1	1.41	10.9	8.91
1,2,3,4,6,7,8-HpCDF	84.5	78.7	92.4	<0.52	192	168
1,2,3,4,7,8,9-HpCDF	14.0	12.2	15.1	<0.54	<24	23.0
OCDF	<86	<86	<89	1.38	<220	<210
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	94	97	94	96	94	95
13C12-1,2,3,4,7,8-HxCDD	94	104	104	101	95	104
13C12-2,3,4,7,8-PeCDF	101	101	107	104	101	108
13C12-1,2,3,4,7,8-HxCDF	95	98	97	91	102	95
13C12-1,2,3,4,7,8,9-HpCDF	107	111	107	106	107	113
Extraction Standards						
13C12-2,3,7,8-TCDD	68	86	71	71	80	66
13C12-1,2,3,7,8-PeCDD	85	103	91	90	95	86
13C12-1,2,3,6,7,8-HxCDD	81	88	83	81	85	79
13C12-1,2,3,4,6,7,8-HpCDD	89	99	94	88	89	91
13C12-OCDD	98	103	101	99	97	99
13C12-2,3,7,8-TCDF	68	82	67	75	75	61
13C12-1,2,3,7,8-PeCDF	75	89	74	77	80	71
13C12-1,2,3,6,7,8-HxCDF	67	74	69	70	58	68
13C12-1,2,3,4,6,7,8-HpCDF	75	82	78	75	66	74
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	71	71	68	75	66	65
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
Total-TCDD	191	173	192	<1.9	164	94.3
Total-PeCDD	321	300	331	<1.2	270	237
Total-HxCDD	611	743	698	<1.2	832	852
Total-HpCDD	1110	1060	1240	2.06	3660	3360
Total-TCDF	107	96.7	109	<1.9	62.8	4.00
Total-PeCDF	112	78.3	136	<1.2	74.6	42.6
Total-HxCDF	111	106	73.9	2.02	99.8	100
Total-HpCDF	157	147	143	<0.54	304	295
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	29.3	21.5	26.4	0.162	35.9	35.5
Mid Point PCDD/F TEQ (WHO 2005)	31.5	28.2	33.2	2.32	42.0	38.6
Upper Bound PCDD/F TEQ (WHO 2005)	31.5	29.4	34.8	4.43	42.5	39.9

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Sample Analysis summary Report

Sample Name	17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET	17-21754-SVOC-(36 THRU 40) BLANK#2	17-21754-SVOC-(101 THRU 105) TEST#1 #1 QUENCH INLET	17-21754-SVOC-(106 THRU 110) TEST#2 #1 QUENCH INLET	17-21754-SVOC-(111 THRU 115) TEST#3 #1 QUENCH INLET	17-21754-SVOC-(131 THRU 135) TEST#1 #2 QUENCH INLET
ALS Sample ID	L1932116-7	L1932116-8	L1932116-9	L1932116-10	L1932116-11	L1932116-12
Sample Size	1	1	1	1	1	1
Sample size units	Train	Train	Train	Train	Train	Train
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	26-May-17	26-May-17	25-May-17	25-May-17	26-May-17	25-May-17
Extraction Date	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17
Target Analytes	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
2,3,7,8-TCDD	<2.7	<2.3	896	1080	1080	822
1,2,3,7,8-PeCDD	6.28	<1.1	1460	1940	1910	1380
1,2,3,4,7,8-HxCDD	25.3	<1.1	532	743	723	551
1,2,3,6,7,8-HxCDD	47.1	<0.90	578	834	782	646
1,2,3,7,8,9-HxCDD	26.1	<0.98	704	1190	1070	827
1,2,3,4,6,7,8-HpCDD	1740	1.98	2930	3460	3460	2830
OCDD	7690	<3.4	6090	5850	7380	5810
2,3,7,8-TCDF	<3.3	<3.0	5720	8640	9650	7280
1,2,3,7,8-PeCDF	4.73	<2.6	7070	8220	8720	6340
2,3,4,7,8-PeCDF	8.92	<1.3	5470	6190	6770	5060
1,2,3,4,7,8-HxCDF	<11	<1.2	5150	5950	6330	4680
1,2,3,6,7,8-HxCDF	<12	<1.1	5240	6370	6770	4910
2,3,4,6,7,8-HxCDF	25.7	<1.2	3420	3870	4210	3460
1,2,3,7,8,9-HxCDF	<3.0	1.87	857	1160	1260	965
1,2,3,4,6,7,8-HpCDF	228	<1.1	11800	12700	13000	10800
1,2,3,4,7,8,9-HpCDF	25.9	<0.88	1060	1210	1160	1010
OCDF	<290	<0.79	2560	2620	2490	2360
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	95	95	87	95	90	94
13C12-1,2,3,4,7,8-HxCDD	106	102	84	101	97	104
13C12-2,3,4,7,8-PeCDF	103	104	95	102	97	105
13C12-1,2,3,4,7,8-HxCDF	95	92	89	97	100	101
13C12-1,2,3,4,7,8,9-HpCDF	105	105	93	100	102	103
Extraction Standards						
13C12-2,3,7,8-TCDD	66	78	61	63	71	73
13C12-1,2,3,7,8-PeCDD	76	105	80	76	98	88
13C12-1,2,3,6,7,8-HxCDD	71	94	87	68	93	77
13C12-1,2,3,4,6,7,8-HpCDD	83	107	92	75	101	86
13C12-OCDD	88	112	99	75	104	85
13C12-2,3,7,8-TCDF	64	75	61	63	24	71
13C12-1,2,3,7,8-PeCDF	67	88	70	68	81	75
13C12-1,2,3,6,7,8-HxCDF	61	81	74	59	77	64
13C12-1,2,3,4,6,7,8-HpCDF	67	90	82	66	88	73
Cleanup Standard						
13C12-1,2,3,7,8,9-HxCDF	65	68	75	78	88	74
Homologue Group Totals	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
Total-TCDD	125	<2.3	11800	13700	8380	11100
Total-PeCDD	294	<1.1	10500	12100	12600	9980
Total-HxCDD	1050	<1.1	7380	9580	9670	8210
Total-HpCDD	4330	1.98	6140	7140	7100	5770
Total-TCDF	65.7	10.8	171000	185000	181000	158000
Total-PeCDF	77.1	<1.1	98500	109000	107000	86900
Total-HxCDF	101	2.87	43200	51700	55800	41100
Total-HpCDF	387	<0.88	17100	18500	18600	15500
Toxic Equivalency - (WHO 2005)						
Lower Bound PCDD/F TEQ (WHO 2005)	43.8	0.207	6590	8180	8540	6390
Mid Point PCDD/F TEQ (WHO 2005)	47.8	2.87	6590	8180	8540	6390
Upper Bound PCDD/F TEQ (WHO 2005)	49.5	5.04	6590	8180	8540	6390

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Sample Analysis summary Report

Sample Name	17-21754-SVOC-(136 THRU 140) TEST#2 #2 QUENCH INLET	17-21754-SVOC-(141 THRU 145) TEST#3 #2 QUENCH INLET
ALS Sample ID	L1932116-13	L1932116-14
Sample Size	1	1
Sample size units	Train	Train
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	25-May-17	26-May-17
Extraction Date	29-May-17	29-May-17
Target Analytes	**pg**	**pg**
2,3,7,8-TCDD	955	711
1,2,3,7,8-PeCDD	1840	1260
1,2,3,4,7,8-HxCDD	763	530
1,2,3,6,7,8-HxCDD	801	596
1,2,3,7,8,9-HxCDD	1140	710
1,2,3,4,6,7,8-HpCDD	3220	3180
OCDD	5350	6110
2,3,7,8-TCDF	7700	6580
1,2,3,7,8-PeCDF	6960	5510
2,3,4,7,8-PeCDF	5770	4820
1,2,3,4,7,8-HxCDF	5340	4530
1,2,3,6,7,8-HxCDF	5860	4600
2,3,4,6,7,8-HxCDF	3700	3530
1,2,3,7,8,9-HxCDF	1090	983
1,2,3,4,6,7,8-HpCDF	10700	11500
1,2,3,4,7,8,9-HpCDF	1030	1060
OCDF	2030	2470
Field Spike Standards	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	96	91
13C12-1,2,3,4,7,8-HxCDD	112	100
13C12-2,3,4,7,8-PeCDF	103	102
13C12-1,2,3,4,7,8-HxCDF	99	102
13C12-1,2,3,4,7,8,9-HpCDF	105	104
Extraction Standards		
13C12-2,3,7,8-TCDD	62	62
13C12-1,2,3,7,8-PeCDD	85	78
13C12-1,2,3,6,7,8-HxCDD	78	70
13C12-1,2,3,4,6,7,8-HpCDD	89	78
13C12-OCDD	89	76
13C12-2,3,7,8-TCDF	63	63
13C12-1,2,3,7,8-PeCDF	72	66
13C12-1,2,3,6,7,8-HxCDF	66	57
13C12-1,2,3,4,6,7,8-HpCDF	74	65
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	73	75
Homologue Group Totals	**pg**	**pg**
Total-TCDD	12700	10400
Total-PeCDD	12400	9180
Total-HxCDD	10500	7550
Total-HpCDD	6640	6450
Total-TCDF	153000	144000
Total-PeCDF	92000	76100
Total-HxCDF	47000	39900
Total-HpCDF	11700	12600
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	7530	5950
Mid Point PCDD/F TEQ (WHO 2005)	7530	5950
Upper Bound PCDD/F TEQ (WHO 2005)	7530	5950

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Quality Control Summary Report

Sample Name	Method Blank	Media Blank	Laboratory Control Sample
ALS Sample ID	WG2535724-1	WG2535724-4	WG2535724-2
Sample Size	1.00	1.00	1.00
Sample size units	Train	Train	n/a
Percent Moisture	n/a	n/a	n/a
Sample Matrix	Water	XAD	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	29-May-17	29-May-17	29-May-17
Target Analytes	**pg**	**pg**	**% Rec**
2,3,7,8-TCDD	<0.66	<1.1	102
1,2,3,7,8-PeCDD	<1.1	<0.82	103
1,2,3,4,7,8-HxCDD	<0.83	<0.85	103
1,2,3,6,7,8-HxCDD	<0.67	<0.69	113
1,2,3,7,8,9-HxCDD	<0.92	0.800	127
1,2,3,4,6,7,8-HpCDD	<3.0	3.00	99
OCDD	<9.1	11.9	97
2,3,7,8-TCDF	<1.1	<0.60	91
1,2,3,7,8-PeCDF	<1.7	<1.3	93
2,3,4,7,8-PeCDF	<0.70	<0.51	89
1,2,3,4,7,8-HxCDF	<0.56	0.900	90
1,2,3,6,7,8-HxCDF	<0.56	<0.54	109
2,3,4,6,7,8-HxCDF	<0.54	<0.61	104
1,2,3,7,8,9-HxCDF	<1.7	<3.1	111
1,2,3,4,6,7,8-HpCDF	0.850	1.14	95
1,2,3,4,7,8,9-HpCDF	<0.63	<0.90	98
OCDF	1.61	<1.3	86
Field Spike Standards	**% Rec**	**% Rec**	**% Rec**
37Cl4-2,3,7,8-TCDD	NS	NS	NS
13C12-1,2,3,4,7,8-HxCDD	NS	NS	NS
13C12-2,3,4,7,8-PeCDF	NS	NS	NS
13C12-1,2,3,4,7,8-HxCDF	NS	NS	NS
13C12-1,2,3,4,7,8,9-HpCDF	NS	NS	NS
Extraction Standards			
13C12-2,3,7,8-TCDD	70	63	79
13C12-1,2,3,7,8-PeCDD	85	81	91
13C12-1,2,3,6,7,8-HxCDD	88	68	85
13C12-1,2,3,4,6,7,8-HpCDD	106	80	99
13C12-OCDD	105	80	99
13C12-2,3,7,8-TCDF	67	68	80
13C12-1,2,3,7,8-PeCDF	69	66	80
13C12-1,2,3,6,7,8-HxCDF	71	51	79
13C12-1,2,3,4,6,7,8-HpCDF	85	61	83
Cleanup Standard			
13C12-1,2,3,7,8,9-HxCDF	71	68	72
Homologue Group Totals	**pg**	**pg**	
Total-TCDD	<0.66	<1.1	
Total-PeCDD	<1.1	<0.82	
Total-HxCDD	<0.83	1.35	
Total-HpCDD	<1.3	3.00	
Total-TCDF	2.36	<0.60	
Total-PeCDF	<0.71	<0.42	
Total-HxCDF	<0.66	0.900	
Total-HpCDF	0.850	1.14	
Toxic Equivalency - (WHO 2005)			
Lower Bound PCDD/F TEQ (WHO 2005)	0.00898	0.215	
Mid Point PCDD/F TEQ (WHO 2005)	1.64	1.85	
Upper Bound PCDD/F TEQ (WHO 2005)	2.76	2.98	

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET**	Sampling Date	25-May-17		Approved:
ALS Sample ID	L1932116-1	Extraction Date	29-May-17		*T.Patterson*
Analysis Method	EPA M23A	Sample Size	1	Train	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2017
Sample Matrix	Stack	Split Ratio	5		

Run Information	**Run 1**
Filename	7-170602A10
Run Date	02-Jun-17 16:33
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.78	2.35	2.1	M,J		50
1,2,3,7,8-PeCDD	1	31.98	7.16	1.2	M,J		250
1,2,3,4,7,8-HxCDD	0.1	34.04	12.5	3.1	J		250
1,2,3,6,7,8-HxCDD	0.1	34.09	31.9	2.5	J		250
1,2,3,7,8,9-HxCDD	0.1	34.22	21.3	2.7	J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	467	3.2			250
OCDD	0.0003	37.22	1240	3.9			500
2,3,7,8-TCDF	0.1	26.75	10.4	3.2	M,J		50
1,2,3,7,8-PeCDF	0.03	31.03	<3.6	1.5	M,J,R	3.6	250
2,3,4,7,8-PeCDF	0.3	31.75	12.4	1.5	M,J		250
1,2,3,4,7,8-HxCDF	0.1	33.54	<11	2.6	M,J,1.	11	250
1,2,3,6,7,8-HxCDF	0.1	33.61	<10	2.2	M,J,R	10	250
2,3,4,6,7,8-HxCDF	0.1	33.94	19.3	2.5	J		250
1,2,3,7,8,9-HxCDF	0.1	34.36	4.79	3.1	M,J		250
1,2,3,4,6,7,8-HpCDF	0.01	35.16	84.5	1.6	J		250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	14.0	2.2	M,J		250
OCDF	0.0003	37.30	<86	1.4	J,1.	86	500

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	800	27.77	94	70-130
13C12-1,2,3,4,7,8-HxCDD	8000	34.04	94	70-130
13C12-2,3,4,7,8-PeCDF	8000	31.74	101	70-130
13C12-1,2,3,4,7,8-HxCDF	8000	33.54	95	70-130
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.96	107	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.74	68	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.96	85	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	81	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	89	25-130
13C12-OCDD	20000	37.22	98	25-130
13C12-2,3,7,8-TCDF	10000	26.81	68	40-130
13C12-1,2,3,7,8-PeCDF	10000	31.00	75	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	67	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	75	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	71	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	6	191	2.1	50
Total-PeCDD	7	321	1.2	250
Total-HxCDD	5	611	3.1	250
Total-HpCDD	2	1110	3.2	250
Total-TCDF	7	107	3.2	50
Total-PeCDF	6	112	1.5	250
Total-HxCDF	7	111	3.1	250
Total-HpCDF	4	157	2.2	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	29.3
Mid Point PCDD/F TEQ (WHO 2005)	31.5
Upper Bound PCDD/F TEQ (WHO 2005)	31.5

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.
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

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-2	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A11
Run Date	02-Jun-17 17:15
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.71	<2.1	2.1	M,U	0.069	50
1,2,3,7,8-PeCDD	1	31.98	6.04	1.5	J		250
1,2,3,4,7,8-HxCDD	0.1	34.04	13.9	2.6	M,J		250
1,2,3,6,7,8-HxCDD	0.1	34.09	32.9	2.1	M,J		250
1,2,3,7,8,9-HxCDD	0.1	34.23	20.7	2.3	M,J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	451	5.1			250
OCDD	0.0003	37.23	1270	4.5			500
2,3,7,8-TCDF	0.1	26.84	<2.7	2.7	M,U	1.8	50
1,2,3,7,8-PeCDF	0.03	31.03	6.30	2.3	J		250
2,3,4,7,8-PeCDF	0.3	31.75	<11	2.3	M,J,R	11	250
1,2,3,4,7,8-HxCDF	0.1	33.54	<9.8	2.7	M,J,1.	9.8	250
1,2,3,6,7,8-HxCDF	0.1	33.62	<12	2.4	J,1.	12	250
2,3,4,6,7,8-HxCDF	0.1	33.94	19.5	2.6	M,J		250
1,2,3,7,8,9-HxCDF	0.1	34.37	7.91	3.2	M,J		250
1,2,3,4,6,7,8-HpCDF	0.01	35.16	78.7	0.92	J		250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	12.2	1.3	J		250
OCDF	0.0003	37.31	<86	1.1	J,1.	86	500

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	800	27.75	97	70-130
13C12-1,2,3,4,7,8-HxCDD	8000	34.04	104	70-130
13C12-2,3,4,7,8-PeCDF	8000	31.74	101	70-130
13C12-1,2,3,4,7,8-HxCDF	8000	33.54	98	70-130
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.96	111	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.74	86	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.96	103	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	88	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.72	99	25-130
13C12-OCDD	20000	37.22	103	25-130
13C12-2,3,7,8-TCDF	10000	26.81	82	40-130
13C12-1,2,3,7,8-PeCDF	10000	31.00	89	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.61	74	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	82	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	71	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	5	173	2.1	50
Total-PeCDD	7	300	1.5	250
Total-HxCDD	7	743	2.6	250
Total-HpCDD	2	1060	5.1	250
Total-TCDF	5	96.7	2.7	50
Total-PeCDF	6	78.3	2.3	250
Total-HxCDF	8	106	3.2	250
Total-HpCDF	4	147	1.3	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	21.5
Mid Point PCDD/F TEQ (WHO 2005)	28.2
Upper Bound PCDD/F TEQ (WHO 2005)	29.4

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.
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

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET**	Sampling Date	26-May-17		
ALS Sample ID	L1932116-3	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A12
Run Date	02-Jun-17 17:57
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.77	<2.9	2.9	M,U	1.6	50
1,2,3,7,8-PeCDD	1	31.97	6.73	1.7	J		250
1,2,3,4,7,8-HxCDD	0.1	34.04	<16	2.5	M,J,R	16	250
1,2,3,6,7,8-HxCDD	0.1	34.09	36.5	2.0	M,J		250
1,2,3,7,8,9-HxCDD	0.1	34.22	22.1	2.2	M,J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.71	529	5.7			250
OCDD	0.0003	37.22	1370	4.0			500
2,3,7,8-TCDF	0.1	26.83	<3.1	3.1	M,U	2.1	50
1,2,3,7,8-PeCDF	0.03	31.02	6.51	2.9	M,J		250
2,3,4,7,8-PeCDF	0.3	31.74	15.1	2.9	M,J		250
1,2,3,4,7,8-HxCDF	0.1	33.54	<13	2.7	M,J,1.	13	250
1,2,3,6,7,8-HxCDF	0.1	33.61	<14	2.3	M,J,1.	14	250
2,3,4,6,7,8-HxCDF	0.1	33.94	23.0	2.6	J		250
1,2,3,7,8,9-HxCDF	0.1	34.37	<9.1	3.1	M,J,R	9.1	250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	92.4	1.2	J		250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	15.1	1.6	M,J		250
OCDF	0.0003	37.30	<89	1.3	J,1.	89	500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.75	94	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	104	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.73	107	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	97	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	107	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.72	71	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.95	91	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	83	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	94	25-130			
13C12-OCDD	20000	37.21	101	25-130			
13C12-2,3,7,8-TCDF	10000	26.81	67	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.00	74	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	69	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	78	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	68	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	6	192	2.9	50
Total-PeCDD	8	331	1.7	250
Total-HxCDD	5	698	2.5	250
Total-HpCDD	2	1240	5.7	250
Total-TCDF	7	109	3.1	50
Total-PeCDF	8	136	2.9	250
Total-HxCDF	4	73.9	3.1	250
Total-HpCDF	3	143	1.6	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	26.4
Mid Point PCDD/F TEQ (WHO 2005)	33.2
Upper Bound PCDD/F TEQ (WHO 2D05)	34.8

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	**17-21754-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	25-May-17		Approved:
ALS Sample ID	L1932116-4	Extraction Date	29-May-17		*T.Patterson*
Analysis Method	EPA M23A	Sample Size	1	Train	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2017
Sample Matrix	Stack	Split Ratio	5		

Run Information	**Run 1**
Filename	7-170602A08
Run Date	02-Jun-17 15:10
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.9	1.9	U		50
1,2,3,7,8-PeCDD	1	NotFnd	<1.2	1.2	U		250
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.2	1.2	U		250
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.95	0.95	U		250
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<1.0	1.0	U		250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	2.06	1.2	M,J		250
OCDD	0.0003	37.24	<2.6	1.0	M,J,R	2.6	500
2,3,7,8-TCDF	0.1	NotFnd	<1.9	1.9	U		50
1,2,3,7,8-PeCDF	0.03	31.03	<1.3	1.2	M,J,R	1.3	250
2,3,4,7,8-PeCDF	0.3	NotFnd	<1.2	1.2	U		250
1,2,3,4,7,8-HxCDF	0.1	NotFnd	<0.90	0.90	U		250
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.77	0.77	U		250
2,3,4,6,7,8-HxCDF	0.1	33.93	<0.87	0.87	M,U		250
1,2,3,7,8,9-HxCDF	0.1	34.36	1.41	1.1	M,J		250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	<0.52	0.40	M,J,R	0.52	250
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.54	0.54	U		250
OCDF	0.0003	37.32	1.38	1.0	M,J,B		500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.77	96	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.04	101	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.74	104	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.54	91	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.96	106	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.74	71	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.96	90	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	81	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.72	88	25-130			
13C12-OCDD	20000	37.22	99	25-130			
13C12-2,3,7,8-TCDF	10000	26.81	75	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.02	77	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.61	70	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	75	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.36	75	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<1.9	1.9	U	50
Total-PeCDD	0	<1.2	1.2	U	250
Total-HxCDD	0	<1.2	1.2	U	250
Total-HpCDD	1	2.06	1.2		250
Total-TCDF	0	<1.9	1.9	U	50
Total-PeCDF	0	<1.2	1.2	U	250
Total-HxCDF	2	2.02	1.1		250
Total-HpCDF	0	<0.54	0.54	U	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.162
Mid Point PCDD/F TEQ (WHO 2005)	2.32
Upper Bound PCDD/F TEQ (WHO 2005)	4.43

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	**17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-5	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170604A07
Run Date	04-Jun-17 16:08
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.0	1.0	U		50
1,2,3,7,8-PeCDD	1	31.98	5.09	0.95	J		250
1,2,3,4,7,8-HxCDD	0.1	34.05	17.0	2.1	J		250
1,2,3,6,7,8-HxCDD	0.1	34.10	38.0	1.7	J		250
1,2,3,7,8,9-HxCDD	0.1	34.23	24.4	1.9	J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.73	1480	4.1			250
OCDD	0.0003	37.23	6120	5.1			500
2,3,7,8-TCDF	0.1	26.86	3.58	2.0	J		50
1,2,3,7,8-PeCDF	0.03	31.03	<5.5	0.79	M,J,R	5.5	250
2,3,4,7,8-PeCDF	0.3	31.75	9.53	0.79	M,J		250
1,2,3,4,7,8-HxCDF	0.1	33.55	<13	2.2	J,1.	13	250
1,2,3,6,7,8-HxCDF	0.1	33.62	<13	1.9	M,J,R,1.	13	250
2,3,4,6,7,8-HxCDF	0.1	33.94	<25	2.1	M,J,1.	25	250
1,2,3,7,8,9-HxCDF	0.1	34.38	10.9	2.6	J		250
1,2,3,4,6,7,8-HpCDF	0.01	35.17	192	0.86	J		250
1,2,3,4,7,8,9-HpCDF	0.01	35.97	<24	1.2	M,J,R	24	250
OCDF	0.0003	37.31	<220	1.6	J,1.	220	500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.77	94	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.04	95	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.74	101	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.54	102	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.96	107	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.74	80	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.96	95	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	85	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.72	89	25-130			
13C12-OCDD	20000	37.23	97	25-130			
13C12-2,3,7,8-TCDF	10000	26.81	75	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.02	80	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.62	58	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.16	66	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.36	66	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	7	164	1.0	50
Total-PeCDD	8	270	0.95	250
Total-HxCDD	7	832	2.1	250
Total-HpCDD	2	3660	4.1	250
Total-TCDF	8	62.8	2.0	50
Total-PeCDF	7	74.6	0.79	250
Total-HxCDF	6	99.8	2.6	250
Total-HpCDF	3	304	1.2	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	35.9
Mid Point PCDD/F TEQ (WHO 2005)	42.0
Upper Bound PCDD/F TEQ (WHO 2005)	42.5

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

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-6	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A14
Run Date	02-Jun-17 19:21
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.7	2.7	U		50
1,2,3,7,8-PeCDD	1	31.98	4.39	1.4	J		250
1,2,3,4,7,8-HxCDD	0.1	34.05	20.8	3.7	M,J		250
1,2,3,6,7,8-HxCDD	0.1	34.10	36.6	3.0	J		250
1,2,3,7,8,9-HxCDD	0.1	34.22	22.0	3.3	M,J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	1390	6.2			250
OCDD	0.0003	37.23	5680	5.8			500
2,3,7,8-TCDF	0.1	26.77	4.00	3.0	M,J		50
1,2,3,7,8-PeCDF	0.03	31.03	4.70	2.0	J		250
2,3,4,7,8-PeCDF	0.3	31.74	7.54	2.0	M,J		250
1,2,3,4,7,8-HxCDF	0.1	33.55	<8.2	2.5	M,J,R	8.2	250
1,2,3,6,7,8-HxCDF	0.1	33.62	<8.8	2.2	M,J,1.	8.8	250
2,3,4,6,7,8-HxCDF	0.1	33.94	19.2	2.4	M,J		250
1,2,3,7,8,9-HxCDF	0.1	34.38	8.91	2.9	M,J		250
1,2,3,4,6,7,8-HpCDF	0.01	35.16	168	1.5	J		250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	23.0	2.0	J		250
OCDF	0.0003	37.31	<210	1.8	J,1.	210	500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.77	95	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.04	104	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.74	108	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.54	95	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.96	113	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.74	66	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.96	86	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	79	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.72	91	25-130			
13C12-OCDD	20000	37.22	99	25-130			
13C12-2,3,7,8-TCDF	10000	26.81	61	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.02	71	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.61	68	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.16	74	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.36	65	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	2	94.3	2.7	50
Total-PeCDD	7	237	1.4	250
Total-HxCDD	8	852	3.7	250
Total-HpCDD	2	3360	6.2	250
Total-TCDF	1	4.00	3.0	50
Total-PeCDF	7	42.6	2.0	250
Total-HxCDF	6	100	2.9	250
Total-HpCDF	4	295	2.0	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	35.5
Mid Point PCDD/F TEQ (WHO 2005)	38.6
Upper Bound PCDD/F TEQ (WHO 2005)	39.9

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.
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	**17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET**	Sampling Date	26-May-17		
ALS Sample ID	L1932116-7	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A15
Run Date	02-Jun-17 20:03
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.74	<2.7	2.7	M,U	1.5	50
1,2,3,7,8-PeCDD	1	31.96	6.28	2.3	J		250
1,2,3,4,7,8-HxCDD	0.1	34.04	25.3	4.3	J		250
1,2,3,6,7,8-HxCDD	0.1	34.09	47.1	3.4	J		250
1,2,3,7,8,9-HxCDD	0.1	34.22	26.1	3.7	J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	1740	9.3			250
OCDD	0.0003	37.22	7690	9.5			500
2,3,7,8-TCDF	0.1	26.81	<3.3	3.3	M,U	2.3	50
1,2,3,7,8-PeCDF	0.03	31.02	4.73	1.8	J		250
2,3,4,7,8-PeCDF	0.3	31.74	8.92	1.8	M,J		250
1,2,3,4,7,8-HxCDF	0.1	33.53	<11	2.5	M,J,1.	11	250
1,2,3,6,7,8-HxCDF	0.1	33.61	<12	2.2	M,J,R	12	250
2,3,4,6,7,8-HxCDF	0.1	33.94	25.7	2.5	J		250
1,2,3,7,8,9-HxCDF	0.1	34.35	<3.0	3.0	M,U	2.6	250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	228	1.9	J		250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	25.9	2.6	J		250
OCDF	0.0003	37.30	<290	2.6	J,1.	290	500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.75	95	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	106	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.74	103	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	95	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	105	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.74	66	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.95	76	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	71	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	83	25-130			
13C12-OCDD	20000	37.21	88	25-130			
13C12-2,3,7,8-TCDF	10000	26.81	64	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.00	67	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	61	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	67	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	65	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	3	125	2.7	50
Total-PeCDD	6	294	2.3	250
Total-HxCDD	7	1050	4.3	250
Total-HpCDD	2	4330	9.3	250
Total-TCDF	6	65.7	3.3	50
Total-PeCDF	8	77.1	1.8	250
Total-HxCDF	5	101	3.0	250
Total-HpCDF	4	387	2.6	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	43.8
Mid Point PCDD/F TEQ (WHO 2005)	47.8
Upper Bound PCDD/F TEQ (WHO 2005)	49.5

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	**17-21754-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	26-May-17		
ALS Sample ID	L1932116-8	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A09
Run Date	02-Jun-17 15:52
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<2.3	2.3	U		50
1,2,3,7,8-PeCDD	1	NotFnd	<1.1	1.1	U		250
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<1.1	1.1	U		250
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.90	0.90	U		250
1,2,3,7,8,9-HxCDD	0.1	NotFnd	<0.98	0.98	U		250
1,2,3,4,6,7,8-HpCDD	0.01	35.71	1.98	1.1	M,J		250
OCDD	0.0003	37.23	<3.4	0.79	J,R	3.4	500
2,3,7,8-TCDF	0.1	NotFnd	<3.0	3.0	U		50
1,2,3,7,8-PeCDF	0.03	31.00	<2.6	1.1	M,J,R	2.6	250
2,3,4,7,8-PeCDF	0.3	31.74	<1.3	1.1	M,J,R	1.3	250
1,2,3,4,7,8-HxCDF	0.1	33.53	<1.2	1.2	M,U		250
1,2,3,6,7,8-HxCDF	0.1	33.61	<1.1	1.1	M,U	0.96	250
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<1.2	1.2	U		250
1,2,3,7,8,9-HxCDF	0.1	34.36	1.87	1.4	M,J		250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	<1.1	0.65	M,J,R	1.1	250
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.88	0.88	U		250
OCDF	0.0003	NotFnd	<0.79	0.79	U		500

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	800	27.75	95	70-130
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	102	70-130
13C12-2,3,4,7,8-PeCDF	8000	31.73	104	70-130
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	92	70-130
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	105	70-130
Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.74	78	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.95	105	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	94	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	107	25-130
13C12-OCDD	20000	37.21	112	25-130
13C12-2,3,7,8-TCDF	10000	26.81	75	40-130
13C12-1,2,3,7,8-PeCDF	10000	31.00	88	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	81	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	90	25-130
Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	68	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	0	<2.3	2.3	U	50
Total-PeCDD	0	<1.1	1.1	U	250
Total-HxCDD	0	<1.1	1.1	U	250
Total-HpCDD	1	1.98	1.1		250
Total-TCDF	2	10.8	3.0		50
Total-PeCDF	0	<1.1	1.1	U	250
Total-HxCDF	2	2.87	1.4		250
Total-HpCDF	0	<0.88	0.88	U	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.207
Mid Point PCDD/F TEQ (WHO 2005)	2.87
Upper Bound PCDD/F TEQ (WHO 2005)	5.04

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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Sample Analysis Report

Sample Name	**17-21754-SVOC-(101 THRU 105) TEST#1 #1 QUENCH INLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-9	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A20
Run Date	02-Jun-17 23:41
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.78	896	6.8			50
1,2,3,7,8-PeCDD	1	31.97	1460	6.7			250
1,2,3,4,7,8-HxCDD	0.1	34.04	532	16			250
1,2,3,6,7,8-HxCDD	0.1	34.09	578	13			250
1,2,3,7,8,9-HxCDD	0.1	34.22	704	14			250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	2930	16			250
OCDD	0.0003	37.23	6090	18			500
2,3,7,8-TCDF	0.1	26.86	5720	13			50
1,2,3,7,8-PeCDF	0.03	31.03	7070	10			250
2,3,4,7,8-PeCDF	0.3	31.75	5470	10			250
1,2,3,4,7,8-HxCDF	0.1	33.54	5150	23			250
1,2,3,6,7,8-HxCDF	0.1	33.62	5240	20			250
2,3,4,6,7,8-HxCDF	0.1	33.94	3420	23			250
1,2,3,7,8,9-HxCDF	0.1	34.38	857	28			250
1,2,3,4,6,7,8-HpCDF	0.01	35.16	11800	11			250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	1060	15			250
OCDF	0.0003	37.31	2560	11			500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.78	87	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.04	84	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.74	95	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.54	89	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.96	93	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.77	61	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.96	80	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	87	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.72	92	25-130			
13C12-OCDD	20000	37.23	99	25-130			
13C12-2,3,7,8-TCDF	10000	26.84	61	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.02	70	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.61	74	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	82	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	75	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	16	11800	6.8	50
Total-PeCDD	10	10500	6.7	250
Total-HxCDD	7	7380	16	250
Total-HpCDD	2	6140	16	250
Total-TCDF	24	171000	13	50
Total-PeCDF	17	98500	10	250
Total-HxCDF	12	43200	28	250
Total-HpCDF	4	17100	15	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	6590
Mid Point PCDD/F TEQ (WHO 2005)	6590
Upper Bound PCDD/F TEQ (WHO 2005)	6590

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.
EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(106 THRU 110) TEST#2 #1 QUENCH INLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-10	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A21
Run Date	03-Jun-17 00:23
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 D85MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.75	1080	4.5			50
1,2,3,7,8-PeCDD	1	31.96	1940	2.8			250
1,2,3,4,7,8-HxCDD	0.1	34.03	743	7.6			250
1,2,3,6,7,8-HxCDD	0.1	34.08	834	6.1			250
1,2,3,7,8,9-HxCDD	0.1	34.21	1190	6.6			250
1,2,3,4,6,7,8-HpCDD	0.01	35.71	3460	9.4			250
OCDD	0.0003	37.22	5850	7.7			500
2,3,7,8-TCDF	0.1	26.83	8640	7.4			50
1,2,3,7,8-PeCDF	0.03	31.02	8220	7.1			250
2,3,4,7,8-PeCDF	0.3	31.74	6190	7.1			250
1,2,3,4,7,8-HxCDF	0.1	33.54	5950	12			250
1,2,3,6,7,8-HxCDF	0.1	33.60	6370	10			250
2,3,4,6,7,8-HxCDF	0.1	33.93	3870	11			250
1,2,3,7,8,9-HxCDF	0.1	34.37	1160	14			250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	12700	8.0			250
1,2,3,4,7,8,9-HpCDF	0.01	35.95	1210	11			250
OCDF	0.0003	37.30	2620	3.8			500

Field Spike Standards	**pg**		**% Rec**	**Limits**
37Cl4-2,3,7,8-TCDD	800	27.75	95	70-130
13C12-1,2,3,4,7,8-HxCDD	8000	34.02	101	70-130
13C12-2,3,4,7,8-PeCDF	8000	31.73	102	70-130
13C12-1,2,3,4,7,8-HxCDF	8000	33.52	97	70-130
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	100	70-130

Extraction Standards				
13C12-2,3,7,8-TCDD	10000	27.72	63	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.95	76	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	34.07	68	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	75	25-130
13C12-OCDD	20000	37.21	75	25-130
13C12-2,3,7,8-TCDF	10000	26.80	63	40-130
13C12-1,2,3,7,8-PeCDF	10000	31.00	68	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	59	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.14	66	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	78	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	
Total-TCDD	16	13700	4.5	50
Total-PeCDD	7	12100	2.8	250
Total-HxCDD	6	9580	7.6	250
Total-HpCDD	2	7140	9.4	250
Total-TCDF	22	185000	7.4	50
Total-PeCDF	18	109000	7.1	250
Total-HxCDF	13	51700	14	250
Total-HpCDF	4	18500	11	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	8180
Mid Point PCDD/F TEQ (WHO 2005)	8180
Upper Bound PCDD/F TEQ (WHO 2005)	8180

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.
EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(111 THRU 115) TEST#3 #1 QUENCH INLET**	Sampling Date	26-May-17		
ALS Sample ID	L1932116-11	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A22
Run Date	03-Jun-17 01:04
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.75	1080	3.0			50
1,2,3,7,8-PeCDD	1	31.96	1910	2.1			250
1,2,3,4,7,8-HxCDD	0.1	34.04	723	6.0			250
1,2,3,6,7,8-HxCDD	0.1	34.09	782	4.9			250
1,2,3,7,8,9-HxCDD	0.1	34.22	1070	5.3			250
1,2,3,4,6,7,8-HpCDD	0.01	35.71	3460	7.0			250
OCDD	0.0003	37.22	7380	6.4			500
2,3,7,8-TCDF	0.1	26.83	9650	17			50
1,2,3,7,8-PeCDF	0.03	31.02	8720	7.0			250
2,3,4,7,8-PeCDF	0.3	31.74	6770	7.0			250
1,2,3,4,7,8-HxCDF	0.1	33.54	6330	9.7			250
1,2,3,6,7,8-HxCDF	0.1	33.61	6770	8.4			250
2,3,4,6,7,8-HxCDF	0.1	33.94	4210	9.4			250
1,2,3,7,8,9-HxCDF	0.1	34.37	1260	11			250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	13000	5.3			250
1,2,3,4,7,8,9-HpCDF	0.01	35.95	1160	7.2			250
OCDF	0.0003	37.30	2490	3.6			500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.75	90	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	97	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.73	97	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	100	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	102	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.72	71	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.95	98	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	93	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	101	25-130			
13C12-OCDD	20000	37.21	104	25-130			
13C12-2,3,7,8-TCDF	10000	26.80	24	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.00	81	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	77	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.14	88	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	88	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	14	8380	3.0	50
Total-PeCDD	10	12600	2.1	250
Total-HxCDD	7	9670	6.0	250
Total-HpCDD	2	7100	7.0	250
Total-TCDF	22	181000	17	50
Total-PeCDF	14	107000	7.0	250
Total-HxCDF	13	55800	11	250
Total-HpCDF	4	18600	7.2	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	8540
Mid Point PCDD/F TEQ (WHO 2005)	8540
Upper Bound PCDD/F TEQ (WHO 2005)	8540

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.
EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(131 THRU 135) TEST#1 #2 QUENCH INLET**	Sampling Date	25-May-17		Approved:
ALS Sample ID	L1932116-12	Extraction Date	29-May-17		*T.Patterson*
Analysis Method	EPA M23A	Sample Size	1	Train	--e-signature--
Analysis Type	Sample	Percent Moisture	n/a		05-Jun-2017
Sample Matrix	Stack	Split Ratio	5		

Run Information	**Run 1**
Filename	7-170602A23
Run Date	03-Jun-17 01:46
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.75	822	2.8			50
1,2,3,7,8-PeCDD	1	31.97	1380	3.7			250
1,2,3,4,7,8-HxCDD	0.1	34.04	551	7.0			250
1,2,3,6,7,8-HxCDD	0.1	34.09	646	5.7			250
1,2,3,7,8,9-HxCDD	0.1	34.22	827	6.1			250
1,2,3,4,6,7,8-HpCDD	0.01	35.72	2830	6.8			250
OCDD	0.0003	37.22	5810	5.9			500
2,3,7,8-TCDF	0.1	26.83	7280	8.7			50
1,2,3,7,8-PeCDF	0.03	31.02	6340	7.4			250
2,3,4,7,8-PeCDF	0.3	31.74	5060	7.3			250
1,2,3,4,7,8-HxCDF	0.1	33.54	4680	14			250
1,2,3,6,7,8-HxCDF	0.1	33.62	4910	12			250
2,3,4,6,7,8-HxCDF	0.1	33.94	3460	13			250
1,2,3,7,8,9-HxCDF	0.1	34.38	965	16			250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	10800	5.7			250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	1010	7.8			250
OCDF	0.0003	37.30	2360	2.8			500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.75	94	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	104	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.73	105	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	101	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	103	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.72	73	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.96	88	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	77	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	86	25-130			
13C12-OCDD	20000	37.22	85	25-130			
13C12-2,3,7,8-TCDF	10000	26.81	71	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.00	75	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	64	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	73	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	74	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**	**LQL**
Total-TCDD	16	11100	2.8	50
Total-PeCDD	9	9980	3.7	250
Total-HxCDD	9	8210	7.0	250
Total-HpCDD	2	5770	6.8	250
Total-TCDF	22	158000	8.7	50
Total-PeCDF	16	86900	7.4	250
Total-HxCDF	13	41100	16	250
Total-HpCDF	4	15500	7.8	250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	6390
Mid Point PCDD/F TEQ (WHO 2005)	6390
Upper Bound PCDD/F TEQ (WHO 2005)	6390

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.
EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(136 THRU 140) TEST#2 #2 QUENCH INLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-13	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A24
Run Date	03-Jun-17 02:28
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.75	955	3.6			50
1,2,3,7,8-PeCDD	1	31.96	1840	2.6			250
1,2,3,4,7,8-HxCDD	0.1	34.04	763	4.7			250
1,2,3,6,7,8-HxCDD	0.1	34.09	801	3.8			250
1,2,3,7,8,9-HxCDD	0.1	34.22	1140	4.1			250
1,2,3,4,6,7,8-HpCDD	0.01	35.71	3220	7.9			250
OCDD	0.0003	37.22	5350	6.5			500
2,3,7,8-TCDF	0.1	26.81	7700	7.6			50
1,2,3,7,8-PeCDF	0.03	31.02	6960	13			250
2,3,4,7,8-PeCDF	0.3	31.74	5770	13			250
1,2,3,4,7,8-HxCDF	0.1	33.54	5340	10			250
1,2,3,6,7,8-HxCDF	0.1	33.61	5860	8.9			250
2,3,4,6,7,8-HxCDF	0.1	33.94	3700	10			250
1,2,3,7,8,9-HxCDF	0.1	34.37	1090	12			250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	10700	4.4			250
1,2,3,4,7,8,9-HpCDF	0.01	35.96	1030	6.0			250
OCDF	0.0003	37.30	2030	4.4			500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.75	96	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	112	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.73	103	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	99	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	105	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.72	62	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.95	85	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	78	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	89	25-130			
13C12-OCDD	20000	37.21	89	25-130			
13C12-2,3,7,8-TCDF	10000	26.80	63	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.00	72	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	66	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	74	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	73	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	16	12700	3.6		50
Total-PeCDD	10	12400	2.6		250
Total-HxCDD	8	10500	4.7		250
Total-HpCDD	2	6640	7.9		250
Total-TCDF	20	153000	7.6		50
Total-PeCDF	15	92000	13		250
Total-HxCDF	13	47000	12		250
Total-HpCDF	2	11700	6.0		250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	7530
Mid Point PCDD/F TEQ (WHO 2005)	7530
Upper Bound PCDD/F TEQ (WHO 2005)	7530

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.
EMPC Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(141 THRU 145) TEST#3 #2 QUENCH INLET**	Sampling Date	26-May-17		
ALS Sample ID	L1932116-14	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A25
Run Date	03-Jun-17 03:10
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	27.75	711	3.3			50
1,2,3,7,8-PeCDD	1	31.96	1260	2.3			250
1,2,3,4,7,8-HxCDD	0.1	34.04	530	5.7			250
1,2,3,6,7,8-HxCDD	0.1	34.09	596	4.6			250
1,2,3,7,8,9-HxCDD	0.1	34.22	710	5.0			250
1,2,3,4,6,7,8-HpCDD	0.01	35.71	3180	5.1			250
OCDD	0.0003	37.22	6110	6.5			500
2,3,7,8-TCDF	0.1	26.81	6580	5.1			50
1,2,3,7,8-PeCDF	0.03	31.02	5510	4.7			250
2,3,4,7,8-PeCDF	0.3	31.74	4820	4.7			250
1,2,3,4,7,8-HxCDF	0.1	33.54	4530	10			250
1,2,3,6,7,8-HxCDF	0.1	33.61	4600	8.6			250
2,3,4,6,7,8-HxCDF	0.1	33.93	3530	9.7			250
1,2,3,7,8,9-HxCDF	0.1	34.37	983	12			250
1,2,3,4,6,7,8-HpCDF	0.01	35.15	11500	5.9			250
1,2,3,4,7,8,9-HpCDF	0.01	35.95	1060	8.0			250
OCDF	0.0003	37.30	2470	3.9			500
Field Spike Standards	**pg**		**% Rec**	**Limits**			
37Cl4-2,3,7,8-TCDD	800	27.75	91	70-130			
13C12-1,2,3,4,7,8-HxCDD	8000	34.03	100	70-130			
13C12-2,3,4,7,8-PeCDF	8000	31.73	102	70-130			
13C12-1,2,3,4,7,8-HxCDF	8000	33.53	102	70-130			
13C12-1,2,3,4,7,8,9-HpCDF	8000	35.95	104	70-130			
Extraction Standards							
13C12-2,3,7,8-TCDD	10000	27.72	62	40-130			
13C12-1,2,3,7,8-PeCDD	10000	31.95	78	40-130			
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	70	40-130			
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	78	25-130			
13C12-OCDD	20000	37.21	76	25-130			
13C12-2,3,7,8-TCDF	10000	26.80	63	40-130			
13C12-1,2,3,7,8-PeCDF	10000	31.00	66	40-130			
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	57	40-130			
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.14	65	25-130			
Cleanup Standard	**pg**						
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	75	40-130			

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		
Total-TCDD	16	10400	3.3		50
Total-PeCDD	10	9180	2.3		250
Total-HxCDD	8	7550	5.7		250
Total-HpCDD	2	6450	5.1		250
Total-TCDF	23	144000	5.1		50
Total-PeCDF	16	76100	4.7		250
Total-HxCDF	13	39900	12		250
Total-HpCDF	2	12600	8.0		250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	5950
Mid Point PCDD/F TEQ (WHO 2005)	5950
Upper Bound PCDD/F TEQ (WHO 2005)	5950

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.
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	WG2535724-1	Extraction Date	29-May-17		*T.Patterson*
Analysis Method	EPA M23A	Sample Size	1	Train	--e-signature--
Analysis Type	Blank	Percent Moisture	n/a		05-Jun-2017
Sample Matrix	Water	Split Ratio	5		

Run Information	**Run 1**
Filename	7-170604A05
Run Date	04-Jun-17 14:44
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<0.66	0.66	U		50
1,2,3,7,8-PeCDD	1	31.97	<1.1	1.1	M,U	0.92	250
1,2,3,4,7,8-HxCDD	0.1	34.05	<0.83	0.83	M,U	0.59	250
1,2,3,6,7,8-HxCDD	0.1	NotFnd	<0.67	0.67	U		250
1,2,3,7,8,9-HxCDD	0.1	34.24	<0.92	0.72	M,J,R	0.92	250
1,2,3,4,6,7,8-HpCDD	0.01	35.73	<3.0	1.3	M,J,R	3.0	250
OCDD	0.0003	37.24	<9.1	0.80	M,J,R	9.1	500
2,3,7,8-TCDF	0.1	26.84	<1.1	0.79	M,J,R	1.1	50
1,2,3,7,8-PeCDF	0.03	31.04	<1.7	0.71	M,J,R	1.7	250
2,3,4,7,8-PeCDF	0.3	31.77	<0.70	0.70	M,U	0.63	250
1,2,3,4,7,8-HxCDF	0.1	33.57	<0.56	0.56	M,U	0.50	250
1,2,3,6,7,8-HxCDF	0.1	33.63	<0.56	0.48	M,J,R	0.56	250
2,3,4,6,7,8-HxCDF	0.1	NotFnd	<0.54	0.54	U		250
1,2,3,7,8,9-HxCDF	0.1	34.37	<1.7	0.66	M,J,R	1.7	250
1,2,3,4,6,7,8-HpCDF	0.01	35.16	0.850	0.47	M,J		250
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.63	0.63	U		250
OCDF	0.0003	37.32	1.61	0.42	J		500

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	10000	27.75	70	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.97	85	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	88	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.73	106	25-130
13C12-OCDD	20000	37.24	105	25-130
13C12-2,3,7,8-TCDF	10000	26.83	67	40-130
13C12-1,2,3,7,8-PeCDF	10000	31.02	69	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.62	71	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.17	85	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.36	71	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<0.66	0.66	U	50
Total-PeCDD	0	<1.1	1.1	U	250
Total-HxCDD	0	<0.83	0.83	U	250
Total-HpCDD	0	<1.3	1.3	U	250
Total-TCDF	1	2.36	0.79		50
Total-PeCDF	0	<0.71	0.71	U	250
Total-HxCDF	0	<0.66	0.66	U	250
Total-HpCDF	1	0.850	0.63		250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.00898
Mid Point PCDD/F TEQ (WHO 2005)	1.64
Upper Bound PCDD/F TEQ (WHO 2005)	2.76

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 the sample was not spiked with this standard

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a		
ALS Sample ID	WG2535724-4	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	Train	*T.Patterson*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	XAD	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170604A06
Run Date	04-Jun-17 15:26
Final Volume	20 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**EMPC pg**	**LQL**
2,3,7,8-TCDD	1	NotFnd	<1.1	1.1	U		50
1,2,3,7,8-PeCDD	1	NotFnd	<0.82	0.82	U		250
1,2,3,4,7,8-HxCDD	0.1	NotFnd	<0.85	0.85	U		250
1,2,3,6,7,8-HxCDD	0.1	34.11	<0.69	0.69	M,U		250
1,2,3,7,8,9-HxCDD	0.1	34.22	0.800	0.75	M,J		250
1,2,3,4,6,7,8-HpCDD	0.01	35.73	3.00	0.71	M,J		250
OCDD	0.0003	37.24	11.9	1.0	M,J		500
2,3,7,8-TCDF	0.1	NotFnd	<0.60	0.60	U		50
1,2,3,7,8-PeCDF	0.03	31.02	<1.3	0.42	M,J,R	1.3	250
2,3,4,7,8-PeCDF	0.3	31.75	<0.51	0.42	M,J,R	0.51	250
1,2,3,4,7,8-HxCDF	0.1	33.54	0.900	0.63	M,J		250
1,2,3,6,7,8-HxCDF	0.1	NotFnd	<0.54	0.54	U		250
2,3,4,6,7,8-HxCDF	0.1	33.94	<0.61	0.61	M,U	0.49	250
1,2,3,7,8,9-HxCDF	0.1	34.36	<3.1	0.75	M,J,R	3.1	250
1,2,3,4,6,7,8-HpCDF	0.01	35.16	1.14	0.67	M,J,B		250
1,2,3,4,7,8,9-HpCDF	0.01	NotFnd	<0.90	0.90	U		250
OCDF	0.0003	37.31	<1.3	0.54	M,J,R	1.3	500

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	10000	27.74	63	40-130
13C12-1,2,3,7,8-PeCDD	10000	31.96	81	40-130
13C12-1,2,3,6,7,8-HxCDD	10000	34.09	68	40-130
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.72	80	25-130
13C12-OCDD	20000	37.23	80	25-130
13C12-2,3,7,8-TCDF	10000	26.81	68	40-130
13C12-1,2,3,7,8-PeCDF	10000	31.00	66	40-130
13C12-1,2,3,6,7,8-HxCDF	10000	33.61	51	40-130
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.16	61	25-130

Cleanup Standard	**pg**			
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	68	40-130

Homologue Group Totals	**# peaks**	**Conc. pg**	**EDL pg**		**LQL**
Total-TCDD	0	<1.1	1.1	U	50
Total-PeCDD	0	<0.82	0.82	U	250
Total-HxCDD	2	1.35	0.85		250
Total-HpCDD	1	3.00	0.71		250
Total-TCDF	0	<0.60	0.60	U	50
Total-PeCDF	0	<0.42	0.42	U	250
Total-HxCDF	1	0.900	0.75		250
Total-HpCDF	1	1.14	0.90		250

Toxic Equivalency - (WHO 2005)	**pg**
Lower Bound PCDD/F TEQ (WHO 2005)	0.215
Mid Point PCDD/F TEQ (WHO 2005)	1.85
Upper Bound PCDD/F TEQ (WHO 2005)	2.98

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
NS	Indicates that the sample was not spiked with this standard

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Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a		
ALS Sample ID	WG2535724-2	Extraction Date	29-May-17		Approved:
Analysis Method	EPA M23A	Sample Size	1	n/a	*T.Patterson*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	QC	Split Ratio	5		05-Jun-2017

Run Information	**Run 1**
Filename	7-170602A02
Run Date	02-Jun-17 10:59
Final Volume	20 uL
Dilution Factor	1
Analysis Units	%
Instrument - Column	HRMS-7 DB5MSUSP222023H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
2,3,7,8-TCDD	1000	27.77	102	70-130	
1,2,3,7,8-PeCDD	5000	31.97	103	70-130	
1,2,3,4,7,8-HxCDD	5000	34.04	103	70-130	
1,2,3,6,7,8-HxCDD	5000	34.09	113	70-130	
1,2,3,7,8,9-HxCDD	5000	34.22	127	70-130	
1,2,3,4,6,7,8-HpCDD	5000	35.71	99	70-130	
OCDD	10000	37.22	97	70-130	
2,3,7,8-TCDF	1000	26.83	91	70-130	
1,2,3,7,8-PeCDF	5000	31.02	93	70-130	
2,3,4,7,8-PeCDF	5000	31.74	89	70-130	
1,2,3,4,7,8-HxCDF	5000	33.54	90	70-130	
1,2,3,6,7,8-HxCDF	5000	33.61	109	70-130	
2,3,4,6,7,8-HxCDF	5000	33.94	104	70-130	
1,2,3,7,8,9-HxCDF	5000	34.35	111	70-130	
1,2,3,4,6,7,8-HpCDF	5000	35.15	95	70-130	
1,2,3,4,7,8,9-HpCDF	5000	35.96	98	70-130	
OCDF	10000	37.30	86	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	10000	27.74	79	40-130	
13C12-1,2,3,7,8-PeCDD	10000	31.95	91	40-130	
13C12-1,2,3,6,7,8-HxCDD	10000	34.08	85	40-130	
13C12-1,2,3,4,6,7,8-HpCDD	10000	35.71	99	25-130	
13C12-OCDD	20000	37.21	99	25-130	
13C12-2,3,7,8-TCDF	10000	26.81	80	40-130	
13C12-1,2,3,7,8-PeCDF	10000	31.00	80	40-130	
13C12-1,2,3,6,7,8-HxCDF	10000	33.60	79	40-130	
13C12-1,2,3,4,6,7,8-HpCDF	10000	35.15	83	25-130	
Cleanup Standard	**pg**				
13C12-1,2,3,7,8,9-HxCDF	10000	34.35	72	40-130	

NS Indicates that the sample was not spiked with this standard

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	Client Name:	ORTECH Environmental
ALS Project ID:	ORT100	Client Address:	804 Southdown Road
ALS WO#:	L1932116		Mississauga, ON L5J 2Y4
Date of Report	5-Jun-17		CANADA
Date of Sample Receipt	26-May-17	Client Contact:	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS: **Toxic PCB Congeners by GC/HRMS (EPA 1668C)**

The samples were received in good condition at 11.6 degrees C, which is above the method-recommended transportation and storage temperature. The short period at above the recommended temperature is not expected to have a negative impact on sample results.

The liquid portions of the samples were extracted with dichloromethane (DCM) via liquid/liquid extraction. The solid portions were extracted with DCM via Soxhlet, followed by DCM acidified with ~100uL of trifluoroacetic acid. The combined extracts were prepared for analysis by GC/HRMS using acidified silica and alumina column chromatography.

The lab QC sample WG2535724-1 is a method blank consisting of 1L laboratory water, and taken through all method steps.
The lab QC sample WG2535724-4 is a media blank consisting of XAD-2 resin, and taken through all method steps.

There was a low level of PCB-77 detected in the method blank that was within the method control limit. Low level sample results may be elevated, as identified on the sample reports.

The results for selected targets for selected samples have been reported from the analysis of diluted extracts due to interferences.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life sciences

Sample Analysis summary Report

Sample Name	17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET	17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET	17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET	17-21754-SVOC-(16 THRU 20) BLANK#1	17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET	17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET
ALS Sample ID	L1932116-1	L1932116-2	L1932116-3	L1932116-4	L1932116-5	L1932116-6
Sample Size	1	1	1	1	1	1
Sample size units	stack	stack	stack	stack	stack	stack
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	25-May-17	25-May-17	26-May-17	25-May-17	25-May-17	25-May-17
Extraction Date	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17
Polychlorinated Dibenzo(p)dioxins	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB-81	136	<92	<59	<36	<27	<71
PCB-77	135	123	<65	<38	154	105
PCB-123	<58	<390	<80	<15	<170	<110
PCB-118	3060	2830	888	133	1430	<760
PCB-114	141	120	<48	<14	<46	<43
PCB-105	1210	<990	356	<47	534	<260
PCB-126	<60	<66	<54	<15	<24	<47
PCB-167	<21	<45	<22	<14	<15	<15
PCB-156	<99	91.4	<15	<14	45.8	<16
PCB-157	<22	<13	<16	<16	<16	<17
PCB-169	<23	<14	<15	<17	<16	<17
PCB-189	<8.8	<9.7	<8.5	<5.6	<12	<8.6
Field Spikes	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-95	111	85	111	118	84	104
13C12-PCB-153	110	118	106	112	109	102
Extraction Standards						
13C12-PCB-81	85	63	75	67	80	67
13C12-PCB-77	98	91	84	73	91	74
13C12-PCB-123	74	73	75	50	86	54
13C12-PCB-118	66	76	66	47	69	47
13C12-PCB-114	71	76	70	48	75	51
13C12-PCB-105	77	84	79	55	85	54
13C12-PCB-126	73	75	71	52	77	53
13C12-PCB-167	84	72	73	66	79	62
13C12-PCB-156	84	73	72	66	78	61
13C12-PCB-157	80	70	71	60	75	57
13C12-PCB-169	90	79	85	66	91	72
13C12-PCB-189	91	74	80	68	91	69
Cleanup Standards						
13C12-PCB-28	99	87	99	80	101	103
13C12-PCB-111	79	89	90	67	90	75
Toxic Equivalency (WHO 2005)						
Lower Bound PCB TEQ	0.187	0.104	0.0373	0.00399	0.0757	0.0105
Mid Point PCB TEQ	3.54	3.68	2.98	1.02	1.53	2.66
Upper Bound PCB TEQ	6.88	7.19	5.92	2.03	2.97	5.28

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Sample Analysis summary Report

Sample Name	17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET	17-21754-SVOC-(36 THRU 40) BLANK#2	17-21754-SVOC-(101 THRU 105) TEST#1 #1 QUENCH INLET	17-21754-SVOC-(106 THRU 110) TEST#2 #1 QUENCH INLET	17-21754-SVOC-(111 THRU 115) TEST#3 #1 QUENCH INLET	17-21754-SVOC-(131 THRU 135) TEST#1 #2 QUENCH INLET
ALS Sample ID	L1932116-7	L1932116-8	L1932116-9	L1932116-10	L1932116-11	L1932116-12
Sample Size	1	1	1	1	1	1
Sample size units	stack	stack	stack	stack	stack	stack
Percent Moisture	n/a	n/a	n/a	n/a	n/a	n/a
Sample Matrix	Stack	Stack	Stack	Stack	Stack	Stack
Sampling Date	26-May-17	26-May-17	25-May-17	25-May-17	26-May-17	25-May-17
Extraction Date	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17	29-May-17
Polychlorinated Dibenzo(p)dioxins	**pg**	**pg**	**pg**	**pg**	**pg**	**pg**
PCB-81	<52	<9.8	<310	344	<320	493
PCB-77	<110	<14	930	2880	1250	970
PCB-123	<120	<38	<840	1610	<1100	<510
PCB-118	621	<190	3180	13500	4550	2450
PCB-114	<44	<33	<250	<370	530	<350
PCB-105	258	<84	1540	4460	2180	1510
PCB-126	<49	<36	547	523	816	631
PCB-167	<11	<6.4	<260	<270	<300	<200
PCB-156	<20	<6.5	<260	455	357	<310
PCB-157	<13	<6.5	<140	191	<130	210
PCB-169	<14	<7.3	<170	<190	<220	229
PCB-189	<11	<5.9	207	172	254	214
Field Spikes	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-95	98	107	74	65	99	72
13C12-PCB-153	100	113	98	102	94	90
Extraction Standards						
13C12-PCB-81	86	63	51	39	52	71
13C12-PCB-77	92	73	68	26	71	96
13C12-PCB-123	70	51	95	97	129	67
13C12-PCB-118	72	54	96	77	107	64
13C12-PCB-114	70	55	95	90	118	66
13C12-PCB-105	77	61	110	98	123	71
13C12-PCB-126	69	57	103	85	124	68
13C12-PCB-167	81	66	74	78	76	101
13C12-PCB-156	78	65	71	82	70	95
13C12-PCB-157	72	66	68	74	71	93
13C12-PCB-169	81	72	85	92	76	108
13C12-PCB-189	90	79	85	89	85	109
Cleanup Standards						
13C12-PCB-28	97	73	94	112	105	111
13C12-PCB-111	85	66	113	146	133	158
Toxic Equivalency (WHO 2005)						
Lower Bound PCB TEQ	0.0264	0.00	54.9	53.3	82.0	70.3
Mid Point PCB TEQ	2.71	1.92	60.1	59.0	88.7	70.4
Upper Bound PCB TEQ	5.38	3.83	60.2	59.0	88.7	70.4

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Sample Analysis summary Report

Sample Name	17-21754-SVOC-(136 THRU 140) TEST#2 #2 QUENCH INLET	17-21754-SVOC-(141 THRU 145) TEST#3 #2 QUENCH INLET
ALS Sample ID	L1932116-13	L1932116-14
Sample Size	1	1
Sample size units	stack	stack
Percent Moisture	n/a	n/a
Sample Matrix	Stack	Stack
Sampling Date	25-May-17	26-May-17
Extraction Date	29-May-17	29-May-17
Polychlorinated Dibenzo(p)dioxins	**pg**	**pg**
PCB-81	<350	<340
PCB-77	1140	881
PCB-123	<1100	<630
PCB-118	3480	3970
PCB-114	<230	<310
PCB-105	1420	1850
PCB-126	628	734
PCB-167	<230	295
PCB-156	<280	374
PCB-157	150	160
PCB-169	309	<170
PCB-189	203	270
Field Spikes	**% Rec**	**% Rec**
13C12-PCB-95	61	70
13C12-PCB-153	104	107
Extraction Standards		
13C12-PCB-81	49	90
13C12-PCB-77	99	126
13C12-PCB-123	112	84
13C12-PCB-118	100	82
13C12-PCB-114	103	79
13C12-PCB-105	108	84
13C12-PCB-126	111	74
13C12-PCB-167	84	108
13C12-PCB-156	81	106
13C12-PCB-157	85	109
13C12-PCB-169	92	107
13C12-PCB-189	97	115
Cleanup Standards		
13C12-PCB-28	97	133
13C12-PCB-111	125	94
Toxic Equivalency (WHO 2005)		
Lower Bound PCB TEQ	72.3	73.7
Mid Point PCB TEQ	72.4	78.9
Upper Bound PCB TEQ	72.5	78.9

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Sample Analysis summary Report

Sample Name	Method Blank	Media Blank	Laboratory Control Sample
ALS Sample ID	WG2535724-1	WG2535724-4	WG2535724-2
Sample Size	1	1	1
Sample size units	stack	stack	n/a
Percent Moisture	n/a	n/a	n/a
Sample Matrix	Water	XAD	QC
Sampling Date	n/a	n/a	n/a
Extraction Date	29-May-17	29-May-17	29-May-17
Polychlorinated Dibenzo(p)dioxins	**pg**	**pg**	**% Rec**
PCB-81	<7.4	<7.8	88
PCB-77	23.2	<8.8	99
PCB-123	<17	<18	93
PCB-118	<14	<15	107
PCB-114	<15	<17	98
PCB-105	<15	<17	91
PCB-126	<16	<19	108
PCB-167	<8.9	<8.4	85
PCB-156	<9.7	<8.4	92
PCB-157	<9.3	<8.6	89
PCB-169	<12	<11	104
PCB-189	<2.4	<0.92	89
Field Spikes	**% Rec**	**% Rec**	**% Rec**
13C12-PCB-95	NS	NS	NS
13C12-PCB-153	NS	NS	NS
Extraction Standards			
13C12-PCB-81	63	64	65
13C12-PCB-77	69	71	69
13C12-PCB-123	55	53	62
13C12-PCB-118	44	56	48
13C12-PCB-114	50	54	56
13C12-PCB-105	50	55	61
13C12-PCB-126	52	53	54
13C12-PCB-167	61	68	69
13C12-PCB-156	60	70	67
13C12-PCB-157	63	69	68
13C12-PCB-169	62	67	66
13C12-PCB-189	66	70	72
Cleanup Standards			
13C12-PCB-28	44	42	42
13C12-PCB-111	62	63	63
Toxic Equivalency (WHO 2005)			
Lower Bound PCB TEQ	0.00232	0.00	
Mid Point PCB TEQ	0.985	1.12	
Upper Bound PCB TEQ	1.97	2.24	

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET**	Sampling Date	25-May-17		
ALS Sample ID	L1932116-1	Extraction Date	29-May-17		Approved:
Analysis Method	EPA 1668C	Sample Size	1	stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a		--e-signature--
Sample Matrix	Stack	Split Ratio	5		05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS015
Run Date	01-Jun-27 22:39
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.95	136	94	M,J
PCB-77	0.0001	7.13	135	92	M,J,B
PCB-123	0.00003	NotFnd	<58	58	U
PCB-118	0.00003	7.48	3060	50	M
PCB-114	0.00003	7.64	141	57	M,J
PCB-105	0.00003	7.86	1210	53	M
PCB-126	0.1	NotFnd	<60	60	U
PCB-167	0.00003	8.65	<21	20	M,J,R
PCB-156	0.00003	9.01	<99	22	M,J,R
PCB-157	0.00003	NotFnd	<22	22	U
PCB-169	0.03	NotFnd	<23	23	U
PCB-189	0.00003	NotFnd	<8.8	8.8	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.24	111	70-130
13C12-PCB-153	8000	7.78	110	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	85	10-145
13C12-PCB-77	10000	7.11	98	10-145
13C12-PCB-123	10000	7.41	74	10-145
13C12-PCB-118	10000	7.46	66	10-145
13C12-PCB-114	10000	7.63	71	10-145
13C12-PCB-105	10000	7.84	77	10-145
13C12-PCB-126	10000	8.36	73	10-145
13C12-PCB-167	10000	8.65	84	10-145
13C12-PCB-156	10000	9.01	84	10-145
13C12-PCB-157	10000	9.07	80	10-145
13C12-PCB-169	10000	9.62	90	10-145
13C12-PCB-189	10000	10.19	91	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	99	5-145
13C12-PCB-111	10000	6.90	79	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.187
Mid Point PCB TEQ	3.54
Upper Bound PCB TEQ	6.88

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 DL.
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.

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-2	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS016
Run Date	01-Jun-27 22:58
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	7.01	<92	52	J,R
PCB-77	0.0001	7.13	123	46	J,B
PCB-123	0.00003	7.40	<390	68	M,J,1.
PCB-118	0.00003	7.48	2830	58	
PCB-114	0.00003	7.63	120	61	M,J
PCB-105	0.00003	7.87	<990	58	M,R
PCB-126	0.1	NotFnd	<66	66	U
PCB-167	0.00003	8.65	<45	12	M,J,1.
PCB-156	0.00003	9.01	91.4	12	J
PCB-157	0.00003	NotFnd	<13	13	U
PCB-169	0.03	NotFnd	<14	14	U
PCB-189	0.00003	NotFnd	<9.7	9.7	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.24	85	70-130
13C12-PCB-153	8000	7.78	118	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.97	63	10-145
13C12-PCB-77	10000	7.11	91	10-145
13C12-PCB-123	10000	7.41	73	10-145
13C12-PCB-118	10000	7.46	76	10-145
13C12-PCB-114	10000	7.63	76	10-145
13C12-PCB-105	10000	7.86	84	10-145
13C12-PCB-126	10000	8.38	75	10-145
13C12-PCB-167	10000	8.65	72	10-145
13C12-PCB-156	10000	9.01	73	10-145
13C12-PCB-157	10000	9.09	70	10-145
13C12-PCB-169	10000	9.62	79	10-145
13C12-PCB-189	10000	10.20	74	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.09	87	5-145
13C12-PCB-111	10000	6.91	89	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.104
Mid Point PCB TEQ	3.68
Upper Bound PCB TEQ	7.19

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 DL.
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.
1.	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET**	Sampling Date	26-May-17	
ALS Sample ID	L1932116-3	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS017
Run Date	01-Jun-27 23:17
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	NotFnd	<59	59	U
PCB-77	0.0001	7.11	<65	65	U
PCB-123	0.00003	7.40	<80	56	M,J,R
PCB-118	0.00003	7.46	888	41	J
PCB-114	0.00003	NotFnd	<48	48	U
PCB-105	0.00003	7.86	356	43	J
PCB-126	0.1	NotFnd	<54	54	U
PCB-167	0.00003	8.66	<22	14	J,R
PCB-156	0.00003	9.01	<15	15	M,U
PCB-157	0.00003	NotFnd	<16	16	U
PCB-169	0.03	NotFnd	<15	15	U
PCB-189	0.00003	NotFnd	<8.5	8.5	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.23	111	70-130
13C12-PCB-153	8000	7.78	106	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	75	10-145
13C12-PCB-77	10000	7.11	84	10-145
13C12-PCB-123	10000	7.40	75	10-145
13C12-PCB-118	10000	7.46	66	10-145
13C12-PCB-114	10000	7.62	70	10-145
13C12-PCB-105	10000	7.84	79	10-145
13C12-PCB-126	10000	8.36	71	10-145
13C12-PCB-167	10000	8.65	73	10-145
13C12-PCB-156	10000	8.99	72	10-145
13C12-PCB-157	10000	9.07	71	10-145
13C12-PCB-169	10000	9.62	85	10-145
13C12-PCB-189	10000	10.19	80	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.07	99	5-145
13C12-PCB-111	10000	6.90	90	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0373
Mid Point PCB TEQ	2.98
Upper Bound PCB TEQ	5.92

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 DL.
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.

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-4	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170602AS004
Run Date	02-Jun-27 11:31
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	NotFnd	<36	36	U
PCB-77	0.0001	NotFnd	<38	38	U
PCB-123	0.00003	NotFnd	<15	15	U
PCB-118	0.00003	7.48	133	12	M,J
PCB-114	0.00003	NotFnd	<14	14	U
PCB-105	0.00003	7.88	<47	13	M,J,R
PCB-126	0.1	NotFnd	<15	15	U
PCB-167	0.00003	NotFnd	<14	14	U
PCB-156	0.00003	NotFnd	<14	14	U
PCB-157	0.00003	NotFnd	<16	16	U
PCB-169	0.03	NotFnd	<17	17	U
PCB-189	0.00003	NotFnd	<5.6	5.6	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.25	118	70-130
13C12-PCB-153	8000	7.79	112	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.97	67	10-145
13C12-PCB-77	10000	7.12	73	10-145
13C12-PCB-123	10000	7.42	50	10-145
13C12-PCB-118	10000	7.47	47	10-145
13C12-PCB-114	10000	7.64	48	10-145
13C12-PCB-105	10000	7.86	55	10-145
13C12-PCB-126	10000	8.38	52	10-145
13C12-PCB-167	10000	8.66	66	10-145
13C12-PCB-156	10000	9.01	66	10-145
13C12-PCB-157	10000	9.08	60	10-145
13C12-PCB-169	10000	9.62	66	10-145
13C12-PCB-189	10000	10.20	68	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.09	80	5-145
13C12-PCB-111	10000	6.91	67	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00399
Mid Point PCB TEQ	1.02
Upper Bound PCB TEQ	2.03

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 DL.
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.

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-5	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS018
Run Date	01-Jun-27 23:36
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.95	<27	27	M,U
PCB-77	0.0001	7.12	154	28	J,B
PCB-123	0.00003	7.39	<170	24	J,R
PCB-118	0.00003	7.48	1430	20	
PCB-114	0.00003	7.63	<46	22	M,J,R
PCB-105	0.00003	7.86	534	20	M,J
PCB-126	0.1	NotFnd	<24	24	U
PCB-167	0.00003	8.65	<15	15	M,U
PCB-156	0.00003	9.01	45.8	16	M,J
PCB-157	0.00003	NotFnd	<16	16	U
PCB-169	0.03	NotFnd	<16	16	U
PCB-189	0.00003	10.20	<12	12	M,U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.24	84	70-130
13C12-PCB-153	8000	7.78	109	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	80	10-145
13C12-PCB-77	10000	7.12	91	10-145
13C12-PCB-123	10000	7.42	86	10-145
13C12-PCB-118	10000	7.47	69	10-145
13C12-PCB-114	10000	7.62	75	10-145
13C12-PCB-105	10000	7.85	85	10-145
13C12-PCB-126	10000	8.37	77	10-145
13C12-PCB-167	10000	8.65	79	10-145
13C12-PCB-156	10000	9.01	78	10-145
13C12-PCB-157	10000	9.08	75	10-145
13C12-PCB-169	10000	9.62	91	10-145
13C12-PCB-189	10000	10.19	91	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.07	101	5-145
13C12-PCB-111	10000	6.91	90	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0757
Mid Point PCB TEQ	1.53
Upper Bound PCB TEQ	2.97

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 DL.
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.

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-6	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS019
Run Date	01-Jun-27 23:55
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags
PCB-81	0.0003	NotFnd	<71	71	U
PCB-77	0.0001	7.11	105	75	M,J,B
PCB-123	0.00003	7.40	<110	45	M,J,R
PCB-118	0.00003	7.48	<760	39	M,J,R
PCB-114	0.00003	NotFnd	<43	43	U
PCB-105	0.00003	7.86	<260	42	M,J,R
PCB-126	0.1	NotFnd	<47	47	U
PCB-167	0.00003	8.65	<15	15	M,U
PCB-156	0.00003	NotFnd	<16	16	U
PCB-157	0.00003	NotFnd	<17	17	U
PCB-169	0.03	NotFnd	<17	17	U
PCB-189	0.00003	NotFnd	<8.6	8.6	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.23	104	70-130
13C12-PCB-153	8000	7.78	102	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	67	10-145
13C12-PCB-77	10000	7.11	74	10-145
13C12-PCB-123	10000	7.41	54	10-145
13C12-PCB-118	10000	7.47	47	10-145
13C12-PCB-114	10000	7.62	51	10-145
13C12-PCB-105	10000	7.84	54	10-145
13C12-PCB-126	10000	8.36	53	10-145
13C12-PCB-167	10000	8.65	62	10-145
13C12-PCB-156	10000	9.01	61	10-145
13C12-PCB-157	10000	9.07	57	10-145
13C12-PCB-169	10000	9.62	72	10-145
13C12-PCB-189	10000	10.19	69	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	103	5-145
13C12-PCB-111	10000	6.90	75	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0105
Mid Point PCB TEQ	2.66
Upper Bound PCB TEQ	5.28

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 DL.
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.

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET**	Sampling Date	26-May-17	
ALS Sample ID	L1932116-7	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS020
Run Date	01-Jun-27 00:14
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags
PCB-81	0.0003	NotFnd	<52	52	U
PCB-77	0.0001	7.12	<110	59	M,J,R
PCB-123	0.00003	7.41	<120	47	M,J,1.
PCB-118	0.00003	7.47	621	42	J
PCB-114	0.00003	NotFnd	<44	44	U
PCB-105	0.00003	7.87	258	41	M,J
PCB-126	0.1	NotFnd	<49	49	U
PCB-167	0.00003	8.63	<11	11	M,U
PCB-156	0.00003	9.02	<20	12	M,J,R
PCB-157	0.00003	9.08	<13	13	M,U
PCB-169	0.03	NotFnd	<14	14	U
PCB-189	0.00003	10.20	<11	11	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.24	98	70-130
13C12-PCB-153	8000	7.78	100	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.97	86	10-145
13C12-PCB-77	10000	7.12	92	10-145
13C12-PCB-123	10000	7.41	70	10-145
13C12-PCB-118	10000	7.47	72	10-145
13C12-PCB-114	10000	7.63	70	10-145
13C12-PCB-105	10000	7.85	77	10-145
13C12-PCB-126	10000	8.37	69	10-145
13C12-PCB-167	10000	8.66	81	10-145
13C12-PCB-156	10000	9.00	78	10-145
13C12-PCB-157	10000	9.08	72	10-145
13C12-PCB-169	10000	9.63	81	10-145
13C12-PCB-189	10000	10.19	90	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	97	5-145
13C12-PCB-111	10000	6.91	85	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.0264
Mid Point PCB TEQ	2.71
Upper Bound PCB TEQ	5.38

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 DL.
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.
1.	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	26-May-17	
ALS Sample ID	L1932116-8	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS014
Run Date	01-Jun-27 22:19
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	NotFnd	<9.8	9.8	U
PCB-77	0.0001	7.10	<14	11	M,J,R
PCB-123	0.00003	NotFnd	<38	38	U
PCB-118	0.00003	7.48	<190	32	J,R
PCB-114	0.00003	NotFnd	<33	33	U
PCB-105	0.00003	7.87	<84	31	M,J,R
PCB-126	0.1	NotFnd	<36	36	U
PCB-167	0.00003	NotFnd	<6.4	6.4	U
PCB-156	0.00003	NotFnd	<6.5	6.5	U
PCB-157	0.00003	NotFnd	<6.5	6.5	U
PCB-169	0.03	NotFnd	<7.3	7.3	U
PCB-189	0.00003	NotFnd	<5.9	5.9	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.24	107	70-130
13C12-PCB-153	8000	7.78	113	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.97	63	10-145
13C12-PCB-77	10000	7.11	73	10-145
13C12-PCB-123	10000	7.41	51	10-145
13C12-PCB-118	10000	7.48	54	10-145
13C12-PCB-114	10000	7.63	55	10-145
13C12-PCB-105	10000	7.86	61	10-145
13C12-PCB-126	10000	8.38	57	10-145
13C12-PCB-167	10000	8.66	66	10-145
13C12-PCB-156	10000	9.01	65	10-145
13C12-PCB-157	10000	9.09	66	10-145
13C12-PCB-169	10000	9.63	72	10-145
13C12-PCB-189	10000	10.20	79	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	73	5-145
13C12-PCB-111	10000	6.91	66	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	1.92
Upper Bound PCB TEQ	3.83

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
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the DL.
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.

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(101 THRU 105) TEST#1 #1 QUENCH INLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-9	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS021
Run Date	01-Jun-27 00:34
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.97	<310	310	M,U
PCB-77	0.0001	7.12	930	280	M
PCB-123	0.00003	7.40	<840	58	M,R
PCB-118	0.00003	7.47	3180	51	
PCB-114	0.00003	7.64	<250	54	M,J,R
PCB-105	0.00003	7.86	1540	49	M
PCB-126	0.1	8.38	547	57	M,J
PCB-167	0.00003	8.64	<260	54	M,J,1.
PCB-156	0.00003	9.01	<260	58	M,J,R
PCB-157	0.00003	9.09	<140	61	M,J,R
PCB-169	0.03	9.62	<170	57	J,R
PCB-189	0.00003	10.20	207	20	M,J

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.24	74	70-130
13C12-PCB-153	8000	7.78	98	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.97	51	10-145
13C12-PCB-77	10000	7.11	68	10-145
13C12-PCB-123	10000	7.41	95	10-145
13C12-PCB-118	10000	7.47	96	10-145
13C12-PCB-114	10000	7.62	95	10-145
13C12-PCB-105	10000	7.85	110	10-145
13C12-PCB-126	10000	8.37	103	10-145
13C12-PCB-167	10000	8.66	74	10-145
13C12-PCB-156	10000	9.00	71	10-145
13C12-PCB-157	10000	9.08	68	10-145
13C12-PCB-169	10000	9.62	85	10-145
13C12-PCB-189	10000	10.20	85	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.07	94	5-145
13C12-PCB-111	10000	6.91	113	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	54.9
Mid Point PCB TEQ	60.1
Upper Bound PCB TEQ	60.2

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 DL.
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.
1.	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(106 THRU 110) TEST#2 #1 QUENCH INLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-10	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**	**Run 2**
Filename	1-170601CS022	1-170602AS008
Run Date	01-Jun-27 00:53	02-Jun-27 12:48
Final Volume	45 uL	45 uL
Dilution Factor	1	5
Analysis Units	pg	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	7.01	344	330	M,J				
PCB-77	0.0001	7.13	2880	540					
PCB-123	0.00003					7.41	1610	420	M,J
PCB-118	0.00003					7.47	13500	340	
PCB-114	0.00003					NotFnd	<370	370	U
PCB-105	0.00003					7.86	4460	350	M
PCB-126	0.1					8.40	523	450	M,J
PCB-167	0.00003	8.65	<270	60	M,J,1.				
PCB-156	0.00003	9.02	455	58	M,J				
PCB-157	0.00003	9.09	191	66	M,J				
PCB-169	0.03	9.63	<190	64	M,J,R				
PCB-189	0.00003	10.21	172	41	J				

Field Spikes	**pg**		**% Rec**	**Limits**			**% Rec**
13C12-PCB-95	8000	6.25	65	70-130	M,R		
13C12-PCB-153	8000	7.78	102	70-130			

Extraction Standards	**pg**		**% Rec**	**Limits**			**% Rec**
13C12-PCB-81	10000	6.96	39	10-145			
13C12-PCB-77	10000	7.12	26	10-145			
13C12-PCB-123	10000			10-145		7.41	97
13C12-PCB-118	10000			10-145		7.47	77
13C12-PCB-114	10000			10-145		7.62	90
13C12-PCB-105	10000			10-145		7.85	98
13C12-PCB-126	10000			10-145		8.37	85
13C12-PCB-167	10000	8.65	78	10-145			
13C12-PCB-156	10000	9.01	82	10-145			
13C12-PCB-157	10000	9.09	74	10-145			
13C12-PCB-169	10000	9.62	92	10-145			
13C12-PCB-189	10000	10.19	89	10-145			

Cleanup Standards	**pg**		**% Rec**	**Limits**			**% Rec**
13C12-PCB-28	10000	5.08	112	5-145			
13C12-PCB-111	10000	6.90	146	10-145			

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	53.3
Mid Point PCB TEQ	59.0
Upper Bound PCB TEQ	59.0

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 DL.
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.
1.	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(111 THRU 115) TEST#3 #1 QUENCH INLET**	Sampling Date	26-May-17	
ALS Sample ID	L1932116-11	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS023
Run Date	01-Jun-27 01:12
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.96	<320	320	M,U
PCB-77	0.0001	7.12	1250	280	M
PCB-123	0.00003	7.40	<1100	56	M,1.
PCB-118	0.00003	7.47	4550	44	
PCB-114	0.00003	7.63	530	49	M,J
PCB-105	0.00003	7.86	2180	50	M
PCB-126	0.1	8.38	816	52	
PCB-167	0.00003	8.65	<300	25	M,J,R
PCB-156	0.00003	9.01	357	29	M,J
PCB-157	0.00003	9.09	<130	28	M,J,R
PCB-169	0.03	9.62	<220	30	M,J,R
PCB-189	0.00003	10.20	254	34	J
Field Spikes	**pg**		**% Rec**	**Limits**	
13C12-PCB-95	8000	6.23	99	70-130	
13C12-PCB-153	8000	7.78	94	70-130	
Extraction Standards	**pg**		**% Rec**	**Limits**	
13C12-PCB-81	10000	6.96	52	10-145	
13C12-PCB-77	10000	7.12	71	10-145	
13C12-PCB-123	10000	7.42	129	10-145	
13C12-PCB-118	10000	7.47	107	10-145	
13C12-PCB-114	10000	7.62	118	10-145	
13C12-PCB-105	10000	7.85	123	10-145	
13C12-PCB-126	10000	8.37	124	10-145	M
13C12-PCB-167	10000	8.65	76	10-145	
13C12-PCB-156	10000	9.00	70	10-145	
13C12-PCB-157	10000	9.08	71	10-145	
13C12-PCB-169	10000	9.62	76	10-145	
13C12-PCB-189	10000	10.19	85	10-145	
Cleanup Standards	**pg**		**% Rec**	**Limits**	
13C12-PCB-28	10000	5.08	105	5-145	
13C12-PCB-111	10000	6.90	133	10-145	

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	82.0
Mid Point PCB TEQ	88.7
Upper Bound PCB TEQ	88.7

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 DL.
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.
1.	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Sample Analysis Report

Sample Name	**17-21754-SVOC-(131 THRU 135) TEST#1 #2 QUENCH INLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-12	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**	**Run 2**
Filename	1-170601CS024	1-170602AS009
Run Date	01-Jun-27 01:31	02-Jun-27 13:07
Final Volume	45 uL	45 uL
Dilution Factor	1	5
Analysis Units	pg	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.95	493	88	J				
PCB-77	0.0001	7.11	970	78	M				
PCB-123	0.00003					7.40	<510	360	M,J,R
PCB-118	0.00003					7.48	2450	290	J
PCB-114	0.00003					NotFnd	<350	350	U
PCB-105	0.00003					7.86	1510	330	M,J
PCB-126	0.1					8.38	631	370	M,J
PCB-167	0.00003	8.66	<200	45	M,J,R				
PCB-156	0.00003	9.01	<310	50	M,J,R				
PCB-157	0.00003	9.09	210	53	M,J				
PCB-169	0.03	9.63	229	52	M,J				
PCB-189	0.00003	10.19	214	31	M,J				

Field Spikes	**pg**		**% Rec**	**Limits**		**% Rec**	
13C12-PCB-95	8000	6.23	72	70-130			
13C12-PCB-153	8000	7.78	90	70-130			

Extraction Standards	**pg**		**% Rec**	**Limits**		**% Rec**	
13C12-PCB-81	10000	6.96	71	10-145			
13C12-PCB-77	10000	7.11	96	10-145			
13C12-PCB-123	10000			10-145		7.42	67
13C12-PCB-118	10000			10-145		7.47	64
13C12-PCB-114	10000			10-145		7.63	66 R
13C12-PCB-105	10000			10-145		7.86	71
13C12-PCB-126	10000			10-145		8.38	68
13C12-PCB-167	10000	8.65	101	10-145			
13C12-PCB-156	10000	9.01	95	10-145			
13C12-PCB-157	10000	9.07	93	10-145			
13C12-PCB-169	10000	9.61	108	10-145			
13C12-PCB-189	10000	10.19	109	10-145			

Cleanup Standards	**pg**		**% Rec**	**Limits**	**% Rec**
13C12-PCB-28	10000	5.08	111	5-145	
13C12-PCB-111	10000	6.90	158	10-145	

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	70.3
Mid Point PCB TEQ	70.4
Upper Bound PCB TEQ	70.4

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 DL.
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.
1.	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(136 THRU 140) TEST#2 #2 QUENCH INLET**	Sampling Date	25-May-17	
ALS Sample ID	L1932116-13	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS025
Run Date	01-Jun-27 01:51
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.98	<350	350	M,U
PCB-77	0.0001	7.13	1140	200	M
PCB-123	0.00003	7.40	<1100	34	M,1.
PCB-118	0.00003	7.48	3480	29	
PCB-114	0.00003	7.64	<230	35	M,J,R
PCB-105	0.00003	7.86	1420	33	M
PCB-126	0.1	8.38	628	35	
PCB-167	0.00003	8.65	<230	57	M,J,R
PCB-156	0.00003	9.01	<280	60	M,J,R
PCB-157	0.00003	9.09	150	61	M,J
PCB-169	0.03	9.62	309	64	M,J
PCB-189	0.00003	10.19	203	49	J

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	6.25	61	70-130
13C12-PCB-153	8000	7.78	104	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	49	10-145
13C12-PCB-77	10000	7.12	99	10-145
13C12-PCB-123	10000	7.42	112	10-145
13C12-PCB-118	10000	7.47	100	10-145
13C12-PCB-114	10000	7.63	103	10-145
13C12-PCB-105	10000	7.85	108	10-145
13C12-PCB-126	10000	8.37	111	10-145
13C12-PCB-167	10000	8.65	84	10-145
13C12-PCB-156	10000	9.01	81	10-145
13C12-PCB-157	10000	9.08	85	10-145
13C12-PCB-169	10000	9.62	92	10-145
13C12-PCB-189	10000	10.19	97	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	97	5-145
13C12-PCB-111	10000	6.91	125	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	72.3
Mid Point PCB TEQ	72.4
Upper Bound PCB TEQ	72.5

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 DL.
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.
1.	Estimated Maximum Possible Concentration – elevated detection limit due to interference or positive id criterion failure

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Sample Analysis Report

Sample Name	**17-21754-SVOC-(141 THRU 145) TEST#3 #2 QUENCH INLET**	Sampling Date	26-May-17	
ALS Sample ID	L1932116-14	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Sample	Percent Moisture	n/a	--e-signature--
Sample Matrix	Stack	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**	**Run 2**
Filename	1-170601CS026	1-170602AS010
Run Date	01-Jun-27 02:10	02-Jun-27 13:26
Final Volume	45 uL	45 uL
Dilution Factor	1	5
Analysis Units	pg	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	6.98	<340	340	M,U				
PCB-77	0.0001	7.12	881	290	M				
PCB-123	0.00003					7.40	<630	300	J,R,1
PCB-118	0.00003					7.48	3970	270	M,J
PCB-114	0.00003					7.64	<310	310	M,U
PCB-105	0.00003					7.87	1850	310	M,J
PCB-126	0.1					8.38	734	360	M,J
PCB-167	0.00003	8.64	295	49	M,J				
PCB-156	0.00003	9.01	374	51	M,J				
PCB-157	0.00003	9.09	160	52	J				
PCB-169	0.03	9.61	<170	61	J,R				
PCB-189	0.00003	10.20	270	30	J				

Field Spikes	**pg**		**% Rec**	**Limits**			**% Rec**
13C12-PCB-95	8000	6.24	70	70-130	M		
13C12-PCB-153	8000	7.78	107	70-130			

Extraction Standards	**pg**		**% Rec**	**Limits**		**% Rec**
13C12-PCB-81	10000	6.96	90	10-145		
13C12-PCB-77	10000	7.11	126	10-145		
13C12-PCB-123	10000			10-145	7.42	B4
13C12-PCB-118	10000			10-145	7.47	82
13C12-PCB-114	10000			10-145	7.63	79
13C12-PCB-105	10000			10-145	7.86	84
13C12-PCB-126	10000			10-145	8.38	74
13C12-PCB-167	10000	8.65	108	10-145		
13C12-PCB-156	10000	9.01	106	10-145		
13C12-PCB-157	10000	9.07	109	10-145		
13C12-PCB-169	10000	9.61	107	10-145		
13C12-PCB-189	10000	10.19	115	10-145		

Cleanup Standards	**pg**	**% Rec**	**Limits**		**% Rec**
13C12-PCB-28	10000		5-145	5.08	133
13C12-PCB-111	10000		10-145	6.90	94

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	73.7
Mid Point PCB TEQ	78.9
Upper Bound PCB TEQ	78.9

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 DL.
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.
1.	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a	
ALS Sample ID	WG2535724-1	Extraction Date	29-May-17	Approved:
Analysis Method	EPA 1668C	Sample Size	1 stack	*A.Ali*
Analysis Type	Blank	Percent Moisture	n/a	--e-signature--
Sample Matrix	Water	Split Ratio	5	05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS009
Run Date	01-Jun-27 20:43
Final Volume	45 uL
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	NotFnd	<7.4	7.4	U
PCB-77	0.0001	7.12	23.2	8.5	M,J
PCB-123	0.00003	NotFnd	<17	17	U
PCB-118	0.00003	NotFnd	<14	14	U
PCB-114	0.00003	NotFnd	<15	15	U
PCB-105	0.00003	NotFnd	<15	15	U
PCB-126	0.1	NotFnd	<16	16	U
PCB-167	0.00003	NotFnd	<8.9	8.9	U
PCB-156	0.00003	NotFnd	<9.7	9.7	U
PCB-157	0.00003	NotFnd	<9.3	9.3	U
PCB-169	0.03	NotFnd	<12	12	U
PCB-189	0.00003	NotFnd	<2.4	2.4	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	NS	NS	70-130
13C12-PCB-153	8000	NS	NS	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	63	10-145
13C12-PCB-77	10000	7.12	69	10-145
13C12-PCB-123	10000	7.40	55	10-145
13C12-PCB-118	10000	7.47	44	10-145
13C12-PCB-114	10000	7.62	50	10-145
13C12-PCB-105	10000	7.85	50	10-145
13C12-PCB-126	10000	8.36	52	10-145
13C12-PCB-167	10000	8.65	61	10-145
13C12-PCB-156	10000	9.00	60	10-145
13C12-PCB-157	10000	9.08	63	10-145
13C12-PCB-169	10000	9.62	62	10-145
13C12-PCB-189	10000	10.19	66	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	44	5-145
13C12-PCB-111	10000	6.90	62	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00232
Mid Point PCB TEQ	0.985
Upper Bound PCB TEQ	1.97

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 DL.
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.

ALS Life sciences

Laboratory Method Blank Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a		
ALS Sample ID	WG2535724-4	Extraction Date	29-May-17		Approved:
Analysis Method	EPA 166BC	Sample Size	1	stack	*A.Ali*
Analysis Type	Blank	Percent Moisture	n/a		--e-signature--
Sample Matrix	XAD	Split Ratio	5		05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS010
Run Date	01-Jun-27 21:03
Final Volume	45 ul.
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**TEF (WHO 2005)**	**Ret. Time**	**Conc. pg**	**EDL pg**	**Flags**
PCB-81	0.0003	NotFnd	<7.8	7.8	U
PCB-77	0.0001	NotFnd	<8.8	8.8	U
PCB-123	0.00003	NotFnd	<18	18	U
PCB-118	0.00003	NotFnd	<15	15	U
PCB-114	0.00003	NotFnd	<17	17	U
PCB-105	0.00003	NotFnd	<17	17	U
PCB-126	0.1	NotFnd	<19	19	U
PCB-167	0.00003	NotFnd	<8.4	8.4	U
PCB-156	0.00003	NotFnd	<8.4	8.4	U
PCB-157	0.00003	NotFnd	<8.6	8.6	U
PCB-169	0.03	NotFnd	<11	11	U
PCB-189	0.00003	NotFnd	<0.92	0.92	U

Field Spikes	**pg**		**% Rec**	**Limits**
13C12-PCB-95	8000	NS	NS	70-130
13C12-PCB-153	8000	NS	NS	70-130

Extraction Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-81	10000	6.96	64	10-145
13C12-PCB-77	10000	7.12	71	10-145
13C12-PCB-123	10000	7.40	53	10-145
13C12-PCB-118	10000	7.47	56	10-145
13C12-PCB-114	10000	7.62	54	10-145
13C12-PCB-105	10000	7.85	55	10-145
13C12-PCB-126	10000	8.37	53	10-145
13C12-PCB-167	10000	8.65	68	10-145
13C12-PCB-156	10000	9.00	70	10-145
13C12-PCB-157	10000	9.08	69	10-145
13C12-PCB-169	10000	9.62	67	10-145
13C12-PCB-189	10000	10.19	70	10-145

Cleanup Standards	**pg**		**% Rec**	**Limits**
13C12-PCB-28	10000	5.08	42	5-145
13C12-PCB-111	10000	6.91	63	10-145

Toxic Equivalency (WHO 2005)	**pg**
Lower Bound PCB TEQ	0.00
Mid Point PCB TEQ	1.12
Upper Bound PCB TEQ	2.24

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
U	Indicates that this compound was not detected above the DL.
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	WG2535724-2	Extraction Date	29-May-17		Approved:
Analysis Method	EPA 1668C	Sample Size	1	n/a	*A.Ali*
Analysis Type	LCS	Percent Moisture	n/a		--e-signature--
Sample Matrix	XAD	Split Ratio	5		05-Jul-2017

Run Information	**Run 1**
Filename	1-170601CS002
Run Date	01-Jun-27 18:29
Final Volume	45 uL
Dilution Factor	1
Analysis Units	% Rec
Instrument - Column	HRMS-1 DB5MSUSN734833H

Target Analytes	**pg**	**Ret. Time**	**% Rec**	**Limits**	**Flags**
PCB-81	5000	6.99	88	60-135	
PCB-77	5000	7.13	99	60-135	
PCB-123	5000	7.43	93	60-135	
PCB-118	5000	7.48	107	60-135	
PCB-114	5000	7.65	98	60-135	
PCB-105	5000	7.88	91	60-135	
PCB-126	5000	8.39	108	60-135	
PCB-167	5000	8.67	85	60-135	
PCB-156	5000	9.03	92	60-135	
PCB-157	5000	9.11	89	60-135	
PCB-169	5000	9.63	104	60-135	
PCB-189	5000	10.21	89	60-135	
Field Spikes	**pg**		**% Rec**	**Limits**	
13C12-PCB-95	8000	NS	NS	70-130	
13C12-PCB-153	8000	NS	NS	70-130	
Extraction Standards	**pg**		**% Rec**	**Limits**	
13C12-PCB-81	10000	6.98	65	40-145	
13C12-PCB-77	10000	7.13	69	40-145	
13C12-PCB-123	10000	7.42	62	40-145	
13C12-PCB-118	10000	7.48	48	40-145	
13C12-PCB-114	10000	7.64	56	40-145	
13C12-PCB-105	10000	7.86	61	40-145	
13C12-PCB-126	10000	8.38	54	40-145	
13C12-PCB-167	10000	8.67	69	40-145	
13C12-PCB-156	10000	9.01	67	40-145	
13C12-PCB-157	10000	9.09	68	40-145	
13C12-PCB-169	10000	9.63	66	40-145	
13C12-PCB-189	10000	10.20	72	40-145	
Cleanup Standards	**pg**		**% Rec**	**Limits**	
13C12-PCB-28	10000	5.10	42	15-145	
13C12-PCB-111	10000	6.92	63	40-145	

Lower Bound PCB TEQ
Mid Point PCB TEQ
Upper Bound PCB TEQ

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1932116		Mississauga, ON L5J 2Y4
Date of Report	2-Jun-17		Canada
Date of Sample Receipt	26-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS: **CB by LRGC/MS - Isotope dilution**

Certified by.

Ron McLeod, Ph.D.
Technical Director

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		Media Blank		17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET		17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET		17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET		17-21754-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG2535724-1		WG2535724-4		L1932116-1		L1932116-2		L1932116-3		L1932116-4	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Matrix	QC		QC		Stack		Stack		Stack		Stack	
Sampling Date	n/a		n/a		25-May-17		25-May-17		26-May-17		25-May-17	
Extraction Date	29-May-17		29-May-17		29-May-17		29-May-17		29-May-17		29-May-17	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Chlorobenzene	<10	U	<10	U	2200		1540		1830		<10	U
1,3-Dichlorobenzene	<10	U	<10	U	264		322		465		<10	U
1,4-Dichlorobenzene	<10	U	<10	U	133		145		205		14	
1,2-Dichlorobenzene	<10	U	<10	U	152		163		270		<10	U
1,3,5-Trichlorobenzene	<10	U	<10	U	30.8		42.7	R	45.7		<10	U
1,2,4-Trichlorobenzene	<10	U	<10	U	43.4	M	70.9		90.3	M	<10	U
1,2,3-Trichlorobenzene	<10	U	<10	U	16.8		22.6		31.6		<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<10	U	<10	U	18.3		18.9		27.6		<10	U
1,2,3,4-Tetrachlorobenzene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Pentachlorobenzene	<10	U	<10	U	12.2		15.3		12.9		<10	U
Hexachlorobenzene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	NS		NS		84		88		94		86	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	73		48		61		76		115		79	
13C6-1,4-Dichlorobenzene	104		71		92		81		91		81	
13C6-1,2,3-Trichlorobenzene	77		59		76		71		76		72	
13C6-1,2,3,4-Tetrachlorobenzene	86		60		74		75		77		69	
13C6-Pentachlorobenzene	89		76		92		101		97		92	
13C6-Hexachlorobenzene	96		80		91		112		99		101	

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.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Summary Report

Sample Name	17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET		17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET		17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET		17-21754-SVOC-(36 THRU 40) BLANK#2		High Level Laboratory Control Sample (at 250ng)		Low Level Laboratory Control Sample (at 12.5ng)	
ALS Sample ID	L1932116-5		L1932116-6		L1932116-7		L1932116-8		WG2535724-2		WG2535724-5	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		%		%	
Matrix	Stack		Stack		Stack		Stack		QC		QC	
Sampling Date	25-May-17		25-May-17		26-May-17		26-May-17		n/a		n/a	
Extraction Date	29-May-17		29-May-17		29-May-17		29-May-17		29-May-17		29-May-17	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**		**% Recovery**	
Chlorobenzene	2090		2850		1950		<10	U	NS		106	
1,3-Dichlorobenzene	249		240		257		<10	U	138		135	
1,4-Dichlorobenzene	132		144		140		12.5		98		90	
1,2-Dichlorobenzene	148		148		152		<10	U	111		112	M
1,3,5-Trichlorobenzene	24.6		27.3		23.5		<10	U	98		138	
1,2,4-Trichlorobenzene	81		69.7		77.8		<10	U	109		143	M
1,2,3-Trichlorobenzene	17.9		21.8		18.9		<10	U	101		130	M
1,2,3,5/1,2,4,5-Tetrachlorobenzene	14.8		12.9		16.6		<10	U	122		113	
1,2,3,4-Tetrachlorobenzene	<10	U	<10	U	<10	U	<10	U	121		111	M
Pentachlorobenzene	<10	U	<10	U	<10	U	<10	U	121		143	M
Hexachlorobenzene	<10	U	<10	U	<10	U	<10	U	110		132	M
Field Sampling Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	84		86		84		84		NS		NS	
Extraction Standards	**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**		**%Rec**	
13C6-Chlorobenzene	67		51		78		75		65		75	
13C6-1,4-Dichlorobenzene	73		86		96		90		73		78	
13C6-1,2,3-Trichlorobenzene	63		72		79		73		80		58	
13C6-1,2,3,4-Tetrachlorobenzene	64		76		82		74		65		53	
13C6-Pentachlorobenzene	86		98		103		95		81		64	
13C6-Hexachlorobenzene	87		102		101		96		86		72	

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.

ALS Environmental

Sample Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2535724-1	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17060108.D
Run Date	6/1/2017 11:44
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<10	U
1,3-Dichlorobenzene	NotFnd	<10	U
1,4-Dichlorobenzene	7.18	<10	U
1,2-Dichlorobenzene	NotFnd	<10	U
1,3,5-Trichlorobenzene	NotFnd	<10	U
1,2,4-Trichlorobenzene	NotFnd	<10	U
1,2,3-Trichlorobenzene	NotFnd	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<10	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<10	U
Pentachlorobenzene	NotFnd	<10	U
Hexachlorobenzene	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	500	NotFnd	NS

Extraction Standards			**%Rec**
13C6-Chlorobenzene	250	4.88	73
13C6-1,4-Dichlorobenzene	250	7.17	104
13C6-1,2,3-Trichlorobenzene	250	9.51	77
13C6-1,2,3,4-Tetrachlorobenzene	250	11.21	86
13C6-Pentachlorobenzene	250	12.53	89
13C6-Hexachlorobenzene	250	14.16	96

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a
ALS Sample ID	WG2535724-4	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	sample		
Sample Matrix	QC		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17060107.D
Run Date	6/1/2017 11:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<10	U
1,3-Dichlorobenzene	NotFnd	<10	U
1,4-Dichlorobenzene	7.16	<10	U
1,2-Dichlorobenzene	NotFnd	<10	U
1,3,5-Trichlorobenzene	NotFnd	<10	U
1,2,4-Trichlorobenzene	NotFnd	<10	U
1,2,3-Trichlorobenzene	NotFnd	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<10	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<10	U
Pentachlorobenzene	NotFnd	<10	U
Hexachlorobenzene	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	500	NotFnd	NS

Extraction Standards			**%Rec**
13C6-Chlorobenzene	250	4.87	48
13C6-1,4-Dichlorobenzene	250	7.16	71
13C6-1,2,3-Trichlorobenzene	250	9.50	59
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	60
13C6-Pentachlorobenzene	250	12.52	76
13C6-Hexachlorobenzene	250	14.16	80

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-1	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060109.D
Run Date	6/1/2017 12:07
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.90	2200	
1,3-Dichlorobenzene	7.11	264	
1,4-Dichlorobenzene	7.18	133	
1,2-Dichlorobenzene	7.46	152	
1,3,5-Trichlorobenzene	8.60	30.8	
1,2,4-Trichlorobenzene	9.11	43.4	M
1,2,3-Trichlorobenzene	9.51	16.8	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.70	18.3	
1,2,3,4-Tetrachlorobenzene	11.20	<10	U
Pentachlorobenzene	12.53	12.2	
Hexachlorobenzene	14.15	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	500	10.50	84

Extraction Standards			**%Rec**
13C6-Chlorobenzene	250	4.90	61
13C6-1,4-Dichlorobenzene	250	7.18	92
13C6-1,2,3-Trichlorobenzene	250	9.51	76
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	74
13C6-Pentachlorobenzene	250	12.53	92
13C6-Hexachlorobenzene	250	14.16	91

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-2	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060110.D
Run Date	6/1/2017 12:30
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.90	1540	
1,3-Dichlorobenzene	7.11	322	
1,4-Dichlorobenzene	7.18	145	
1,2-Dichlorobenzene	7.46	163	
1,3,5-Trichlorobenzene	8.60	42.7	R
1,2,4-Trichlorobenzene	9.11	70.9	
1,2,3-Trichlorobenzene	9.51	22.6	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.70	18.9	
1,2,3,4-Tetrachlorobenzene	11.20	<10	U
Pentachlorobenzene	12.53	15.3	
Hexachlorobenzene	14.15	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	500	10.50	88

Extraction Standards			**%Rec**
13C6-Chlorobenzene	250	4.90	76
13C6-1,4-Dichlorobenzene	250	7.18	81
13C6-1,2,3-Trichlorobenzene	250	9.51	71
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	75
13C6-Pentachlorobenzene	250	12.52	101
13C6-Hexachlorobenzene	250	14.15	112

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 Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET**	Sampling Date	26-May-17
ALS Sample ID	L1932116-3	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060111.D
Run Date	6/1/2017 12:53
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	4.94	1830	
1,3-Dichlorobenzene	7.12	465	
1,4-Dichlorobenzene	7.20	205	
1,2-Dichlorobenzene	7.47	270	
1,3,5-Trichlorobenzene	8.60	45.7	
1,2,4-Trichlorobenzene	9.11	90.3	M
1,2,3-Trichlorobenzene	9.51	31.6	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.70	27.6	
1,2,3,4-Tetrachlorobenzene	11.20	<10	U
Pentachlorobenzene	12.53	12.9	
Hexachlorobenzene	14.16	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	500	10.50	94	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	250	4.94	115	R
13C6-1,4-Dichlorobenzene	250	7.20	91	
13C6-1,2,3-Trichlorobenzene	250	9.51	76	
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	77	
13C6-Pentachlorobenzene	250	12.53	97	
13C6-Hexachlorobenzene	250	14.16	99	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	25-May-17
ALS Sample ID	L1932116-4	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060112.D
Run Date	6/1/2017 13:16
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<10	U
1,3-Dichlorobenzene	NotFnd	<10	U
1,4-Dichlorobenzene	7.18	14	
1,2-Dichlorobenzene	NotFnd	<10	U
1,3,5-Trichlorobenzene	NotFnd	<10	U
1,2,4-Trichlorobenzene	NotFnd	<10	U
1,2,3-Trichlorobenzene	NotFnd	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<10	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<10	U
Pentachlorobenzene	NotFnd	<10	U
Hexachlorobenzene	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	500	10.50	86	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	250	4.86	79	R
13C6-1,4-Dichlorobenzene	250	7.18	81	
13C6-1,2,3-Trichlorobenzene	250	9.50	72	
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	69	
13C6-Pentachlorobenzene	250	12.52	92	
13C6-Hexachlorobenzene	250	14.16	101	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-5	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060113.D
Run Date	6/1/2017 13:39
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.89	2090	
1,3-Dichlorobenzene	7.10	249	
1,4-Dichlorobenzene	7.17	132	
1,2-Dichlorobenzene	7.45	148	
1,3,5-Trichlorobenzene	8.59	24.6	
1,2,4-Trichlorobenzene	9.11	81	
1,2,3-Trichlorobenzene	9.51	17.9	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.71	14.8	
1,2,3,4-Tetrachlorobenzene	11.20	<10	U
Pentachlorobenzene	12.53	<10	U
Hexachlorobenzene	14.16	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	500	10.50	84

Extraction Standards			**%Rec**
13C6-Chlorobenzene	250	4.89	67
13C6-1,4-Dichlorobenzene	250	7.17	73
13C6-1,2,3-Trichlorobenzene	250	9.51	63
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	64
13C6-Pentachlorobenzene	250	12.52	86
13C6-Hexachlorobenzene	250	14.15	87

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-6	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060114.D
Run Date	6/1/2017 14:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.90	2850	
1,3-Dichlorobenzene	7.09	240	
1,4-Dichlorobenzene	7.17	144	
1,2-Dichlorobenzene	7.45	148	
1,3,5-Trichlorobenzene	8.59	27.3	
1,2,4-Trichlorobenzene	9.11	69.7	
1,2,3-Trichlorobenzene	9.50	21.8	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.71	12.9	
1,2,3,4-Tetrachlorobenzene	11.20	<10	U
Pentachlorobenzene	12.53	<10	U
Hexachlorobenzene	NotFnd	<10	U
Field Sampling Standards	**ng spiked**	**%Rec**	
1-Bromo-2,3-Dichlorobenzene	500 10.50	86	
Extraction Standards		**%Rec**	
13C6-Chlorobenzene	250 4.90	51	R
13C6-1,4-Dichlorobenzene	250 7.17	86	
13C6-1,2,3-Trichlorobenzene	250 9.50	72	
13C6-1,2,3,4-Tetrachlorobenzene	250 11.20	76	
13C6-Pentachlorobenzene	250 12.52	98	
13C6-Hexachlorobenzene	250 14.16	102	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET**	Sampling Date	26-May-17
ALS Sample ID	L1932116-7	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060115.D
Run Date	6/1/2017 14:25
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	4.88	1950	
1,3-Dichlorobenzene	7.11	257	
1,4-Dichlorobenzene	7.18	140	
1,2-Dichlorobenzene	7.46	152	
1,3,5-Trichlorobenzene	8.60	23.5	
1,2,4-Trichlorobenzene	9.11	77.8	
1,2,3-Trichlorobenzene	9.51	18.9	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	10.70	16.6	
1,2,3,4-Tetrachlorobenzene	11.20	<10	U
Pentachlorobenzene	12.53	<10	U
Hexachlorobenzene	14.16	<10	U
Field Sampling Standards	**ng spiked**	**%Rec**	
1-Bromo-2,3-Dichlorobenzene	500 10.50	84	
Extraction Standards		**%Rec**	
13C6-Chlorobenzene	250 4.88	78	
13C6-1,4-Dichlorobenzene	250 7.18	96	
13C6-1,2,3-Trichlorobenzene	250 9.51	79	
13C6-1,2,3,4-Tetrachlorobenzene	250 11.20	82	
13C6-Pentachlorobenzene	250 12.52	103	
13C6-Hexachlorobenzene	250 14.15	101	

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	26-May-17
ALS Sample ID	L1932116-8	Extraction Date	29-May-17
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--
01-Jun-2017

Run Information	**Run 1**
Filename	17060116.D
Run Date	6/1/2017 14:48
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Chlorobenzene	NotFnd	<10	U
1,3-Dichlorobenzene	NotFnd	<10	U
1,4-Dichlorobenzene	7.18	12.5	
1,2-Dichlorobenzene	NotFnd	<10	U
1,3,5-Trichlorobenzene	NotFnd	<10	U
1,2,4-Trichlorobenzene	NotFnd	<10	U
1,2,3-Trichlorobenzene	NotFnd	<10	U
1,2,3,5/1,2,4,5-Tetrachlorobenzen	NotFnd	<10	U
1,2,3,4-Tetrachlorobenzene	NotFnd	<10	U
Pentachlorobenzene	NotFnd	<10	U
Hexachlorobenzene	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**%Rec**
1-Bromo-2,3-Dichlorobenzene	500	10.50	84

Extraction Standards			**%Rec**
13C6-Chlorobenzene	250	4.87	75
13C6-1,4-Dichlorobenzene	250	7.18	90
13C6-1,2,3-Trichlorobenzene	250	9.51	73
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	74
13C6-Pentachlorobenzene	250	12.52	95
13C6-Hexachlorobenzene	250	14.16	96

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**High Level Laboratory Control Sample (at 250ng)**	Sampling Date	n/a
ALS Sample ID	WG2535724-2	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 %		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17060103.D
Run Date	6/1/2017 9:50
Final Volume	1 mL
Dilution Factor	1
Analysis Units	% Rec
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene	250	NotFnd	NS	
1,3-Dichlorobenzene	250	7.14	138	
1,4-Dichlorobenzene	250	7.22	98	
1,2-Dichlorobenzene	250	7.49	111	
1,3,5-Trichlorobenzene	250	8.60	98	
1,2,4-Trichlorobenzene	250	9.11	109	
1,2,3-Trichlorobenzene	250	9.51	101	
1,2,3,5/1,2,4,5-Tetrachlorobenzen	500	10.72	122	
1,2,3,4-Tetrachlorobenzene	250	11.20	121	
Pentachlorobenzene	250	12.52	121	
Hexachlorobenzene	250	14.16	110	
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	500		NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	250	4.89	65	
13C6-1,4-Dichlorobenzene	250	7.21	73	
13C6-1,2,3-Trichlorobenzene	250	9.51	80	R
13C6-1,2,3,4-Tetrachlorobenzene	250	11.20	65	
13C6-Pentachlorobenzene	250	12.52	81	
13C6-Hexachlorobenzene	250	14.15	86	

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

Laboratory Control Sample Analysis Report

Sample Name	**Low Level Laboratory Control Sample (at 12.5ng)**	Sampling Date	n/a
ALS Sample ID	WG2535724-5	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	QC		
Sample Size	1 %		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17060105.D
Run Date	6/1/2017 10:35
Final Volume	1 mL
Dilution Factor	1
Analysis Units	% Rec
Instrument	MSD-2
Column	HP-5MS USN334522H

Target Analytes	**ng spiked**	**Ret. Time**	**% Recovery**	**Flags**
Chlorobenzene	12.5	4.91	106	M
1,3-Dichlorobenzene	12.5	7.10	135	
1,4-Dichlorobenzene	12.5	7.17	90	
1,2-Dichlorobenzene	12.5	7.45	112	M
1,3,5-Trichlorobenzene	12.5	8.60	138	
1,2,4-Trichlorobenzene	12.5	9.11	143	M
1,2,3-Trichlorobenzene	12.5	9.51	130	M
1,2,3,5/1,2,4,5-Tetrachlorobenzen	25	10.72	113	
1,2,3,4-Tetrachlorobenzene	12.5	11.21	111	M
Pentachlorobenzene	12.5	12.54	143	M
Hexachlorobenzene	12.5	14.16	132	M
Field Sampling Standards	**ng spiked**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene	500		NS	
Extraction Standards			**%Rec**	
13C6-Chlorobenzene	250	4.91	75	
13C6-1,4-Dichlorobenzene	250	7.17	78	
13C6-1,2,3-Trichlorobenzene	250	9.50	58	
13C6-1,2,3,4-Tetrachlorobenzene	250	11.21	53	
13C6-Pentachlorobenzene	250	12.54	64	
13C6-Hexachlorobenzene	250	14.16	72	

M Indicates that a peak has been manually integrated.

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:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1932116		Mississauga, ON L5J 2Y4
Date of Report	5-Jun-17		CANADA
Date of Sample Receipt	26-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS: **Chlorophenols as acetate derivatives by SIM GC/MS**

Poor recoveries on selected samples for the more acidic phenols - especially 2,4,6-tribromophenol (extraction standard) and 2,6-Dichloro-4-Fluorophenol (field spike) - was observed in this sample set. This indicates probable low recoveries on related target phenols such as trichlorophenols on those samples that show this low recovery bias (i.e. samples L-2, -4, -6, -7, -8).

The samples were soxhlet extracted twice, first without pH adjustment and a second time with the addition of 1mL of trifluoroacetic acid. The 1st extract was used for the analysis of all neutral targets. For the chlorophenols, an equal portion of each of the two extracts was combined for deriviatization and chlorophenol analysis

Sample extracts were initially analyzed for chlorophenols as their acetate derivatives. The archived portion of the extracts from two of the samples were then analyzed directly for chlorophenols as the free phenols including one with acceptable and one with poor phenolic recoveries. The sample pattern of recoveries was observed confirming that the poor recoveries was related to extraction efficiencies and not to an absence of derivatization.

The pattern of recovery losses is not fully explained since it does not follow order of the volatility nor acidity of the phenols.

Certified by:

Ron McLeod, PhD
Technical Director, Air Toxic and Special Chemistries

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		Media Blank		17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET		17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET		17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET		17-21754-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG2535724-1		WG2535724-4		L1932116-1		L1932116-2		L1932116-3		L1932116-4	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	Water		XAD		Stack		Stack		Stack		Stack	
Sampling Date	n/a		n/a		25-May-17		25-May-17		26-May-17		25-May-17	
Extraction Date	29-May-17		29-May-17		29-May-17		29-May-17		29-May-17		29-May-17	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
2-Chlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
3-Chlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
4-Chlorophenol	<50	U	<50	U	142		64.2		97.3		<50	U
2,6-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,4/2,5-Dichlorophenol	<50	U	<50	U	65.6	R	<50	U	<50	U	<50	U
3,5-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
3,4-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,4,6-Trichlorophenol	<50	U	<50	U	154		<50	U	96.2		<50	U
2,3,6-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,4,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3,4-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
3,4,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
2,3,4,5-Tetrachlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
Pentachlorophenol	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
2-Fluorophenol	18		29		115	M	22	M	65	M	37	
d5-Phenol	41	M	52		115	M	44	M	70	M	61	M
d4-2-Chlorophenol	23		77		117		41		78		56	
2,4,6-Tribromophenol	1		56		86		15		43		18	
13C-Pentachlorophenol	16		82		87		31		59		97	
Field Spike	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
2,6-Dichloro-4-Fluorophenol(FS)	NS		NS		94		5		41		9	

U	Indicates that this compound was not detected above the LOR.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Sample Analysis Summary Report

Sample Name	17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET		17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET		17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET		17-21754-SVOC-(36 THRU 40) BLANK#2		Laboratory Control Sample	
ALS Sample ID	L1932116-5		L1932116-6		L1932116-7		L1932116-8		WG2535724-2	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		%	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		XAD	
Sampling Date	25-May-17		25-May-17		26-May-17		26-May-17		n/a	
Extraction Date	29-May-17		29-May-17		29-May-17		29-May-17		29-May-17	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**% Recovery**	
2-Chlorophenol	<50	U	90.7	R	<50	U	<50	U	83	
3-Chlorophenol	<50	U	<50	U	<50	U	<50	U	81	
4-Chlorophenol	110		<50	U	67.8		<50	U	85	
2,6-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	66	
2,4/2,5-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	73	
3,5-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	92	
2,3-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	118	
3,4-Dichlorophenol	<50	U	<50	U	<50	U	<50	U	93	
2,4,6-Trichlorophenol	104		<50	U	<50	U	<50	U	61	
2,3,6-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	57	
2,3,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	63	M
2,4,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	68	
2,3,4-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	74	
3,4,5-Trichlorophenol	<50	U	<50	U	<50	U	<50	U	85	
2,3,5,6/2,3,4,6-Tetrachlorophenol	<50	U	<50	U	<50	U	<50	U	65	M
2,3,4,5-Tetrachlorophenol	<50	U	<50	U	<50	U	<50	U	64	
Pentachlorophenol	<50	U	<50	U	<50	U	<50	U	77	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
2-Fluorophenol	60	M	4	M	29		49	M	45	
d5-Phenol	77	M	21	M	70	M	65	M	59	M
d4-2-Chlorophenol	83		24		43	M	57		81	
2,4,6-Tribromophenol	49		0		8		15		59	
13C-Pentachlorophenol	88		13		67		93		70	
Field Spike	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
2,6-Dichloro-4-Fluorophenol(FS)	21		1		2		2		NS	

U	Indicates that this compound was not detected above the LOR.
M	Indicates that a peak has been manually integrated.
NS	Indicates that this compound was not spiked.
R	Indicates that the ion abundance ratio for this compound did not meet the acceptance criterion.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2535724-1	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	Water		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
02-Jun-2017

Run Information	**Run 1**
Filename	17060108.D
Run Date	6/1/2017 18:56
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.44	<50	U
2,6-Dichlorophenol	NotFnd	<50	U
2,4/2,5-Dichlorophenol	NotFnd	<50	U
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	NotFnd	<50	U
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	NotFnd	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	NotFnd	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.36	18	
d5-Phenol	1000	6.47	41	M
d4-2-Chlorophenol	1000	8.08	23	
2,4,6-Tribromophenol	1000	13.00	1	
13C-Pentachlorophenol	1000	13.65	16	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	NotFnd	NS

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.
1	This result is an Estimated Maximum Possible Concentration (EMPC) due to interference or positive id criterion failure.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Media Blank**	Sampling Date	n/a
ALS Sample ID	WG2535724-4	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	blank		
Sample Matrix	Xad		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
02-Jun-2017

Run Information	**Run 1**
Filename	17060109.D
Run Date	6/1/2017 19:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.44	<50	U
2,6-Dichlorophenol	NotFnd	<50	U
2,4/2,5-Dichlorophenol	NotFnd	<50	U
3,5-Dichlorophenol	9.73	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	10.54	<50	U
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	NotFnd	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	NotFnd	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**
2-Fluorophenol	1000	6.37	29
d5-Phenol	1000	6.47	52
d4-2-Chlorophenol	1000	8.09	77
2,4,6-Tribromophenol	1000	12.99	56
13C-Pentachlorophenol	1000	13.65	82

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	NotFnd	NS

U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-1	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060112.D
Run Date	6/1/2017 20:37
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.46	142	
2,6-Dichlorophenol	9.43	<50	U
2,4/2,5-Dichlorophenol	9.62	65.6	,R
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	9.94	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	10.54	154	
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	11.08	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	12.19	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	13.65	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.49	115	M
d5-Phenol	1000	6.58	115	M
d4-2-Chlorophenol	1000	8.11	117	
2,4,6-Tribromophenol	1000	12.99	86	
13C-Pentachlorophenol	1000	13.65	87	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.73	94

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
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 Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-2	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060113.D
Run Date	6/1/2017 21:02
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.45	64.2	
2,6-Dichlorophenol	9.42	<50	U
2,4/2,5-Dichlorophenol	9.62	<50	U
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	10.54	<50	U
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	11.08	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	12.18	<50	U
2,3,4,5-Tetrachlorophenol	12.68	<50	U
Pentachlorophenol	13.64	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.42	22	M
d5-Phenol	1000	6.52	44	M
d4-2-Chlorophenol	1000	8.09	41	
2,4,6-Tribromophenol	1000	13.00	15	
13C-Pentachlorophenol	1000	13.65	31	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.72	5

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET**	Sampling Date	26-May-17
ALS Sample ID	L1932116-3	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060114.D
Run Date	6/1/2017 21:28
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.46	97.3	
2,6-Dichlorophenol	9.42	<50	U
2,4/2,5-Dichlorophenol	9.62	<50	U
3,5-Dichlorophenol	9.73	<50	U
2,3-Dichlorophenol	9.94	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	10.54	96.2	
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	11.08	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	12.18	<50	U
2,3,4,5-Tetrachlorophenol	12.68	<50	U
Pentachlorophenol	13.65	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.44	65	M
d5-Phenol	1000	6.53	70	M
d4-2-Chlorophenol	1000	8.09	78	
2,4,6-Tribromophenol	1000	13.00	43	
13C-Pentachlorophenol	1000	13.65	59	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.72	41

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	25-May-17
ALS Sample ID	L1932116-4	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060110.D
Run Date	6/1/2017 19:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.44	<50	U
2,6-Dichlorophenol	NotFnd	<50	U
2,4/2,5-Dichlorophenol	NotFnd	<50	U
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	NotFnd	<50	U
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	NotFnd	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	NotFnd	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.38	37	
d5-Phenol	1000	6.49	61	M
d4-2-Chlorophenol	1000	8.09	56	
2,4,6-Tribromophenol	1000	13.00	18	
13C-Pentachlorophenol	1000	13.64	97	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.72	9

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-5	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060115.D
Run Date	6/2/2017 6:31
Final Volume	1 mL
Dilution Factor	1
Analysis Units	n/a
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration n/a**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	8.39	<50	U
4-Chlorophenol	8.46	110	
2,6-Dichlorophenol	9.43	<50	U
2,4/2,5-Dichlorophenol	9.62	<50	U
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	9.94	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	10.54	104	
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	11.08	<50	U
2,4,5-Trichlorophenol	11.08	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	12.19	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	13.65	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.46	60	M
d5-Phenol	1000	6.56	77	M
d4-2-Chlorophenol	1000	8.10	83	
2,4,6-Tribromophenol	1000	13.00	49	
13C-Pentachlorophenol	1000	13.65	88	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.73	21

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-6	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060116.D
Run Date	6/2/2017 6:56
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	8.10	90.7	,R
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.46	<50	U
2,6-Dichlorophenol	NotFnd	<50	U
2,4/2,5-Dichlorophenol	NotFnd	<50	U
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	NotFnd	<50	U
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	11.09	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	13.64	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.54	4	M
d5-Phenol	1000	6.60	21	M
d4-2-Chlorophenol	1000	8.13	24	
2,4,6-Tribromophenol	1000	12.99	0	
13C-Pentachlorophenol	1000	13.65	13	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.72	1

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
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 Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET**	Sampling Date	26-May-17
ALS Sample ID	L1932116-7	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060117.D
Run Date	6/2/2017 7:21
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.44	67.8	
2,6-Dichlorophenol	9.41	<50	U
2,4/2,5-Dichlorophenol	9.62	<50	U
3,5-Dichlorophenol	9.73	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	10.53	<50	U
2,3,6-Trichlorophenol	10.96	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	11.09	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	12.18	<50	U
2,3,4,5-Tetrachlorophenol	12.68	<50	U
Pentachlorophenol	13.65	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.39	29	
d5-Phenol	1000	6.49	70	M
d4-2-Chlorophenol	1000	8.09	43	M
2,4,6-Tribromophenol	1000	13.00	8	
13C-Pentachlorophenol	1000	13.65	67	

Field Spike			**% Rec**	
2,6-Dichloro-4-Fluorophenol(FS)	800	8.71	2	

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	26-May-17
ALS Sample ID	L1932116-8	Extraction Date	29-May-17
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--
02-Jun-2017

Run Information	**Run 1**
Filename	17060111.D
Run Date	6/1/2017 20:12
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
2-Chlorophenol	NotFnd	<50	U
3-Chlorophenol	NotFnd	<50	U
4-Chlorophenol	8.44	<50	U
2,6-Dichlorophenol	NotFnd	<50	U
2,4/2,5-Dichlorophenol	NotFnd	<50	U
3,5-Dichlorophenol	9.74	<50	U
2,3-Dichlorophenol	NotFnd	<50	U
3,4-Dichlorophenol	NotFnd	<50	U
2,4,6-Trichlorophenol	NotFnd	<50	U
2,3,6-Trichlorophenol	NotFnd	<50	U
2,3,5-Trichlorophenol	NotFnd	<50	U
2,4,5-Trichlorophenol	NotFnd	<50	U
2,3,4-Trichlorophenol	NotFnd	<50	U
3,4,5-Trichlorophenol	NotFnd	<50	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	NotFnd	<50	U
2,3,4,5-Tetrachlorophenol	NotFnd	<50	U
Pentachlorophenol	NotFnd	<50	U
Hexachlorophene	NotFnd	<50	U

Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.45	49	M
d5-Phenol	1000	6.55	65	M
d4-2-Chlorophenol	1000	8.10	57	
2,4,6-Tribromophenol	1000	13.00	15	
13C-Pentachlorophenol	1000	13.65	93	

Field Spike			**% Rec**
2,6-Dichloro-4-Fluorophenol(FS)	800	8.73	2

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the LOR.
B	Indicates that this compound was detected in the method blank at greater than 10% of the sample value.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2535724-2	Extraction Date	29-May-17
Analysis Method	SIM GC/MS		
Analysis Type	LCS		
Sample Matrix	Xad		
Sample Size	1 %		
Percent Moisture	n/a		
Split Ratio	5		

Approved:
Andrew Reid
--e-signature--
02-Jun-2017

Run Information	**Run 1**
Filename	17060105.D
Run Date	6/1/2017 17:41
Final Volume	1 mL
Dilution Factor	1
Analysis Units	% Rec
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**ug spiked**	**Ret. Time**	**% Recovery**	**Flags**
2-Chlorophenol	1000	8.10	83	
3-Chlorophenol	1000	8.38	81	
4-Chlorophenol	1000	8.45	85	
2,6-Dichlorophenol	1000	9.42	66	
2,4/2,5-Dichlorophenol	2000	9.62	73	
3,5-Dichlorophenol	1000	9.74	92	
2,3-Dichlorophenol	1000	9.93	118	
3,4-Dichlorophenol	1000	10.17	93	
2,4,6-Trichlorophenol	1000	10.54	61	
2,3,6-Trichlorophenol	1000	10.96	57	
2,3,5-Trichlorophenol	1000	11.02	63	M
2,4,5-Trichlorophenol	1000	11.08	68	
2,3,4-Trichlorophenol	1000	11.48	74	
3,4,5-Trichlorophenol	1000	11.59	85	
2,3,5,6/2,3,4,6-Tetrachlorophenol	2000	12.19	65	M
2,3,4,5-Tetrachlorophenol	1000	12.67	64	
Pentachlorophenol	1000	13.65	77	
Hexachlorophene	1000	18.79	51	
Extraction Standards			**% Rec**	
2-Fluorophenol	1000	6.38	45	
d5-Phenol	1000	6.48	59	M
d4-2-Chlorophenol	1000	8.09	81	
2,4,6-Tribromophenol	1000	12.99	59	
13C-Pentachlorophenol	1000	13.65	70	
Field Spike			**% Rec**	
2,6-Dichloro-4-Fluorophenol(FS)	800	NotFnd	NS	

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.

1435 Norjohn Court, Unit 1, Burlington ON, L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1932116		Mississauga, ON L5J 2Y4
Date of Report	1-Jun-17		CANADA
Date of Sample Receipt	26-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS: **PAH by CARB method 429 (LR option)- Isotope dilution**

There were levels of naphthalene and tetralin detected in the media blank, likely due to contribution from the XAD resin. Reported values may be elevated, as identified on the reports.

Certified by:

Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		Method Blank		17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET		17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET		17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET		17-21754-SVOC-(16 THRU 20) BLANK#1	
ALS Sample ID	WG2535724-1		WG2535724-4		L1932116-1		L1932116-2		L1932116-3		L1932116-4	
Sample Size	1		1		1		1		1		1	
Sample units	sample		sample		sample		sample		sample		sample	
Moisture Content	n/a		n/a		n/a		n/a		n/a		n/a	
Matrix	Water		XAD		Stack		Stack		Stack		Stack	
Sampling Date	n/a		n/a		25-May-17		25-May-17		26-May-17		25-May-17	
Extraction Date	29-May-17		29-May-17		29-May-17		29-May-17		29-May-17		29-May-17	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**	
Naphthalene	<10	U	51.1		106	B	157	B	113	B	54.5	B
2-Methylnaphthalene	<10	U	<10	U	38.1		51.8		24.6		<10	U
1-Methylnaphthalene	<10	U	<10	U	20.7		28.1		13.2		<10	U
Acenaphthylene	<10	U	<10	U	<10	U	19.1		10.6		<10	U
Acenaphthene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Fluorene	<10	U	<10	U	15.1		22.8		10.3		<10	U
Phenanthrene	<10	U	<10	U	97.3		125		65.5		13.3	
Anthracene	<10	U	<10	U	<10	U	11.1		<10	U	<10	U
Fluoranthene	<10	U	<10	U	21.6		43.3		18.2		<10	U
Pyrene	<10	U	<10	U	30.9		54.6		27.3		<10	U
Benzo(a)anthracene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Chrysene/Triphenylene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(b)flouranthene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(k)fluoranthene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(e)pyrene	<10	U	<10	U	<10	U	13.8		26.4		<10	U
Benzo(a)pyrene	<10	U	<10	U	<10	U	13.0		14.8		<10	U
Perylene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Indeno(1,2,3-cd)pyrene	<10	U	<10	U	<10	U	10.5		24.3		<10	U
Dibenzo(a,h/a,c)anthracene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(g,h,i)perylene	<10	U	<10	U	28.1		87.0		171		<10	U
Additional Analytes												
Tetralin	<10	U	105		138	B	153	B	188	B	72.2	B
2-Chloronaphthalene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Biphenyl	<10	U	<10	U	263		222		319		<10	U
o-Terphenyl	<10	U	<10	U	15.0		11.7		<10	U	<10	U
1-Methylphenanthrene	<10	U	<10	U	11.1		16.5		18.2		<10	U
9-Methylphenanthrene	<10	U	<10	U	13.1		25.9		10.1		<10	U
2-methylanthracene	<10	U	<10	U	13.6		23.1		<10	U	<10	U
9,10-dimethylanthracene	<10	U	<10	U	20.2		19.1		18.8		<10	U
m-terphenyl	<10	U	<10	U	103		70.5		61.2		<10	U
p-terphenyl	<10	U	<10	U	102		75.3		67.8		<10	U
Benzo(a)fluorene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
Benzo(b)fluorene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U	<10	U	<10	U	<10	U	<10	U
3-Methylcholanthrene	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
Picene	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
Dibenzo(a,e)pyrene	<50	U	<50	U	<50	U	<50	U	<50	U	<50	U
Coronene	<50	U	<50	U	<50	U	77.5		176		<50	U
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-1-Methylnaphthalene	NS		NS		79.8		72.7	M	78.7		77.9	
d10-Fluorene	NS		NS		85.3		78.8		90.5		85.1	
d14-Terphenyl	NS		NS		94.6		95.1		95.0		100.4	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d8-Naphthalene-ES	118.3		97.3		97.9		98.3		114.4		104.0	
d10-2-Methylnaphthalene-ES	112.9		94.9		97.1		102.6		115.9		105.4	
d8-Acenaphthylene-ES	98.7		89.7		96.0		104.1		111.3		95.8	
d10-Phenanthrene-ES	132.3		117.3		109.7		131.2		118.4		124.5	
d10-Anthracene-ES	122.6		114.1		106.5		121.3		121.6		113.2	
d10-Fluoranthene-ES	127.9		116.4		105.5		126.8		119.8		114.6	
d12-Benzo(a)anthracene-ES	93.7		92.9		87.9		116.8		114.6		96.3	
d12-Chrysene-ES	109.7		104.0		81.9		106.8		100.8		96.2	
d12-Benzo(b)fluoranthene-ES	126.9		121.2		112.9		147.8		144.3		124.2	
d12-Benzo(k)fluoranthene-ES	126.8		114.6		117.6		137.9		133.0		120.2	
d12-Benzo(a)pyrene-ES	102.7		104.5		106.9		123.0		122.6		99.0	
d12-Perylene-ES	99.4		96.0		100.1		120.8		119.0		102.3	
d12-Indeno(1,2,3,c-d)pyrene-ES	110.8	M	104.6	M	94.5	M	143.7		131.6		118.0	
d14-Dibenz(a,h)anthracene-ES	121.1	M	109.9	M	100.1	M	139.4	M	125.3	M	121.8	M
d12-Benzo(ghi)perylene-ES	123.0	M	110.6	M	91.6	M	121.8	M	102.8	M	102.5	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.
NS	Indicates that this compound was not spiked.

ALS Environmental

Sample Analysis Summary Report

Sample Name	17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET		17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET		17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET		17-21754-SVOC-(36 THRU 40) BLANK#2		Laboratory Control Sample	
ALS Sample ID	L1932116-5		L1932116-6		L1932116-7		L1932116-8		WG2535724-2	
Sample Size	1		1		1		1		1	
Sample units	sample		sample		sample		sample		%	
Moisture Content	n/a		n/a		n/a		n/a		n/a	
Matrix	Stack		Stack		Stack		Stack		XAD	
Sampling Date	25-May-17		25-May-17		26-May-17		26-May-17		n/a	
Extraction Date	29-May-17		29-May-17		29-May-17		29-May-17		29-May-17	
Target Analytes	**ng/sample**		**ng/sample**		**ng/sample**		**ng/sample**		**%**	
Naphthalene	140	U	109	B	123	B	92.4	B	120.3	
2-Methylnaphthalene	48.1		22.2		23.4		<10	U	NS	
1-Methylnaphthalene	26.7		13.5		14.9		<10	U	NS	
Acenaphthylene	17.0		<10	U	16.0		<10	U	104.2	
Acenaphthene	<10	U	<10	U	<10	U	<10	U	87.6	
Fluorene	51.2		13.0		24.7		<10	U	98.4	
Phenanthrene	222		93.9		119		15.5		107.2	
Anthracene	14.2		<10	U	10.7		<10	U	99.5	
Fluoranthene	92.6		42.2		74.9		16.4		105.9	
Pyrene	186		74.4		151		47.1		102.3	
Benzo(a)anthracene	<10	U	<10	U	<10	U	<10	U	99.3	
Chrysene/Triphenylene	<10	U	<10	U	<10	U	<10	U	100.3	
Benzo(b)flouranthene	14.8		<10	U	<10	U	<10	U	94.4	
Benzo(k)fluoranthene	28.4		29.1		11.3		<10	U	100.0	
Benzo(e)pyrene	97.6		45.5		96.7		13.5		NS	
Benzo(a)pyrene	20.2		11.6		<10	U	<10	U	96.6	
Perylene	<10	U	<10	U	<10	U	<10	U	NS	
Indeno(1,2,3-cd)pyrene	66.8		28.0		32.1		<10	U	84.3	
Dibenzo(a,h/a,c)anthracene	<10	U	<10	U	<10	U	<10	U	97.7	M
Benzo(g,h,i)perylene	448		211		272		65.0		99.2	M
Additional Analytes										
Tetralin	118	B	180	B	157	B	133	B		
2-Chloronaphthalene	<10	U	<10	U	<10	U	<10	U		
Biphenyl	161		159		100		<10	U		
o-Terphenyl	<10	U	<10	U	<10	U	<10	U		
1-Methylphenanthrene	17.5		15.5		16.4		11.4			
9-Methylphenanthrene	25.7		11.4		21.6		<10	U		
2-methylanthracene	17.9		<10	U	14.9		<10	U		
9,10-dimethylanthracene	<10	U	11.4		<10	U	<10	U		
m-terphenyl	<10	U	<10	U	<10	U	<10	U		
p-terphenyl	26.5		11.6		<10	U	<10	U		
Benzo(a)fluorene	<10	U	<10	U	<10	U	<10	U		
Benzo(b)fluorene	<10	U	<10	U	<10	U	<10	U		
7,12-Dimethylbenzo(a)anthracene	<10	U	<10	U	<10	U	<10	U		
3-Methylcholanthrene	<50	U	<50	U	<50	U	<50	U		
Picene	<50	U	<50	U	<50	U	<50	U		
Dibenzo(a,e)pyrene	<50	U	<50	U	<50	U	<50	U		
Coronene	294		118		189		<50	U		
Field Sampling Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d10-1-Methylnaphthalene	75.0	M	80.2		133.6		76.6		NS	
d10-Fluorene	85.4		89.3		85.5		93.0		NS	
d14-Terphenyl	108.0	M	102.6		99.8		99.1		NS	
Extraction Standards	**% Rec**		**% Rec**		**% Rec**		**% Rec**		**% Rec**	
d8-Naphthalene-ES	87.7		101.1		111.3		106.3		93.4	
d10-2-Methylnaphthalene-ES	89.1		103.4		110.4		107.0		91.0	
d8-Acenaphthylene-ES	89.2		102.3		107.5		103.6		90.0	
d10-Phenanthrene-ES	106.2		122.6		118.9		116.0		103.5	
d10-Anthracene-ES	105.8		135.3		114.8		118.3		107.8	
d10-Fluoranthene-ES	106.2		123.1		113.1		116.3		106.6	
d12-Benzo(a)anthracene-ES	99.5		114.5		107.8		113.6		91.9	
d12-Chrysene-ES	88.0		105.1		98.5		105.5		96.6	
d12-Benzo(b)fluoranthene-ES	123.9		144.7		134.6		135.3		108.6	
d12-Benzo(k)fluoranthene-ES	115.0		134.5		119.2		117.2		116.3	
d12-Benzo(a)pyrene-ES	108.1		118.0		116.0		116.7		107.1	
d12-Perylene-ES	106.1		119.4		113.3		113.3		100.9	
d12-Indeno(1,2,3,c-d)pyrene-ES	123.0		147.2		133.3		129.2		105.7	
d14-Dibenz(a,h)anthracene-ES	115.0	M	136.8	M	107.4		121.8	M	95.9	
d12-Benzo(ghi)perylene-ES	96.4	M	110.8	M	84.0		98.8	M	89.6	

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.
NS	Indicates that this compound was not spiked.

ALS Environmental

Laboratory Method Blank Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2535724-1	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	blank		
Sample Matrix	Water		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
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01-Jun-2017

Run Information	**Run 1**
Filename	17053109.D
Run Date	5/31/2017 20:50
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.61	<10	U
2-Methylnaphthalene	9.81	<10	U
1-Methylnaphthalene	9.98	<10	U
Acenaphthylene	NotFnd	<10	U
Acenaphthene	NotFnd	<10	U
Fluorene	12.52	<10	U
Phenanthrene	14.12	<10	U
Anthracene	NotFnd	<10	U
Fluoranthene	16.17	<10	U
Pyrene	16.56	<10	U
Benzo(e)anthracene	NotFnd	<10	U
Chrysene/Triphenylene	NotFnd	<10	U
Benzo(b)flouranthene	NotFnd	<10	U
Benzo(k)fluoranthene	NotFnd	<10	U
Benzo(e)pyrene	NotFnd	<10	U
Benzo(a)pyrene	NotFnd	<10	U
Perylene	NotFnd	<10	U
Indeno(1,2,3-cd)pyrene	NotFnd	<10	U
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U
Benzo(g,h,i)perylene	NotFnd	<10	U
Additional Analytes			
Tetralin	NotFnd	<10	U
Quinoline	[illegible]	[illegible]	[illegible]
2-Chloronaphthalene	NotFnd	<10	U
Biphenyl	10.64	<10	U
o-Terphenyl	NotFnd	<10	U
1-Methylphenanthrene	15.08	<10	U
9-Methylphenanthrene	NotFnd	<10	U
2-methylanthracene	NotFnd	<10	U
9,10-dimethylanthracene	NotFnd	<10	U
m-terphenyl	NotFnd	<10	U
p-terphenyl	NotFnd	<10	U
Benzo(a)fluorene	NotFnd	<10	U
Benzo(b)fluorene	NotFnd	<10	U
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<50	U
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]
Picene	NotFnd	<50	U
Dibenzo(a,e)pyrene	NotFnd	<50	U
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]
Coronene	NotFnd	<50	U
0	NotFnd	<10	U
0	NotFnd	<10	U

Field Sampling Standards	**ng spiked**	**% Rec**
d10-1-Methylnaphthalene	100	[illegible]
d10-Fluorene	100	[illegible]
d14-Terphenyl	100	[illegible]

Extraction Standards			**% Rec**	**Limits**
d8-Naphthalene-ES	500	8.58	118.3	50-150
d10-2-Methylnaphthalene-ES	500	9.75	112.9	50-150
d8-Acenaphthylene-ES	500	11.30	98.7	50-150
d10-Phenanthrene-ES	500	14.07	132.3	50-150
d10-Anthracene-ES	500	14.16	122.6	50-150
d10-Fluoranthene-ES	500	16.14	127.9	50-150
d12-Benzo(a)anthracene-ES	500	18.94	93.7	50-150
d12-Chrysene-ES	500	19.02	109.7	50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	126.9	50-150
d12-Benzo(k)fluoranthene-ES	500	21.21	126.8	50-150
d12-Benzo(a)pyrene-ES	500	21.76	102.7	50-150
d12-Perylene-ES	500	21.92	99.4	50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.79	110.8 M	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	121.1 M	50-150
d12-Benzo(ghi)perylene-ES	500	24.19	123.0 M	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 Environmental

Sample Analysis Report

Sample Name	**Method Blank**	Sampling Date	n/a
ALS Sample ID	WG2535724-4	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	XAD		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053108.D
Run Date	5/31/2017 20:14
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.61	51.1	
2-Methylnaphthalene	9.80	<10	U
1-Methylnaphthalene	9.97	<10	U
Acenaphthylene	NotFnd	<10	U
Acenaphthene	NotFnd	<10	U
Fluorene	NotFnd	<10	U
Phenanthrene	14.11	<10	U
Anthracene	14.19	<10	U
Fluoranthene	NotFnd	<10	U
Pyrene	16.56	<10	U
Benzo(a)anthracene	NotFnd	<10	U
Chrysene/Triphenylene	NotFnd	<10	U
Benzo(b)flouranthene	NotFnd	<10	U
Benzo(k)fluoranthene	NotFnd	<10	U
Benzo(e)pyrene	NotFnd	<10	U
Benzo(a)pyrene	NotFnd	<10	U
Perylene	NotFnd	<10	U
Indeno(1,2,3-cd)pyrene	NotFnd	<10	U
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U
Benzo(g,h,i)perylene	NotFnd	<10	U
Additional Analytes			
Tetralin	8.36	105	
Quinoline	[illegible]	[illegible]	[illegible]
2-Chloronaphthalene	10.62	<10	U
Biphenyl	10.64	<10	U
o-Terphenyl	NotFnd	<10	U
1-Methylphenanthrene	15.08	<10	U
9-Methylphenanthrene	NotFnd	<10	U
2-methylanthracene	NotFnd	<10	U
9,10-dimethylanthracene	NotFnd	<10	U
m-terphenyl	NotFnd	<10	U
p-terphenyl	NotFnd	<10	U
Benzo(a)fluorene	NotFnd	<10	U
Benzo(b)fluorene	NotFnd	<10	U
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<50	U
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]
Picene	NotFnd	<50	U
Dibenzo(a,e)pyrene	NotFnd	<50	U
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]
Coronene	NotFnd	<50	U
0	NotFnd	<10	U
0	NotFnd	<10	U

Field Sampling Standards	**ng spiked**	**% Rec**
d10-1-Methylnaphthalene	100	[illegible]
d10-Fluorene	100	[illegible]
d14-Terphenyl	100	[illegible]

Extraction Standards			**% Rec**	**Limits**
d8-Naphthalene-ES	500	8.58	97.3	50-150
d10-2-Methylnaphthalene-ES	500	9.75	94.9	50-150
d8-Acenaphthylene-ES	500	11.29	89.7	50-150
d10-Phenanthrene-ES	500	14.07	117.3	50-150
d10-Anthracene-ES	500	14.16	114.1	50-150
d10-Fluoranthene-ES	500	16.14	116.4	50-150
d12-Benzo(a)anthracene-ES	500	18.94	92.9	50-150
d12-Chrysene-ES	500	19.01	104.0	50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	121.2	50-150
d12-Benzo(k)fluoranthene-ES	500	21.21	114.6	50-150
d12-Benzo(a)pyrene-ES	500	21.76	104.5	50-150
d12-Perylene-ES	500	21.92	96.0	50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.79	104.6 M	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.85	109.9 M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	110.6 M	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 Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(1 THRU 5) TEST#1 #1 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-1	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053112.D
Run Date	5/31/2017 22:37
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Rat. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	8.61	106		B
2-Methylnaphthalene	9.80	38.1		
1-Methylnaphthalene	9.97	20.7		
Acenaphthylene	11.31	<10	U	
Acenaphthene	11.63	<10	U	
Fluorene	12.50	15.1		
Phenanthrene	14.11	97.3		
Anthracene	14.19	<10	U	
Fluoranthene	16.16	21.6		
Pyrene	16.55	30.9		
Benzo(a)anthracene	NotFnd	<10	U	
Chrysene/Triphenylene	19.06	<10	U	
Benzo(b)flouranthene	NotFnd	<10	U	
Benzo(k)fluoranthene	NotFnd	<10	U	
Benzo(e)pyrene	21.71	<10	U	
Benzo(a)pyrene	NotFnd	<10	U	
Perylene	NotFnd	<10	U	
Indeno(1,2,3-cd)pyrene	23.83	<10	U	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U	
Benzo(g,h,i)perylene	24.23	28.1		
Additional Analytes				
Tetralin	8.36	138		B
Quinoline	[illegible]	[illegible]		
2-Chloronaphthalene	10.59	<10	U	
Biphenyl	10.63	263		
o-Terphenyl	14.91	15.0		
1-Methylphenanthrene	15.08	11.1		
9-Methylphenanthrene	15.15	13.1		
2-methylanthracene	15.19	13.6		
9,10-dimethylanthracene	16.70	20.2		
m-terphenyl	16.75	103		
p-terphenyl	17.05	102		
Benzo(a)fluorene	NotFnd	<10	U	
Benzo(b)fluorene	NotFnd	<10	U	
Benzo(b)anthracene	[illegible]	[illegible]		
Benzo(j)fluoranthene	[illegible]	[illegible]		
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U	
3-Methylcholanthrene	NotFnd	<50	U	
Dibenz(a,j)acridine	[illegible]	[illegible]		
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]		
Picene	NotFnd	<50	U	
Dibenzo(a,e)pyrene	NotFnd	<50	U	
dibenzo(a,i)pyrene	[illegible]	[illegible]		
Coronene	26.70	<50	U	
0	NotFnd	<10	U	
0	NotFnd	<10	U	

Field Sampling Standards	**ng spiked**		**% Rec**
d10-1-Methylnaphthalene	500	9.91	79.8
d10-Fluorene	500	12.46	85.3
d14-Terphenyl	500	17.01	94.6

Extraction Standards			**% Rec**		**Limits**
d8-Naphthalene-ES	500	8.58	97.9		50-150
d10-2-Methylnaphthalene-ES	500	9.75	97.1		50-150
d8-Acenaphthylene-ES	500	11.29	96.0		50-150
d10-Phenanthrene-ES	500	14.07	109.7		50-150
d10-Anthracene-ES	500	14.16	106.5		50-150
d10-Fluoranthene-ES	500	16.14	105.5		50-150
d12-Benzo(a)anthracene-ES	500	18.94	87.9		50-150
d12-Chrysene-ES	500	19.01	81.9		50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	112.9		50-150
d12-Benzo(k)fluoranthene-ES	500	21.21	117.6		50-150
d12-Benzo(a)pyrene-ES	500	21.76	106.9		50-150
d12-Perylene-ES	500	21.92	100.1		50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.79	94.5	M	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	100.1	M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	91.6	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(6 THRU 10) TEST#2 #1 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-2	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053113.D
Run Date	5/31/2017 23:13
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.61	157	B
2-Methylnaphthalene	9.80	51.8	
1-Methylnaphthalene	9.97	28.1	
Acenaphthylene	11.28	19.1	
Acenaphthene	11.63	<10	U
Fluorene	12.50	22.8	
Phenanthrene	14.11	125	
Anthracene	14.19	11.1	
Fluoranthene	16.16	43.3	
Pyrene	16.56	54.6	
Benzo(a)anthracene	18.98	<10	U
Chrysene/Triphenylene	19.05	<10	U
Benzo(b)flouranthene	NotFnd	<10	U
Benzo(k)fluoranthene	NotFnd	<10	U
Benzo(e)pyrene	21.71	13.8	
Benzo(a)pyrene	21.83	13.0	
Perylene	NotFnd	<10	U
Indeno(1,2,3-cd)pyrene	23.83	10.5	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U
Benzo(g,h,i)perylene	24.22	87.0	
Additional Analytes			
Tetralin	8.36	153	B
Quinoline	[illegible]	[illegible]	[illegible]
2-Chloronaphthalene	NotFnd	<10	U
Biphenyl	10.63	222	
o-Terphenyl	14.91	11.7	
1-Methylphenanthrene	15.08	16.5	
9-Methylphenanthrene	15.15	25.9	
2-methylanthracene	15.19	23.1	
9,10-dimethylanthracene	16.70	19.1	
m-terphenyl	16.75	70.5	
p-terphenyl	17.05	75.3	
Benzo(a)fluorene	17.27	<10	U
Benzo(b)fluorene	NotFnd	<10	U
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<50	U
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]
Picene	NotFnd	<50	U
Dibenzo(a,e)pyrene	NotFnd	<50	U
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]
Coronene	26.68	77.5	
0	NotFnd	<10	U
0	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**% Rec**	
d10-1-Methylnaphthalene	500	9.91	72.7	M
d10-Fluorene	500	12.46	78.8	
d14-Terphenyl	500	17.01	95.1	

Extraction Standards			**% Rec**	**Limits**
d8-Naphthalene-ES	500	8.58	98.3	50-150
d10-2-Methylnaphthalene-ES	500	9.74	102.6	50-150
d8-Acenaphthylene-ES	500	11.29	104.1	50-150
d10-Phenanthrene-ES	500	14.07	131.2	50-150
d10-Anthracene-ES	500	14.15	121.3	50-150
d10-Fluoranthene-ES	500	16.13	126.8	50-150
d12-Benzo(a)anthracene-ES	500	18.94	116.8	50-150
d12-Chrysene-ES	500	19.01	106.8	50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	147.8	50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	137.9	50-150
d12-Benzo(a)pyrene-ES	500	21.76	123.0	50-150
d12-Perylene-ES	500	21.91	120.8	50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	143.7	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	139.4 M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	121.8 M	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(11 THRU 15) TEST#3 #1 APC OUTLET**	Sampling Date	26-May-17
ALS Sample ID	L1932116-3	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053114.D
Run Date	5/31/2017 23:49
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.61	113	B
2-Methylnaphthalene	9.80	24.6	
1-Methylnaphthalene	9.97	13.2	
Acenaphthylene	11.31	10.6	
Acenaphthene	11.63	<10	U
Fluorene	12.50	10.3	
Phenanthrene	14.11	65.5	
Anthracene	14.19	<10	U
Fluoranthene	16.16	18.2	
Pyrene	16.55	27.3	
Benzo(a)anthracene	NotFnd	<10	U
Chrysene/Triphenylene	19.05	<10	U
Benzo(b)flouranthene	NotFnd	<10	U
Benzo(k)fluoranthene	NotFnd	<10	U
Benzo(e)pyrene	21.71	26.4	
Benzo(a)pyrene	21.83	14.8	
Perylene	NotFnd	<10	U
Indeno(1,2,3-cd)pyrene	23.82	24.3	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U
Benzo(g,h,i)perylene	24.22	171	
Additional Analytes			
Tetralin	8.36	188	B
Quinoline	[illegible]	[illegible]	
2-Chloronaphthalene	NotFnd	<10	U
Biphenyl	10.63	319	
o-Terphenyl	14.91	<10	U
1-Methylphenanthrene	15.08	18.2	
9-Methylphenanthrene	15.15	10.1	
2-methylanthracene	15.19	<10	U
9,10-dimethylanthracene	16.70	18.8	
m-terphenyl	16.75	61.2	
p-terphenyl	17.05	67.8	
Benzo(a)fluorene	17.27	<10	U
Benzo(b)fluorene	NotFnd	<10	U
Benzo(b)anthracene	[illegible]	[illegible]	
Benzo(j)fluoranthene	[illegible]	[illegible]	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<50	U
Dibenz(a,j)acridine	[illegible]	[illegible]	
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	
Picene	NotFnd	<50	U
Dibenzo(a,e)pyrene	NotFnd	<50	U
dibenzo(a,i)pyrene	[illegible]	[illegible]	
Coronene	26.68	176	
0	NotFnd	<10	U
0	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**% Rec**
d10-1-Methylnaphthalene	500	9.91	78.7
d10-Fluorene	500	12.46	90.5
d14-Terphenyl	500	17.01	95

Extraction Standards			**% Rec**		**Limits**
d8-Naphthalene-ES	500	8.58	114.4		50-150
d10-2-Methylnaphthalene-ES	500	9.75	115.9		50-150
d8-Acenaphthylene-ES	500	11.29	111.3		50-150
d10-Phenanthrene-ES	500	14.07	118.4		50-150
d10-Anthracene-ES	500	14.15	121.6		50-150
d10-Fluoranthene-ES	500	16.13	119.8		50-150
d12-Benzo(a)anthracene-ES	500	18.94	114.6		50-150
d12-Chrysene-ES	500	19.01	100.8		50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	144.3		50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	133.0		50-150
d12-Benzo(a)pyrene-ES	500	21.76	122.6		50-150
d12-Perylene-ES	500	21.91	119.0		50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	131.6		50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	125.3	M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	102.8	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(16 THRU 20) BLANK#1**	Sampling Date	25-May-17
ALS Sample ID	L1932116-4	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG253S724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053117.D
Run Date	6/1/2017 1:36
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	8.61	54.5		B
2-Methylnaphthalene	9.80	<10	U	
1-Methylnaphthalene	9.97	<10	U	
Acenaphthylene	NotFnd	<10	U	
Acenaphthene	11.58	<10	U	
Fluorene	12.50	<10	U	
Phenanthrene	14.11	13.3		
Anthracene	14.19	<10	U	
Fluoranthene	16.16	<10	U	
Pyrene	16.56	<10	U	
Benzo(a)anthracene	NotFnd	<10	U	
Chrysene/Triphenylene	NotFnd	<10	U	
Benzo(b)flouranthene	NotFnd	<10	U	
Benzo(k)fluoranthene	NotFnd	<10	U	
Benzo(e)pyrene	NotFnd	<10	U	
Benzo(a)pyrene	NotFnd	<10	U	
Perylene	NotFnd	<10	U	
Indeno(1,2,3-cd)pyrene	NotFnd	<10	U	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U	
Benzo(g,h,i)perylene	24.22	<10	U	
Additional Analytes				
Tetralin	8.36	72.2		B
Quinoline	[illegible]	[illegible]	[illegible]	
2-Chloronaphthalene	NotFnd	<10	U	
Biphenyl	10.63	<10	U	
o-Terphenyl	NotFnd	<10	U	
1-Methylphenanthrene	15.08	<10	U	
9-Methylphenanthrene	NotFnd	<10	U	
2-methylanthracene	NotFnd	<10	U	
9,10-dimethylanthracene	NotFnd	<10	U	
m-terphenyl	NotFnd	<10	U	
p-terphenyl	NotFnd	<10	U	
Benzo(a)fluorene	NotFnd	<10	U	
Benzo(b)fluorene	NotFnd	<10	U	
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]	
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U	
3-Methylcholanthrene	NotFnd	<50	U	
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]	
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]	
Picene	NotFnd	<50	U	
Dibenzo(a,e)pyrene	NotFnd	<50	U	
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]	
Coronene	NotFnd	<50	U	
0	NotFnd	<10	U	
0	NotFnd	<10	U	

Field Sampling Standards	**ng spiked**		**% Rec**
d10-1-Methylnaphthalene	500	9.91	77.9
d10-Fluorene	500	12.46	85.1
d14-Terphenyl	500	17.01	100.4

Extraction Standards			**% Rec**		**Limits**
d8-Naphthalene-ES	500	8.58	104.0		50-150
d10-2-Methylnaphthalene-ES	500	9.74	105.4		50-150
d8-Acenaphthylene-ES	500	11.29	95.8		50-150
d10-Phenanthrene-ES	500	14.07	124.5		50-150
d10-Anthracene-ES	500	14.15	113.2		50-150
d10-Fluoranthene-ES	500	16.13	114.6		50-150
d12-Benzo(a)anthracene-ES	500	18.94	96.3		50-150
d12-Chrysene-ES	500	19.01	96.2		50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	124.2		50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	120.2		50-150
d12-Benzo(a)pyrene-ES	500	21.76	99.0		50-150
d12-Perylene-ES	500	21.91	102.3		50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	118.0		50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	121.8	M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	102.5	M	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(21 THRU 25) TEST#1 #2 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-5	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053118.D
Run Date	6/1/2017 2:11
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.61	140	B
2-Methylnaphthalene	9.79	48.1	
1-Methylnaphthalene	9.97	26.7	
Acenaphthylene	11.31	17.0	
Acenaphthene	11.63	<10	U
Fluorene	12.50	51.2	
Phenanthrene	14.10	222	
Anthracene	14.19	14.2	
Fluoranthene	16.16	92.6	
Pyrene	16.55	186	
Benzo(a)anthracene	18.98	<10	U
Chrysene/Triphenylene	19.06	<10	U
Benzo(b)flouranthene	21.19	14.8	
Benzo(k)fluoranthene	21.23	28.4	
Benzo(e)pyrene	21.71	97.6	
Benzo(a)pyrene	21.80	20.2	
Perylene	21.96	<10	U
Indeno(1,2,3-cd)pyrene	23.82	66.8	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U
Benzo(g,h,i)perylene	24.22	448	
Additional Analytes			
Tetralin	8.36	118	B
Quinoline	[illegible]	[illegible]	[illegible]
2-Chloronaphthalene	NotFnd	<10	U
Biphenyl	10.63	161	
o-Terphenyl	14.91	<10	U
1-Methylphenanthrene	15.07	17.5	
9-Methylphenanthrene	15.15	25.7	
2-methylanthracene	15.19	17.9	
9,10-dimethylanthracene	NotFnd	<10	U
m-terphenyl	16.75	<10	U
p-terphenyl	17.01	26.5	
Benzo(a)fluorene	NotFnd	<10	U
Benzo(b)fluorene	NotFnd	<10	U
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<50	U
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]
Picene	NotFnd	<50	U
Dibenzo(a,e)pyrene	NotFnd	<50	U
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]
Coronene	26.67	294	
0	NotFnd	<10	U
0	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**% Rec**	
d10-1-Methylnaphthalene	500	9.91	75	M
d10-Fluorene	500	12.46	85.4	
d14-Terphenyl	500	17.00	108	M

Extraction Standards			**% Rec**	**Limits**
d8-Naphthalene-ES	500	8.58	87.7	50-150
d10-2-Methylnaphthalene-ES	500	9.74	89.1	50-150
d8-Acenaphthylene-ES	500	11.29	89.2	50-150
d10-Phenanthrene-ES	500	14.07	106.2	50-150
d10-Anthracene-ES	500	14.15	105.8	50-150
d10-Fluoranthene-ES	500	16.14	106.2	50-150
d12-Benzo(a)anthracene-ES	500	18.94	99.5	50-150
d12-Chrysene-ES	500	19.01	88.0	50-150
d12-Benzo(b)fluoranthene-ES	500	21.14	123.9	50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	115.0	50-150
d12-Benzo(a)pyrene-ES	500	21.75	108.1	50-150
d12-Perylene-ES	500	21.91	106.1	50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	123.0	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	115.0	M 50-150
d12-Benzo(ghi)perylene-ES	500	24.18	96.4	M 50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(26 THRU 30) TEST#2 #2 APC OUTLET**	Sampling Date	25-May-17
ALS Sample ID	L1932116-6	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053119.D
Run Date	6/1/2017 2:47
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS US\N698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**
Naphthalene	8.61	109	B
2-Methylnaphthalene	9.80	22.2	
1-Methylnaphthalene	9.97	13.5	
Acenaphthylene	11.31	<10	U
Acenaphthene	11.63	<10	U
Fluorene	12.50	13.0	
Phenanthrene	14.11	93.9	
Anthracene	14.19	<10	U
Fluoranthene	16.16	42.2	
Pyrene	16.55	74.4	
Benzo(a)anthracene	NotFnd	<10	U
Chrysene/Triphenylene	19.06	<10	U
Benzo(b)flouranthene	21.20	<10	U
Benzo(k)fluoranthene	21.23	29.1	
Benzo(e)pyrene	21.71	45.5	
Benzo(a)pyrene	21.80	11.6	
Perylene	NotFnd	<10	U
Indeno(1,2,3-cd)pyrene	23.83	28.0	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U
Benzo(g,h,i)perylene	24.22	211	
Additional Analytes			
Tetralin	8.36	180	B
Quinoline	[illegible]	[illegible]	[illegible]
2-Chloronaphthalene	NotFnd	<10	U
Biphenyl	10.63	159	
o-Terphenyl	14.91	<10	U
1-Methylphenanthrene	15.07	15.5	
9-Methylphenanthrene	15.15	11.4	
2-methylanthracene	15.19	<10	U
9,10-dimethylanthracene	16.73	11.4	
m-terphenyl	16.75	<10	U
p-terphenyl	17.02	11.6	
Benzo(a)fluorene	NotFnd	<10	U
Benzo(b)fluorene	NotFnd	<10	U
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U
3-Methylcholanthrene	NotFnd	<50	U
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]
Picene	NotFnd	<50	U
Dibenzo(a,e)pyrene	NotFnd	<50	U
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]
Coronene	26.68	118	
0	NotFnd	<10	U
0	NotFnd	<10	U

Field Sampling Standards	**ng spiked**		**% Rec**
d10-1-Methylnaphthalene	500	9.91	80.2
d10-Fluorene	500	12.46	89.3
d14-Terphenyl	500	17.00	102.6

Extraction Standards			**% Rec**		**Limits**
d8-Naphthalene-ES	500	8.58	101.1		50-150
d10-2-Methylnaphthalene-ES	500	9.74	103.4		50-150
d8-Acenaphthylene-ES	500	11.29	102.3		50-150
d10-Phenanthrene-ES	500	14.07	122.6		50-150
d10-Anthracene-ES	500	14.15	135.3		50-150
d10-Fluoranthene-ES	500	16.14	123.1		50-150
d12-Benzo(a)anthracene-ES	500	18.94	114.5		50-150
d12-Chrysene-ES	500	19.01	105.1		50-150
d12-Benzo(b)fluoranthene-ES	500	21.14	144.7		50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	134.5		50-150
d12-Benzo(a)pyrene-ES	500	21.75	118.0		50-150
d12-Perylene-ES	500	21.91	119.4		50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	147.2		50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	136.8	M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	110.8	M	50-150

M Indicates that a peak has been manually integrated.
U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(31 THRU 35) TEST#3 #2 APC OUTLET**	Sampling Date	26-May-17
ALS Sample ID	L1932116-7	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053120.D
Run Date	6/1/2017 3:22
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN6980S7H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	8.61	123		B
2-Methylnaphthalene	9.79	23.4		
1-Methylnaphthalene	9.97	14.9		
Acenaphthylene	11.31	16.0		
Acenaphthene	11.63	<10	U	
Fluorene	12.50	24.7		
Phenanthrene	14.11	119		
Anthracene	14.18	10.7		
Fluoranthene	16.16	74.9		
Pyrene	16.55	151		
Benzo(a)anthracene	18.98	<10	U	
Chrysene/Triphenylene	19.06	<10	U	
Benzo(b)flouranthene	21.19	<10	U	
Benzo(k)fluoranthene	21.23	11.3		
Benzo(e)pyrene	21.70	96.7		
Benzo(a)pyrene	21.80	<10	U	
Perylene	21.95	<10	U	
Indeno(1,2,3-cd)pyrene	23.82	32.1		
Dibenzo(a,h/a,c)anthracene	23.86	<10	U	
Benzo(g,h,i)perylene	24.22	272		
Additional Analytes				
Tetralin	8.36	157		B
Quinoline				
2-Chloronaphthalene	NotFnd	<10	U	
Biphenyl	10.63	100		
o-Terphenyl	14.91	<10	U	
1-Methylphenanthrene	15.08	16.4		
9-Methylphenanthrene	15.15	21.6		
2-methylanthracene	15.19	14.9		
9,10-dimethylanthracene	NotFnd	<10	U	
m-terphenyl	16.75	<10	U	
p-terphenyl	17.05	<10	U	
Benzo(a)fluorene	NotFnd	<10	U	
Benzo(b)fluorene	NotFnd	<10	U	
Benzo(b)anthracene				
Benzo(j)fluoranthene				
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U	
3-Methylcholanthrene	NotFnd	<50	U	
Dibenz(a,j)acridine				
7H-Dibenzo(c,g)carbazole				
Picene	NotFnd	<50	U	
Dibenzo(a,e)pyrene	NotFnd	<50	U	
dibenzo(a,l)pyrene				
Coronene	26.67	189		
0	NotFnd	<10	U	
0	NotFnd	<10	U	

Field Sampling Standards	**ng spiked**		**% Rec**
d10-1-Methylnaphthalene	500	9.74	133.6
d10-Fluorene	500	12.45	85.5
d14-Terphenyl	500	17.01	99.8

Extraction Standards			**% Rec**	**Limits**
d8-Naphthalene-ES	500	8.58	111.3	50-150
d10-2-Methylnaphthalene-ES	500	9.74	110.4	50-150
d8-Acenaphthylene-ES	500	11.29	107.5	50-150
d10-Phenanthrene-ES	500	14.07	118.9	50-150
d10-Anthracene-ES	500	14.15	114.8	50-150
d10-Fluoranthene-ES	500	16.13	113.1	50-150
d12-Benzo(a)anthracene-ES	500	18.93	107.8	50-150
d12-Chrysene-ES	500	19.00	98.5	50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	134.6	50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	119.2	50-150
d12-Benzo(a)pyrene-ES	500	21.76	116.0	50-150
d12-Perylene-ES	500	21.91	113.3	50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	133.3	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	107.4	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	84.0	50-150

U Indicates that this compound was not detected above the MDL.

ALS Environmental

Sample Analysis Report

Sample Name	**17-21754-SVOC-(36 THRU 40) BLANK#2**	Sampling Date	26-May-17
ALS Sample ID	L1932116-8	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	sample		
Sample Matrix	Stack		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053121.D
Run Date	6/1/2017 3:58
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**Ret. Time**	**Concentration ng/sample**	**Flags**	
Naphthalene	8.61	92.4		B
2-Methylnaphthalene	9.79	<10	U	
1-Methylnaphthalene	9.97	<10	U	
Acenaphthylene	11.31	<10	U	
Acenaphthene	11.62	<10	U	
Fluorene	12.50	<10	U	
Phenanthrene	14.11	15.5		
Anthracene	14.19	<10	U	
Fluoranthene	16.16	16.4		
Pyrene	16.55	47.1		
Benzo(a)anthracene	NotFnd	<10	U	
Chrysene/Triphenylene	19.06	<10	U	
Benzo(b)flouranthene	NotFnd	<10	U	
Benzo(k)fluoranthene	NotFnd	<10	U	
Benzo(e)pyrene	21.70	13.5		
Benzo(a)pyrene	21.81	<10	U	
Perylene	NotFnd	<10	U	
Indeno(1,2,3-cd)pyrene	23.82	<10	U	
Dibenzo(a,h/a,c)anthracene	NotFnd	<10	U	
Benzo(g,h,i)perylene	24.22	65.0		
Additional Analytes				
Tetralin	8.35	133		B
Quinoline	[illegible]	[illegible]	[illegible]	
2-Chloronaphthalene	10.62	<10	U	
Biphenyl	10.63	<10	U	
o-Terphenyl	NotFnd	<10	U	
1-Methylphenanthrene	15.08	11.4		
9-Methylphenanthrene	15.15	<10	U	
2-methylanthracene	15.19	<10	U	
9,10-dimethylanthracene	NotFnd	<10	U	
m-terphenyl	NotFnd	<10	U	
p-terphenyl	NotFnd	<10	U	
Benzo(a)fluorene	NotFnd	<10	U	
Benzo(b)fluorene	NotFnd	<10	U	
Benzo(b)anthracene	[illegible]	[illegible]	[illegible]	
Benzo(j)fluoranthene	[illegible]	[illegible]	[illegible]	
7,12-Dimethylbenzo(a)anthracene	NotFnd	<10	U	
3-Methylcholanthrene	NotFnd	<50	U	
Dibenz(a,j)acridine	[illegible]	[illegible]	[illegible]	
7H-Dibenzo(c,g)carbazole	[illegible]	[illegible]	[illegible]	
Picene	NotFnd	<50	U	
Dibenzo(a,e)pyrene	NotFnd	<50	U	
dibenzo(a,i)pyrene	[illegible]	[illegible]	[illegible]	
Coronene	26.69	<50	U	
0	NotFnd	<10	U	
0	NotFnd	<10	U	

Field Sampling Standards	**ng spiked**		**% Rec**
d10-1-Methylnaphthalene	500	9.91	76.6
d10-Fluorene	500	12.45	93
d14-Terphenyl	500	17.01	99.1

Extraction Standards			**% Rec**		**Limits**
d8-Naphthalene-ES	500	8.58	106.3		50-150
d10-2-Methylnaphthalene-ES	500	9.74	107.0		50-150
d8-Acenaphthylene-ES	500	11.29	103.6		50-150
d10-Phenanthrene-ES	500	14.07	116.0		50-150
d10-Anthracene-ES	500	14.15	118.3		50-150
d10-Fluoranthene-ES	500	16.13	116.3		50-150
d12-Benzo(a)anthracene-ES	500	18.93	113.6		50-150
d12-Chrysene-ES	500	19.00	105.5		50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	135.3		50-150
d12-Benzo(k)fluoranthene-ES	500	21.20	117.2		50-150
d12-Benzo(a)pyrene-ES	500	21.75	116.7		50-150
d12-Perylene-ES	500	21.91	113.3		50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.78	129.2		50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	121.8	M	50-150
d12-Benzo(ghi)perylene-ES	500	24.18	98.8	M	50-150

M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the MDL.

ALS Environmental

Laboratory Control Sample Analysis Report

Sample Name	**Laboratory Control Sample**	Sampling Date	n/a
ALS Sample ID	WG2535724-2	Extraction Date	29-May-17
Analysis Method	PAH by CARB 429		
Analysis Type	LCS		
Sample Matrix	XAD		
Sample Size	1 sample		
Percent Moisture	n/a		
Split Ratio	5	Workgroup	WG2535724

Approved:
AR
--e-signature--
01-Jun-2017

Run Information	**Run 1**
Filename	17053104.D
Run Date	5/31/2017 17:50
Final Volume	1 mL
Dilution Factor	1
Analysis Units	ng/sample
Instrument	MSD-1
Column	HP-5MS USN698067H

Target Analytes	**ug spiked**	**Ret. Time**	**%**	**Flags**	**Limits**
Naphthalene	500	8.62	120.3		50-150
2-Methylnaphthalene	500	NotFnd	0 M	R	50-150
1-Methylnaphthalene	500	[illegible]	[illegible]		50-150
Acenaphthylene	500	11.32	104.2		50-150
Acenaphthene	500	11.63	87.6		50-150
Fluorene	500	12.50	98.4		50-150
Phenanthrene	500	14.11	107.2		50-150
Anthracene	500	14.19	99.5		50-150
Fluoranthene	500	16.17	105.9		50-150
Pyrene	500	16.56	102.3		50-150
Benzo(a)anthracene	500	18.98	99.3		50-150
Chrysene/Triphenylene	500	19.06	100.3		50-150
Benzo(b)flouranthene	500	21.20	94.4		50-150
Benzo(k)fluoranthene	500	21.25	100		50-150
Benzo(e)pyrene	500	NotFnd	0 M	R	50-150
Benzo(a)pyrene	500	21.80	96.6		50-150
Perylene	500	NotFnd	0 M	R	50-150
Indeno(1,2,3-cd)pyrene	500	23.83	84.3		50-150
Dibenzo(a,h/a,c)anthracene	500	23.89	97.7 M		50-150
Benzo(g,h,i)perylene	500	24.23	99.2 M		50-150

Additional Analytes

0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0
0	100	NotFnd	0

Field Sampling Standards	**ng spiked**		**% Rec**	
d10-1-Methylnaphthalene	100	NotFnd	0 M	R
d10-Fluorene	100	NotFnd	0 M	
d14-Terphenyl	100	NotFnd	0 M	R

Extraction Standards			**% Rec**	**Limits**
d8-Naphthalene-ES	500	8.58	93.4	30-150
d10-2-Methylnaphthalene-ES	500	9.75	91.0	30-150
d8-Acenaphthylene-ES	500	11.30	90.0	30-150
d10-Phenanthrene-ES	500	14.08	103.5	50-150
d10-Anthracene-ES	500	14.16	107.8	50-150
d10-Fluoranthene-ES	500	16.14	106.6	50-150
d12-Benzo(a)anthracene-ES	500	18.94	91.9	50-150
d12-Chrysene-ES	500	19.02	96.6	50-150
d12-Benzo(b)fluoranthene-ES	500	21.15	108.6	50-150
d12-Benzo(k)fluoranthene-ES	500	21.21	116.3	50-150
d12-Benzo(a)pyrene-ES	500	21.76	107.1	30-150
d12-Perylene-ES	500	21.92	100.9	50-150
d12-Indeno(1,2,3,c-d)pyrene-ES	500	23.79	105.7	50-150
d14-Dibenz(a,h)anthracene-ES	500	23.84	95.9	50-150
d12-Benzo(ghi)perylene-ES	500	24.19	89.6	50-150

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

APPENDIX 18

Acid Gas Recovery Data Sheets
(8 page)

Method 26A Recovery Sheet

Client : Covanta DYEC

Project No.: 21754

Date: MAY 23/17

Test No.: 1

Test Location: UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: COVANTA - QE - 10		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	666.7
Initial Wt:	768.3
Final Wt:	871.5
1 Gain:	103.2 ✓
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	963.8
Final Wt:	975.0
4 Gain:	11.2

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	666.8
Initial Wt:	777.9
Final Wt:	802.3
2 Gain:	24.4 ✓
Colour:	CLEAR

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	548.8
Final Wt:	552.0
3 Gain:	3.2 ✓
Colour:	CLEAR

SAMPLE IDENTIFICATION	17-21754-M26A-
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	1

CONTAINER TS3 WEIGHTS	
Empty Wt:	409.4
With Imp. 1,2,3 Soln:	742.3
Imp. 1,2,3 Volume:	332.9
After Rinse:	887.3
Total TS3:	477.9

Train Loaded By: AN

Train Recovered By: AN

Recovery Witnessed By:

Date: MAY 23/17

CWTR = 1+2+3: 130.8

WCBDA= 4: 11.2 ✓

Box 9

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	MAY 23/17
Test No.:	2
Test Location:	UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID: COVANTA-DF-9		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	655.3
Initial Wt:	758.5
Final Wt:	873.5
1 Gain:	115.0
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	929.7
Final Wt:	937.2
4 Gain:	7.5

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	663.8
Initial Wt:	762.1
Final Wt:	779.6
2 Gain:	17.5
Colour:	CLEAR

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	660.6
Final Wt:	662.4
3 Gain:	1.8
Colour:	CLEAR

SAMPLE IDENTIFICATION	17-21754-UM26A--
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	2

CONTAINER TS3 WEIGHTS	
Empty Wt:	406.6
With Imp. 1,2,3 Soln:	735.3
Imp. 1,2,3 Volume:	328.7
After Rinse:	834.3
Total TS3:	427.7

Train Loaded By:	AN
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 23/17

CWTR = 1+2+3:	134.3
WCBDA= 4:	~~7.8~~ 7.5 ✓

Box 14

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	MAY 23, 17
Test No.:	3
Test Location:	UNIT #1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID:		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO4	
Empty Wt:	669.9
Initial Wt:	769.5
Final Wt:	980.0
1 Gain:	110.5
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	~~975.0~~ 937.2
Final Wt:	944.9
4 Gain:	7.7

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	671.5
Initial Wt:	772.1
Final Wt:	788.8
2 Gain:	16.7
Colour:	CLEAR

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	550.0
Final Wt:	551.6
3 Gain:	1.6
Colour:	CLEAR

SAMPLE IDENTIFICATION	17-21754-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	3

CONTAINER TS3 WEIGHTS	
Empty Wt:	410.3
With Imp. 1,2,3 Soln:	741.3
Imp. 1,2,3 Volume:	331.0
After Rinse:	855.3
Total TS3:	445.0

Train Loaded By:	AN
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	MAY 23, 17

CWTR = 1+2+3:	128.8
WCBDA= 4:	7.7

Box 9

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	MAY 23, 17
Test No.:	BLANK 1
Test Location:	

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID:		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

SAMPLE IDENTIFICATION	17-21754-MZA-
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	BLANK 1

CONTAINER TS3 WEIGHTS	
Empty Wt:	410.1
With Imp. 1,2,3 Soln:	616.7
Imp. 1,2,3 Volume:	206.6
After Rinse:	724.8
Total TS3:	314.7

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	
Date:	MAY 23, 17

CWTR = 1+2+3:	
WCBDA= 4:	

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	MAY 24/17
Test No.:	1
Test Location:	UNIT 2 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID:		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	658.2
Initial Wt:	757.3
Final Wt:	873.8
1 Gain:	116.5
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	949.9
Final Wt:	959.9
4 Gain:	10.0

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	665.4
Initial Wt:	764.5
Final Wt:	782.1
2 Gain:	17.6
Colour:	CLEAR

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	664.9
Final Wt:	667.0
3 Gain:	2.1
Colour:	CLEAR

SAMPLE IDENTIFICATION	17-21754-M26A-
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	4

CONTAINER TS3 WEIGHTS	
Empty Wt:	411.5
With Imp. 1,2,3 Soln:	745.1
Imp. 1,2,3 Volume:	333.6
After Rinse:	880.7
Total TS3:	469.2

Train Loaded By:	AN
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 24/17

CWTR = 1+2+3:	136.2 ✓
WCBDA= 4:	10.0

Box 9 (B)

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	May 24, 17
Test No.:	2
Test Location:	UNIT 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID:		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO4		
Empty Wt:	665.4	
Initial Wt:	769.3	
Final Wt:	883.8	
1 Gain:	114.5	
Colour:	CLEAR	

Impinger #4 Silica Gel		
Initial Wt:	944.8	
Final Wt:	952.4	
4 Gain:	7.6	

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO4	
Empty Wt:	669.8
Initial Wt:	769.6
Final Wt:	787.3
2 Gain:	17.7
Colour:	CLEAR

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	549.9
Final Wt:	552.5
3 Gain:	2.6
Colour:	CLEAR

SAMPLE IDENTIFICATION	12-21754-M26A
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	5

CONTAINER TS3 WEIGHTS	
Empty Wt:	413.3
With Imp. 1,2,3 Soln:	747.6
Imp. 1,2,3 Volume:	334.3
After Rinse:	850.0
Total TS3:	436.7

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	
Date:	May 24, 17

CWTR = 1+2+3:	134.8 ✓
WCBDA= 4:	7.6

A

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	MAY 24/17
Test No.:	3
Test Location:	UNIT 2 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID:		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	658.4
Initial Wt:	758.9
Final Wt:	872.8
1 Gain:	113.9
Colour:	CLEAR

Impinger #4 Silica Gel	
Initial Wt:	959.8
Final Wt:	967.8
4 Gain:	8.0

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	666.2
Initial Wt:	766.3
Final Wt:	783.8
2 Gain:	17.5
Colour:	CLEAR

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	665.2
Final Wt:	667.3
3 Gain:	2.1
Colour:	CLEAR

SAMPLE IDENTIFICATION	17-21754-M26A -
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	6

CONTAINER TS3 WEIGHTS	
Empty Wt:	422.5
With Imp. 1,2,3 Soln:	756.8
Imp. 1,2,3 Volume:	334.3
After Rinse:	928.4
Total TS3:	505.9

Train Loaded By:	AW
Train Recovered By:	AN/DT
Recovery Witnessed By:	
Date:	MAY 24/17

CWTR = 1+2+3:	133.5 ✓
WCBDA= 4:	8.0

6

Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21754
Date:	MAY 24/17
Test No.:	BLANK 2
Test Location:	—

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
	Filter ID:		

CONTAINER TS1	CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #1 0.1 N H_2SO_4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

MARK FLUID LEVEL

Seal and label container TS1

SEAL CONTAINER TS2

Impinger #2 0.1 N H_2SO_4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

SAMPLE IDENTIFICATION	17-21754-M26A-
TS1(Probe Rinse-Acetone)	
TS2(Filter)	
TS3(Impinger 1,2,3 Sol'n)	BLANK 2

CONTAINER TS3 WEIGHTS	
Empty Wt:	413.8
With Imp. 1,2,3 Soln:	620.7
Imp. 1,2,3 Volume:	206.9
After Rinse:	721.8
Total TS3:	308.0

Train Loaded By:	AN
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 24/17

CWTR = 1+2+3:	
WCBDA= 4:	

APPENDIX 19

VOST Analytical Reports
(3 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:	Rachael Stolys	**Client Name:**	ORTECH Environmental
ALS Project ID:	ORT100	**Client Address:**	804 Southdown Road
ALS WO#:	L1931917		Mississauga, ON L5J 2Y4
Date of Report	5-Jun-17		CANADA
Date of Sample Receipt	26-May-17	**Client Contact:**	Chris Belore
		Client Project ID:	21754 COVANTA

COMMENTS: **VOCs via SW846 Method 5041A/8260B**

Ketone data by VOST analyses are estimated values only

Trichlorotrifluoroethane; Butadiene, 1,3-; Isopropylbenzene; Dichlorodifluoromethane; Ethylene Dibromide; 1,3,5-trimethylbenzene; are semi-quantitative and/or estimated due to being outside the normal volatility range for method 0030/0031.

The following synonyms are noted:

Cumene	=	Isopropylbenzene
Mesitylene	=	1,3,5-trimethylbenzene
1,1,2-Trichloroethylene	=	Trichloroethene
Dichloromethane	=	Methylene Chloride
Methyl ethyl ketone	=	2-butanone

Certified by: Steve Kennedy
Technical Supervisor

ALS Environmental

Sample Analysis Summary Report

Instrument	MSD-3				Sample Matrix	VOST Tube										
Column	Rxi-624Sil MS 1426839				Analysis Units	ug/sample										
Acquisition Start Date	5/29/2017															
	Laboratory Method Blank	**Laboratory Control Sample**	**17-21754-VOST-(30A,30B) TRIP BLANK #1 APC OUTLET**	**17-21754-VOST-(5A,5B) TEST#1 FIELD BLANK #1 APC OUTLET**	**17-21754-VOST-(25A,25B) FIELD BLANK #2 APC OUTLET**	**17-21754-VOST-(14A,14B) FIELD BLANK #2 APC OUTLET**	**17-21754-VOST-(1A,1B) TEST#1 PAIR#1 #1 APC OUTLET**	**17-21754-VOST-(18A,18B) TEST#1 PAIR#2 #2 APC OUTLET**	**17-21754-VOST-(6A,6B) TEST#2 PAIR#1 #1 APC OUTLET**	**17-21754-VOST-(10A,10B) TEST#3 PAIR#1 #1 APC OUTLET**	**17-21754-VOST-(22A,22B) TEST#2 PAIR#2 #2 APC OUTLET**	**17-21754-VOST-(27A,27B) TEST#3 PAIR#2 #2 APC OUTLET**	**17-21754-VOST-(19A,19B) TEST#1 PAIR#3 #2 APC OUTLET**	**17-21754-VOST-(20A,20B) TEST#1 PAIR#4 #2 APC OUTLET**	**Recovery Control Limits**
Client Sample ID																
ALS Sample ID	WG2536695-1	WG2536695-2	L1931917-14	L1931917-5	L1931917-20	L1931917-29	L1931917-1	L1931917-17	L1931917-6	L1931917-10	L1931917-22	L1931917-26	L1931917-18	L1931917-19		
Filename	17052905.D	17052904.D	17052906.D	17052907.D	17052908.D	17052909.D	17052911.D	17052912.D	17052913.D	17052914.D	17052915.D	17052916.D	17052917.D	17052918.D		
	Blank	LCS	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample		
Sampling date			5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017		
Acquisition Time	5/29/2017 14:39	5/29/2017 14:00	5/29/2017 15:05	5/29/2017 15:32	5/29/2017 15:58	5/29/2017 16:24	5/29/2017 16:50	5/29/2017 17:16	5/29/2017 17:55	5/29/2017 18:21	5/29/2017 18:47	5/29/2017 19:13	5/29/2017 19:39	5/29/2017 20:05		
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**		
Dichlorodifluoromethane	0.05	<	69	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Vinyl Chloride	0.02	<	85	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Bromomethane	0.09	<	71	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	
Trichlorofluoromethane	0.02	<	101	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
1,1-Dichloroethene	0.01	<	94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Acetone	0.1	<	72	<0.1	<0.1	<0.1	0.153	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Methylene Chloride	0.1	<	89	<0.1	<0.1	<0.1	0.190	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
trans,1,2-Dichloroethene	0.01	<	79	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
2-Butanone	0.01	<	101	<0.01	0.011	<0.01	0.096	0.011	0.018	0.015	<0.01	0.016	0.019	<0.01	<0.01	
Chloroform	0.01	<	66	<0.01	<0.01	<0.01	0.014	0.015	<0.01	<0.01	<0.01	<0.01	0.011	<0.01	<0.01	
1,1,1-Trichloroethane	0.01	<	79	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Carbon Tetrachloride	0.01	<	86	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Benzene	0.05	<	89	<0.05	<0.05	<0.05	0.119	0.054	0.051	<0.05	<0.05	0.055	<0.05	<0.05	<0.05	
1,2-Dichloroethane	0.01	<	77	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Trichloroethene (1,1,2-Trichloroethylene)	0.01	<	104	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
1,2-Dichloropropane	0.01	<	102	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Bromodichloromethane	0.01	<	94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Toluene	0.05	<	92	<0.05	<0.05	<0.05	0.208	0.157	<0.05	0.062	0.098	0.136	0.161	0.110		
Tetrachloroethene	0.01	<	94	<0.01	<0.01	<0.01	0.054	0.039	<0.01	<0.01	0.012	<0.01	0.024	0.019		
Chlorodibromomethane	0.01	<	105	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Ethylene Dibromide	0.02	<	97	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Ethylbenzene	0.01	<	97	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
M&P-Xylene	0.03	<	100	<0.03	<0.03	<0.03	<0.03	0.030	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	
O-Xylene	0.01	<	99	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Styrene	0.02	<	93	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Bromoform	0.01	<	100	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Isopropylbenzene	0.02	<	100	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
1,3,5-Trimethylbenzene	0.02	<	101	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Trichlorotrifluoroethane	0.05	<	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Butadiene, 1,3-	0.05	<	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		110	108	104	115	149	142	102	63	57	70	29	68	45	34	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		104	66	109	109	111	108	88	65	107	107	105	112	107	114	50-150
d8-Toluene		98	103	91	97	105	102	96	97	93	94	85	92	94	94	50-150
4-Bromofluorobenzene		104	120	103	97	86	86	109	108	105	103	102	104	99	102	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		98	100	104	102	104	98	74	113	99	97	95	94	87	101	50-200
1,4-Difluorobenzene		108	103	111	109	108	106	100	112	104	111	103	99	93	106	50-200
d5-Chlorobenzene		112	91	124	112	97	98	98	99	120	123	131	115	102	121	50-200

NS Indicates that compound was not spiked

ALS Environmental

Sample Analysis Summary Report

Instrument	MSD-3	Sample Matrix	VOST Tube
Column	Rxi-624Sil MS 1426839	Analysis Units	ug/sample
Acquisition Start Date	6/1/2017		

Client Sample ID	Laboratory Method Blank	Laboratory Control Sample	17-21754-VOST-(23A,23B) TEST#2 PAIR#3 #2 APC OUTLET	17-21754-VOST-(24A,24B) TEST#2 PAIR#4 #2 APC OUTLET	17-21754-VOST-(28A,28B) TEST#3 PAIR#3 #2 APC OUTLET	17-21754-VOST-(29A,29B) TEST#3 PAIR#4 #2 APC OUTLET	17-21754-VOST-(2A,2B) TEST#1 PAIR#2 #1 APC OUTLET	17-21754-VOST-(3A,3B) TEST#1 PAIR#3 #1 APC OUTLET	17-21754-VOST-(7A,7B) TEST#2 PAIR#2 #1 APC OUTLET	17-21754-VOST-(8A,8B) TEST#2 PAIR#3 #1 APC OUTLET	17-21754-VOST-(11A,11B) TEST#3 PAIR#2 #1 APC OUTLET	17-21754-VOST-(12A,12B) TEST#3 PAIR#3 #1 APC OUTLET	Recovery Control Limits
ALS Sample ID	WG2539088-1	WG2539088-2	L1931917-23	L1931917-24	L1931917-27	L1931917-28	L1931917-2	L1931917-3	L1931917-7	L1931917-8	L1931917-11	L1931917-12	
Filename	17060105.D	17060104.D	17060106.D	17060107.D	17060108.D	17060109.D	17060110.D	17060111.D	17060112.D	17060113.D	17060114.D	17060115.D	
	Blank	LCS	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	
Sampling date			5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	5/25/2017	
Acquisition Time	6/1/2017 13:32	6/1/2017 12:42	6/1/2017 14:25	6/1/2017 14:50	6/1/2017 15:16	6/1/2017 15:42	6/1/2017 16:07	6/1/2017 16:33	6/1/2017 17:18	6/1/2017 17:44	6/1/2017 18:10	6/1/2017 18:35	
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**% Rec**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	
Dichlorodifluoromethane	0.05	<	84	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Vinyl Chloride	0.02	<	96	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Bromomethane	0.09	<	71	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	
Trichlorofluoromethane	0.02	<	107	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
1,1-Dichloroethene	0.01	<	105	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Acetone	0.1	<	65	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Methylene Chloride	0.1	<	104	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.136	<0.1	
trans,1,2-Dichloroethene	0.01	<	84	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
2-Butanone	0.01	<	78	0.013	0.012	0.021	0.013	<0.01	<0.01	<0.01	0.018	<0.01	0.013	
Chloroform	0.01	<	65	<0.01	<0.01	0.017	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
1,1,1-Trichloroethane	0.01	<	79	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Carbon Tetrachloride	0.01	<	101	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Benzene	0.05	<	105	0.054	<0.05	0.050	0.059	0.070	0.060	0.050	0.073	<0.05	0.076	
1,2-Dichloroethane	0.01	<	85	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Trichloroethene (1,1,2-Trichloroethylene)	0.01	<	121	<0.01	0.013	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
1,2-Dichloropropane	0.01	<	117	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Bromodichloromethane	0.01	<	107	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Toluene	0.05	<	88	0.124	0.132	0.133	0.170	<0.05	<0.05	<0.05	0.014	<0.01	0.053	
Tetrachloroethene	0.01	<	99	0.021	0.021	0.015	0.013	0.016	0.015	0.013	0.014	<0.01	<0.01	
Chlorodibromomethane	0.01	<	104	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Ethylene Dibromide	0.02	<	92	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Ethylbenzene	0.01	<	96	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
M&P-Xylene	0.03	<	101	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	
O-Xylene	0.01	<	100	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Styrene	0.02	<	92	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Bromoform	0.01	<	94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Isopropylbenzene	0.02	<	101	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
1,3,5-Trimethylbenzene	0.02	<	102	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
Trichlorotrifluoroethane	0.05	<	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Butadiene, 1,3-	0.05	<	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		87	117	73	104	45	61	83	77	35	83	102	84	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		117	70	50	76	70	117	118	115	115	114	115	115	50-150
d8-Toluene		96	100	97	97	101	95	95	97	93	98	90	95	50-150
4-Bromofluorobenzene		109	132	137	125	111	105	109	107	103	107	107	108	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		99	111	104	118	65	101	95	106	94	90	62	88	50-200
1,4-Difluorobenzene		115	117	102	106	135	111	104	116	100	98	105	105	50-200
d5-Chlorobenzene		124	112	98	115	123	123	118	129	115	105	121	116	50-200

NS indicates that compound was not spiked

APPENDIX 20

Aldehydes Recovery Data Sheets
(8 page)

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	1
Test Location:	UNIT 1 OUTLET
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-M430-1

Impinger 1 (15 ml DNPH)	
Empty Mass:	98.6
Initial Mass:	113.7
Final Mass:	117.9
Gain:	4.2

Impinger 2 (15 ml DNPH)	
Empty Mass:	99.6
Initial Mass:	114.9
Final Mass:	114.9
Gain:	0

Impinger 3 (Empty)	
Initial Mass:	103.3
Final Mass:	103.2
Gain:	-0.1

Impinger 4 (Silica Gel)	
Initial Mass:	~~116.4~~ 109.0
Final Mass:	109.6
Gain:	0.6

Imp. 1, 2 and 3 plus rinsings	
Colour:	YELLOW
Bottle empty:	118.0
Mass with impingers:	151.1
With DNPH rinse:	168.1
With ~~Hexane~~ TOLUENE rinse:	185.5
Total sample:	67.5

Total Moisture Gain:	4.7 ✓

Train Loaded By:	C. Belove
Train Recovered By:	AW
Recovery Witnessed By:	
Date:	MAY 26/17

B

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	2
Test Location:	APC OUTLET UNIT 1
Test Date:	MAY 26 2017

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-M430-2

Impinger 1 (15 ml DNPH)	
Empty Mass:	104.4
Initial Mass:	119.9
Final Mass:	123.6
Gain:	3.7

Impinger 2 (15 ml DNPH)	
Empty Mass:	103.5
Initial Mass:	119.5
Final Mass:	118.9
Gain:	-0.6

Impinger 3 (Empty)	
Initial Mass:	101.3
Final Mass:	101.2
Gain:	-0.1

Impinger 4 (Silica Gel)	
Initial Mass:	116.4
Final Mass:	118.0
Gain:	1.6

Imp. 1, 2 and 3 plus rinsings	
Colour:	YELLOW
Bottle empty:	117.3
Mass with impingers:	152.0
With DNPH rinse:	166.9
With ~~Hexane~~ TOLUENE rinse:	181.2
Total sample:	63.9

Total Moisture Gain: 4.6 ✓

Train Loaded By: AN

Train Recovered By: AN

Recovery Witnessed By:

Date: MAY 26/17

C

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	3
Test Location:	UNIT 1 OUTLET
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-M430-3

Impinger 1 (15 ml DNPH)	
Empty Mass:	99.4
Initial Mass:	114.5
Final Mass:	117.9
Gain:	3.4

Impinger 2 (15 ml DNPH)	
Empty Mass:	100.2
Initial Mass:	115.6
Final Mass:	114.7
Gain:	−0.9

Impinger 3 (Empty)	
Initial Mass:	104.3
Final Mass:	104.0
Gain:	−0.3

Impinger 4 (Silica Gel)	
Initial Mass:	109.6
Final Mass:	111.6
Gain:	2.0

Imp. 1, 2 and 3 plus rinsings	
Colour:	YELLOW
Bottle empty:	117.4
Mass with impingers:	150.0
With DNPH rinse:	171.7
With ~~Hexane~~ TOLUENE rinse:	190.3
Total sample:	72.9

Total Moisture Gain: 4.2 ✓

Train Loaded By:	AN
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 26/17

B

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	BLANK 1
Test Location:	—
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-M430-BLANK 1

Impinger 1 (15 ml DNPH)	
Empty Mass:	103.7
Initial Mass:	119.2
Final Mass:	119.2
Gain:	0

Imp. 1, 2 and 3 plus rinsings	
Colour:	YELLOW
Bottle empty:	~~117.6~~ 117.3
Mass with impingers:	~~147.1~~ 145.8
With DNPH rinse:	154.0
With ~~Hexane~~ TOLUENE rinse:	168.8
Total sample:	51.5

Impinger 2 (15 ml DNPH)	
Empty Mass:	102.8
Initial Mass:	117.7
Final Mass:	117.7
Gain:	0

Impinger 3 (Empty)	
Initial Mass:	101.3
Final Mass:	101.3
Gain:	0

Impinger 4 (Silica Gel)	
Initial Mass:	116.4
Final Mass:	116.4
Gain:	0

Total Moisture Gain:	0

Train Loaded By:	C. Relore
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 26/17

C

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	1
Test Location:	UNIT 2 OUTLET
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-M430-4

Impinger 1 (15 ml DNPH)	
Empty Mass:	88.4
Initial Mass:	103.4
Final Mass:	107.2
Gain:	3.8

Imp. 1, 2 and 3 plus rinsings	
Colour:	YELLOW
Bottle empty:	117.3
Mass with impingers:	150.0
With DNPH rinse:	169.4
With ~~Hexane~~ TOLUENE rinse:	187.2
Total sample:	69.9

Impinger 2 (15 ml DNPH)	
Empty Mass:	100.3
Initial Mass:	116.8
Final Mass:	116.8
Gain:	0

Impinger 3 (Empty)	
Initial Mass:	88.0
Final Mass:	89.3
Gain:	1.3

Impinger 4 (Silica Gel)	
Initial Mass:	124.5
Final Mass:	124.9
Gain:	0.4

Total Moisture Gain:	5.5 ✓

Train Loaded By:	C. Belore
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 26/17

A

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	2
Test Location:	UNIT 2 OUTLET
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-MM30-5

Impinger 1 (15 ml DNPH)	
Empty Mass:	97.7
Initial Mass:	113.8
Final Mass:	~~113~~ 116.9
Gain:	3.1

Impinger 2 (15 ml DNPH)	
Empty Mass:	98.4
Initial Mass:	114.2
Final Mass:	113.6
Gain:	-0.6

Impinger 3 (Empty)	
Initial Mass:	89.1
Final Mass:	89.2
Gain:	0.1

Impinger 4 (Silica Gel)	
Initial Mass:	122.0
Final Mass:	123.5
Gain:	1.5

Imp. 1, 2 and 3 plus rinsings	
Colour:	YELLOW
Bottle empty:	117.2
Mass with impingers:	150.5
With DNPH rinse:	170.3
With ~~Hexane~~ TOLUENE rinse:	190.7
Total sample:	73.5

Total Moisture Gain: 4.1 ✓

Train Loaded By:	AN
Train Recovered By:	AN
Recovery Witnessed By:	
Date:	MAY 26/17

D

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	3
Test Location:	UNIT 2 OUTLET
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-MM30-6

Impinger 1 (15 ml DNPH)	
Empty Mass:	89.2
Initial Mass:	106.6
Final Mass:	109.4
Gain:	2.8 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	101.6
Initial Mass:	115.4
Final Mass:	115.5
Gain:	0.1 ✓

Impinger 3 (Empty)	
Initial Mass:	89.9
Final Mass:	89.8
Gain:	-0.1 ✓

Impinger 4 (Silica Gel)	
Initial Mass:	124.9
Final Mass:	126.3
Gain:	1.4 ✓

Imp. 1, 2 and 3 plus rinsings	
Colour:	Yellow
Bottle empty:	118.3
Mass with impingers:	152.5
With DNPH rinse:	171.2
With ~~Hexane~~ Toluene rinse:	190.2
Total sample:	71.9

Total Moisture Gain: 4.2 ✓ 4.2

Train Loaded By: AN

Train Recovered By: AN

Recovery Witnessed By:

Date: MAY 26/17

A

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21754
Test No.:	BLANK 2
Test Location:	—
Test Date:	MAY 26/17

Impingers 1, 2, 3 & 4

Sample ID: 17-21754-MM30-BLANK 2

Impinger 1 (15 ml DNPH)	
Empty Mass:	97.7
Initial Mass:	113.1
Final Mass:	113.1
Gain:	0

Imp. 1, 2 and 3 plus rinsings	
Colour:	~~CLEAR~~ YELLOW
Bottle empty:	117.6
Mass with impingers:	147.1
With DNPH rinse:	157.0
With ~~Hexane~~ TOLUENE rinse:	165.5
Total sample:	47.9

Impinger 2 (15 ml DNPH)	
Empty Mass:	98.4
Initial Mass:	113.5
Final Mass:	113.5
Gain:	0

Impinger 3 (Empty)	
Initial Mass:	89.1
Final Mass:	89.1
Gain:	0

Impinger 4 (Silica Gel)	
Initial Mass:	122.0
Final Mass:	122.0
Gain:	0

Total Moisture Gain:	0

Train Loaded By:	C. Belore
Train Recovered By:	AM
Recovery Witnessed By:	
Date:	MAY 26/17

D

APPENDIX 21

Aldehydes Analytical Reports
(13 pages)

05-Jun-2017

Rachael Stolys
ALS
1435 Norjohn Court
Unit 1
Burlington, Ontario L7L0E6

Tel: (905) 331-3111
Fax:

Re: L1932633 Work Order: **17051110**

Dear Rachael,

ALS Environmental received 9 samples on 31-May-2017 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 14.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Shawn Smythe

Electronically approved by: Shawn Smythe

Shawn Smythe
Project Manager

ALS Environmental

Date: 05-Jun-17

Client: ALS
Project: L1932633
Work Order: **17051110**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17051110-01	L1932633-01	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-02	L1932633-02	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-03	L1932633-03	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-04	L1932633-04	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-05	L1932633-05	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-06	L1932633-06	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-07	L1932633-07	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-08	L1932633-08	Impinger		5/26/2017	5/26/2017 13:10	☐
17051110-09	L1932633-09	Impinger		5/26/2017	5/26/2017 13:10	☐

Client:	ALS
Project:	L1932633
Work Order:	17051110

Case Narrative

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Results relate only to the items tested and are not blank corrected unless indicated.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

Sample number L1932633-06 was received broken.

ALS Environmental

Date: *05-Jun-17*

Client: ALS

Project: L1932633 **Work Order:** 17051110

Sample ID: L1932633-01 17-21754-M430-1 TEST#1 #1 APC OUTLET **Lab ID:** 17051110-01

Collection Date: 5/26/2017 **Matrix:** IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	0.051		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	0.20		0.045	µg/sample	1	6/1/2017 06:52 PM
formaldehyde	0.089		0.045	µg/sample	1	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS

Project: L1932633 **Work Order:** 17051110

Sample ID: L1932633-02 17-21754-M430-2 TEST#2 #1 APC OUTLET **Lab ID:** 17051110-02

Collection Date: 5/26/2017 **Matrix:** IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	**0.061**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
Acrolein	**0.065**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
formaldehyde	ND		0.22	µg/sample	5	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS
Project: L1932633 **Work Order:** 17051110
Sample ID: L1932633-03 17-21754-M430-3 TEST#3 #1 APC OUTLET **Lab ID:** 17051110-03
Collection Date: 5/26/2017 **Matrix:** IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	ND		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	**0.23**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
formaldehyde	ND		0.22	µg/sample	5	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS
Project: L1932633
Work Order: 17051110
Sample ID: L1932633-04 17-21754-M430-BLANK #1
Lab ID: 17051110-04
Collection Date: 5/26/2017
Matrix: IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	ND		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	**0.15**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
formaldehyde	ND		0.22	µg/sample	5	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS

Project: L1932633 **Work Order:** 17051110

Sample ID: L1932633-05 17-21754-M430-4 TEST#1 #2 APC OUTLET **Lab ID:** 17051110-05

Collection Date: 5/26/2017 **Matrix:** IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	ND		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	**0.078**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
formaldehyde	ND		0.22	µg/sample	5	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS

Project: L1932633 **Work Order:** 17051110

Sample ID: L1932633-07 17-21754-M430-6 TEST#3 #2 APC OUTLET **Lab ID:** 17051110-07

Collection Date: 5/26/2017 **Matrix:** IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	ND		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	**0.20**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
formaldehyde	ND		0.22	µg/sample	5	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS
Project: L1932633
Work Order: 17051110
Sample ID: L1932633-08 17-21754-M430-BLANK #2
Lab ID: 17051110-08
Collection Date: 5/26/2017
Matrix: IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			**CARB430**		Prep Date: **6/1/2017**	Analyst: **JMB**
Acetaldehyde	ND		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	**0.16**		**0.045**	**µg/sample**	1	6/1/2017 06:52 PM
formaldehyde	ND		0.22	µg/sample	5	6/1/2017 06:52 PM

Note:

ALS Environmental

Date: *05-Jun-17*

Client: ALS
Project: L1932633
Work Order: 17051110
Sample ID: L1932633-09 17-21754-M430-9 TRIP SPIKE
Lab ID: 17051110-09
Collection Date: 5/26/2017
Matrix: IMPINGER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ALDEHYDES BY CARB 430			CARB430		Prep Date: 6/1/2017	Analyst: JMB
Acetaldehyde	0.69		0.045	µg/sample	1	6/1/2017 06:52 PM
Acrolein	0.48		0.045	µg/sample	1	6/1/2017 06:52 PM
formaldehyde	0.85		0.090	µg/sample	1	6/1/2017 06:52 PM

Trip Spike sample was prepared using spiking solution at 2ug/ml. Final volume of sample was 1ml.

Note:

ALS Environmental

Date: 05-Jun-17

Client: ALS

Work Order: 17051110

Project: L1932633

QC BATCH REPORT

Batch ID: **43536** Instrument ID: **HPLC2** Method: **CARB430**

MBLK Sample ID: **MBLK-43536-43536** Units: **µg/sample** Analysis Date: **6/1/2017 06:52 PM**

Client ID: Run ID: **HPLC2_170601A** SeqNo: **1517582** Prep Date: **6/1/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetaldehyde	ND	0.045								
Acrolein	ND	0.045								
formaldehyde	ND	0.045								

LCS Sample ID: **LCS-43536-43536** Units: **µg/sample** Analysis Date: **6/1/2017 06:52 PM**

Client ID: Run ID: **HPLC2_170601A** SeqNo: **1517583** Prep Date: **6/1/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetaldehyde	0.2899	0.045	2	0	14.5	70-130	0			S
Acrolein	0.2647	0.045	2	0	13.2	70-130	0			S
formaldehyde	0.6543	0.045	2	0	32.7	70-130	0			S

LCSD Sample ID: **LCSD-43536-43536** Units: **µg/sample** Analysis Date: **6/1/2017 06:52 PM**

Client ID: Run ID: **HPLC2_170601A** SeqNo: **1517592** Prep Date: **6/1/2017** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acetaldehyde	0.6519	0.045	2	0	32.6	70-130	0.2899	76.9	20	SR
Acrolein	0.4342	0.045	2	0	21.7	70-130	0.2647	48.5	20	SR
formaldehyde	0.8546	0.045	2	0	42.7	70-130	0.6543	26.5	20	SR

The following samples were analyzed in this batch:

17051110-01A	17051110-02A	17051110-03A
17051110-04A	17051110-05A	17051110-07A
17051110-08A	17051110-09A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 05-Jun-17

Client: ALS
Project: L1932633
WorkOrder: 17051110

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/sample	

APPENDIX 22

SVOC and VOST Proof Data
(7 pages)

1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6
Phone: 905-331-3111, FAX: 905-331-4567

Certificate of Analysis

ALS Project Contact:	Rachael Stolys	Client Name:	ORTECH Environmental
ALS Project ID:	ORT100	Client Address:	804 Southdown Road
ALS WO#:	L1919676		Mississauga, ON L5J 2Y4
Date of Report	12-May-17		CANADA
Date of Sample Receipt	2-May-17	Client Contact:	Chris Belore
		Client Project ID:	21754 & 21773 COVANTA

COMMENTS:

Toxic PCB Congeners by GC/HRMS (EPA 1668C)
PCDD/F by EPA M23A
VOCs via SW846 Method 5041A/8260B
CB by LRGC/MS - Isotope dilution
Chlorophenols as acetate derivatives by SIM GC/MS
PAH by CARB method 429 (LR option)- Isotope dilution

Certified by:

Steve Kennedy
Technical Supervisor

ALS Life sciences

Sample Analysis summary Report

Sample Name	Method Blank	GLASSWARE PROOF - 26 SETS
ALS Sample ID	WG2525337-1	L1919676-40
Sample Size	1	1
Sample size units	proof	Proof
Percent Moisture	n/a	n/a
Sample Matrix	QC	Media Prep
Sampling Date	n/a	n/a
Extraction Date	10-May-17	10-May-17
Polychlorinated Dibenzo(p)dioxins	**pg**	**pg**
PCB-81	<4.6	<6.6
PCB-77	<5.0	<8.2
PCB-123	<9.7	<22
PCB-118	<9.4	115
PCB-114	<9.0	<21
PCB-105	<9.4	<28
PCB-126	<9.6	<32
PCB-167	<9.5	<39
PCB-156	<4.3	<19
PCB-157	<4.9	<20
PCB-169	<5.5	<23
PCB-189	<5.3	<11
Extraction Standards		
13C12-PCB-81	83	98
13C12-PCB-77	89	100
13C12-PCB-123	69	72
13C12-PCB-118	61	58
13C12-PCB-114	67	67
13C12-PCB-105	68	67
13C12-PCB-126	70	67
13C12-PCB-167	71	49
13C12-PCB-156	81	79
13C12-PCB-157	74	66
13C12-PCB-169	78	77
13C12-PCB-189	80	75
Toxic Equivalency (WHO 2005)		
Lower Bound PCB TEQ	0.00	0.00345
Mid Point PCB TEQ	0.565	1.95
Upper Bound PCB TEQ	1.13	3.90

ALS Life sciences

Sample Analysis summary Report

Sample Name	GLASSWARE PROOF - 26 SETS	Method Blank
ALS Sample ID	L1919676-40	WG2525337-1
Sample Size	1	1.00
Sample size units	Proof	Proof
Percent Moisture	n/a	n/a
Sample Matrix	Media Prep	QC
Sampling Date	n/a	n/a
Extraction Date	10-May-17	10-May-17
Target Analytes	**pg**	**pg**
2,3,7,8-TCDD	<1.1	<1.2
1,2,3,7,8-PeCDD	<3.1	<3.3
1,2,3,4,7,8-HxCDD	<2.6	<3.3
1,2,3,6,7,8-HxCDD	<2.1	<4.3
1,2,3,7,8,9-HxCDD	3.60	<4.7
1,2,3,4,6,7,8-HpCDD	4.99	<4.5
OCDD	11.9	12.8
2,3,7,8-TCDF	<0.96	<1.2
1,2,3,7,8-PeCDF	3.20	5.00
2,3,4,7,8-PeCDF	3.15	<2.5
1,2,3,4,7,8-HxCDF	2.16	3.89
1,2,3,6,7,8-HxCDF	2.30	4.00
2,3,4,6,7,8-HxCDF	<2.3	4.37
1,2,3,7,8,9-HxCDF	3.07	<6.6
1,2,3,4,6,7,8-HpCDF	<3.1	3.97
1,2,3,4,7,8,9-HpCDF	1.70	<5.2
OCDF	5.77	8.15
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	68
13C12-1,2,3,7,8-PeCDD	74	77
13C12-1,2,3,6,7,8-HxCDD	75	68
13C12-1,2,3,4,6,7,8-HpCDD	70	81
13C12-OCDD	56	75
13C12-2,3,7,8-TCDF	72	68
13C12-1,2,3,7,8-PeCDF	71	74
13C12-1,2,3,6,7,8-HxCDF	73	68
13C12-1,2,3,4,6,7,8-HpCDF	75	84
Cleanup Standard		
13C12-1,2,3,7,8,9-HxCDF	NS	NS
Homologue Group Totals	**pg**	**pg**
Total-TCDD	<1.1	<1.2
Total-PeCDD	<0.97	3.13
Total-HxCDD	9.61	3.89
Total-HpCDD	4.99	<1.0
Total-TCDF	2.66	<1.2
Total-PeCDF	6.35	8.38
Total-HxCDF	7.53	15.2
Total-HpCDF	1.70	3.97
Toxic Equivalency - (WHO 2005)		
Lower Bound PCDD/F TEQ (WHO 2005)	2.23	1.42
Mid Point PCDD/F TEQ (WHO 2005)	6.66	8.12
Upper Bound PCDD/F TEQ (WHO 2005)	7.25	8.78

ALS Environmental

Sample Analysis Summary Report

Sample Name	Method Blank		GLASSWARE PROOF - 26 SETS	
ALS Sample ID	WG2525337-1		L1919676-40	
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	10-May-17		10-May-17	
Target Analytes	**ng/sample**		**ng/sample**	
Naphthalene	<8	U	26.9	
2-Methylnaphthalene	<8	U	<8	U
1-Methylnaphthalene	<8	U	<8	U
Acenaphthylene	<8	U	<8	U
Acenaphthene	<8	U	<8	U
Fluorene	<8	U	<8	U
Phenanthrene	<8	U	12.5	
Anthracene	<8	U	<8	U
Fluoranthene	<8	U	<8	U
Pyrene	<8	U	<8	U
Benzo(a)Anthracene	<8	U	<8	U
Chrysene	<8	U	<8	U
Benzo(b)Fluoranthene	<8	U	<8	U
Benzo(k)Fluoranthene	<8	U	<8	U
Benzo(e)Pyrene	<8	U	<8	U
Benzo(a)Pyrene	<8	U	<8	U
Perylene	<8	U	<8	U
Indeno(1,2,3-cd)Pyrene	<8	U	<8	U
Dibenzo(a,h)Anthracene	<8	U	<8	U
Benzo(g,h,i)Perylene	<8	U	<8	U
Extraction Standards	**% Rec**		**% Rec**	
Naphthalene D8	103.2		97.1	
2-Methylnaphthalene-D10	100.8		95.0	
Acenaphthylene D8	93.2		89.0	
Phenanthrene D10	94.6		96.0	
Anthracene-D10	111.0		104.2	
Fluoranthene D10	100.9		95.9	
Benz(a)Anthracene-D12	71.1		82.5	
Chrysene D12	84.3		83.1	
Benzo(b)Fluoranthene-D12	89.1		98.5	
Benzo(k)Fluoranthene-D12	100.7		103.7	
Benzo(a)Pyrene D12	82.6		96.4	
Perylene D12	81.4		97.4	
Indeno(1,2,3,cd)Pyrene-D12	72.4	M	71.3	M
Dibenz(a,h)Anthracene-D14	85.6	M	86.2	M
Benzo(g,h,i)Perylene D12	98.2	M	90.7	M

U Indicates that this compound was not detected above the LOD.

M Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Sample Name	**Method Blank**		**GLASSWARE PROOF - 26 SETS**	
ALS Sample ID	WG2525337-1		L1919676-40	
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	10-May-17		10-May-17	
Target Analytes	**ng/sample**		**ng/sample**	
2-Chlorophenol	<4	U	<4	U
3-Chlorophenol	<4	U	<4	U
4-Chlorophenol	<4	U	<4	U
2,6-Dichlorophenol	<4	U	<4	U
2,4/2,5-Dichlorophenol	<4	U	<4	U
3,5-Dichlorophenol	<4	U	<4	U
2,3-Dichlorophenol	<4	U	<4	U
3,4-Dichlorophenol	<4	U	<4	U
2,4,6-Trichlorophenol	<4	U	<4	U
2,3,6-Trichlorophenol	<4	U	<4	U
2,3,5-Trichlorophenol	<4	U	<4	U
2,4,5-Trichlorophenol	<4	U	<4	U
2,3,4-Trichlorophenol	<4	U	<4	U
3,4,5-Trichlorophenol	<4	U	<4	U
2,3,5,6/2,3,4,6-Tetrachlorophenol	<4	U	<4	U
2,3,4,5-Tetrachlorophenol	<4	U	<4	U
Pentachlorophenol	<4	U	<4	U
Extraction Standards	**% Rec**		**% Rec**	
2-Fluorophenol	53		57	
d5-Phenol	68		62	
d4-2-Chlorophenol	120		101	
2,4,6-Tribromophenol	112		133	
13C-Pentachlorophenol	122		129	

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	Method Blank		GLASSWARE PROOF - 26 SETS	
ALS Sample ID	WG2525337-1		L1919676-40	
Sample Size	1		1	
Sample units	sample		n/a	
Moisture Content	n/a		n/a	
Matrix	QC		Media Prep	
Sampling Date	n/a		n/a	
Extraction Date	10-May-17		10-May-17	
Target Analytes	**ng/sample**		**ng/sample**	
Chlorobenzene	<8	U	<8	U
1,3-Dichlorobenzene	<8	U	<8	U
1,4-Dichlorobenzene	<8	U	<8	U
1,2-Dichlorobenzene	<8	U	<8	U
1,3,5-Trichlorobenzene	<8	U	<8	U
1,2,4-Trichlorobenzene	<8	U	<8	U
1,2,3-Trichlorobenzene	<8	U	<8	U
1,2,3,5/1,2,4,5-Tetrachlorobenzene	<8	U	<8	U
1,2,3,4-Tetrachlorobenzene	<8	U	<8	U
Pentachlorobenzene	<8	U	<8	U
Hexachlorobenzene	<8	U	<8	U
Field Sampling Standards	**%Rec**		**%Rec**	
1-Bromo-2,3-Dichlorobenzene				
Extraction Standards	**%Rec**		**%Rec**	
13C6-Chlorobenzene	82		68	
13C6-1,4-Dichlorobenzene	101		88	
13C6-1,2,3-Trichlorobenzene	106		98	
13C6-1,2,3,4-Tetrachlorobenzene	65		71	
13C6-Pentachlorobenzene	91		113	
13C6-Hexachlorobenzene	84		113	

U	Indicates that this compound was not detected above the LOD.
M	Indicates that a peak has been manually integrated.

ALS Environmental

Sample Analysis Summary Report

Instrument	MSD-3	Sample Matrix	VOST Tube
Column	Rxi-624Sil MS 1426839	Analysis Units	ug/sample
Acquisition Start Date	5/15/2017		

		Laboratory Method Blank	VOST PROOF #1	VOST PROOF #2	VOST PROOF #3	Recovery Control Limtis
Client Sample ID						
ALS Sample ID		VOST blank	L1919676-79	L1919676-80	L1919676-81	
Filename		17051505.D	17051506.D	17051507.D	17051508.D	
Dilution			1	1	1	
		Blank	sample	sample	sample	
Sampling date						
Acquisition Time		5/15/2017 14:01	5/15/2017 14:27	5/15/2017 14:53	5/15/2017 15:18	
Target Analyte	**RL ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	**Conc. ug/sample**	
Dichlorodifluoromethane	0.05	<	<0.05	<0.05	<0.05	
Vinyl Chloride	0.02	<	<0.02	<0.02	<0.02	
Bromomethane	0.09	<	<0.09	<0.09	<0.09	
Trichlorofluoromethane	0.02	<	<0.02	<0.02	<0.02	
1,1-Dichloroethene	0.01	<	<0.01	<0.01	<0.01	
Acetone	0.1	<	<0.1	<0.1	<0.1	
Methylene Chloride	0.1	<	<0.1	<0.1	<0.1	
trans,1,2-Dichloroethene	0.01	<	<0.01	<0.01	<0.01	
2-Butanone	0.01	<	<0.01	<0.01	<0.01	
Chloroform	0.01	<	<0.01	<0.01	<0.01	
1,1,1-Trichloroethane	0.01	<	<0.01	<0.01	<0.01	
Carbon Tetrachloride	0.01	<	<0.01	<0.01	<0.01	
Benzene	0.05	<	<0.05	<0.05	<0.05	
1,2-Dichloroethane	0.01	<	<0.01	<0.01	<0.01	
Trichloroethene	0.01	<	<0.01	<0.01	<0.01	
1,2-Dichloropropane	0.01	<	<0.01	<0.01	<0.01	
Bromodichloromethane	0.01	<	<0.01	<0.01	<0.01	
Toluene	0.05	<	<0.05	<0.05	<0.05	
Tetrachloroethene	0.01	<	<0.01	<0.01	<0.01	
Chlorodibromomethane	0.01	<	<0.01	<0.01	<0.01	
Ethylene Dibromide	0.02	<	<0.02	<0.02	<0.02	
Ethylbenzene	0.01	<	<0.01	<0.01	<0.01	
M&P-Xylene	0.03	<	<0.03	<0.03	<0.03	
O-Xylene	0.01	<	<0.01	<0.01	<0.01	
Styrene	0.02	<	<0.02	<0.02	<0.02	
Bromoform	0.01	<	<0.01	<0.01	<0.01	
Isopropylbenzene	0.02	<	<0.02	<0.02	<0.02	
1,3,5-Trimethylbenzene	0.02	<	<0.02	<0.02	<0.02	
Trichlorotrifluoroethane	0.05	<	<0.05	<0.05	<0.05	
Butadiene, 1,3-	0.05	<	<0.05	<0.05	<0.05	
Field Standard		**% Rec**	**% Rec**	**% Rec**	**% Rec**	
d10-Ethylbenzene		88	96	92	85	
Surrogate Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
d4-1,2-Dichloroethane		106	104	103	102	50-150
d8-Toluene		136	95	96	88	50-150
4-Bromofluorobenzene		78	100	106	108	50-150
Internal Standards		**% Rec**	**% Rec**	**% Rec**	**% Rec**	**% Rec**
Bromochloromethane		77	92	91	73	50-200
1,4-Difluorobenzene		68	91	90	76	50-200
d5-Chlorobenzene		50	104	100	96	50-200

APPENDIX 23

ORTECH Equipment Calibration Data
(36 pages)

ORTECH Environmental
Pitot Tube Calibration

Date	January 24, 2017
Probe/Pitot ID	S3
Mil Number	B03763
Calibrated Against	B02911
Cp standard	0.99948
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	7.33	0.130	0.182	0.845	0.0051
(0.25")	9.43	0.215	0.305	0.839	0.0004
	11.50	0.320	0.450	0.843	0.0033
	13.94	0.470	0.670	0.837	0.0025
	15.55	0.585	0.840	0.834	0.0055
			Mean	0.840	0.0034
Without Nozzle	7.47	0.135	0.190	0.842	0.0015
	9.49	0.218	0.310	0.838	0.0028
	11.41	0.315	0.450	0.836	0.0048
	13.87	0.465	0.650	0.845	0.0044
	15.62	0.590	0.830	0.843	0.0017
			Mean	0.841	0.0030

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 Environmental
Pitot Tube Calibration

Date	January 24, 2017
Probe/Pitot ID	S6
Mil Number	B03767
Calibrated Against	B02911
Cp standard	0.99948
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	7.19	0.125	0.175	0.845	0.0012
(0.25")	9.09	0.200	0.280	0.845	0.0012
	10.95	0.290	0.410	0.841	0.0030
	13.41	0.435	0.610	0.844	0.0005
	15.35	0.570	0.800	0.844	0.0001
			Mean	0.844	0.0012
Without Nozzle	7.04	0.120	0.165	0.852	0.0043
	9.09	0.200	0.275	0.852	0.0043
	10.86	0.285	0.400	0.844	0.0044
	13.33	0.430	0.600	0.846	0.0019
	14.80	0.530	0.740	0.846	0.0022
			Mean	0.848	0.0034

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 Environmental
Pitot Tube Calibration

Date	January 24, 2017
Probe/Pitot ID	S7
MII Number	B03768
Calibrated Against	B02911
Cp standard	0.99948
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	7.33	0.130	0.180	0.849	0.0054
(0.25")	9.09	0.200	0.280	0.845	0.0007
	11.32	0.310	0.435	0.844	0.0002
	13.57	0.445	0.630	0.840	0.0040
	15.08	0.550	0.775	0.842	0.0020
			Mean	0.844	0.0025

Without Nozzle	7.33	0.130	0.183	0.842	0.0013
	9.21	0.205	0.290	0.840	0.0008
	11.14	0.300	0.420	0.845	0.0036
	13.64	0.450	0.635	0.841	0.0003
	15.08	0.550	0.785	0.837	0.0045
			Mean	0.841	0.0021

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 Environmental
Pitot Tube Calibration

Date	January 24, 2017
Probe/Pitot ID	S8
MII Number	B03769
Calibrated Against	B02911
Cp standard	0.99948
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	7.19	0.125	0.175	0.845	0.0040
(0.25")	9.09	0.200	0.275	0.852	0.0036
	11.14	0.300	0.420	0.845	0.0040
	13.33	0.430	0.600	0.846	0.0026
	15.08	0.550	0.750	0.856	0.0071
			Mean	0.849	0.0043
Without Nozzle	7.33	0.130	0.180	0.849	0.0006
	9.09	0.200	0.275	0.852	0.0024
	11.14	0.300	0.415	0.850	0.0002
	13.33	0.430	0.600	0.846	0.0039
	15.22	0.560	0.770	0.852	0.0024
			Mean	0.850	0.0019

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 Environmental
Pitot Tube Calibration

Date	January 24, 2017
Probe/Pitot ID	S11
Mil Number	B03772
Calibrated Against	B02911
Cp standard	0.99948
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	7.04	0.120	0.165	0.852	0.0061
(0.25")	8.75	0.185	0.260	0.843	0.0031
	10.76	0.280	0.390	0.847	0.0006
	13.02	0.410	0.570	0.848	0.0014
	14.52	0.510	0.720	0.841	0.0050
			Mean	0.846	0.0033
Without Nozzle	7.04	0.120	0.170	0.840	0.0018
	8.75	0.185	0.260	0.843	0.0016
	10.57	0.270	0.380	0.842	0.0010
	12.86	0.400	0.565	0.841	0.0005
	14.52	0.510	0.720	0.841	0.0003
			Mean	0.841	0.0010

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 Environmental
Pitot Tube Calibration

Date	January 24, 2017
Probe/Pitot ID	SP4
Mil Number	B04011
Calibrated Against	B02911
Cp standard	0.99948
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	7.33	0.130	0.180	0.849	0.0002
(0.25")	9.09	0.200	0.275	0.852	0.0032
	10.95	0.290	0.400	0.851	0.0019
	13.10	0.415	0.570	0.853	0.0037
	14.80	0.530	0.750	0.840	0.0090
			Mean	0.849	0.0036
Without Nozzle	7.04	0.120	0.170	0.840	0.0040
	9.09	0.200	0.280	0.845	0.0010
	11.14	0.300	0.420	0.845	0.0010
	13.02	0.410	0.565	0.851	0.0077
	14.66	0.520	0.740	0.838	0.0058
			Mean	0.844	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 Environmental
Manometer Calibration Data

Date	December 12, 2016	Calibrated By	Andrew Saikaley
Manometer Number	7	Signature	
Manometer MII Number	COE20017	Reviewed/Accepted By	
Calibrated Against	HHP-100A		
MII Number	B02679		
Calibration Procedure	03 - J010		

Manometer Scale "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.129	N/A	0.133	3.0
0-0.5	0.288		0.296	2.7
	0.427		0.444	3.8
	0.805		0.805	0.0
0-1.0	0.523		0.522	-0.2
	0.212		0.212	0.0
	0.58		0.57	-1.8
0-2.0	0.96		0.95	-1.1
	1.64		1.62	-1.2
	2.33		2.33	0.0
0-10.0	5.03		4.98	-1.0
	8.48		8.39	-1.1

$$\text{Percent Difference} = \frac{(\text{Micromanometer} - \text{Instrument Reading})}{\text{Micromanometer}} \times 100$$

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 Environmental
Manometer Calibration Data

Date	March 1, 2017	Calibrated By	Andrew Saikaley
Manometer Number	10	Signature	
Manometer MII Number	B02107	Reviewed/Accepted By	
Calibrated Against	HHP-100A		
MII Number	B02679		
Calibration Procedure	03 - J010		

Manometer Scale "H_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.435	NA	0.433	-0.5
0-0.5	0.275		0.268	-2.6
	0.132		0.130	-1.5
	0.888		0.881	-0.8
0-1.0	0.574		0.568	-1.1
	0.252		0.250	-0.8
	1.72		1.71	-0.6
0-2.0	1.03		1.01	-2.0
	0.48		0.47	-2.1
	8.80		8.74	-0.7
0-10.0	5.37		5.33	-0.8
	2.55	V	2.54	-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 Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Control Box #14
Date	April 18, 2017
Barometric Pressure	29.94
System Leak Check	< 0.001 cfm @ 22 "Hg

MII NUMBERS	
DGM	B03701
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Andrew Saikaley
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ °F+460}{Tstd\ °F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
84.50	19.50	65.00	3.058	21.0	403.550	406.589	3.039	71.5	0.8	70	1.007	6
86.80	21.50	65.30	3.072	21.0	406.589	409.672	3.083	74	0.8	72	1.002	6
84.90	19.90	65.00	3.058	20.5	409.672	412.762	3.090	76	0.8	73	1.001	6
84.80	21.20	63.60	2.992	21.0	413.903	416.927	3.024	79.5	1.8	76	1.003	4
85.00	21.70	63.30	2.978	21.0	416.927	419.932	3.005	81	1.8	77	1.007	4
85.00	21.50	63.50	2.987	21.0	419.932	422.954	3.022	83.5	1.8	79	1.010	4
85.00	22.50	62.50	2.940	21.0	422.954	425.910	2.956	84.5	3.2	80	1.014	3
84.90	22.00	62.90	2.959	21.0	425.910	428.896	2.986	86.5	3.2	82	1.014	3
84.00	21.30	62.70	2.949	21.0	428.896	431.879	2.983	88	3.2	83	1.015	3

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	1.008
BEFORE	1.001

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	OMEGA DP116
MII	B03701
Date	April 18, 2017
Calibrated By	Andrew Saikaley
Signature	
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	70		0.0
100	100		0.0
200	201		-0.5
250	252		-0.8
300	302		-0.7
400	400		0.0
500	500		0.0
600	600		0.0
700	702		-0.3
800	801		-0.1
900	901		-0.1
1000	1002		-0.2
1100	1102		-0.2
1200	1202		-0.2
1250	1252		-0.2

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

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	Control Box # 7
Date	February 27, 2017
Barometric Pressure	29.71
System Leak Check	< 0.002 cfm @ 21 "Hg

MII NUMBERS	
DGM	A09072
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Andrew Saikaley
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
82.90	20.70	62.20	2.926	22.5	992.031	994.981	2.950	72.5	0.8	71	0.990	6
83.00	22.30	60.70	2.855	22.0	995.150	998.075	2.925	72.5	0.8	71	0.976	6
83.00	23.80	59.20	2.785	21.5	998.075	1000.959	2.884	74.5	0.8	72	0.971	6
83.00	19.90	63.10	2.968	21.5	0.959	4.002	3.043	75.5	1.8	73	0.980	4
82.90	19.90	63.00	2.963	21.5	4.002	7.045	3.043	76.5	1.8	74	0.980	4
84.10	21.00	63.10	2.968	21.5	7.045	10.091	3.046	77	1.8	74	0.982	4
83.00	21.00	62.00	2.916	21.0	10.091	13.070	2.979	78	3	75	0.987	3
82.80	20.70	62.10	2.921	21.0	13.070	16.067	2.997	79	3	75	0.984	3
83.00	20.70	62.30	2.931	21.0	16.067	19.069	3.002	79.5	3	76	0.987	3

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	0.982
BEFORE	0.966

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	A09072
Date	February 27, 2017
Calibrated By	Andrew Saikaley
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference
	Before Adjustment (°F)	After Adjustment (°F)	(%)
32	32	32	0.0
70	70	70	0.0
100	100	99	1.0
200	201	201	-0.5
250	252	251	-0.4
300	302	300	0.0
400	400	399	0.3
500	500	498	0.4
600	600	599	0.2
700	702	700	0.0
800	802	800	0.0
900	902	900	0.0
1000	1002	1000	0.0
1100	1103	1100	0.0
1200	1203	1200	0.0
1250	1253	1250	0.0

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading})}{\text{micromite}} \times 100$$

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	Team 1
Date	March 29, 2017
Barometric Pressure	29.74
System Leak Check	< .001 cfm @ 25 "Hg

MII NUMBERS	
DGM	COE 20094
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Andrew Saikaley
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Make sure to inspect pump before each calibration

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
83.10	19.90	63.20	2.973	21.0	11.892	14.890	2.998	69.5	0.8	70	0.989	6
81.30	20.00	61.30	2.884	21.0	987.793	990.696	2.903	70	0.75	69	0.992	6
77.20	15.50	61.70	2.902	21.0	990.696	993.651	2.955	70	0.75	70	0.981	6
79.60	16.40	63.20	2.973	21.0	993.648	996.658	3.010	69.5	1.9	69	0.982	4
85.05	19.50	65.55	3.083	21.0	996.658	999.782	3.124	70	1.9	70	0.983	4.1
86.30	21.60	64.70	3.043	21.0	999.782	1002.878	3.096	69.5	1.9	70	0.978	4
85.20	22.70	62.50	2.940	21.0	2.878	5.851	2.973	69.5	3.4	70	0.980	3
85.30	21.70	63.60	2.992	21.0	5.852	8.867	3.015	69	3.4	69	0.983	3
86.00	22.10	63.90	3.006	21.0	8.867	11.892	3.025	69	3.4	69	0.984	3

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	0.983
BEFORE	0.995

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 2
Date	March 24, 2017
Barometric Pressure	29.59
System Leak Check	< .001 cfm @ 25 "Hg

MII NUMBERS	
DGM	COE 20092
Gasometer	A01463
Barometer	COE20028

Calibrated By	A.Saikaley
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Make sure to inspect pump before each calibration

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
79.50	18.50	61.00	2.869	25.0	932.925	935.796	2.871	70.5	0.7	70	0.986	6
81.80	21.50	60.30	2.836	21.0	935.796	938.655	2.859	67	0.7	67	0.985	6
81.60	21.60	60.00	2.822	20.0	938.655	941.515	2.860	67.5	0.7	67	0.984	6
81.60	19.70	61.90	2.912	20.0	941.515	944.437	2.922	68.5	1.8	68	0.993	4
82.30	19.90	62.40	2.935	20.0	944.437	947.395	2.958	68.5	1.8	68	0.989	4
82.10	19.50	62.60	2.945	20.0	947.395	950.380	2.985	68.5	1.8	68	0.983	4
82.00	19.00	63.00	2.963	20.0	950.380	953.370	2.990	68.5	3.3	68	0.984	3
81.80	18.50	63.30	2.978	20.0	953.370	956.376	3.006	68.5	3.3	68	0.983	3
82.00	18.50	63.50	2.987	20.0	956.376	959.382	3.006	68.5	3.3	68	0.987	3

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	0.986
BEFORE	0.98

ORTECH Environmental

Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 3
Date	February 28, 2017
Barometric Pressure	29.71
System Leak Check	0.001 cfm @ 23 "Hg

MII NUMBERS	
DGM	COE 20093
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Andrew Saikaley
signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

DGMCF= $\frac{\text{Vstd } ft^3}{\text{Vdgm } ft^3}$ $\frac{\text{Tdgm } ^\circ F+460}{\text{Tstd } ^\circ F+460}$ $\frac{\text{Pbar (in. Hg)}}{\text{(Pbar in. Hg+DGMPressure/13.6)}}$

Make sure to inspect pump before each calibration

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
82.80	20.80	62.00	2.916	20.5	24.824	27.821	2.997	68	0.84	68	0.969	6
81.80	19.90	61.90	2.912	20.5	27.821	30.813	2.992	69.5	0.84	69	0.972	6
83.70	21.80	61.90	2.912	20.5	30.813	33.804	2.991	70	0.84	69	0.973	6
83.30	22.40	60.90	2.865	20.5	33.804	36.734	2.930	71	1.9	70	0.977	4
83.00	21.80	61.20	2.879	20.5	36.734	39.666	2.932	71.5	1.9	70	0.982	4
83.00	22.20	60.80	2.860	20.5	39.666	42.587	2.921	72	1.9	70	0.980	4
82.90	20.90	62.00	2.916	20.5	42.587	45.560	2.973	72.5	3.4	71	0.979	3
83.80	21.40	62.40	2.935	20.5	45.560	48.532	2.972	72.5	3.4	71	0.986	3
82.90	20.50	62.40	2.935	20.5	48.532	51.516	2.984	73	3.4	71	0.983	3

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	0.978
BEFORE	0.972

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 3
MII	COE 20093
Date	February 28, 2017
Calibrated By	Andrew Saikaley
Signature	
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	499		0.2
600	600		0.0
700	701		-0.1
800	801		-0.1
900	901		-0.1
1000	1001		-0.1
1100	1102		-0.2
1200	1202		-0.2
1250	1252		-0.2

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading})}{\text{micromite}} \times 100$$

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
Manometer Calibration Data

Date	February 28, 2017	Calibrated By	Andrew Saikaley
Manometer Number	Team 3	Signature	
Manometer MII Number	COE 20093	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale	Manometer Reading "H_2O		Reference Manometer Reading	Percent Difference
"H_2O	Before Adjustment	After Adjustment	"H_2O	%
	0.835	NA	0.853	2.1
0-1.0	0.519		0.530	2.1
	0.210		0.213	1.4
	8.42		8.39	-0.4
1.0-10.0	5.81		5.80	-0.2
	2.20		2.19	-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 Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 4
Date	January 27, 2017
Barometric Pressure	29.18
System Leak Check	<.001 cfm @ 24 "Hg

MII NUMBERS	
DGM	COE 20090
Gasometer	A01463
Barometer	COE20028

Calibrated By	Thomas Timar
signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

Make sure to inspect pump before each calibration

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F	Factor	min.
89.60	26.10	63.50	2.987	21.0	125.300	128.355	3.055	73	0.8	70	0.982	6
89.10	25.70	63.40	2.982	21.0	128.355	131.410	3.055	72.5	0.8	70	0.979	6
88.60	25.20	63.40	2.982	21.0	131.410	134.455	3.045	73	0.8	71	0.983	6
89.60	27.10	62.50	2.940	21.0	135.390	138.410	3.020	73	1.8	71	0.975	4
89.70	27.10	62.60	2.945	21.0	138.410	141.425	3.015	72.5	1.8	71	0.977	4
89.10	26.40	62.70	2.949	21.0	141.425	144.435	3.010	72.5	1.8	71	0.980	4
88.90	24.30	64.60	3.039	21.0	146.960	150.055	3.095	73	3.4	71	0.979	3
89.20	24.60	64.60	3.039	21.0	150.055	153.155	3.100	73	3.4	71	0.978	3
89.80	18.40	71.40	3.359	21.0	153.155	156.575	3.420	73	3.4	71	0.980	3

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	0.979
BEFORE	0.980

ORTECH Environmental
Manometer Calibration Data

Date	March 28, 2017	Calibrated By	David Utley
Manometer Number	Team 4	Signature	
Manometer MII Number	COE 20090	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.898	N/A	0.897	-0.1
0-1.0	0.556		0.555	-0.2
	0.256		0.254	-0.8
	7.62		7.600	-0.3
1.0-10.0	5.02		5.040	0.4
	1.56		1.570	0.6

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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 Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP 116
MII	COE 20090
Date	March 28, 2017
Calibrated By	David Utley
Signature	
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	70		0.0
100	99		1.0
200	200		0.0
250	250		0.0
300	301		-0.3
400	401		-0.3
500	501		-0.2
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

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

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	Vost 3
Date	May 15, 2017
Barometric Pressure	29.50
System Leak Check	NDL @ 22" Hg

MII NUMBERS	
DGM	A12010
Gasometer	A01463
Barometer	COE 28028

Calibrated By	J. Grollman
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

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
84.00	64.30	19.70	0.927	21.0	4370.64	4397.07	0.933	27.0	1.0	27.0	1.011	25	1.1
64.30	48.30	16.00	0.753	21.0	4397.07	4418.83	0.768	28.0	1.0	28.0	1.000	20	1.1
84.30	73.20	11.10	0.522	21.0	4418.83	4434.20	0.543	30.0	1.0	30.0	0.989	15	1.0
72.90	66.30	6.60	0.310	21.0	4434.20	4443.15	0.316	30.0	0.5	30.0	1.011	17	0.5
84.30	77.20	7.10	0.334	21.0	4459.720	4469.39	0.341	28.0	0.5	28.0	1.000	18	0.5
60.40	54.00	6.40	0.301	21.0	4450.940	4459.720	0.310	31.0	0.5	31.0	1.003	17	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

1Lpm	1.000
0.5Lpm	1.005

Revision June 5, 2007

ORTECH Environmental

Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Nutech**
MII	**A12010**
Date	**May 15, 2017**
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
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	201		-0.5
300	302		-0.7
400	402		-0.5
500	503		-0.6
600	604		-0.7

$$\% \text{ Difference} = \frac{(\text{micromite} - \text{after adjustment reading}) \times 100}{\text{micromite}}$$

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	Vost 5
Date	May 15, 2017
Barometric Pressure	29.50
System Leak Check	NDL @ 24 "Hg

MII NUMBERS	
DGM	COE 20018
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

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^\circ F+460}{Tstd\ ^\circ F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

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
71.50	49.90	21.60	1.016	21.0	923.85	953.44	1.045	27.0	1.3	27.0	0.989	30	1.0
75.50	51.60	23.90	1.124	21.0	850.53	882.50	1.129	25.0	1.4	25.0	1.006	38	0.8
51.60	33.80	17.80	0.837	21.0	882.50	906.55	0.849	26.0	1.4	26.0	0.999	23	1.0
61.80	51.10	10.70	0.503	21.0	984.56	998.90	0.506	27.0	0.8	27.0	1.012	33	0.4
51.10	40.90	10.20	0.480	21.0	998.90	1012.43	0.478	27.0	0.8	27.0	1.023	25	0.5
68.60	61.80	6.80	0.320	21.0	975.45	984.56	0.322	26.0	0.8	26.0	1.009	21	0.4

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

1Lpm	0.998
0.5Lpm	1.015

Revision June 5, 2007

ORTECH Environmental

Trendicator Calibration

Calibration Procedure	**03-J005**
Trendicator Type	**Jenco 765**
MII	**COE 20018**
Date	**May 15, 2017**
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		299	0.3
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)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 23, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Inlet Unit 1	Test 1	Inlet Unit 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	0.07	B1	1.002				
High	90.18	A2	90.4	B2	C				
Mid	51.3	A4	50.28	B4		51.4	D4	-2.2	E4
Low	30.6	A3	29.93	B3		30.7	D3	-2.4	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	0.07	0	0.07
Mid	29.93	31.5	-1.6

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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 23, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Inlet Unit 1	Test 2	Inlet Unit 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	1.000	C				
High	90.18	A2	90.19	B2						
Mid	51.3	A4	51.02	B4			51.3	D4	-0.6	E4
Low	30.6	A3	30.33	B3			30.6	D3	-0.9	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	30.33	31.1	-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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 23, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Inlet Unit 1	Test 3	Inlet Unit 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	90.18	A2	90.34	B2	C				
Mid	51.3	A4	51.22	B4		51.4	D4	-0.3	E4
Low	30.6	A3	30.7	B3		30.7	D3	0.1	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	0
Mid	30.7	30.6	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	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 23, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Inlet Unit 2	Test 1	Inlet Unit 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	0.999				
High	90.18	A2	90.09	B2	C				
Mid	51.3	A4	51.4	B4		51.2	D4	0.3	E4
Low	30.6	A3	30.75	B3		30.6	D3	0.6	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	30.75	30.8	0.0

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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 24, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Inlet Unit 2	Test 2	Inlet Unit 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	1.003				
High	90.18	A2	90.44	B2	C				
Mid	51.3	A4	51.7	B4		51.4	D4	0.5	E4
Low	30.6	A3	30.8	B3		30.7	D3	0.4	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	30.8	31.1	-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	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 24, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Inlet Unit 2	Test 3	Inlet Unit 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	1.003					
High	90.18	A2	90.44	B2		C				
Mid	51.3	A4	51.7	B4			51.4	D4	0.5	E4
Low	30.6	A3	30.8	B3			30.7	D3	0.4	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	0.06	-0.06
Mid	51.7	50.5	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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 24, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Outlet Unit 1	Test 1	Outlet Unit 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	90.18	A2	90.37	B2	C				
Mid	51.3	A4	51.14	B4		51.4	D4	-0.5	E4
Low	30.6	A3	30.2	B3		30.7	D3	-1.5	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	51.14	51.6	-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	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 23, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Outlet Unit 1	Test 2	Outlet Unit 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	1.008				
High	90.18	A2	90.87	B2	C				
Mid	51.3	A4	51.07	B4		51.7	D4	-1.2	E4
Low	30.6	A3	30.24	B3		30.8	D3	-1.9	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	51.07	52.0	-0.9

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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 23, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	DYEC	Analyzer ID	Ratfiche
Test Location:	Outlet Unit 1	Test 3	Outlet Unit 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	1.008					
High	90.18	A2	90.87	B2		C				
Mid	51.3	A4	51.07	B4			51.7	D4	-1.2	E4
Low	30.6	A3	30.24	B3			30.8	D3	-1.9	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	0.42	-0.42
Mid	51.07	52.7	-1.6

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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 24, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	Constatine	Analyzer ID	Ratfiche
Test Location:	Outlet Unit 2	Test 1	Outlet Unit2

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	0.11	B1	1.000				
High	90.18	A2	90.27	B2	C				
Mid	51.3	A4	51.24	B4		51.3	D4	-0.1	E4
Low	30.6	A3	30.37	B3		30.6	D3	-0.7	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	0.11	0	0.11
Mid	51.24	51.1	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	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 24, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	Constatine	Analyzer ID	Ratfiche
Test Location:	Outlet Unit 2	Test 2	Outlet Unit 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	0.999				
High	90.18	A2	90.09	B2	C				
Mid	51.3	A4	51.47	B4		51.2	D4	0.4	E4
Low	30.6	A3	30.78	B3		30.6	D3	0.7	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	51.47	51.1	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	30		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21754	Date:	May 24, 2017
Company:	COVANTA	Operator:	T, Timar
Location:	Constatine	Analyzer ID	Ratfiche
Test Location:	Outlet Unit 2	Test 3	Outlet Unit 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	1.007					
High	90.18	A2	90.77	B2		C				
Mid	51.3	A4	51.77	B4			51.6	D4	0.3	E4
Low	30.6	A3	31.03	B3			30.8	D3	0.8	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	0.01	-0.01
Mid	51.77	50.8	0.9

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		43
Run 2	30		45
Run 3	30		41
Average	**30**		**43**

APPENDIX 24

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:	May 23, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.978
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	3.638 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	142.0 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	18.02 m/s
BAROMETRIC PRESSURE (Station)	100.203 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	97.539 Kpa
OXYGEN CONCENTRATION	8.48 %
CARBON DIOXIDE CONCENTRATION	10.71 %
CARBON MONOXIDE CONCENTRATION	11.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.63 m^3/s
DRY REF GAS FLOWRATE	15.41 Rm^3/s
DRY ADJ GAS FLOWRATE	19.34 Rm^3/s
WET REF GAS FLOWRATE	18.41 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.7 mg
	-FILTER	3.3 mg
	-TOTAL	6 mg
DRY REF GAS VOLUME SAMPLED		3.638 m^3
PARTICULATE CONC. - ACTUAL		0.955 mg/m^3
PARTICULATE CONC. - DRY REF		1.649 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.315 mg/m^3
PARTICULATE CONC. - WET REF		1.381 mg/m^3
PARTICULATE EMISSION RATE		0.025417 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:	May 23, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	3.3		
DGMCF	0.978	**Probe (mg)**	2.7		
Barometric Pressure	29.59 "Hg	**CWTR (g)**	498.6		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	20.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.567 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%	8.48
CO2%	10.71
COppm	11.4

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	879.34	0.82	285	65	73	73	2.1	3.0		19.04	
	2.5	881.10	0.84	289	48	73	73	2.2	3.0		19.32	90.8
	5	883.03	0.84	288	47	73	73	2.2	3.0		19.31	98.7
2	7.5	885.00	0.83	288	47	73	73	2.2	3.0		19.20	100.7
	10	886.96	0.81	288	46	73	73	2.1	3.0		18.96	100.8
	12.5	888.89	0.84	288	47	73	73	2.2	3.0		19.31	100.5
3	15	890.84	0.78	288	47	73	73	2	3.0		18.61	99.7
	17.5	892.73	0.78	288	47	73	74	2	3.0		18.61	100.2
	20	894.60	0.78	287	47	73	74	2	3.0		18.60	99.1
4	22.5	896.50	0.74	287	47	73	74	1.9	3.0		18.11	100.6
	25	898.32	0.74	287	47	73	74	1.9	3.0		18.11	98.9
	27.5	900.12	0.73	287	47	73	74	1.9	3.0		17.99	97.8
5	30	901.94	0.68	287	46	73	75	1.8	3.0		17.36	99.6
	32.5	903.72	0.66	288	46	73	75	1.7	3.0		17.12	100.8
	35	905.45	0.66	287	46	73	75	1.7	3.0		17.11	99.5
6	37.5	907.17	0.63	287	46	74	75	1.6	3.0		16.71	98.8
	40	908.87	0.61	287	46	74	75	1.6	3.0		16.45	99.9
	42.5	910.54	0.63	288	46	74	75	1.6	3.0		16.72	99.7
7	45	912.25	0.69	288	45	74	75	1.8	3.0		17.50	100.5
	47.5	914.02	0.71	288	45	74	75	1.8	3.0		17.75	99.5
	50	915.80	0.7	288	45	74	75	1.8	3.0		17.63	98.6
8	52.5	917.57	0.72	288	45	74	75	1.9	3.0		17.88	98.7
	55	919.40	0.73	288	45	74	75	1.9	3.0		18.00	100.7
	57.5	921.20	0.73	288	44	74	76	1.9	3.0		18.00	98.4
9	60	923.01	0.75	288	44	74	76	2	3.0		18.25	98.8
	62.5	924.86	0.74	288	44	74	76	1.9	3.0		18.13	99.7
	65	926.69	0.75	288	44	74	76	1.9	3.0		18.25	99.2
10	67.5	928.52	0.78	288	44	74	76	2	3.0		18.61	98.6
	70	930.39	0.8	287	45	74	76	2.1	3.0		18.83	98.8
	72.5	932.32	0.76	288	45	75	76	2	3.0		18.37	100.6
11	75	934.20	0.71	288	45	74	76	1.9	3.0		17.75	100.5

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	3.3		
DGMCF	0.978	**Probe (mg)**	2.7		
Barometric Pressure	29.59 "Hg	**CWTR (g)**	498.6		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	20.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.567 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%	8.48
CO2%	10.71
COppm	11.4

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 %
	77.5	936.02	0.71	288	45	74	76	1.9	3.0		17.75	100.7
	80	937.83	0.74	288	45	74	76	2	3.0		18.13	100.2
12	82.5	939.68	0.71	288	45	74	76	1.9	3.0		17.75	100.3
	85	941.48	0.7	287	46	74	76	1.9	3.0		17.62	99.6
	87.5	943.26	0.67	288	46	75	76	1.8	3.0		17.25	99.2
	90	945.06								0.567		102.5
1	0	945.63	0.81	284	55	75	75	2.1	3.0		18.91	
	2.5	947.56	0.85	288	48	75	76	2.2	3.5		19.43	100.0
	5	949.55	0.87	288	47	75	76	2.2	3.5		19.65	100.7
2	7.5	951.55	0.87	288	48	75	76	2.2	3.5		19.65	100.0
	10	953.53	0.9	288	49	75	76	2.3	3.5		19.99	99.0
	12.5	955.58	0.89	289	48	75	76	2.3	3.5		19.89	100.8
3	15	957.60	0.85	288	48	75	76	2.2	3.5		19.43	99.9
	17.5	959.60	0.86	288	48	75	77	2.2	3.5		19.54	101.2
	20	961.58	0.84	288	47	75	77	2.2	3.5		19.31	99.5
4	22.5	963.56	0.81	288	48	75	77	2.1	3.5		18.96	100.7
	25	965.50	0.82	288	47	75	77	2.1	3.5		19.08	100.4
	27.5	967.43	0.8	288	47	76	77	2.1	3.5		18.85	99.3
5	30	969.34	0.72	288	47	76	77	1.9	3.0		17.88	99.4
	32.5	971.16	0.68	290	47	76	77	1.8	3.0		17.40	99.8
	35	972.95	0.68	288	48	76	77	1.8	3.0		17.37	101.1
6	37.5	974.74	0.6	288	48	76	78	1.6	3.0		16.32	100.9
	40	976.41	0.61	288	48	76	77	1.6	3.0		16.46	100.1
	42.5	978.08	0.61	288	49	76	77	1.6	3.0		16.46	99.4
7	45	979.74	0.62	288	48	76	78	1.6	3.0		16.59	98.8
	47.5	981.43	0.67	289	49	76	78	1.8	3.0		17.26	99.7
	50	983.16	0.66	289	47	76	78	1.8	3.0		17.13	98.3
8	52.5	984.90	0.69	288	46	77	78	1.8	3.0		17.50	99.6
	55	986.70	0.67	288	46	77	78	1.8	3.0		17.25	100.6
	57.5	988.47	0.7	288	46	77	79	1.8	3.0		17.63	100.4
9	60	990.27	0.69	287	46	77	79	1.8	3.0		17.49	99.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	3.3		
DGMCF	0.978	**Probe (mg)**	2.7		
Barometric Pressure	29.59 "Hg	**CWTR (g)**	498.6		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	20.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.567 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%	8.48
CO2%	10.71
COppm	11.4

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 %
	62.5	992.08	0.71	287	46	77	79	1.8	3.0		17.74	**101.0**
	65	993.88	0.71	287	46	77	79	1.8	3.0		17.74	**99.0**
10	67.5	995.67	0.7	287	46	77	79	1.8	3.0		17.62	**98.4**
	70	997.46	0.69	287	47	77	79	1.8	3.0		17.49	**99.1**
	72.5	999.26	0.69	287	47	78	80	1.8	3.0		17.49	**100.4**
11	75	1001.04	0.71	287	47	78	80	1.9	3.0		17.74	**99.1**
	77.5	1002.85	0.67	287	47	78	80	1.8	3.0		17.24	**99.4**
	80	1004.63	0.68	287	47	78	80	1.8	3.0		17.36	**100.6**
12	82.5	1006.41	0.68	287	48	78	80	1.8	3.0		17.36	**99.8**
	85	1008.19	0.66	287	48	78	80	1.8	3.0		17.11	**99.8**
	87.5	1009.94	0.66	287	48	78	80	1.8	3.0		17.11	**99.6**
	90	1011.70										**99.9**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 Particulate & Metals
Date:	May 23, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.978
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	3.637 m^3
AVGERGE ISOKINETICITY	99.4 %
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	142.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.7 %
AVERAGE GAS VELOCITY	17.98 m/s
BAROMETRIC PRESSURE (Station)	100.000 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	97.336 Kpa
OXYGEN CONCENTRATION	8.49 %
CARBON DIOXIDE CONCENTRATION	10.58 %
CARBON MONOXIDE CONCENTRATION	15.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.57 m^3/s
DRY REF GAS FLOWRATE	15.45 Rm^3/s
DRY ADJ GAS FLOWRATE	19.37 Rm^3/s
WET REF GAS FLOWRATE	18.33 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.1 mg
	-FILTER	1.7 mg
	-TOTAL	3.8 mg
DRY REF GAS VOLUME SAMPLED		3.637 m^3
PARTICULATE CONC. - ACTUAL		0.608 mg/m^3
PARTICULATE CONC. - DRY REF		1.045 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.834 mg/m^3
PARTICULATE CONC. - WET REF		0.881 mg/m^3
PARTICULATE EMISSION RATE		0.016145 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:	May 23, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	1.7		
DGMCF	0.978	**Probe (mg)**	2.1		
Barometric Pressure	29.53 "Hg	**CWTR (g)**	474.8		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	21.6		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.593 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%	8.49
CO2%	10.58
COppm	15.6

Measured H2O
15.7 %

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	12.55	0.84	283	66	80	80	2.2	4.0		19.25	
	2.5	14.45	0.85	288	51	79	80	2.3	4.0		19.43	94.9
	5	16.46	0.85	288	48	79	79	2.3	4.0		19.43	100.2
2	7.5	18.48	0.9	289	49	79	80	2.3	4.0		20.00	100.8
	10	20.52	0.87	288	49	79	80	2.3	4.0		19.65	98.9
	12.5	22.56	0.87	288	48	80	80	2.3	4.0		19.65	100.5
3	15	24.58	0.85	288	49	80	80	2.3	4.0		19.43	99.5
	17.5	26.62	0.85	288	49	80	80	2.3	4.0		19.43	101.6
	20	28.60	0.86	288	49	80	80	2.3	4.0		19.54	98.6
4	22.5	30.60	0.86	288	49	80	80	2.3	4.0		19.54	99.1
	25	32.59	0.78	288	49	80	80	2.1	4.0		18.61	98.6
	27.5	34.53	0.78	288	48	80	81	2.1	3.5		18.61	100.8
5	30	36.46	0.68	288	48	80	81	1.8	3.5		17.38	100.2
	32.5	38.27	0.7	288	47	80	81	1.8	3.5		17.63	100.6
	35	40.05	0.69	288	47	80	81	1.8	3.5		17.50	97.5
6	37.5	41.83	0.59	288	47	80	81	1.6	3.0		16.19	98.2
	40	43.51	0.6	288	47	80	81	1.6	3.0		16.32	100.2
	42.5	45.18	0.6	288	47	81	82	1.6	3.0		16.32	98.8
7	45	46.85	0.7	288	47	80	82	1.9	3.5		17.63	98.6
	47.5	48.65	0.69	288	46	81	82	1.9	3.5		17.50	98.5
	50	50.46	0.68	288	46	81	82	1.9	3.5		17.38	99.7
8	52.5	52.27	0.71	288	45	81	82	1.9	3.5		17.75	100.4
	55	54.09	0.72	288	45	81	82	1.9	3.5		17.88	98.8
	57.5	55.92	0.71	288	45	81	82	1.9	3.5		17.75	98.7
9	60	57.75	0.7	287	46	81	82	1.9	3.5		17.62	99.4
	62.5	59.58	0.7	287	46	81	82	1.9	3.5		17.62	100.0
	65	61.41	0.7	287	46	81	82	1.9	3.5		17.62	100.0
10	67.5	63.23	0.69	287	46	81	82	1.9	3.5		17.49	99.5
	70	65.05	0.72	287	46	81	82	1.9	3.5		17.87	100.2
	72.5	66.86	0.72	287	46	81	82	1.9	3.5		17.87	97.5
11	75	68.74	0.68	287	46	81	82	1.8	3.5		17.36	101.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	1.7		
DGMCF	0.978	**Probe (mg)**	2.1		
Barometric Pressure	29.53 "Hg	**CWTR (g)**	474.8		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	21.6		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.593 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%	8.49
CO2%	10.58
COppm	15.6

Measured H2O
15.7 %

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 %
	77.5	70.56	0.67	287	47	81	82	1.8	3.5		17.24	100.9
	80	72.32	0.66	287	47	81	82	1.8	3.5		17.11	98.3
12	82.5	74.08	0.67	287	48	81	83	1.8	3.5		17.24	99.0
	85	75.95	0.65	287	48	81	83	1.8	3.5		16.98	104.3
	87.5	77.76	0.66	287	48	81	83	1.8	3.5		17.11	102.5
	90	79.56								0.593		101.0
1	0	80.15	0.77	287	60	82	83	2	4.0		18.48	
	2.5	81.97	0.75	287	51	81	82	2	4.0		18.24	94.7
	5	83.88	0.79	287	49	81	82	2.1	4.0		18.72	100.9
2	7.5	85.80	0.82	287	48	82	82	2.2	4.0		19.07	98.8
	10	87.80	0.86	287	48	81	82	2.3	4.0		19.53	101.0
	12.5	89.93	0.84	287	48	81	82	2.2	4.0		19.30	105.1
3	15	91.83	0.81	288	48	81	82	2.2	4.0		18.96	94.9
	17.5	93.80	0.83	288	48	81	82	2.2	4.0		19.20	100.2
	20	95.77	0.82	288	49	81	82	2.2	4.0		19.08	99.0
4	22.5	97.71	0.76	288	49	82	82	2	4.0		18.37	98.1
	25	99.65	0.78	288	50	82	83	2.1	4.0		18.61	101.8
	27.5	101.57	0.77	288	50	82	83	2.1	4.0		18.49	99.3
5	30	103.48	0.76	288	50	82	83	2	4.0		18.37	99.5
	32.5	105.39	0.7	289	50	82	83	2	4.0		17.64	100.1
	35	107.25	0.7	290	51	82	83	2	4.0		17.65	101.6
6	37.5	109.04	0.64	289	51	82	83	1.7	4.0		16.87	97.9
	40	110.85	0.65	289	51	82	83	1.7	4.0		17.00	103.4
	42.5	112.58	0.63	289	51	82	83	1.7	4.0		16.74	98.0
7	45	114.31	0.68	289	51	82	84	1.8	4.0		17.39	99.6
	47.5	116.07	0.69	289	51	82	84	1.8	4.0		17.51	97.4
	50	117.83	0.68	289	51	82	84	1.8	4.0		17.39	96.7
8	52.5	119.61	0.7	289	51	82	84	1.8	4.0		17.64	98.5
	55	121.39	0.7	289	50	82	84	1.8	4.0		17.64	97.1
	57.5	123.16	0.71	289	49	83	84	1.8	4.0		17.77	96.6
9	60	124.94	0.74	289	48	83	84	2	4.0		18.14	96.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	1.7		
DGMCF	0.978	**Probe (mg)**	2.1		
Barometric Pressure	29.53 "Hg	**CWTR (g)**	474.8		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	21.6		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.593 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%	8.49
CO2%	10.58
COppm	15.6

Measured H2O
15.7 %

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 %
	62.5	126.79	0.74	289	48	83	84	2	4.0		18.14	**98.1**
	65	128.65	0.72	289	48	83	84	2	4.0		17.89	**98.7**
10	67.5	130.52	0.74	289	48	83	84	2	4.0		18.14	**100.6**
	70	132.38	0.8	288	48	83	84	2.1	4.0		18.85	**98.7**
	72.5	134.28	0.78	288	48	83	84	2.1	4.0		18.61	**96.9**
11	75	136.21	0.7	288	48	83	84	1.9	4.0		17.63	**99.7**
	77.5	138.08	0.73	288	48	83	84	1.9	4.0		18.00	**101.9**
	80	139.92	0.71	288	48	83	84	1.9	4.0		17.75	**98.2**
12	82.5	141.80	0.54	288	48	83	84	1.4	4.0		15.48	**101.7**
	85	143.41	0.57	288	48	83	84	1.5	4.0		15.91	**99.8**
	87.5	145.02	0.55	288	49	83	84	1.5	4.0		15.63	**97.1**
	90	146.65										**99.9**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 Particulate & Metals
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.978
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	3.698 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	142.0 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	17.96 m/s
BAROMETRIC PRESSURE (Station)	99.289 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	96.600 Kpa
OXYGEN CONCENTRATION	8.62 %
CARBON DIOXIDE CONCENTRATION	10.41 %
CARBON MONOXIDE CONCENTRATION	11.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.53 m^3/s
DRY REF GAS FLOWRATE	15.35 Rm^3/s
DRY ADJ GAS FLOWRATE	19.05 Rm^3/s
WET REF GAS FLOWRATE	18.17 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.2 mg
	-FILTER	2.1 mg
	-TOTAL	4.3 mg
DRY REF GAS VOLUME SAMPLED		3.698 m^3
PARTICULATE CONC. - ACTUAL		0.673 mg/m^3
PARTICULATE CONC. - DRY REF		1.163 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.937 mg/m^3
PARTICULATE CONC. - WET REF		0.983 mg/m^3
PARTICULATE EMISSION RATE		0.017855 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:	May 25, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	2.1		
DGMCF	0.978	**Probe (mg)**	2.2		
Barometric Pressure	29.32 "Hg	**CWTR (g)**	473.8		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24.2		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.546 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%	8.62
CO2%	10.41
COppm	11.7

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	275.84	0.83	284	60	76	76	2.2	3.0		19.22	
	2.5	277.75	0.82	288	60	76	76	2.2	3.5		19.15	94.5
	5	279.76	0.85	288	60	76	76	2.3	3.5		19.50	100.1
2	7.5	281.79	0.82	288	58	76	76	2.2	3.5		19.15	99.4
	10	283.82	0.82	288	58	76	76	2.2	3.5		19.15	101.1
	12.5	285.82	0.81	288	58	76	76	2.2	3.5		19.04	99.6
3	15	287.84	0.72	289	58	76	76	2	3.0		17.96	101.3
	17.5	289.72	0.75	289	64	76	76	2.1	3.0		18.33	100.0
	20	291.62	0.75	289	62	76	76	2.1	3.0		18.33	99.0
4	22.5	293.52	0.67	289	59	76	77	1.8	3.0		17.32	99.0
	25	295.34	0.69	289	58	76	77	1.8	3.0		17.58	100.2
	27.5	297.14	0.68	289	56	76	77	1.8	3.0		17.45	97.6
5	30	298.95	0.62	289	55	76	78	1.7	3.0		16.66	98.9
	32.5	300.71	0.62	289	55	77	78	1.7	3.0		16.66	100.6
	35	302.47	0.63	289	54	77	78	1.7	3.0		16.80	100.5
6	37.5	304.21	0.66	289	53	77	78	1.8	3.0		17.19	98.6
	40	306.00	0.64	289	53	77	78	1.8	3.0		16.93	99.1
	42.5	307.76	0.63	289	52	77	79	1.8	3.0		16.80	98.9
7	45	309.53	0.68	289	52	77	79	1.9	3.0		17.45	100.2
	47.5	311.35	0.67	289	52	77	79	1.9	3.0		17.32	99.2
	50	313.15	0.66	288	52	77	79	1.8	3.0		17.18	98.8
8	52.5	314.96	0.7	288	52	77	79	1.9	3.0		17.70	100.0
	55	316.78	0.71	288	52	77	79	1.9	3.0		17.82	97.7
	57.5	318.64	0.69	288	52	77	79	1.9	3.0		17.57	99.1
9	60	320.47	0.64	288	53	77	79	1.8	3.0		16.92	99.0
	62.5	322.27	0.68	288	53	78	79	1.9	3.0		17.44	101.0
	65	324.09	0.69	288	53	77	79	1.9	3.0		17.57	99.0
10	67.5	325.90	0.63	288	54	78	79	1.8	3.0		16.79	97.9
	70	327.69	0.64	288	54	78	79	1.8	3.0		16.92	101.2
	72.5	329.46	0.65	288	54	78	79	1.8	3.0		17.05	99.3
11	75	331.25	0.77	288	55	79	79	2.1	3.5		18.56	99.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	May 25, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	2.1		
DGMCF	0.978	**Probe (mg)**	2.2		
Barometric Pressure	29.32 "Hg	**CWTR (g)**	473.8		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24.2		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.546 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%	8.62
CO2%	10.41
COppm	11.7

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 %
	77.5	333.16	0.56	288	55	78	79	1.6	3.0		15.83	**97.6**
	80	334.85	0.55	288	56	78	79	1.5	3.0		15.69	**101.3**
12	82.5	336.50	0.61	288	57	78	79	1.7	3.0		16.52	**99.7**
	85	338.21	0.6	288	58	78	79	1.7	3.0		16.38	**98.2**
	87.5	339.93	0.6	288	58	78	79	1.7	3.0		16.38	**99.6**
	90	341.78								0.546		**107.3**
1	0	342.33	0.89	286	70	77	77	2.4	4.0		19.93	
	2.5	344.34	0.89	288	58	77	76	2.5	4.0		19.95	**95.9**
	5	346.45	0.88	288	55	76	76	2.4	4.0		19.84	**100.9**
2	7.5	348.55	0.92	288	54	76	76	2.5	4.0		20.29	**101.1**
	10	350.66	0.91	288	53	76	76	2.5	4.0		20.18	**99.3**
	12.5	352.77	0.91	288	53	76	76	2.5	4.0		20.18	**99.9**
3	15	354.89	0.86	288	53	76	76	2.3	4.0		19.61	**100.3**
	17.5	356.98	0.88	288	53	76	77	2.3	4.0		19.84	**101.7**
	20	359.08	0.88	288	53	76	77	2.3	4.0		19.84	**100.9**
4	22.5	361.15	0.83	288	52	76	77	2.2	4.0		19.27	**99.5**
	25	363.10	0.8	288	55	76	77	2.2	4.0		18.92	**96.5**
	27.5	365.12	0.82	288	57	77	77	2.2	4.0		19.15	**101.8**
5	30	367.13	0.76	288	58	76	77	2.1	4.0		18.44	**100.0**
	32.5	369.06	0.75	288	57	76	77	2.1	4.0		18.32	**99.8**
	35	370.98	0.73	288	55	76	77	2	4.0		18.07	**99.9**
6	37.5	372.88	0.64	288	54	76	77	1.8	3.5		16.92	**100.2**
	40	374.70	0.63	288	53	76	77	1.7	3.5		16.79	**102.4**
	42.5	376.48	0.65	287	52	77	77	1.7	3.5		17.04	**101.0**
7	45	378.25	0.72	287	52	76	77	2	3.5		17.93	**98.7**
	47.5	380.11	0.72	287	51	77	78	2	3.5		17.93	**98.7**
	50	381.96	0.71	287	51	76	77	2	3.5		17.81	**98.0**
8	52.5	383.82	0.74	287	51	76	78	2	4.0		18.18	**99.4**
	55	385.70	0.73	287	51	76	77	2	4.0		18.06	**98.3**
	57.5	387.58	0.72	287	51	76	78	2	4.0		17.93	**99.1**
9	60	389.46	0.73	285	52	76	77	2	4.0		18.03	**99.7**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 Particulate & Metals	**Test Location:**	APC Outlet No. 1
Date:	May 25, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	2.1		
DGMCF	0.978	**Probe (mg)**	2.2		
Barometric Pressure	29.32 "Hg	**CWTR (g)**	473.8		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	24.2		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.546 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%	8.62
CO2%	10.41
COppm	11.7

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 %
	62.5	391.35	0.74	286	52	76	78	2	4.0		18.17	**99.5**
	65	393.23	0.72	286	54	76	78	2	4.0		17.92	**98.2**
10	67.5	395.12	0.75	286	55	76	78	2.1	4.0		18.29	**100.1**
	70	397.03	0.76	284	56	76	78	2.1	4.0		18.39	**99.2**
	72.5	398.95	0.78	285	57	77	78	2.1	4.0		18.64	**98.9**
11	75	400.91	0.7	285	58	76	78	1.9	4.0		17.66	**99.6**
	77.5	402.80	0.72	285	59	77	78	1.9	4.0		17.91	**101.4**
	80	404.68	0.71	285	60	76	78	1.9	4.0		17.79	**99.4**
12	82.5	406.55	0.61	285	62	77	78	1.7	3.5		16.49	**99.7**
	85	408.31	0.61	285	62	77	78	1.7	3.5		16.49	**101.1**
	87.5	410.06	0.61	285	61	77	78	1.7	3.5		16.49	**100.5**
	90	411.90										**105.5**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Particulate & Metals
Date:	May 24, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.979
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	3.587 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	139.5 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	17.63 m/s
BAROMETRIC PRESSURE (Station)	99.661 Kpa
STATIC PRESSURE	-2.303 Kpa
ABSOLUTE GAS PRESSURE	97.358 Kpa
OXYGEN CONCENTRATION	8.26 %
CARBON DIOXIDE CONCENTRATION	10.73 %
CARBON MONOXIDE CONCENTRATION	14.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.05 m^3/s
DRY REF GAS FLOWRATE	15.27 Rm^3/s
DRY ADJ GAS FLOWRATE	19.49 Rm^3/s
WET REF GAS FLOWRATE	18.09 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0.7 mg
	-FILTER	5.5 mg
	-TOTAL	6.2 mg
DRY REF GAS VOLUME SAMPLED		3.587 m^3
PARTICULATE CONC. - ACTUAL		1.013 mg/m^3
PARTICULATE CONC. - DRY REF		1.729 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.354 mg/m^3
PARTICULATE CONC. - WET REF		1.460 mg/m^3
PARTICULATE EMISSION RATE		0.026393 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:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	5.5		
DGMCF	0.979	**Probe (mg)**	0.7		
Barometric Pressure	29.43 "Hg	**CWTR (g)**	465.4		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	20.2		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.529 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%	8.26
CO2%	10.73
COppm	14.8

Measured H2O
15.5 %

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	670.02	0.75	278	72	76	76	1.8	5.0		18.12	
	2.5	671.91	0.76	281	52	75	75	1.8	5.0		18.27	99.8
	5	673.78	0.74	280	51	76	76	1.8	5.0		18.02	98.5
2	7.5	675.64	0.79	281	51	76	75	1.9	5.0		18.63	99.1
	10	677.56	0.8	281	51	76	75	1.9	5.0		18.75	99.2
	12.5	679.49	0.82	281	51	76	76	1.9	5.0		18.98	99.0
3	15	681.44	0.79	281	51	76	76	1.9	5.0		18.63	98.8
	17.5	683.47	0.84	281	51	76	77	2	5.0		19.21	104.7
	20	685.40	0.8	282	51	76	78	2	5.0		18.76	96.5
4	22.5	687.45	0.82	282	52	77	78	2	5.0		18.99	105.0
	25	689.35	0.79	282	52	77	79	1.9	5.0		18.64	96.0
	27.5	691.32	0.8	282	52	77	79	1.9	5.0		18.76	101.3
5	30	693.25	0.71	278	52	77	79	1.7	5.0		17.63	98.7
	32.5	695.10	0.76	283	53	77	80	1.8	5.0		18.30	100.1
	35	697.01	0.71	283	53	77	80	1.7	5.0		17.69	100.1
6	37.5	698.88	0.64	283	53	77	80	1.5	4.0		16.79	101.4
	40	700.62	0.65	283	54	77	80	1.5	4.0		16.92	99.3
	42.5	702.36	0.65	283	54	78	81	1.5	5.0		16.92	98.5
7	45	704.08	0.67	283	53	78	82	1.6	5.0		17.18	97.2
	47.5	705.83	0.67	283	53	78	82	1.6	5.0		17.18	97.4
	50	707.64	0.69	283	52	78	81	1.7	5.0		17.43	100.7
8	52.5	709.44	0.69	283	53	80	81	1.7	5.0		17.43	98.8
	55	711.25	0.69	283	52	79	82	1.7	5.0		17.43	99.2
	57.5	713.05	0.68	283	52	79	82	1.7	5.0		17.31	98.6
9	60	714.84	0.67	283	52	79	82	1.7	5.0		17.18	98.8
	62.5	716.60	0.72	283	52	80	82	1.8	5.5		17.81	97.9
	65	718.48	0.7	283	51	80	82	1.7	5.0		17.56	100.8
10	67.5	720.32	0.69	283	51	79	82	1.7	5.0		17.43	100.0
	70	722.13	0.71	283	51	79	84	1.7	5.0		17.69	99.2
	72.5	723.98	0.68	283	51	79	84	1.7	5.0		17.31	99.7
11	75	725.78	0.68	283	51	79	82	1.7	5.0		17.31	99.2

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	5.5		
DGMCF	0.979	**Probe (mg)**	0.7		
Barometric Pressure	29.43 "Hg	**CWTR (g)**	465.4		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	20.2		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.529 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%	8.26
CO2%	10.73
COppm	14.8

Measured H2O
15.5 %

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	727.59	0.71	283	52	80	83	1.7	5.0		17.69	99.9
	80	729.42	0.68	283	51	80	82	1.7	5.0		17.31	98.7
12	82.5	731.24	0.59	283	52	81	83	1.4	4.0		16.12	100.4
	85	732.94	0.6	283	52	81	83	1.4	5.0		16.26	100.4
	87.5	734.58	0.63	283	52	80	83	1.5	5.0		16.66	96.0
	90	736.33								0.529		100.3
1	0	736.86	0.79	280	60	80	82	2	6.0		18.62	
	2.5	738.76	0.81	284	54	80	81	2	6.0		18.90	96.9
	5	740.84	0.8	284	52	81	81	2	6.0		18.79	105.3
2	7.5	742.82	0.84	284	51	80	81	2	6.0		19.25	100.8
	10	744.82	0.85	284	51	80	82	2	6.0		19.36	99.5
	12.5	746.88	0.84	285	51	81	82	2	6.0		19.26	101.7
3	15	748.95	0.81	285	51	80	82	2	6.0		18.92	102.8
	17.5	750.92	0.78	285	51	80	83	1.9	5.5		18.56	99.7
	20	752.84	0.79	284	51	80	83	1.9	5.5		18.67	98.9
4	22.5	754.76	0.74	284	51	80	83	1.8	5.5		18.07	98.3
	25	756.64	0.72	284	51	80	84	1.7	5.5		17.82	99.4
	27.5	758.46	0.71	284	50	81	84	1.7	5.5		17.70	97.4
5	30	760.26	0.68	284	50	80	85	1.7	5.5		17.32	96.9
	32.5	762.05	0.68	284	50	81	85	1.7	5.5		17.32	98.5
	35	763.83	0.7	285	49	80	84	1.7	5.5		17.58	97.9
6	37.5	765.69	0.65	285	49	81	84	1.5	5.0		16.94	101.0
	40	767.43	0.64	283	49	81	84	1.5	5.0		16.79	98.0
	42.5	769.15	0.65	285	49	81	83	1.5	5.0		16.94	97.4
7	45	770.86	0.64	284	49	80	83	1.5	5.0		16.80	96.4
	47.5	772.57	0.66	284	46	80	83	1.5	5.0		17.06	97.1
	50	774.31	0.67	285	49	80	83	1.5	5.0		17.20	97.3
8	52.5	776.08	0.7	284	49	80	82	1.7	6.0		17.57	98.3
	55	777.95	0.73	284	48	80	82	1.7	6.0		17.94	101.7
	57.5	779.80	0.71	284	48	81	82	1.7	6.0		17.70	98.5
9	60	781.62	0.71	284	49	80	84	1.7	5.5		17.70	98.2

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	5.5		
DGMCF	0.979	**Probe (mg)**	0.7		
Barometric Pressure	29.43 "Hg	**CWTR (g)**	465.4		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	20.2		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.529 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%	8.26
CO2%	10.73
COppm	14.8

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 %
	62.5	783.43	0.71	284	48	80	83	1.7	5.5		17.70	97.6
	65	785.23	0.7	284	49	80	82	1.7	6.0		17.57	97.1
10	67.5	787.03	0.66	284	49	80	82	1.5	5.5		17.06	97.9
	70	788.74	0.69	284	49	80	82	1.6	6.0		17.45	95.7
	72.5	790.55	0.65	284	49	80	81	1.5	5.5		16.93	99.1
11	75	792.30	0.57	284	49	79	82	1.3	5.0		15.86	98.8
	77.5	793.94	0.57	284	49	81	82	1.3	5.0		15.86	98.8
	80	795.56	0.55	284	49	81	81	1.3	5.0		15.58	97.5
12	82.5	797.20	0.59	284	49	79	81	1.4	5.5		16.13	100.5
	85	798.88	0.58	284	49	79	82	1.4	5.5		16.00	99.6
	87.5	800.55	0.58	284	50	79	82	1.4	5.5		16.00	99.8
	90	802.21										99.2

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Particulate & Metals
Date:	May 24, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.979
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	3.508 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	139.6 °C
AVERAGE GAS MOISTURE BY VOLUME	16.0 %
AVERAGE GAS VELOCITY	17.28 m/s
BAROMETRIC PRESSURE (Station)	99.560 Kpa
STATIC PRESSURE	-2.303 Kpa
ABSOLUTE GAS PRESSURE	97.257 Kpa
OXYGEN CONCENTRATION	8.13 %
CARBON DIOXIDE CONCENTRATION	10.81 %
CARBON MONOXIDE CONCENTRATION	12.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.53 m^3/s
DRY REF GAS FLOWRATE	14.87 Rm^3/s
DRY ADJ GAS FLOWRATE	19.18 Rm^3/s
WET REF GAS FLOWRATE	17.70 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.6 mg
	-FILTER	4.4 mg
	-TOTAL	6 mg
DRY REF GAS VOLUME SAMPLED		3.508 m^3
PARTICULATE CONC. - ACTUAL		0.996 mg/m^3
PARTICULATE CONC. - DRY REF		1.711 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.326 mg/m^3
PARTICULATE CONC. - WET REF		1.437 mg/m^3
PARTICULATE EMISSION RATE		0.025433 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:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	4.4		
DGMCF	0.979	**Probe (mg)**	1.6		
Barometric Pressure	29.4 "Hg	**CWTR (g)**	466.6		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	24.3		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.722 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%	8.13
CO2%	10.81
COppm	12.0

Measured H2O
16.0 %

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	803.15	0.78	280	70	79	78	1.9	5.0		18.52	
	2.5	805.09	0.8	283	64	79	79	2	5.0		18.80	100.6
	5	807.12	0.81	284	62	80	79	1.9	5.0		18.93	104.1
2	7.5	809.09	0.85	284	57	80	79	2	5.0		19.39	100.3
	10	811.11	0.84	282	52	80	80	2	5.0		19.25	100.4
	12.5	813.17	0.83	285	51	80	81	2	5.0		19.17	102.8
3	15	815.16	0.78	284	50	81	80	1.9	5.0		18.57	100.0
	17.5	817.10	0.78	284	49	80	82	1.9	5.0		18.57	100.5
	20	819.05	0.78	284	49	80	82	1.9	5.0		18.57	100.9
4	22.5	821.02	0.77	284	48	81	83	1.9	5.0		18.45	101.9
	25	822.93	0.77	284	48	81	83	1.9	5.0		18.45	99.3
	27.5	824.98	0.75	285	48	81	84	1.9	5.0		18.23	106.6
5	30	826.80	0.71	285	48	81	84	1.75	5.0		17.73	95.8
	32.5	828.67	0.73	285	48	81	84	1.75	5.0		17.98	101.2
	35	830.56	0.73	285	49	81	84	1.7	5.0		17.98	100.9
6	37.5	832.45	0.65	285	49	81	84	1.6	5.0		16.97	100.8
	40	834.22	0.64	285	49	81	84	1.5	5.0		16.84	100.1
	42.5	835.95	0.64	285	48	82	84	1.5	5.0		16.84	98.5
7	45	837.72	0.63	285	48	82	84	1.4	5.0		16.70	100.7
	47.5	839.40	0.64	284	49	82	85	1.5	5.0		16.83	96.3
	50	841.12	0.63	284	48	82	85	1.5	5.0		16.69	97.7
8	52.5	842.85	0.68	284	48	82	85	1.6	5.0		17.34	99.1
	55	844.67	0.67	284	48	82	86	1.6	5.0		17.21	100.3
	57.5	846.47	0.67	284	49	83	86	1.6	5.0		17.21	99.9
9	60	848.29	0.71	283	49	83	85	1.7	5.0		17.71	100.9
	62.5	850.18	0.7	283	49	83	85	1.7	5.0		17.58	101.8
	65	852.02	0.7	283	49	83	86	1.7	5.0		17.58	99.8
10	67.5	853.86	0.66	283	50	83	86	1.7	5.0		17.07	99.8
	70	855.63	0.67	283	50	83	86	1.6	5.0		17.20	98.8
	72.5	857.40	0.67	283	50	83	86	1.6	5.0		17.20	98.1
11	75	859.17	0.66	283	51	83	86	1.6	5.0		17.07	98.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	4.4		
DGMCF	0.979	**Probe (mg)**	1.6		
Barometric Pressure	29.4 "Hg	**CWTR (g)**	466.6		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	24.3		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.722 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%	8.13
CO2%	10.81
COppm	12.0

Measured H2O
16.0 %

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 %
	77.5	860.93	0.65	283	51	83	86	1.6	5.0		16.94	98.2
	80	862.68	0.66	283	52	83	86	1.6	5.0		17.07	98.4
12	82.5	864.43	0.55	283	53	83	86	1.3	5.0		15.59	97.7
	85	866.08	0.54	283	53	83	86	1.3	5.0		15.44	100.8
	87.5	867.69	0.55	283	53	83	87	1.3	5.0		15.59	99.3
	90	869.33								0.722		100.2
1	0	870.05	0.75	283	60	84	84	1.8	5.5		18.20	
	2.5	871.98	0.72	284	54	84	84	1.8	5.0		17.85	101.0
	5	873.84	0.7	283	53	83	84	1.7	5.0		17.58	99.6
2	7.5	875.67	0.75	283	52	83	84	1.8	5.5		18.20	99.4
	10	877.59	0.72	283	52	83	84	1.7	5.5		17.83	100.8
	12.5	879.50	0.73	282	53	83	85	1.7	5.0		17.95	102.3
3	15	881.40	0.73	282	53	83	84	1.7	5.5		17.95	100.9
	17.5	883.29	0.73	282	53	83	85	1.7	5.5		17.95	100.5
	20	885.18	0.72	283	54	84	86	1.7	5.5		17.83	100.4
4	22.5	887.04	0.73	282	54	84	86	1.7	5.5		17.95	99.3
	25	888.89	0.69	283	54	84	85	1.6	5.0		17.46	98.1
	27.5	890.73	0.7	283	55	85	86	1.6	5.5		17.58	100.4
5	30	892.54	0.63	283	55	84	86	1.5	5.0		16.68	97.9
	32.5	894.27	0.65	283	56	84	87	1.5	5.0		16.94	98.7
	35	895.99	0.61	283	57	84	87	1.4	5.0		16.41	96.5
6	37.5	897.68	0.58	283	58	84	86	1.3	5.0		16.01	97.9
	40	899.31	0.56	283	59	84	86	1.3	5.0		15.73	96.9
	42.5	900.94	0.57	283	60	84	86	1.3	5.0		15.87	98.6
7	45	902.56	0.6	283	61	84	86	1.4	5.0		16.28	97.1
	47.5	904.23	0.64	283	62	84	86	1.5	5.0		16.81	97.6
	50	905.94	0.63	283	63	84	86	1.5	5.0		16.68	96.8
8	52.5	907.66	0.64	283	64	84	86	1.5	5.0		16.81	98.1
	55	909.36	0.65	283	65	84	87	1.5	5.0		16.94	96.2
	57.5	911.08	0.63	283	67	84	87	1.4	5.0		16.68	96.5
9	60	912.77	0.63	283	68	84	87	1.5	5.0		16.68	96.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	4.4		
DGMCF	0.979	**Probe (mg)**	1.6		
Barometric Pressure	29.4 "Hg	**CWTR (g)**	466.6		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	24.3		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.722 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%	8.13
CO2%	10.81
COppm	12.0

Measured H2O
16.0 %

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 %
	62.5	914.54	0.63	283	65	84	87	1.5	5.0		16.68	**100.9**
	65	916.31	0.64	283	65	85	87	1.5	5.0		16.81	**100.9**
10	67.5	918.08	0.66	283	64	85	87	1.5	5.5		17.07	**100.0**
	70	919.85	0.7	283	63	85	87	1.6	5.5		17.58	**98.5**
	72.5	921.66	0.65	284	63	85	87	1.6	5.5		16.96	**97.8**
11	75	923.45	0.68	283	62	85	87	1.6	5.5		17.33	**100.5**
	77.5	925.26	0.64	283	62	85	87	1.6	5.5		16.81	**99.3**
	80	927.07	0.65	283	60	85	87	1.5	5.5		16.94	**102.3**
12	82.5	928.84	0.54	283	59	85	87	1.2	5.0		15.44	**99.3**
	85	930.47	0.53	283	59	85	87	1.2	5.0		15.30	**100.2**
	87.5	932.06	0.51	283	59	85	87	1.2	5.0		15.01	**98.7**
	90	933.68										**102.6**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Particulate & Metals
Date:	May 24, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.979
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	3.584 m^3
AVGERGE ISOKINETICITY	99.5 %
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	139.9 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	17.41 m/s
BAROMETRIC PRESSURE (Station)	99.492 Kpa
STATIC PRESSURE	-2.303 Kpa
ABSOLUTE GAS PRESSURE	97.189 Kpa
OXYGEN CONCENTRATION	8 %
CARBON DIOXIDE CONCENTRATION	10.89 %
CARBON MONOXIDE CONCENTRATION	23.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.72 m^3/s
DRY REF GAS FLOWRATE	14.91 Rm^3/s
DRY ADJ GAS FLOWRATE	19.42 Rm^3/s
WET REF GAS FLOWRATE	17.81 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	1.5 mg
	-FILTER	2.4 mg
	-TOTAL	3.9 mg
DRY REF GAS VOLUME SAMPLED		3.584 m^3
PARTICULATE CONC. - ACTUAL		0.631 mg/m^3
PARTICULATE CONC. - DRY REF		1.088 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.835 mg/m^3
PARTICULATE CONC. - WET REF		0.911 mg/m^3
PARTICULATE EMISSION RATE		0.016221 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:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	2.4		
DGMCF	0.979	**Probe (mg)**	1.5		
Barometric Pressure	29.38 "Hg	**CWTR (g)**	490		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	21.7		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.514 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
CO2%	10.89
COppm	23.4

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	934.30	0.91	283	60	84	84	2.3	6.0		20.07	
	2.5	936.46	0.96	286	55	84	84	2.4	6.0		20.65	101.0
	5	938.71	0.89	285	52	84	84	2.2	5.5		19.87	102.9
2	7.5	940.82	0.92	285	51	84	84	2.2	5.5		20.20	100.1
	10	942.95	0.84	286	51	84	84	2.1	5.5		19.32	99.3
	12.5	945.00	0.84	286	51	84	85	2	5.0		19.32	100.1
3	15	947.00	0.8	285	51	84	85	2	5.0		18.84	97.6
	17.5	948.98	0.82	285	51	84	85	2	5.0		19.07	98.9
	20	950.97	0.82	286	52	84	86	2	5.0		19.09	98.2
4	22.5	952.96	0.73	286	52	84	86	1.8	5.0		18.01	98.2
	25	954.87	0.73	285	52	84	89	1.8	5.0		18.00	99.8
	27.5	956.81	0.72	285	52	84	87	1.8	5.0		17.87	101.0
5	30	958.70	0.65	285	52	84	87	1.7	5.0		16.98	99.3
	32.5	960.57	0.65	285	52	84	87	1.6	5.0		16.98	103.4
	35	962.40	0.68	285	52	85	87	1.6	5.0		17.37	101.1
6	37.5	964.22	0.48	285	52	84	87	1.2	4.8		14.59	98.2
	40	965.88	0.5	285	52	84	87	1.2	4.8		14.89	106.6
	42.5	967.43	0.5	284	53	85	87	1.2	4.8		14.88	97.6
7	45	968.99	0.62	284	53	85	87	1.6	5.0		16.57	98.0
	47.5	970.78	0.63	284	53	85	87	1.6	5.0		16.71	101.1
	50	972.61	0.62	285	53	85	87	1.6	5.0		16.58	102.5
8	52.5	974.42	0.65	284	53	85	87	1.6	5.0		16.97	102.3
	55	976.23	0.67	284	54	85	87	1.6	5.0		17.23	99.9
	57.5	978.03	0.65	284	54	85	87	1.6	5.0		16.97	97.8
9	60	979.81	0.66	284	54	85	87	1.6	5.0		17.10	98.2
	62.5	981.65	0.67	283	54	85	87	1.6	5.0		17.22	100.7
	65	983.49	0.66	283	54	84	87	1.6	5.0		17.09	99.9
10	67.5	985.26	0.65	281	55	85	87	1.6	5.0		16.94	96.9
	70	987.06	0.65	281	55	85	87	1.6	5.0		16.94	99.1
	72.5	988.85	0.73	280	55	85	87	1.9	5.5		17.94	98.5
11	75	990.80	0.63	280	55	85	87	1.6	5.0		16.66	101.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	2.4		
DGMCF	0.979	**Probe (mg)**	1.5		
Barometric Pressure	29.38 "Hg	**CWTR (g)**	490		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	21.7		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.514 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
CO2%	10.89
COppm	23.4

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 %
	77.5	992.61	0.59	280	56	85	87	1.5	5.0		16.12	101.2
	80	994.34	0.59	280	56	85	87	1.5	5.0		16.12	99.9
12	82.5	996.05	0.54	280	56	85	87	1.3	5.0		15.43	98.7
	85	997.71	0.56	280	56	85	87	1.3	5.0		15.71	100.1
	87.5	999.37	0.58	280	57	85	87	1.4	5.0		15.99	98.3
	90	1001.02								0.514		96.2
1	0	1001.54	0.77	283	60	85	85	1.9	6.0		18.46	
	2.5	1003.49	0.78	284	58	85	85	1.9	6.0		18.59	99.2
	5	1005.48	0.77	284	57	86	85	1.9	6.0		18.47	100.5
2	7.5	1007.47	0.81	284	57	85	86	2	6.0		18.94	101.0
	10	1009.48	0.81	284	58	85	86	2	6.0		18.94	99.5
	12.5	1011.51	0.83	284	58	85	87	2.1	6.0		19.18	100.5
3	15	1013.55	0.77	284	59	85	87	1.9	6.0		18.47	99.7
	17.5	1015.54	0.8	284	60	85	88	2	6.0		18.83	100.9
	20	1017.53	0.76	284	61	85	87	1.9	6.0		18.35	99.0
4	22.5	1019.47	0.79	283	63	85	87	2	6.0		18.70	99.1
	25	1021.45	0.76	285	62	85	87	1.9	6.0		18.36	99.1
	27.5	1023.38	0.76	284	60	85	87	1.9	6.0		18.35	98.6
5	30	1025.32	0.69	284	60	85	87	1.7	5.5		17.48	99.1
	32.5	1027.20	0.67	285	59	85	87	1.7	5.5		17.24	100.7
	35	1028.98	0.67	285	58	85	87	1.7	5.5		17.24	96.8
6	37.5	1030.78	0.59	285	57	85	87	1.4	5.0		16.18	97.9
	40	1032.45	0.59	285	57	85	87	1.4	5.0		16.18	96.7
	42.5	1034.13	0.61	284	57	85	87	1.5	5.5		16.44	97.3
7	45	1035.86	0.66	285	56	85	87	1.6	5.5		17.11	98.5
	47.5	1037.67	0.65	285	56	85	88	1.6	5.5		16.98	99.2
	50	1039.48	0.66	285	56	85	88	1.6	5.5		17.11	99.8
8	52.5	1041.29	0.67	285	56	85	88	1.7	6.0		17.24	99.1
	55	1043.12	0.68	285	56	85	88	1.7	6.0		17.37	99.4
	57.5	1044.98	0.68	284	56	85	88	1.7	6.0		17.36	100.3
9	60	1046.81	0.67	284	56	85	88	1.7	6.0		17.23	98.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Particulate & Metals	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2017	**Operator:**	AS

Pitot Factor	0.844	**Filter (mg)**	2.4		
DGMCF	0.979	**Probe (mg)**	1.5		
Barometric Pressure	29.38 "Hg	**CWTR (g)**	490		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	21.7		
Nozzle	0.2553 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.514 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
CO2%	10.89
COppm	23.4

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 %
	62.5	1048.66	0.7	284	57	85	88	1.8	6.0		17.61	100.5
	65	1050.55	0.66	284	57	86	88	1.7	6.0		17.10	100.4
10	67.5	1052.39	0.66	284	57	86	88	1.7	6.0		17.10	100.6
	70	1054.23	0.65	284	56	86	88	1.6	6.0		16.97	100.6
	72.5	1056.05	0.68	284	56	86	88	1.7	6.0		17.36	100.2
11	75	1057.91	0.6	284	56	86	88	1.5	5.5		16.30	100.2
	77.5	1059.63	0.62	284	56	86	88	1.5	5.5		16.57	98.6
	80	1061.38	0.61	284	56	86	88	1.5	5.5		16.44	98.6
12	82.5	1063.13	0.55	284	56	86	89	1.3	5.0		15.61	99.5
	85	1064.75	0.54	284	56	86	89	1.3	5.0		15.47	96.8
	87.5	1066.37	0.55	284	56	86	89	1.3	5.0		15.61	97.7
	90	1068.01										98.1

APPENDIX 25

Particle Size Distribution Test Emission Calculations
(12 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	May-24-17
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 1

Project No.: 21754
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	0.978
Pitot Factor	0.840
Barometric Pressure (" Hg)	29.43
Static Pressure ("H_2O)	-11.00
Oxygen Content (%)	8.5
Carbon Dioxide Content (%)	10.5
Carbon Monoxide Content (PPM)	14.2
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.34 Rft^3/min*	9.5 l/min*
Cyclone Qs_{actual}	0.58 ft^3/min	16.5 l/min
Stack Gas Sampling Parameters		
V_{ms}	40.3 Rft^3*	1.142 Rm^3*
Average Cyclone I Cut Diameter		10.37 µm
Average Cyclone IV Cut Diameter		2.43 µm
Average Isokineticity		88.8 %
Stack Gas Physical Parameters		
B_{ws}	16.3 % v/v	
Average m	221.1 (dimensionless)	
M_d	30.03 lbs/lbs mole	
M_w	28.07 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	63.5 ft/s	19.4 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	60453 ACFM	28.5 m^3/s
Wet Reference Q_s	41502 SCFM*	19.6 Rm^3/s*
Dry Reference Q_s	34737 SCFM*	16.4 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.96 mg/Rm^3*	0.016 g/s
Total Part. (b)	9.11 mg/Rm^3*	0.149 g/s
PM_{10} Part. (b)	8.41 mg/Rm^3*	0.138 g/s
$PM_{2.5}$ Part. (b)	8.32 mg/Rm^3*	0.1364 g/s
Cond. Part.	8.14 mg/Rm^3*	0.134 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)	492.5	668.1	773.8	836.2	0.0
final volume or weight (ml or mg)	648.8	665.4	773.1	846.9	0.0
gain in volume or weight (ml or mg)	156.3	-2.7	-0.7	10.7	0.0
				TOTAL	163.6

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	<0.1	<0.1	<0.1	9.3

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: May-24-17	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 21754
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 (%)
1	1	0.00	10.40	47.00	0.92	0.35	288	75	76	0.40	3.0	66.4	10.00	2.28	89.9
	2	10.40	10.30	50.80	0.89	0.35	287	76	76	0.40	3.0	65.2	10.11	2.32	90.0
	3	20.70	10.10	54.51	0.85	0.35	288	76	76	0.40	3.0	63.8	10.21	2.36	90.9
	4	30.80	9.80	58.10	0.84	0.35	288	77	79	0.40	3.0	63.4	10.66	2.55	86.1
	5	40.60	9.30	61.39	0.73	0.35	288	78	79	0.40	3.0	59.1	10.34	2.42	96.3
	6	49.90	9.30	64.65	0.75	0.35	289	78	80	0.40	3.0	60.0	10.63	2.54	91.5
		59.20		67.79											
2	1	0.00	10.50	67.79	0.97	0.35	289	79	80	0.40	3.0	68.2	10.36	2.43	83.4
	2	10.50	10.90	71.47	0.99	0.35	289	79	80	0.40	3.0	68.9	10.54	2.50	80.6
	3	21.40	10.80	75.20	0.94	0.35	288	79	81	0.40	3.0	67.1	10.53	2.50	82.7
	4	32.20	10.20	78.90	0.85	0.35	288	79	81	0.40	3.0	63.8	10.48	2.47	87.6
	5	42.40	9.50	82.42	0.73	0.35	288	80	81	0.40	3.0	59.1	10.20	2.36	98.3
	6	51.90	9.00	85.83	0.68	0.35	289	80	82	0.40	3.0	57.1	10.39	2.44	99.2
		60.90		88.98											
Averages					**0.85**		**288**	**78**		**0.40**		**63.5**	**10.37**	**2.43**	**88.8**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	May-24-17
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 1

Project No.: 21754
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	0.978
Pitot Factor	0.840
Barometric Pressure (" Hg)	29.42
Static Pressure ("H_2O)	-11.00
Oxygen Content (%)	8.6
Carbon Dioxide Content (%)	10.4
Carbon Monoxide Content (PPM)	10.5
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.34 Rft^3/min*	9.6 l/min*
Cyclone Qs_{actual}	0.58 ft^3/min	16.5 l/min
Stack Gas Sampling Parameters		
V_{ms}	40.7 Rft^3*	1.152 Rm^3*
Average Cyclone I Cut Diameter		10.37 µm
Average Cyclone IV Cut Diameter		2.42 µm
Average Isokineticity		91.1 %
Stack Gas Physical Parameters		
B_{ws}	15.5 % v/v	
Average m	221.4 (dimensionless)	
M_d	30.01 lbs/lbs mole	
M_w	28.15 lbs/lbs mole	
Average T_s	287 °F	142 °C
Average U_s	62.1 ft/s	18.9 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	59096 ACFM	27.9 m^3/s
Wet Reference Q_s	40615 SCFM*	19.2 Rm^3/s*
Dry Reference Q_s	34314 SCFM*	16.2 Rm^3/s*

Summary of Particulate Emission Rates	**Dry Ref. Conc.**	**Emission Rate**
Total Part. (a)	1.04 mg/Rm^3*	0.017 g/s
Total Part. (b)	8.59 mg/Rm^3*	0.139 g/s
PM_{10} Part. (b)	8.51 mg/Rm^3*	0.138 g/s
$PM_{2.5}$ Part. (b)	8.33 mg/Rm^3*	0.1350 g/s
Cond. Part.	7.55 mg/Rm^3*	0.122 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)	475.0	635.3	748.7	853.3	0.0
final volume or weight (ml or mg)	623.6	633.0	748.5	862.8	0.0
gain in volume or weight (ml or mg)	148.6	-2.3	-0.2	9.5	0.0
				TOTAL	**155.6**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	<0.1	0.2	0.8	<0.1	8.7

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: May-24-17	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 21754
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 (%)
1	1	0.00	10.50	89.19	0.91	0.35	287	78	79	0.40	3.0	65.9	10.53	2.49	84.3
	2	10.50	10.30	92.82	0.87	0.35	287	79	80	0.40	3.0	64.4	10.10	2.32	91.4
	3	20.80	10.00	96.60	0.80	0.35	286	79	80	0.40	3.0	61.7	10.30	2.40	92.6
	4	30.80	10.00	100.17	0.75	0.35	286	80	82	0.40	3.0	59.8	10.47	2.46	93.5
	5	40.80	9.30	103.67	0.72	0.35	286	81	82	0.40	3.0	58.6	10.16	2.34	99.6
	6	50.10	9.40	107.07	0.66	0.35	287	81	83	0.40	3.0	56.1	10.37	2.43	101.1
		59.50		110.41											
2	1	0.00	10.70	110.41	0.88	0.35	287	82	83	0.40	3.0	64.8	10.48	2.47	86.3
	2	10.70	10.80	114.16	0.92	0.35	287	82	83	0.40	3.0	66.2	10.49	2.48	84.3
	3	21.50	10.60	117.94	0.92	0.35	288	82	83	0.40	3.0	66.3	10.49	2.48	84.3
	4	32.10	10.00	121.65	0.88	0.35	288	83	83	0.40	3.0	64.8	10.39	2.44	87.4
	5	42.10	9.30	125.20	0.77	0.35	288	83	83	0.40	3.0	60.6	10.07	2.31	97.6
	6	51.40	9.00	128.65	0.65	0.35	289	83	84	0.40	3.0	55.7	10.53	2.49	99.9
		60.40		131.79											
Averages					**0.81**		**287**	**81**		**0.40**		**62.1**	**10.37**	**2.42**	**91.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	May-24-17
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 1

Project No.: 21754
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	0.978
Pitot Factor	0.840
Barometric Pressure (" Hg)	29.38
Static Pressure ("H_2O)	-11.00
Oxygen Content (%)	8.5
Carbon Dioxide Content (%)	10.5
Carbon Monoxide Content (PPM)	14.7
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.34 Rft^3/min*	9.8 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.4 Rft^3*	1.172 Rm^3*
Average Cyclone I Cut Diameter		10.23 µm
Average Cyclone IV Cut Diameter		2.38 µm
Average Isokineticity		93.7 %
Stack Gas Physical Parameters		
B_{ws}	15.6 % v/v	
Average m	221.7 (dimensionless)	
M_d	30.01 lbs/lbs mole	
M_w	28.14 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	61.2 ft/s	18.7 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	58295 ACFM	27.5 m^3/s
Wet Reference Q_s	39955 SCFM*	18.9 Rm^3/s*
Dry Reference Q_s	33739 SCFM*	15.9 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.02 mg/Rm^3*	0.016 g/s
Total Part. (b)	9.22 mg/Rm^3*	0.147 g/s
PM_{10} Part. (b)	9.13 mg/Rm^3*	0.145 g/s
$PM_{2.5}$ Part. (b)	8.62 mg/Rm^3*	0.1373 g/s
Cond. Part.	8.19 mg/Rm^3*	0.130 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)	492.5	667.9	772.9	846.8	0.0
final volume or weight (ml or mg)	645.9	665.4	772.9	854.7	0.0
gain in volume or weight (ml or mg)	153.4	-2.5	0.0	7.9	0.0
				TOTAL	158.8

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	<0.1	0.6	0.4	<0.1	9.6

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: May-24-17	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 21754
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 (%)
1	1	0.00	10.60	31.90	0.89	0.35	289	84	84	0.40	3.0	65.3	10.37	2.43	87.2
	2	10.60	10.40	35.68	0.86	0.35	289	84	85	0.40	3.0	64.2	10.30	2.40	89.6
	3	21.00	10.00	39.43	0.78	0.35	288	84	85	0.40	3.0	61.1	10.37	2.43	93.1
	4	31.00	9.60	43.00	0.74	0.35	288	85	86	0.40	3.0	59.5	10.36	2.42	95.7
	5	40.60	9.40	46.44	0.70	0.35	289	85	86	0.40	3.0	57.9	10.33	2.41	98.8
	6	50.00	9.00	49.82	0.71	0.35	289	85	86	0.40	3.0	58.3	9.98	2.27	103.1
		59.00		53.22											
2	1	0.00	10.40	53.22	0.87	0.35	289	85	86	0.40	3.0	64.5	10.37	2.43	88.2
	2	10.40	10.70	56.94	0.90	0.35	288	85	86	0.40	3.0	65.6	10.23	2.37	88.3
	3	21.10	10.70	60.84	0.88	0.35	288	85	87	0.40	3.0	64.9	10.22	2.37	89.4
	4	31.80	10.40	64.75	0.81	0.35	288	86	87	0.40	3.0	62.2	10.13	2.33	94.4
	5	42.20	9.80	68.60	0.69	0.35	287	86	87	0.40	3.0	57.4	10.11	2.32	102.5
	6	52.00	9.00	72.24	0.61	0.35	286	86	87	0.40	3.0	53.9	10.05	2.30	109.8
		61.00		75.61											
Averages					0.79		288	85		0.40		61.2	10.23	2.38	93.7

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	May-23-17
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	APC Outlet No. 2

Project No.: 21754
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	0.983
Pitot Factor	0.840
Barometric Pressure (" Hg)	29.60
Static Pressure ("H_2O)	-9.10
Oxygen Content (%)	8.0
Carbon Dioxide Content (%)	11.0
Carbon Monoxide Content (PPM)	11.6
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

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}	42.3 Rft^{3}*	1.198 Rm^{3}*
Average Cyclone I Cut Diameter		10.03 µm
Average Cyclone IV Cut Diameter		2.28 µm
Average Isokineticity		97.5 %
Stack Gas Physical Parameters		
B_{ws}	16.4 % v/v	
Average m	219.2 (dimensionless)	
M_d	30.08 lbs/lbs mole	
M_w	28.10 lbs/lbs mole	
Average T_s	282 °F	139 °C
Average U_s	59.8 ft/s	18.2 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	56907 ACFM	26.9 m^3/s
Wet Reference Q_s	39801 SCFM*	18.8 Rm^3/s*
Dry Reference Q_s	33269 SCFM*	15.7 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	0.92 mg/Rm^3*	0.014 g/s
Total Part. (b)	5.01 mg/Rm^3*	0.079 g/s
PM_{10} Part. (b)	4.34 mg/Rm^3*	0.068 g/s
$PM_{2.5}$ Part. (b)	4.26 mg/Rm^3*	0.0669 g/s
Cond. Part.	4.09 mg/Rm^3*	0.064 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)	490.9	665.3	775.9	881.8	
final volume or weight (ml or mg)	654.3	665.3	774.6	892.7	
gain in volume or weight (ml or mg)	163.4	0.0	-1.3	10.9	0.0
				TOTAL	173.0

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	<0.1	<0.1	<0.1	4.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: May-23-17	Plant: DYEC	Test No.: 1	Project No.: 21754
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	10.70	50.76	0.88	0.35	282	71	71	0.38	3.0	64.3	9.96	2.25	92.1
	2	10.70	10.70	54.63	0.84	0.35	282	72	72	0.38	3.0	62.8	10.20	2.34	91.2
	3	21.40	10.50	58.38	0.82	0.35	283	74	72	0.38	3.0	62.1	10.04	2.28	94.4
	4	31.90	10.30	62.15	0.74	0.35	283	74	73	0.38	3.0	59.0	9.93	2.24	101.0
	5	42.20	9.80	65.91	0.69	0.35	283	75	73	0.38	3.0	56.9	10.03	2.28	103.1
	6	52.00	9.20	69.44	0.64	0.35	283	75	73	0.38	3.0	54.8	9.47	2.06	115.9
		61.20		73.03											
2	1	0.00	10.20	73.03	0.82	0.35	282	76	74	0.38	3.0	62.0	10.20	2.35	92.1
	2	10.20	10.20	76.62	0.84	0.35	282	77	75	0.38	3.0	62.8	10.08	2.30	92.6
	3	20.40	10.00	80.28	0.82	0.35	282	77	76	0.38	3.0	62.0	10.12	2.32	93.2
	4	30.40	9.80	83.85	0.73	0.35	282	77	76	0.38	3.0	58.5	10.20	2.35	97.7
	5	40.20	9.50	87.31	0.71	0.35	283	77	77	0.38	3.0	57.8	10.20	2.35	99.2
	6	49.70	9.10	90.67	0.63	0.35	282	77	77	0.38	3.0	54.4	9.95	2.25	108.9
		58.80		94.00											
Averages					0.76		282	74		0.38		59.8	10.03	2.28	97.5

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	May-23-17
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	APC Outlet No. 2

Project No.: 21754
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	0.983
Pitot Factor	0.840
Barometric Pressure (" Hg)	29.53
Static Pressure ("H_2O)	-9.10
Oxygen Content (%)	8.2
Carbon Dioxide Content (%)	10.8
Carbon Monoxide Content (PPM)	21.3
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.9 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.8 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.9 Rft^3*	1.187 Rm^3*
Average Cyclone I Cut Diameter		10.13 µm
Average Cyclone IV Cut Diameter		2.33 µm
Average Isokineticity		97.1 %
Stack Gas Physical Parameters		
B_{ws}	16.0 % v/v	
Average m	219.3 (dimensionless)	
M_d	30.06 lbs/lbs mole	
M_w	28.13 lbs/lbs mole	
Average T_s	281 °F	139 °C
Average U_s	59.1 ft/s	18.0 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	56268 ACFM	26.6 m^3/s
Wet Reference Q_s	39316 SCFM*	18.6 Rm^3/s*
Dry Reference Q_s	33020 SCFM*	15.6 Rm^3/s*

Summary of Particulate Emission Rates	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.35 mg/Rm^3*	0.021 g/s
Total Part. (b)	2.95 mg/Rm^3*	0.046 g/s
PM_{10} Part. (b)	2.27 mg/Rm^3*	0.035 g/s
$PM_{2.5}$ Part. (b)	2.11 mg/Rm^3*	0.0328 g/s
Cond. Part.	1.60 mg/Rm^3*	0.025 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)	475.0	633.0	749.1	843.5	
final volume or weight (ml or mg)	631.1	633.7	748.7	853.6	
gain in volume or weight (ml or mg)	156.1	0.7	-0.4	10.1	0.0
				TOTAL	166.5

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.8	0.2	0.5	<0.1	<1.9

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: May-23-17	**Plant:** DYEC	**Test No.:** 2	**Project No.:** 21754
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	10.70	94.31	0.88	0.35	282	79	78	0.38	3.0	64.3	10.28	2.38	88.2
	2	10.70	10.70	98.09	0.88	0.35	283	79	78	0.38	3.0	64.3	10.07	2.30	90.8
	3	21.40	10.40	101.98	0.83	0.35	283	81	79	0.38	3.0	62.5	10.21	2.35	91.8
	4	31.80	9.80	105.70	0.76	0.35	282	81	79	0.38	3.0	59.8	10.05	2.29	97.9
	5	41.60	9.50	109.28	0.71	0.35	282	83	81	0.38	3.0	57.8	9.98	2.26	102.3
	6	51.10	9.20	112.80	0.60	0.35	281	83	80	0.38	3.0	53.1	10.07	2.30	109.8
		60.30		116.16											
2	1	0.00	10.40	116.16	0.77	0.35	280	83	81	0.38	3.0	60.1	10.17	2.33	95.5
	2	10.40	10.50	119.91	0.77	0.35	280	83	82	0.38	3.0	60.1	10.30	2.39	93.8
	3	20.90	10.40	123.63	0.73	0.35	280	84	82	0.38	3.0	58.5	10.40	2.43	95.0
	4	31.30	9.80	127.27	0.72	0.35	281	84	83	0.38	3.0	58.1	10.00	2.27	101.3
	5	41.10	9.60	130.90	0.70	0.35	281	84	83	0.38	3.0	57.3	10.07	2.30	101.6
	6	50.70	9.10	134.42	0.61	0.35	281	86	84	0.38	3.0	53.5	9.96	2.25	110.7
		59.80		137.82											
Averages					**0.75**		**281**	**81**		**0.38**		**59.1**	**10.13**	**2.33**	**97.1**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	May-23-17
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	APC Outlet No. 2

Project No.: 21754
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	0.983
Pitot Factor	0.840
Barometric Pressure (" Hg)	29.50
Static Pressure ("H_2O)	-9.10
Oxygen Content (%)	8.0
Carbon Dioxide Content (%)	11.0
Carbon Monoxide Content (PPM)	21.8
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.35 Rft^3/min*	9.8 l/min*
Cyclone Qs_{actual}	0.59 ft^3/min	16.8 l/min
Stack Gas Sampling Parameters		
V_{ms}	41.6 Rft^3*	1.178 Rm^3*
Average Cyclone I Cut Diameter		10.15 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		97.1 %
Stack Gas Physical Parameters		
B_{ws}	16.3 % v/v	
Average m	219.0 (dimensionless)	
M_d	30.08 lbs/lbs mole	
M_w	28.12 lbs/lbs mole	
Average T_s	282 °F	139 °C
Average U_s	59.0 ft/s	18.0 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	56178 ACFM	26.5 m^3/s
Wet Reference Q_s	39177 SCFM*	18.5 Rm^3/s*
Dry Reference Q_s	32804 SCFM*	15.5 Rm^3/s*

Summary of Particulate Emission Rates	**Dry Ref. Conc.**	**Emission Rate**
Total Part. (a)	0.93 mg/Rm^3*	0.014 g/s
Total Part. (b)	2.63 mg/Rm^3*	0.041 g/s
PM_{10} Part. (b)	2.29 mg/Rm^3*	0.035 g/s
$PM_{2.5}$ Part. (b)	2.21 mg/Rm^3*	0.0342 g/s
Cond. Part.	1.70 mg/Rm^3*	0.026 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)	492.6	668.1	774.6	892.3	0.0
final volume or weight (ml or mg)	654.2	665.5	773.8	902.5	0.0
gain in volume or weight (ml or mg)	161.6	-2.6	-0.8	10.2	0.0
				TOTAL	**168.4**

Particulate Weight Gains	**>10mm**	**<10mm, >2.5mm**	**<2.5mm**	**back-up filter**	**cond. part.**
particulate weight gains (mg)	0.4	<0.1	0.5	<0.1	<2.0

***Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa**

Test Data Page Calculations

Date: May-23-17	**Plant:** DYEC	**Test No.:** 3	**Project No.:** 21754
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	10.90	37.91	0.85	0.35	282	84	83	0.38	2.0	63.2	10.06	2.29	92.4
	2	10.90	10.90	41.90	0.75	0.35	281	84	83	0.38	2.0	59.4	10.24	2.36	95.8
	3	21.80	10.60	45.79	0.72	0.35	281	85	84	0.38	2.0	58.2	10.16	2.33	98.8
	4	32.40	10.10	49.62	0.67	0.35	281	86	84	0.38	2.0	56.1	10.17	2.33	102.4
	5	42.50	9.80	53.27	0.64	0.35	280	85	84	0.38	2.0	54.8	10.20	2.35	104.1
	6	52.30	9.00	56.79	0.60	0.35	281	85	84	0.38	2.0	53.1	10.19	2.34	107.8
		61.30		60.03											
2	1	0.00	10.20	60.03	0.80	0.35	281	87	85	0.38	2.0	61.3	10.21	2.35	93.1
	2	10.20	10.20	63.70	0.85	0.35	282	87	85	0.38	2.0	63.2	10.21	2.35	90.4
	3	20.40	9.90	67.37	0.84	0.35	283	87	85	0.38	2.0	62.9	10.24	2.37	90.7
	4	30.30	9.80	70.92	0.81	0.35	283	87	85	0.38	2.0	61.8	10.21	2.35	92.7
	5	40.10	9.70	74.45	0.74	0.35	284	88	86	0.38	2.0	59.1	10.01	2.27	99.9
	6	49.80	9.10	78.05	0.64	0.35	285	88	86	0.38	2.0	55.0	9.96	2.26	108.2
		58.90		81.45											
Averages					**0.74**		**282**	**85**		**0.38**		**59.0**	**10.15**	**2.34**	**97.1**

APPENDIX 26

Acid Gases Test Emission Calculations
(12 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - Method 26A
Date:	May 23, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	0.986
NOZZLE DIAMETER	5.93 mm
DRY REF GAS VOLUME SAMPLED	0.989 m^3
AVGERGE ISOKINETICITY	97.7 %
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	142.1 °C
AVERAGE GAS MOISTURE BY VOLUME	16.3 %
AVERAGE GAS VELOCITY	17.58 m/s
BAROMETRIC PRESSURE (Station)	100.271 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	97.607 Kpa
OXYGEN CONCENTRATION	8.47 %
CARBON DIOXIDE CONCENTRATION	10.75 %
CARBON MONOXIDE CONCENTRATION	12.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.97 m^3/s
DRY REF GAS FLOWRATE	15.03 Rm^3/s
DRY ADJ GAS FLOWRATE	18.87 Rm^3/s
WET REF GAS FLOWRATE	17.97 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		0.989 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Method 26A	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	DT

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.61 "Hg	**CWTR (g)**	130.8		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	11.2		
Nozzle	0.2335 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		1	

Combustion Gases	
O2%	8.47
CO2%	10.75
COppm	12.9

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 %
5	0	68.24	0.74	285	69	64	64	1.2	2.5		18.19	
	5	71.02	0.7	289	51	64	64	1.1	2.5		17.74	**90.2**
	10	73.98	0.7	288	52	64	64	1.1	2.5		17.73	**99.0**
	15	76.88	0.68	288	52	64	64	1.1	2.5		17.47	**96.9**
	20	79.80	0.68	287	51	64	64	1.1	2.5		17.46	**99.0**
	25	82.72	0.68	288	51	64	64	1.1	2.5		17.47	**98.9**
	30	85.64	0.68	288	51	64	64	1.1	2.5		17.47	**99.0**
	35	88.55	0.68	288	51	64	64	1.1	2.5		17.47	**98.6**
	40	91.47	0.68	288	51	64	64	1.1	2.5		17.47	**99.0**
	45	94.38	0.68	288	51	64	64	1.1	2.5		17.47	**98.6**
	50	97.26	0.68	288	51	64	64	1.1	2.5		17.47	**97.6**
	55	100.14	0.68	288	51	64	64	1.1	2.5		17.47	**97.6**
	60	103.04										**98.3**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - Method 26A
Date:	May 23, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.849
DGM CORRECTION FACTOR		0.986
NOZZLE DIAMETER		5.93 mm
DRY REF GAS VOLUME SAMPLED		1.029 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	141.9 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.79 m/s
BAROMETRIC PRESSURE (Station)	100.135 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	97.471 Kpa
OXYGEN CONCENTRATION	8.66 %
CARBON DIOXIDE CONCENTRATION	10.55 %
CARBON MONOXIDE CONCENTRATION	10.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.28 m^3/s
DRY REF GAS FLOWRATE	15.30 Rm^3/s
DRY ADJ GAS FLOWRATE	18.91 Rm^3/s
WET REF GAS FLOWRATE	18.17 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.029 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Method 26A	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	DT

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.57 "Hg	**CWTR (g)**	134.3		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	7.5		
Nozzle	0.2335 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		1	

Combustion Gases	
O2%	8.66
CO2%	10.55
COppm	10.8

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 %
5	0	3.54	0.72	276	67	73	72	1.3	2.5		17.83	
	5	6.48	0.74	289	54	73	72	1.3	2.5		18.24	**94.0**
	10	9.64	0.7	289	47	73	73	1.3	2.5		17.74	**100.5**
	15	12.76	0.73	289	46	74	73	1.3	2.5		18.11	**101.9**
	20	15.93	0.72	288	45	74	73	1.3	2.5		17.98	**101.3**
	25	18.99	0.7	288	45	74	73	1.3	2.5		17.73	**98.4**
	30	22.06	0.7	288	45	74	73	1.3	2.5		17.73	**100.1**
	35	25.13	0.73	288	45	75	73	1.3	2.5		18.10	**100.1**
	40	28.26	0.73	289	46	75	74	1.3	2.5		18.11	**99.9**
	45	31.40	0.66	289	47	75	73	1.2	2.5		17.22	**100.2**
	50	34.38	0.68	288	47	76	74	1.25	2.5		17.47	**100.1**
	55	37.43	0.66	287	48	76	74	1.2	2.5		17.20	**100.6**
	60	40.47										**101.7**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - Method 26A
Date:	May 23, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	0.986
NOZZLE DIAMETER	5.93 mm
DRY REF GAS VOLUME SAMPLED	0.986 m^3
AVGERGE ISOKINETICITY	100.6 %
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	142.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	16.97 m/s
BAROMETRIC PRESSURE (Station)	100.034 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	97.370 Kpa
OXYGEN CONCENTRATION	8.6 %
CARBON DIOXIDE CONCENTRATION	10.55 %
CARBON MONOXIDE CONCENTRATION	13.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.07 m^3/s
DRY REF GAS FLOWRATE	14.56 Rm^3/s
DRY ADJ GAS FLOWRATE	18.09 Rm^3/s
WET REF GAS FLOWRATE	17.30 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		0.986 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Method 26A	**Test Location:**	APC Outlet No. 1
Date:	May 23, 2017	**Operator:**	DT

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.54 "Hg	**CWTR (g)**	128.8		
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	7.7		
Nozzle	0.2335 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		1	

Combustion Gases	
O2%	8.6
CO2%	10.55
COppm	13.9

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 %
5	0	42.33	0.63	280	65	77	76	1.1	2.2		16.74	
	5	45.29	0.65	289	54	78	76	1.2	2.2		17.10	100.6
	10	48.28	0.65	288	49	78	76	1.2	2.2		17.09	100.6
	15	51.27	0.66	289	48	78	77	1.2	2.2		17.24	100.5
	20	54.26	0.65	289	49	78	77	1.2	2.2		17.10	99.7
	25	57.23	0.65	289	48	78	77	1.2	2.2		17.10	99.8
	30	60.18	0.65	289	49	78	77	1.2	2.2		17.10	99.2
	35	63.14	0.63	288	49	79	77	1.2	2.2		16.83	99.5
	40	66.13	0.63	288	50	78	77	1.2	2.2		16.83	101.9
	45	69.10	0.63	288	50	79	77	1.2	2.2		16.83	101.3
	50	72.05	0.63	288	51	79	77	1.2	2.2		16.83	100.6
	55	75.03	0.63	288	53	79	77	1.2	2.2		16.83	101.6
	60	78.02										101.9

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - Method 26A
Date:	May 24, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.849
DGM CORRECTION FACTOR		0.983
NOZZLE DIAMETER		5.93 mm
DRY REF GAS VOLUME SAMPLED		1.040 m^3
AVGERGE ISOKINETICITY		99.4 %
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	138.2 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	17.98 m/s
BAROMETRIC PRESSURE (Station)	99.661 Kpa
STATIC PRESSURE	-2.303 Kpa
ABSOLUTE GAS PRESSURE	97.358 Kpa
OXYGEN CONCENTRATION	8.25 %
CARBON DIOXIDE CONCENTRATION	10.74 %
CARBON MONOXIDE CONCENTRATION	19.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.56 m^3/s
DRY REF GAS FLOWRATE	15.53 Rm^3/s
DRY ADJ GAS FLOWRATE	19.84 Rm^3/s
WET REF GAS FLOWRATE	18.50 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.040 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Method 26A	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2016	**Operator:**	DT

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	0.983	**Probe (mg)**	0		
Barometric Pressure	29.43 "Hg	**CWTR (g)**	136.2		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	10		
Nozzle	0.2335 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		1	

Combustion Gases	
O2%	8.25
CO2%	10.74
COppm	19.2

Measured H2O
16.1 %

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 %
5	0	81.87	0.69	280	67	77	75	1.2	2.0		17.52	
	5	85.03	0.71	280	48	77	76	1.2	2.0		17.77	102.3
	10	88.05	0.72	280	48	77	76	1.3	2.0		17.90	96.3
	15	91.21	0.74	280	48	77	76	1.3	2.0		18.14	100.1
	20	94.40	0.74	280	49	78	76	1.3	2.0		18.14	99.7
	25	97.56	0.74	281	49	79	76	1.3	2.0		18.16	98.6
	30	100.72	0.72	281	50	79	76	1.3	2.0		17.91	98.6
	35	103.90	0.74	281	50	80	77	1.3	2.0		18.16	100.6
	40	107.04	0.74	281	52	80	77	1.3	2.0		18.16	97.8
	45	110.21	0.72	281	53	81	77	1.3	2.0		17.91	98.7
	50	113.39	0.73	282	54	81	78	1.3	2.0		18.05	100.3
	55	116.55	0.72	282	57	82	79	1.3	2.0		17.92	99.0
	60	119.75										100.7

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - Method 26A
Date:	May 24, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	0.983
NOZZLE DIAMETER	5.93 mm
DRY REF GAS VOLUME SAMPLED	1.027 m^3
AVGERGE ISOKINETICITY	101.0 %
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	139.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.48 m/s
BAROMETRIC PRESSURE (Station)	99.661 Kpa
STATIC PRESSURE	-2.303 Kpa
ABSOLUTE GAS PRESSURE	97.358 Kpa
OXYGEN CONCENTRATION	8.36 %
CARBON DIOXIDE CONCENTRATION	10.63 %
CARBON MONOXIDE CONCENTRATION	12.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.83 m^3/s
DRY REF GAS FLOWRATE	15.10 Rm^3/s
DRY ADJ GAS FLOWRATE	19.12 Rm^3/s
WET REF GAS FLOWRATE	17.95 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.027 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Method 26A	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2016	**Operator:**	DT

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	0.983	**Probe (mg)**	0		
Barometric Pressure	29.43 "Hg	**CWTR (g)**	134.8		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	7.6		
Nozzle	0.2335 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		1	

Combustion Gases	
O2%	8.36
CO2%	10.63
COppm	12.4

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 %
5	0	20.20	0.68	280	65	81	79	1.3	2.0		17.39	
	5	23.41	0.71	282	56	81	80	1.3	2.0		17.79	**103.7**
	10	26.54	0.69	283	53	81	80	1.3	2.0		17.55	**99.0**
	15	29.75	0.69	283	52	82	80	1.3	2.0		17.55	**103.1**
	20	32.92	0.68	283	52	82	80	1.3	2.0		17.43	**101.7**
	25	36.08	0.66	282	52	82	80	1.2	2.0		17.16	**102.1**
	30	39.18	0.69	282	52	83	80	1.2	2.0		17.54	**101.6**
	35	42.28	0.69	283	52	83	80	1.2	2.0		17.55	**99.3**
	40	45.35	0.7	284	52	84	80	1.25	2.0		17.69	**98.4**
	45	48.52	0.69	283	53	84	81	1.25	2.0		17.55	**100.9**
	50	51.67	0.67	283	53	85	81	1.25	2.0		17.30	**100.8**
	55	54.78	0.67	283	53	84	81	1.25	2.0		17.30	**100.9**
	60	57.87										**100.3**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - Method 26A
Date:	May 24, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	0.983
NOZZLE DIAMETER	5.93 mm
DRY REF GAS VOLUME SAMPLED	1.005 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	139.2 °C
AVERAGE GAS MOISTURE BY VOLUME	16.1 %
AVERAGE GAS VELOCITY	17.32 m/s
BAROMETRIC PRESSURE (Station)	99.628 Kpa
STATIC PRESSURE	-2.303 Kpa
ABSOLUTE GAS PRESSURE	97.324 Kpa
OXYGEN CONCENTRATION	8.13 %
CARBON DIOXIDE CONCENTRATION	10.78 %
CARBON MONOXIDE CONCENTRATION	13.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.59 m^3/s
DRY REF GAS FLOWRATE	14.91 Rm^3/s
DRY ADJ GAS FLOWRATE	19.24 Rm^3/s
WET REF GAS FLOWRATE	17.78 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.005 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Method 26A	**Test Location:**	APC Outlet No. 2
Date:	May 24, 2016	**Operator:**	DT

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	0.983	**Probe (mg)**	0		
Barometric Pressure	29.42 "Hg	**CWTR (g)**	133.5		
Static Pressure	-9.250 "H_2O	**WCBDA (g)**	8		
Nozzle	0.2335 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		1	

Combustion Gases	
O2%	8.13
CO2%	10.78
COppm	13.6

Measured H2O
16.1 %

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 %
5	0	58.30	0.65	280	67	81	80	1.2	2.0		17.01	
	5	61.32	0.64	282	52	82	81	1.2	2.0		16.90	99.9
	10	64.49	0.66	282	50	82	81	1.2	2.0		17.16	105.6
	15	67.46	0.67	283	49	82	81	1.2	2.0		17.30	97.5
	20	70.41	0.67	282	48	83	81	1.2	2.0		17.29	96.1
	25	73.34	0.68	282	49	83	81	1.2	2.0		17.42	95.3
	30	76.51	0.68	283	49	83	81	1.2	2.0		17.43	102.4
	35	79.60	0.68	283	49	84	81	1.2	2.0		17.43	99.9
	40	82.67	0.72	283	49	85	82	1.3	2.0		17.94	99.1
	45	85.91	0.68	284	50	85	82	1.2	2.0		17.44	101.5
	50	89.02	0.66	283	52	85	82	1.2	2.0		17.17	100.3
	55	92.14	0.67	283	53	85	82	1.2	2.0		17.30	102.1
	60	95.23										100.3

APPENDIX 27

SVOC Test Emission Calculations
(42 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	1 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.986
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	4.876 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	141.0 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	18.01 m/s
BAROMETRIC PRESSURE (Station)	99.255 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	96.566 Kpa
OXYGEN CONCENTRATION	8.56 %
CARBON DIOXIDE CONCENTRATION	10.46 %
CARBON MONOXIDE CONCENTRATION	11.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.62 m^3/s
DRY REF GAS FLOWRATE	15.51 Rm^3/s
DRY ADJ GAS FLOWRATE	19.33 Rm^3/s
WET REF GAS FLOWRATE	18.26 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.876 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	May 25, 2017	**Operator:**	DT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	618.9		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	17.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.52 ft³	
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%	10.46
COppm	11.4

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	78.93	0.65	280	67	75	73	1.6	4.5		16.95	
	5	82.41	0.68	273	58	74	73	1.65	5.0		17.25	**99.4**
2	10	85.89	0.66	273	53	74	73	1.65	5.2		17.00	**96.8**
	15	89.42	0.66	274	50	74	73	1.65	5.5		17.01	**99.7**
3	20	92.96	0.6	273	47	75	73	1.45	5.2		16.21	**100.1**
	25	96.34	0.6	288	46	75	73	1.45	5.2		16.37	**100.0**
4	30	99.72	0.7	289	45	75	74	1.7	5.7		17.69	**101.0**
	35	103.25	0.7	289	44	75	73	1.7	5.7		17.69	**97.7**
5	40	106.90	0.73	288	43	75	73	1.8	6.0		18.06	**101.1**
	45	110.51	0.71	288	43	75	74	1.8	6.0		17.81	**97.9**
6	50	114.21	0.75	288	44	76	74	1.8	6.0		18.30	**101.6**
	55	117.91	0.75	288	44	76	74	1.8	6.0		18.30	**98.8**
7	60	121.63	0.65	288	45	76	74	1.6	5.7		17.04	**99.3**
	65	125.04	0.65	289	45	76	74	1.6	5.7		17.05	**97.7**
8	70	128.65	0.7	289	45	76	74	1.8	6.0		17.69	**103.6**
	75	132.27	0.7	289	46	76	74	1.8	6.0		17.69	**100.1**
9	80	135.92	0.75	289	47	76	74	1.8	6.0		18.31	**100.9**
	85	139.65	0.75	289	47	76	74	1.8	6.0		18.31	**99.7**
10	90	143.21	0.78	289	48	76	74	1.9	6.0		18.68	**95.1**
	95	147.01	0.78	289	48	77	75	1.9	6.0		18.68	**99.6**
11	100	150.78	0.8	288	48	77	75	1.9	6.0		18.90	**98.6**
	105	154.64	0.78	288	48	76	75	1.9	6.0		18.66	**99.6**
12	110	158.50	0.78	287	48	76	74	1.9	6.0		18.65	**101.0**
	115	162.30	0.78	288	48	76	74	1.9	6.0		18.66	**99.4**
	120	166.32								0.52		**105.3**
1	0	166.84	0.64	288	67	75	74	1.5	5.0		16.91	
	5	170.15	0.64	284	46	74	73	1.5	5.0		16.86	**95.7**
2	10	173.52	0.6	285	41	74	73	1.5	5.0		16.34	**97.3**
	15	176.91	0.6	285	41	74	74	1.5	5.5		16.34	**101.2**
3	20	180.31	0.64	288	42	74	74	1.5	5.5		16.91	**101.4**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	May 25, 2017	**Operator:**	DT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	618.9		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	17.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.52 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%	10.46
COppm	11.4

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	183.74	0.6	288	42	74	73	1.5	5.5		16.37	**99.2**
4	30	187.12	0.74	288	42	75	73	1.8	6.0		18.18	**101.1**
	35	190.77	0.75	278	42	75	73	1.8	6.0		18.18	**98.3**
5	40	194.48	0.75	279	41	75	73	1.8	6.0		18.19	**98.6**
	45	198.18	0.75	286	41	75	73	1.8	6.0		18.28	**98.4**
6	50	201.89	0.73	286	42	75	73	1.8	6.0		18.03	**99.1**
	55	205.60	0.73	286	42	75	74	1.8	6.0		18.03	**100.5**
7	60	209.28	0.59	286	42	75	73	1.4	5.5		16.21	**99.6**
	65	212.65	0.59	286	43	75	73	1.4	5.5		16.21	**101.4**
8	70	215.98	0.72	287	43	76	74	1.75	6.0		17.92	**100.2**
	75	219.60	0.72	287	43	76	74	1.75	6.0		17.92	**98.6**
9	80	223.25	0.85	287	44	76	74	2.05	7.0		19.47	**99.4**
	85	227.16	0.85	287	45	76	74	2.05	7.0		19.47	**98.1**
10	90	231.12	0.93	288	45	76	74	2.25	7.5		20.38	**99.3**
	95	235.25	0.93	287	46	76	74	2.25	7.5		20.37	**99.1**
11	100	239.39	0.92	288	49	76	74	2.25	7.5		20.27	**99.3**
	105	243.52	0.92	288	49	76	74	2.25	7.5		20.27	**99.7**
12	110	247.67	0.92	288	50	75	74	2.25	7.5		20.27	**100.2**
	115	251.80	0.92	288	52	75	73	2.25	7.5		20.27	**99.8**
	120	255.98										**101.1**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	2 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.986
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	4.864 m^3
AVGERGE ISOKINETICITY	99.1 %
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	141.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.1 %
AVERAGE GAS VELOCITY	18.14 m/s
BAROMETRIC PRESSURE (Station)	99.018 Kpa
STATIC PRESSURE	-2.689 Kpa
ABSOLUTE GAS PRESSURE	96.329 Kpa
OXYGEN CONCENTRATION	8.59 %
CARBON DIOXIDE CONCENTRATION	10.41 %
CARBON MONOXIDE CONCENTRATION	16.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.81 m^3/s
DRY REF GAS FLOWRATE	15.55 Rm^3/s
DRY ADJ GAS FLOWRATE	19.33 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		4.864 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	May 25, 2017	**Operator:**	DT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	621.1		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 ft³	
Length	0.000 ft	**Reading Interval**		5 minutes	
Width	0.000 ft	**Number of Ports**		2	
		Number of points / Port		12	

Combustion Gases	
O2%	8.59
CO2%	10.41
COppm	16.0

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	56.68	0.8	288	67	73	72	1.9	6.2		18.93	
	5	60.36	0.84	289	47	73	72	2	7.5		19.41	95.5
2	10	64.22	0.84	288	45	73	72	2	7.5		19.40	97.9
	15	68.07	0.84	288	45	73	72	2	7.5		19.40	97.6
3	20	71.99	0.84	288	44	73	72	2	7.8		19.40	99.3
	25	75.89	0.84	288	43	74	72	2	7.8		19.40	98.8
4	30	79.78	0.78	288	43	74	72	1.9	7.8		18.69	98.5
	35	83.64	0.78	287	43	74	72	1.9	7.5		18.68	101.4
5	40	87.39	0.72	287	43	74	72	1.7	7.0		17.95	98.4
	45	91.13	0.72	287	44	74	72	1.7	7.0		17.95	102.1
6	50	94.75	0.65	287	44	74	72	1.6	6.5		17.05	98.8
	55	98.28	0.65	287	44	75	73	1.6	6.5		17.05	101.4
7	60	101.83	0.7	287	44	75	73	1.7	6.7		17.70	101.8
	65	105.43	0.7	287	42	75	73	1.7	6.7		17.70	99.5
8	70	109.04	0.7	286	41	75	73	1.7	6.7		17.68	99.8
	75	112.64	0.7	287	41	75	73	1.7	6.7		17.70	99.4
9	80	116.26	0.69	286	41	75	73	1.65	6.7		17.56	100.1
	85	119.80	0.69	287	42	75	73	1.65	6.7		17.57	98.5
10	90	123.35	0.7	287	42	76	73	1.65	6.7		17.70	98.8
	95	126.91	0.7	285	42	76	73	1.65	6.7		17.67	98.3
11	100	130.48	0.7	285	42	76	74	1.65	6.7		17.67	98.4
	105	134.04	0.7	280	42	76	74	1.65	6.7		17.61	98.1
12	110	137.61	0.7	280	41	76	74	1.65	6.7		17.61	98.0
	115	141.15	0.7	280	41	76	74	1.65	6.7		17.61	97.2
	120	144.72								0.43		98.0
1	0	145.15	0.8	280	67	74	72	2	9.0		18.83	
	5	148.94	0.8	288	43	74	73	2	9.0		18.93	97.8
2	10	152.61	0.88	288	44	74	73	2.1	9.0		19.85	95.1
	15	156.57	0.88	288	44	74	73	2.1	9.0		19.85	97.9
3	20	160.51	0.83	288	46	74	73	2.1	9.0		19.28	97.4

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	May 25, 2017	**Operator:**	DT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	621.1		
Static Pressure	-10.800 "H_2O	**WCBDA (g)**	15.7		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.43 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%	8.59
CO2%	10.41
COppm	16.0

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 %
	25	164.52	0.83	288	46	75	73	2.1	9.0		19.28	**102.1**
4	30	168.52	0.77	288	46	75	73	1.9	8.5		18.57	**101.7**
	35	172.38	0.77	288	46	75	73	1.9	8.5		18.57	**101.8**
5	40	176.17	0.68	287	46	75	73	1.6	7.0		17.44	**100.0**
	45	179.74	0.68	288	45	76	74	1.6	7.0		17.45	**100.1**
6	50	183.26	0.58	288	45	76	74	1.4	7.0		16.12	**98.6**
	55	186.63	0.58	288	46	76	74	1.4	7.0		16.12	**102.1**
7	60	189.93	0.68	288	46	76	74	1.6	7.5		17.45	**100.0**
	65	193.36	0.68	288	46	76	74	1.6	7.5		17.45	**96.0**
8	70	196.76	0.75	288	44	76	74	1.8	8.5		18.33	**95.2**
	75	200.43	0.75	289	44	76	74	1.8	8.5		18.34	**97.9**
9	80	204.15	0.74	288	44	77	74	1.8	8.5		18.21	**99.3**
	85	207.88	0.74	288	44	77	75	1.8	8.5		18.21	**100.1**
10	90	211.61	0.75	288	44	77	75	1.8	8.5		18.33	**100.0**
	95	215.33	0.75	288	44	77	75	1.8	8.5		18.33	**99.1**
11	100	219.00	0.7	288	45	77	75	1.7	8.0		17.71	**97.7**
	105	222.64	0.7	288	46	77	75	1.7	8.0		17.71	**100.3**
12	110	226.27	0.7	288	47	76	75	1.7	8.0		17.71	**100.0**
	115	229.92	0.7	288	48	76	75	1.7	8.0		17.71	**100.7**
	120	233.52										**99.3**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 1
Test No.:	3 - SVOC
Date:	May 26, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.844
DGM CORRECTION FACTOR	0.986
NOZZLE DIAMETER	6.42 mm
DRY REF GAS VOLUME SAMPLED	4.928 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	142.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	18.25 m/s
BAROMETRIC PRESSURE (Station)	99.526 Kpa
STATIC PRESSURE	-2.545 Kpa
ABSOLUTE GAS PRESSURE	96.981 Kpa
OXYGEN CONCENTRATION	8.62 %
CARBON DIOXIDE CONCENTRATION	10.54 %
CARBON MONOXIDE CONCENTRATION	17.7 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.96 m^3/s
DRY REF GAS FLOWRATE	15.65 Rm^3/s
DRY ADJ GAS FLOWRATE	19.42 Rm^3/s
WET REF GAS FLOWRATE	18.53 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.928 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	May 26, 2017	**Operator:**	DT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	649		
Static Pressure	-10.220 "H_2O	**WCBDA (g)**	15.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.65 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%	8.62
CO2%	10.54
COppm	17.7

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	34.02	0.82	280	67	74	74	2	6.0		19.01	
	5	37.81	0.82	289	54	75	74	2	6.0		19.12	97.0
2	10	41.70	0.84	289	54	75	74	2.05	6.5		19.35	100.0
	15	45.61	0.84	289	54	76	74	2.05	6.5		19.35	99.3
3	20	49.47	0.84	289	52	76	75	2.05	6.5		19.35	98.0
	25	53.38	0.84	289	48	77	75	2.05	6.5		19.35	99.2
4	30	57.27	0.81	289	48	77	75	2	6.5		19.01	98.6
	35	61.11	0.81	289	46	77	75	2	6.5		19.01	99.1
5	40	65.10	0.72	289	46	78	75	1.75	6.0		17.92	102.9
	45	68.79	0.72	289	44	78	75	1.75	6.0		17.92	100.8
6	50	72.45	0.62	289	44	78	76	1.5	5.5		16.63	100.0
	55	75.88	0.62	289	44	78	76	1.5	5.5		16.63	100.8
7	60	79.27	0.69	290	44	78	76	1.7	6.0		17.55	99.7
	65	82.84	0.69	290	44	78	76	1.7	6.0		17.55	99.6
8	70	86.39	0.74	290	45	79	76	1.8	6.0		18.18	99.0
	75	90.08	0.75	291	44	79	77	1.8	6.0		18.31	99.3
9	80	93.80	0.78	290	44	79	77	1.9	6.5		18.66	99.4
	85	97.62	0.78	290	44	79	77	1.9	6.5		18.66	100.1
10	90	101.41	0.78	289	45	79	77	1.9	6.5		18.65	99.3
	95	105.23	0.78	289	45	79	77	1.9	6.5		18.65	100.0
11	100	109.05	0.75	289	45	80	77	1.8	6.5		18.29	100.0
	105	112.80	0.75	286	45	80	77	1.8	6.5		18.25	100.0
12	110	116.56	0.68	286	45	79	77	1.65	6.0		17.38	100.1
	115	120.15	0.68	286	45	80	78	1.65	6.0		17.38	100.4
	120	123.77								0.65		101.1
1	0	124.42	0.8	280	69	78	77	2	6.5		18.77	
	5	128.36	0.8	288	44	79	77	2	6.5		18.87	101.4
2	10	132.22	0.81	288	44	79	77	2	6.5		18.99	99.8
	15	136.05	0.81	287	44	78	78	2	6.5		18.98	98.4
3	20	139.89	0.81	288	45	78	77	2	6.5		18.99	98.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 1
Date:	May 26, 2017	**Operator:**	DT

Pitot Factor	0.844	**Filter (mg)**	0		
DGMCF	0.986	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	649		
Static Pressure	-10.220 "H_2O	**WCBDA (g)**	15.4		
Nozzle	0.2528 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.65 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%	8.62
CO2%	10.54
COppm	17.7

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	143.71	0.81	287	45	78	77	2	7.0		18.98	**98.2**
4	30	147.60	0.78	288	45	78	77	1.9	7.0		18.64	**99.9**
	35	151.43	0.78	288	45	78	77	1.9	7.0		18.64	**100.3**
5	40	155.26	0.67	288	45	78	77	1.6	6.5		17.27	**100.3**
	45	158.83	0.67	288	45	78	77	1.6	6.5		17.27	**100.8**
6	50	162.36	0.62	288	47	78	77	1.5	6.0		16.62	**99.7**
	55	165.73	0.62	288	47	78	77	1.5	6.0		16.62	**98.9**
7	60	169.20	0.7	287	47	78	76	1.7	6.0		17.64	**101.8**
	65	172.74	0.7	288	47	78	76	1.7	6.2		17.66	**97.9**
8	70	176.32	0.7	288	47	78	76	1.7	6.2		17.66	**99.0**
	75	179.95	0.7	288	47	78	76	1.7	6.2		17.66	**100.4**
9	80	183.50	0.73	289	48	78	76	1.8	7.0		18.04	**98.2**
	85	187.15	0.7	289	48	78	76	1.7	6.5		17.67	**99.0**
10	90	190.79	0.71	288	49	78	76	1.7	6.5		17.78	**100.8**
	95	194.41	0.74	288	49	78	76	1.8	6.7		18.15	**99.4**
11	100	198.11	0.78	288	50	78	76	1.9	7.0		18.64	**99.6**
	105	201.89	0.81	289	51	78	76	2	7.0		19.01	**99.1**
12	110	205.77	0.78	280	52	78	76	1.9	7.0		18.54	**99.9**
	115	209.61	0.78	279	52	78	76	1.9	7.0		18.53	**100.1**
	120	213.43										**99.5**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	1 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.84	
DGM CORRECTION FACTOR	0.979	
NOZZLE DIAMETER	6.52	mm
DRY REF GAS VOLUME SAMPLED	4.854	m^3
AVGERGE ISOKINETICITY	101.3	%
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	138.6	°C
AVERAGE GAS MOISTURE BY VOLUME	15.4	%
AVERAGE GAS VELOCITY	17.05	m/s
BAROMETRIC PRESSURE (Station)	99.255	Kpa
STATIC PRESSURE	-2.365	Kpa
ABSOLUTE GAS PRESSURE	96.890	Kpa
OXYGEN CONCENTRATION	8.28	%
CARBON DIOXIDE CONCENTRATION	10.68	%
CARBON MONOXIDE CONCENTRATION	17.6	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.19	m^3/s
DRY REF GAS FLOWRATE	14.75	Rm^3/s
DRY ADJ GAS FLOWRATE	18.80	Rm^3/s
WET REF GAS FLOWRATE	17.45	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		4.854	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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	May 25, 2017	**Operator:**	RW

Pitot Factor	0.84	**Filter (mg)**	0		
DGMCF	0.979	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	636.4		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	15.1		
Nozzle	0.2565 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.69 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%	8.28
CO2%	10.68
COppm	17.6

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 %
1	0	68.67	0.77	280	74	74	74	2	7.5		18.33	
	5	72.51	0.8	282	65	74	76	2.1	8.0		18.71	98.0
2	10	76.52	0.82	283	63	74	74	2.1	8.0		18.96	100.3
	15	80.55	0.88	283	58	75	76	2.3	8.5		19.64	99.9
3	20	84.48	0.83	284	54	76	81	2.3	8.5		19.09	93.8
	25	89.10	0.83	285	52	77	76	2.1	8.0		19.10	113.0
4	30	93.23	0.8	285	52	78	79	2.1	8.0		18.75	101.4
	35	97.37	0.75	285	51	78	77	1.9	7.0		18.16	103.1
5	40	100.99	0.66	285	52	79	80	1.7	7.0		17.03	93.3
	45	104.69	0.74	285	52	79	80	1.8	7.5		18.03	101.2
6	50	108.46	0.55	285	52	80	78	1.4	7.0		15.55	97.4
	55	112.00	0.54	284	52	80	79	1.4	7.0		15.40	106.1
7	60	115.47	0.53	283	52	80	78	1.4	7.0		15.24	104.8
	65	118.98	0.5	282	63	80	77	1.2	6.5		14.79	107.0
8	70	122.26	0.62	280	53	80	79	1.6	7.0		16.45	102.9
	75	125.80	0.64	282	53	81	78	1.6	7.0		16.74	99.5
9	80	129.37	0.66	281	53	81	78	1.6	7.0		16.99	98.9
	85	132.94	0.7	282	53	81	78	1.8	7.5		17.51	97.3
10	90	136.72	0.64	279	53	81	78	1.7	7.5		16.70	100.2
	95	140.43	0.64	278	53	81	79	1.7	7.5		16.69	102.6
11	100	144.12	0.46	277	53	81	78	1.1	6.5		14.14	101.9
	105	147.30	0.48	277	54	81	78	1.1	6.5		14.45	103.5
12	110	150.48	0.55	278	54	81	78	1.4	6.5		15.47	101.3
	115	153.85	0.56	277	52	81	80	1.4	6.5		15.60	100.4
	120	157.23								0.69		99.6
1	0	157.92	0.7	277	59	77	79	1.8	8.0		17.45	
	5	161.75	0.71	284	47	76	79	1.8	8.0		17.65	101.5
2	10	165.58	0.78	284	47	76	78	2	8.0		18.50	101.3
	15	169.59	0.77	284	47	77	77	2	8.0		18.38	101.4
3	20	173.59	0.76	284	47	77	77	2	8.0		18.26	101.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	May 25, 2017	**Operator:**	RW

Pitot Factor	0.84	**Filter (mg)**	0		
DGMCF	0.979	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	636.4		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	15.1		
Nozzle	0.2565 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.69 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%	8.28
CO2%	10.68
COppm	17.6

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 %
	25	177.56	0.78	285	47	78	77	2	8.0		18.52	**101.7**
4	30	181.53	0.76	285	47	78	77	2	8.0		18.28	**100.3**
	35	185.48	0.76	285	47	79	78	2	8.0		18.28	**101.1**
5	40	189.44	0.7	285	48	79	77	1.8	8.0		17.54	**101.2**
	45	193.27	0.68	284	48	79	77	1.8	8.0		17.28	**102.0**
6	50	197.06	0.62	284	48	79	77	1.6	7.5		16.50	**102.4**
	55	200.72	0.59	284	48	79	77	1.5	7.0		16.09	**103.5**
7	60	204.17	0.62	284	49	49	77	1.5	7.0		16.50	**100.0**
	65	207.66	0.62	284	49	79	77	1.5	7.0		16.50	**101.5**
8	70	211.18	0.62	283	49	79	77	1.5	7.0		16.49	**99.5**
	75	214.61	0.61	282	49	79	77	1.5	7.0		16.34	**96.9**
9	80	218.11	0.65	281	49	79	78	1.7	7.5		16.86	**99.6**
	85	221.80	0.65	280	49	79	77	1.7	7.5		16.85	**101.6**
10	90	225.51	0.65	279	49	79	77	1.7	7.5		16.83	**102.2**
	95	229.16	0.66	274	49	79	77	1.7	7.5		16.91	**100.5**
11	100	232.83	0.63	274	49	79	77	1.7	7.5		16.52	**99.9**
	105	236.49	0.6	274	50	79	77	1.6	7.5		16.12	**102.0**
12	110	240.16	0.6	277	50	79	77	1.6	7.5		16.15	**104.8**
	115	243.82	0.6	276	50	79	77	1.6	7.5		16.14	**104.7**
	120	247.48										**104.6**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	2 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT		0.84
DGM CORRECTION FACTOR		0.979
NOZZLE DIAMETER		6.52 mm
DRY REF GAS VOLUME SAMPLED		4.849 m^3
AVGERGE ISOKINETICITY		101.6 %
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	138.4 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	17.04 m/s
BAROMETRIC PRESSURE (Station)	99.018 Kpa
STATIC PRESSURE	-2.365 Kpa
ABSOLUTE GAS PRESSURE	96.652 Kpa
OXYGEN CONCENTRATION	8.26 %
CARBON DIOXIDE CONCENTRATION	10.62 %
CARBON MONOXIDE CONCENTRATION	21.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.18 m^3/s
DRY REF GAS FLOWRATE	14.69 Rm^3/s
DRY ADJ GAS FLOWRATE	18.75 Rm^3/s
WET REF GAS FLOWRATE	17.41 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		4.849 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	May 25, 2017	**Operator:**	RW

Pitot Factor	0.84	**Filter (mg)**	0		
DGMCF	0.979	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	648		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	10.7		
Nozzle	0.2565 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.68 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%	8.26
CO2%	10.62
COppm	21.1

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	248.07	0.76	280	68	73	75	2	6.0		18.25	
	5	252.05	0.77	282	70	73	75	2	6.0		18.39	102.2
2	10	255.87	0.79	282	64	73	75	2	6.5		18.63	97.6
	15	259.92	0.79	282	59	74	75	2	6.5		18.63	102.2
3	20	263.97	0.8	281	55	75	75	2	6.5		18.73	102.1
	25	267.97	0.79	282	54	76	75	2	6.5		18.63	100.0
4	30	271.98	0.74	282	54	77	76	1.9	6.0		18.03	100.9
	35	275.98	0.75	282	54	77	75	1.9	6.0		18.15	103.8
5	40	279.76	0.65	283	54	78	76	1.7	6.0		16.91	97.5
	45	283.57	0.65	283	55	78	76	1.7	6.0		16.91	105.4
6	50	287.13	0.5	282	53	80	76	1.3	5.5		14.82	98.5
	55	290.66	0.52	282	50	79	76	1.3	5.5		15.11	110.9
7	60	293.93	0.6	282	49	79	76	1.6	6.0		16.23	100.8
	65	297.54	0.6	282	48	79	76	1.6	6.0		16.23	103.7
8	70	301.17	0.63	282	48	79	77	1.6	6.0		16.64	104.3
	75	304.78	0.63	282	48	79	77	1.6	6.0		16.64	101.1
9	80	308.39	0.66	282	49	79	77	1.7	6.0		17.03	101.1
	85	312.10	0.66	281	47	79	76	1.7	6.0		17.02	101.6
10	90	315.78	0.68	279	47	80	78	1.7	6.0		17.25	100.8
	95	319.47	0.69	279	47	80	77	1.8	6.0		17.37	99.1
11	100	323.33	0.66	280	46	80	76	1.7	6.0		17.00	103.1
	105	327.06	0.62	280	46	80	77	1.6	6.0		16.48	102.0
12	110	330.67	0.63	279	46	80	77	1.6	6.0		16.60	101.7
	115	334.28	0.62	279	46	80	77	1.6	6.0		16.47	100.8
	120	337.88								0.68		101.4
1	0	338.56	0.62	279	46	74	76	1.6	6.0		16.47	
	5	342.00	0.64	280	46	85	76	1.7	6.0		16.74	97.5
2	10	345.62	0.7	280	46	75	76	1.9	6.5		17.51	100.0
	15	349.46	0.73	281	46	76	76	1.9	6.5		17.90	102.5
3	20	353.29	0.73	281	47	77	76	1.9	6.5		17.90	100.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	May 25, 2017	**Operator:**	RW

Pitot Factor	0.84	**Filter (mg)**	0		
DGMCF	0.979	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	648		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	10.7		
Nozzle	0.2565 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.68 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%	8.26
CO2%	10.62
COppm	21.1

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 %
	25	357.10	0.73	281	46	78	76	1.9	6.5		17.90	**99.4**
4	30	360.99	0.79	282	47	78	77	2	7.0		18.63	**101.4**
	35	364.89	0.67	282	47	79	78	1.8	6.5		17.16	**97.8**
5	40	368.77	0.65	282	47	79	78	1.7	6.5		16.90	**105.4**
	45	372.46	0.64	282	48	79	76	1.7	6.5		16.77	**101.7**
6	50	376.15	0.57	282	48	79	77	1.5	6.0		15.82	**102.7**
	55	379.66	0.57	282	47	79	77	1.5	6.0		15.82	**103.3**
7	60	383.14	0.62	283	47	80	77	1.6	6.0		16.51	**102.5**
	65	386.73	0.62	283	47	80	77	1.6	6.0		16.51	**101.4**
8	70	390.32	0.67	283	47	79	80	1.8	6.5		17.17	**101.4**
	75	393.91	0.65	283	47	80	78	1.7	6.5		16.91	**97.4**
9	80	397.68	0.63	281	47	81	78	1.6	6.0		16.62	**103.9**
	85	401.27	0.65	280	47	80	78	1.7	6.5		16.87	**100.2**
10	90	404.96	0.68	280	48	80	78	1.8	6.5		17.26	**101.5**
	95	408.71	0.68	279	47	80	78	1.8	6.5		17.25	**100.8**
11	100	412.47	0.63	280	48	80	77	1.6	6.0		16.61	**101.0**
	105	416.24	0.6	280	48	80	79	1.6	6.0		16.21	**105.4**
12	110	419.83	0.6	279	49	80	78	1.6	6.0		16.20	**102.6**
	115	423.41	0.61	279	49	80	77	1.6	6.0		16.34	**102.4**
	120	427.01										**102.2**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet No. 2
Test No.:	3 - SVOC
Date:	May 26, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.84
DGM CORRECTION FACTOR	0.979
NOZZLE DIAMETER	6.44 mm
DRY REF GAS VOLUME SAMPLED	4.870 m^3
AVGERGE ISOKINETICITY	101.7 %
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	139.4 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	17.58 m/s
BAROMETRIC PRESSURE (Station)	99.526 Kpa
STATIC PRESSURE	-2.365 Kpa
ABSOLUTE GAS PRESSURE	97.160 Kpa
OXYGEN CONCENTRATION	7.97 %
CARBON DIOXIDE CONCENTRATION	11.03 %
CARBON MONOXIDE CONCENTRATION	16.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.97 m^3/s
DRY REF GAS FLOWRATE	15.08 Rm^3/s
DRY ADJ GAS FLOWRATE	19.69 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		4.870 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	May 26, 2017	**Operator:**	RW

Pitot Factor	0.84	**Filter (mg)**	0		
DGMCF	0.979	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	681.1		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	11.8		
Nozzle	0.2536 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.61 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%	7.97
CO2%	11.03
COppm	16.9

Measured H2O
16.2 %

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	427.68	0.7	280	60	75	77	1.7	8.0		17.48	
	5	431.54	0.77	284	52	74	77	1.9	8.0		18.38	106.2
2	10	435.32	0.8	283	53	75	77	2	8.5		18.72	99.6
	15	439.24	0.84	283	50	75	77	2.1	9.0		19.18	101.2
3	20	443.27	0.82	284	50	76	77	2	9.0		18.96	101.5
	25	447.26	0.82	284	49	77	78	2	9.0		18.96	101.7
4	30	451.22	0.85	285	49	78	77	2.1	9.0		19.32	100.7
	35	455.17	0.8	285	49	78	80	2	9.0		18.74	98.8
5	40	459.12	0.75	286	50	79	77	1.9	9.0		18.16	101.5
	45	463.05	0.77	285	50	80	77	1.9	9.0		18.39	104.5
6	50	467.06	0.65	286	50	79	78	1.6	8.5		16.91	105.1
	55	470.65	0.64	286	51	80	80	1.6	8.5		16.78	102.4
7	60	474.32	0.65	285	51	80	79	1.6	8.5		16.90	105.2
	65	478.00	0.65	285	51	80	79	1.6	8.5		16.90	104.7
8	70	481.61	0.7	286	51	80	79	1.7	8.5		17.55	102.7
	75	485.50	0.72	286	50	81	80	1.7	8.5		17.79	106.8
9	80	489.10	0.7	286	50	81	80	1.7	8.5		17.55	97.2
	85	492.82	0.72	286	50	81	80	1.7	8.5		17.79	101.9
10	90	496.57	0.72	285	50	81	79	1.7	8.5		17.78	101.3
	95	500.31	0.7	284	50	81	79	1.7	8.5		17.52	101.0
11	100	504.05	0.63	283	51	81	80	1.6	8.5		16.61	102.4
	105	507.71	0.63	279	51	82	80	1.6	8.5		16.57	105.4
12	110	511.32	0.6	282	51	81	82	1.5	8.0		16.20	103.6
	115	514.86	0.59	281	52	82	81	1.5	8.0		16.05	104.2
	120	518.44								0.61		106.2
1	0	519.05	0.73	283	67	79	83	1.8	9.0		17.88	
	5	522.78	0.71	285	50	79	80	1.7	9.0		17.66	99.8
2	10	526.49	0.83	285	50	79	79	2.1	9.5		19.09	101.0
	15	530.50	0.8	285	50	79	79	1.9	9.0		18.74	101.2
3	20	534.43	0.8	284	51	79	79	1.9	9.0		18.73	101.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	APC Outlet No. 2
Date:	May 26, 2017	**Operator:**	RW

Pitot Factor	0.84	**Filter (mg)**	0		
DGMCF	0.979	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	681.1		
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	11.8		
Nozzle	0.2536 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.61 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%	7.97
CO2%	11.03
COppm	16.9

Measured H2O
16.2 %

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 %
	25	538.35	0.8	284	51	79	79	1.9	9.0		18.73	**100.6**
4	30	542.25	0.73	284	51	79	79	1.8	9.0		17.89	**100.1**
	35	546.06	0.71	285	51	79	79	1.7	9.0		17.66	**102.4**
5	40	549.80	0.68	285	51	79	79	1.6	9.0		17.28	**101.9**
	45	553.42	0.7	285	51	79	79	1.6	8.5		17.53	**100.8**
6	50	557.04	0.63	285	51	78	80	1.5	8.0		16.63	**99.4**
	55	560.56	0.61	285	51	78	79	1.5	8.0		16.37	**101.8**
7	60	564.05	0.65	285	52	79	80	1.6	8.0		16.90	**102.7**
	65	567.60	0.65	285	52	79	79	1.6	8.0		16.90	**101.0**
8	70	571.15	0.66	286	52	79	79	1.6	8.0		17.04	**101.1**
	75	574.71	0.68	285	52	78	80	1.6	8.0		17.28	**100.7**
9	80	578.31	0.67	285	52	78	79	1.6	8.5		17.15	**100.2**
	85	581.90	0.68	284	53	79	80	1.6	8.5		17.27	**100.8**
10	90	585.49	0.7	285	53	79	79	1.7	8.5		17.53	**99.8**
	95	589.14	0.7	283	53	78	80	1.7	8.5		17.51	**100.2**
11	100	592.78	0.7	284	54	79	79	1.7	9.0		17.52	**99.8**
	105	596.39	0.69	280	55	79	79	1.6	8.5		17.35	**99.0**
12	110	599.98	0.61	279	56	78	79	1.5	8.0		16.30	**98.9**
	115	603.42	0.6	227	57	78	79	1.5	8.0		15.59	**100.8**
	120	606.88										**98.6**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit #1
Test No.:	1 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.008
NOZZLE DIAMETER	6.03 mm
DRY REF GAS VOLUME SAMPLED	3.279 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	167.0 °C
AVERAGE GAS MOISTURE BY VOLUME	14.7 %
AVERAGE GAS VELOCITY	18.95 m/s
BAROMETRIC PRESSURE (Station)	99.255 Kpa
STATIC PRESSURE	-0.660 Kpa
ABSOLUTE GAS PRESSURE	98.595 Kpa
OXYGEN CONCENTRATION	8.29 %
CARBON DIOXIDE CONCENTRATION	10.46 %
CARBON MONOXIDE CONCENTRATION	14.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.01 m^3/s
DRY REF GAS FLOWRATE	15.75 Rm^3/s
DRY ADJ GAS FLOWRATE	20.06 Rm^3/s
WET REF GAS FLOWRATE	18.46 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		3.279 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 25, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	405		
Static Pressure	-2.650 "H_2O	**WCBDA (g)**	9.5		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.74 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%	8.29
CO2%	10.46
COppm	14.4

Measured H2O
14.7 %

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 %
1	0	67.35	0.7	335	81	86	87	1.25	1.0		18.13	
	2.5	68.97	0.71	336	70	86	88	1.25	1.0		18.28	102.5
	5	70.48	0.71	336	69	86	88	1.3	2.0		18.28	94.9
2	7.5	72.10	0.72	335	68	86	89	1.3	2.5		18.39	101.8
	10	73.72	0.73	335	65	86	91	1.3	3.0		18.52	100.9
	12.5	75.34	0.73	335	62	87	92	1.3	3.0		18.52	100.0
3	15	76.96	0.73	335	61	87	93	1.3	3.5		18.52	99.8
	17.5	78.56	0.72	335	59	88	94	1.25	3.5		18.39	98.5
	20	80.15	0.73	334	59	88	95	1.3	3.5		18.51	98.4
4	22.5	81.73	0.71	334	58	88	96	1.25	3.5		18.25	97.0
	25	83.33	0.71	335	58	89	97	1.25	4.0		18.26	99.5
	27.5	84.92	0.73	335	57	90	98	1.3	4.0		18.52	98.7
5	30	86.56	0.74	334	57	90	99	1.35	4.5		18.63	100.3
	32.5	88.19	0.75	335	56	91	100	1.4	4.5		18.77	98.8
	35	89.86	0.74	335	56	92	101	1.35	5.0		18.65	100.5
6	37.5	91.51	0.8	334	55	92	102	1.5	5.5		19.37	99.8
	40	93.24	0.8	333	55	93	104	1.5	6.0		19.36	100.5
	42.5	94.99	0.79	332	55	94	104	1.45	6.0		19.23	101.3
7	45	96.71	0.86	331	55	95	105	1.65	7.5		20.05	100.0
	47.5	98.52	0.85	332	55	95	106	1.6	7.5		19.95	100.7
	50	100.34	0.86	332	55	96	107	1.6	7.5		20.06	101.8
8	52.5	102.13	0.88	332	55	97	108	1.7	8.5		20.29	99.4
	55	103.97	0.89	332	56	97	109	1.7	8.5		20.41	100.8
	57.5	105.80	0.9	332	57	98	110	1.7	9.0		20.52	99.6
9	60	107.63	0.88	331	56	99	111	1.65	9.0		20.28	98.9
	62.5	109.47	0.88	332	57	99	110	1.65	9.0		20.29	100.3
	65	111.29	0.88	332	55	100	112	1.65	9.0		20.29	99.4
10	67.5	113.10	0.87	332	55	100	112	1.6	9.0		20.18	98.5
	70	114.91	0.88	332	56	101	113	1.65	9.5		20.29	99.1
	72.5	116.74	0.88	332	55	101	113	1.65	9.5		20.29	99.5
11	75	118.56	0.83	330	55	102	114	1.5	9.0		19.68	98.9

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 25, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	405		
Static Pressure	-2.650 "H_2O	**WCBDA (g)**	9.5		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.74 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%	8.29
CO2%	10.46
COppm	14.4

Measured H2O
14.7 %

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 %
	77.5	120.34	0.81	331	55	102	115	1.45	9.0		19.46	99.3
	80	122.09	0.81	331	56	103	115	1.45	9.0		19.46	98.8
12	82.5	123.84	0.79	330	55	103	115	1.45	9.0		19.20	98.7
	85	125.60	0.79	330	56	103	116	1.45	9.0		19.20	100.4
	87.5	127.31	0.78	331	55	104	116	1.45	9.0		19.09	97.5
	90	129.04								0.74		99.2
1	0	129.78	0.72	333	80	97	99	1.25	3.0		18.37	
	2.5	131.41	0.72	332	62	96	98	1.2	3.0		18.36	99.5
	5	133.02	0.72	332	56	95	98	1.25	3.0		18.36	98.4
2	7.5	134.64	0.73	332	54	95	99	1.3	3.5		18.48	99.1
	10	136.28	0.73	333	53	95	100	1.3	3.5		18.50	99.5
	12.5	137.95	0.74	333	52	95	100	1.3	3.5		18.62	101.3
3	15	139.60	0.71	334	52	95	101	1.25	3.5		18.25	99.4
	17.5	141.23	0.7	333	52	95	102	1.25	4.0		18.11	100.2
	20	142.84	0.69	333	52	95	103	1.25	4.0		17.98	99.6
4	22.5	144.44	0.67	332	52	95	104	1.2	4.0		17.71	99.6
	25	146.02	0.66	332	52	96	104	1.2	4.5		17.58	99.6
	27.5	147.61	0.66	332	52	96	105	1.2	4.5		17.58	100.9
5	30	149.18	0.67	333	52	96	106	1.2	4.5		17.72	99.6
	32.5	150.78	0.66	332	52	97	106	1.15	4.5		17.58	100.7
	35	152.35	0.67	332	52	97	107	1.2	4.5		17.71	99.4
6	37.5	153.93	0.7	332	52	97	107	1.3	5.0		18.10	99.2
	40	155.58	0.7	332	51	98	108	1.25	5.0		18.10	101.4
	42.5	157.22	0.7	332	51	98	109	1.25	5.0		18.10	100.5
7	45	158.85	0.76	332	51	98	109	1.4	5.5		18.86	99.8
	47.5	160.58	0.77	332	52	99	110	1.4	5.5		18.98	101.7
	50	162.28	0.76	332	51	99	110	1.4	5.5		18.86	99.1
8	52.5	163.97	0.81	332	52	100	111	1.6	7.0		19.47	99.2
	55	165.74	0.82	332	52	100	112	1.6	7.0		19.59	100.5
	57.5	167.54	0.83	332	51	101	112	1.6	7.5		19.71	101.5
9	60	169.34	0.85	332	51	101	113	1.65	7.5		19.95	100.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 25, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	405		
Static Pressure	-2.650 "H_2O	**WCBDA (g)**	9.5		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.74 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%	8.29
CO2%	10.46
COppm	14.4

Measured H2O
14.7 %

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 %
	62.5	171.16	0.85	332	51	101	113	1.65	7.5		19.95	100.6
	65	172.97	0.85	332	52	102	114	1.65	7.5		19.95	100.1
10	67.5	174.76	0.84	332	52	102	114	1.6	8.0		19.83	98.8
	70	176.54	0.84	333	52	102	115	1.6	8.0		19.84	98.8
	72.5	178.30	0.83	333	52	103	115	1.6	8.0		19.72	97.7
11	75	180.08	0.74	332	52	103	115	1.4	8.0		18.61	99.3
	77.5	181.80	0.73	331	52	103	115	1.3	8.0		18.47	101.5
	80	183.48	0.74	331	53	104	116	1.3	8.0		18.60	99.7
12	82.5	185.13	0.73	331	53	104	116	1.35	8.0		18.47	97.1
	85	186.81	0.74	331	53	104	116	1.35	8.0		18.60	99.6
	87.5	188.48	0.73	332	54	104	116	1.35	8.0		18.48	98.3
	90	190.12										97.3

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit #1
Test No.:	2 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.008
NOZZLE DIAMETER	6.03 mm
DRY REF GAS VOLUME SAMPLED	3.272 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	167.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.0 %
AVERAGE GAS VELOCITY	18.98 m/s
BAROMETRIC PRESSURE (Station)	99.018 Kpa
STATIC PRESSURE	-0.660 Kpa
ABSOLUTE GAS PRESSURE	98.358 Kpa
OXYGEN CONCENTRATION	8.25 %
CARBON DIOXIDE CONCENTRATION	10.41 %
CARBON MONOXIDE CONCENTRATION	18.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.04 m^3/s
DRY REF GAS FLOWRATE	15.66 Rm^3/s
DRY ADJ GAS FLOWRATE	20.01 Rm^3/s
WET REF GAS FLOWRATE	18.43 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		3.272 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 25, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	416.7		
Static Pressure	-2.650 "H_2O	**WCBDA (g)**	8.4		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.68 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%	8.25
CO2%	10.41
COppm	18.9

Measured H2O
15.0 %

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	90.71	0.69	334	78	87	88	1.2	2.5		18.03	
	2.5	92.45	0.7	335	72	87	88	1.2	2.0		18.17	110.8
	5	94.06	0.69	335	67	87	88	1.2	2.0		18.04	101.9
2	7.5	95.61	0.7	335	66	87	89	1.25	2.5		18.17	98.8
	10	97.22	0.69	334	65	87	91	1.25	2.5		18.03	101.8
	12.5	98.81	0.7	334	64	87	92	1.25	2.5		18.16	101.0
3	15	100.39	0.7	334	64	87	93	1.25	2.5		18.16	99.6
	17.5	102.10	0.71	334	63	87	94	1.25	3.0		18.29	107.7
	20	103.63	0.69	334	61	88	95	1.25	3.0		18.03	95.6
4	22.5	105.23	0.69	334	59	88	96	1.25	3.5		18.03	101.2
	25	106.84	0.69	334	58	89	97	1.25	3.5		18.03	101.7
	27.5	108.42	0.7	334	57	89	98	1.25	3.5		18.16	99.7
5	30	109.98	0.72	334	57	90	99	1.3	4.5		18.42	97.6
	32.5	111.63	0.71	333	56	90	100	1.25	4.5		18.28	101.6
	35	113.26	0.72	333	55	91	101	1.3	5.0		18.41	100.9
6	37.5	114.87	0.75	332	53	92	102	1.4	6.0		18.77	98.8
	40	116.53	0.75	332	53	92	102	1.4	6.0		18.77	99.6
	42.5	118.17	0.75	331	52	93	103	1.4	7.0		18.76	98.4
7	45	119.85	0.81	331	51	94	104	1.5	7.5		19.50	100.6
	47.5	121.59	0.83	330	51	94	105	1.55	8.0		19.73	100.1
	50	123.36	0.83	331	51	95	106	1.55	8.0		19.74	100.4
8	52.5	125.13	0.85	330	51	95	107	1.6	8.0		19.96	100.3
	55	126.93	0.86	331	50	96	107	1.6	8.0		20.09	100.7
	57.5	128.72	0.86	330	50	96	108	1.6	8.0		20.08	99.5
9	60	130.48	0.87	330	50	97	109	1.65	9.0		20.20	97.7
	62.5	132.29	0.87	330	50	98	110	1.65	9.0		20.20	99.7
	65	134.09	0.88	330	50	98	110	1.65	9.0		20.31	99.0
10	67.5	135.90	0.86	330	51	99	111	1.6	9.0		20.08	99.0
	70	137.68	0.86	330	51	99	111	1.6	9.0		20.08	98.3
	72.5	139.47	0.85	331	51	100	112	1.6	9.0		19.97	98.8
11	75	141.26	0.77	329	51	100	112	1.5	9.0		18.99	99.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 25, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	416.7		
Static Pressure	-2.650 "H_2O	**WCBDA (g)**	8.4		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.68 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%	8.25
CO2%	10.41
COppm	18.9

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 %
	77.5	143.02	0.76	328	51	101	113	1.5	9.0		18.85	102.4
	80	144.76	0.78	328	51	101	113	1.45	9.0		19.10	101.7
12	82.5	146.49	0.78	329	51	101	114	1.45	9.0		19.11	99.8
	85	148.21	0.78	329	51	102	114	1.45	9.0		19.11	99.2
	87.5	149.92	0.77	329	51	102	115	1.45	9.0		18.99	98.5
	90	151.62								0.68		98.5
1	0	152.30	0.7	333	74	98	101	1.2	2.5		18.15	
	2.5	153.90	0.71	334	59	98	101	1.25	2.5		18.29	99.0
	5	155.51	0.71	334	53	97	102	1.25	2.5		18.29	98.9
2	7.5	157.13	0.71	334	51	97	102	1.25	3.0		18.29	99.6
	10	158.73	0.72	334	50	97	103	1.3	3.0		18.42	98.3
	12.5	160.37	0.71	333	49	97	104	1.3	3.0		18.28	100.0
3	15	162.00	0.68	333	49	97	105	1.25	3.0		17.89	99.9
	17.5	163.59	0.67	333	49	97	105	1.25	3.0		17.76	99.5
	20	165.16	0.66	333	49	97	106	1.2	3.0		17.62	99.0
4	22.5	166.72	0.66	333	49	97	106	1.2	3.0		17.62	99.0
	25	168.26	0.65	333	49	97	107	1.2	3.5		17.49	97.7
	27.5	169.82	0.65	333	49	98	107	1.2	3.5		17.49	99.7
5	30	171.41	0.65	333	49	98	108	1.2	3.5		17.49	101.5
	32.5	172.97	0.65	333	50	98	108	1.2	4.0		17.49	99.5
	35	174.56	0.66	333	50	99	109	1.2	4.0		17.62	101.4
6	37.5	176.13	0.69	334	50	99	109	1.3	4.5		18.03	99.2
	40	177.76	0.7	333	50	100	110	1.3	4.5		18.15	100.8
	42.5	179.37	0.69	333	50	100	110	1.3	4.5		18.02	98.6
7	45	181.01	0.79	333	50	100	111	1.5	5.5		19.28	101.2
	47.5	182.72	0.78	334	50	100	111	1.55	5.5		19.17	98.6
	50	184.49	0.79	334	50	101	112	1.5	6.0		19.29	102.8
8	52.5	186.26	0.84	334	50	101	113	1.55	6.0		19.89	101.9
	55	188.03	0.85	335	50	102	113	1.55	6.5		20.03	98.8
	57.5	189.80	0.84	335	50	102	113	1.6	6.5		19.91	98.2
9	60	191.58	0.86	335	50	102	114	1.6	7.0		20.14	99.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 25, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	416.7		
Static Pressure	-2.650 "H_2O	**WCBDA (g)**	8.4		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.68 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%	8.25
CO2%	10.41
COppm	18.9

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 %
	62.5	193.38	0.87	335	50	102	114	1.65	7.0		20.26	**99.2**
	65	195.20	0.88	335	50	103	115	1.7	8.0		20.38	**99.7**
10	67.5	197.05	0.92	336	50	103	115	1.8	9.0		20.85	**100.6**
	70	198.94	0.94	336	50	103	116	1.8	9.5		21.07	**100.6**
	72.5	200.85	0.92	337	50	104	116	1.75	9.5		20.86	**100.5**
11	75	202.74	0.84	335	50	104	116	1.6	9.0		19.91	**100.5**
	77.5	204.58	0.86	335	50	104	117	1.6	9.0		20.14	**102.2**
	80	206.40	0.85	335	50	105	117	1.6	9.0		20.03	**99.8**
12	82.5	208.20	0.85	336	50	105	118	1.6	9.0		20.04	**99.2**
	85	210.00	0.84	336	51	105	118	1.6	9.0		19.92	**99.2**
	87.5	211.76	0.84	336	51	106	118	1.6	9.0		19.92	**97.6**
	90	213.55										**99.1**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit #1
Test No.:	3 - SVOC
Date:	May 26, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.849
DGM CORRECTION FACTOR	1.008
NOZZLE DIAMETER	6.03 mm
DRY REF GAS VOLUME SAMPLED	3.240 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	166.7 °C
AVERAGE GAS MOISTURE BY VOLUME	14.8 %
AVERAGE GAS VELOCITY	18.64 m/s
BAROMETRIC PRESSURE (Station)	99.526 Kpa
STATIC PRESSURE	-0.655 Kpa
ABSOLUTE GAS PRESSURE	98.871 Kpa
OXYGEN CONCENTRATION	8.25 %
CARBON DIOXIDE CONCENTRATION	10.54 %
CARBON MONOXIDE CONCENTRATION	19.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.54 m^3/s
DRY REF GAS FLOWRATE	15.51 Rm^3/s
DRY ADJ GAS FLOWRATE	19.82 Rm^3/s
WET REF GAS FLOWRATE	18.22 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		3.240 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 26, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	405.2		
Static Pressure	-2.630 "H_2O	**WCBDA (g)**	8.8		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.51 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%	8.25
CO2%	10.54
COppm	19.4

Measured H2O
14.8 %

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	14.51	0.69	330	84	88	89	1.2	2.0		17.92	
	2.5	16.05	0.69	334	67	88	89	1.2	2.0		17.97	97.7
	5	17.63	0.68	334	61	88	91	1.2	2.0		17.84	100.5
2	7.5	19.17	0.68	334	61	89	92	1.2	2.0		17.84	98.5
	10	20.72	0.68	334	58	89	93	1.25	2.5		17.84	99.0
	12.5	22.31	0.69	333	54	89	94	1.25	2.5		17.96	101.5
3	15	23.89	0.7	334	52	90	95	1.25	3.0		18.10	99.9
	17.5	25.47	0.7	334	51	90	96	1.3	3.5		18.10	99.1
	20	27.08	0.7	334	49	91	97	1.3	3.5		18.10	100.9
4	22.5	28.67	0.69	334	49	91	99	1.3	4.0		17.97	99.5
	25	30.27	0.68	334	48	92	100	1.25	4.0		17.84	100.6
	27.5	31.85	0.68	334	48	93	101	1.25	4.0		17.84	99.9
5	30	33.42	0.69	334	48	93	102	1.3	5.0		17.97	99.1
	32.5	35.03	0.69	334	48	94	103	1.3	5.0		17.97	100.8
	35	36.61	0.7	333	48	95	104	1.3	5.5		18.09	98.8
6	37.5	38.25	0.73	333	48	95	105	1.35	6.0		18.47	101.5
	40	39.90	0.74	333	48	96	106	1.4	6.5		18.60	100.0
	42.5	41.55	0.74	332	48	97	107	1.4	7.0		18.59	99.1
7	45	43.21	0.82	331	49	98	108	1.6	7.5		19.55	99.5
	47.5	44.95	0.83	332	49	99	109	1.65	7.5		19.68	98.9
	50	46.75	0.84	332	48	99	110	1.65	8.0		19.80	101.5
8	52.5	48.54	0.85	332	48	100	111	1.65	8.0		19.92	100.3
	55	50.34	0.86	332	48	100	112	1.65	8.5		20.04	100.1
	57.5	52.15	0.85	332	49	101	113	1.65	8.5		19.92	100.0
9	60	53.92	0.86	331	49	102	113	1.65	9.0		20.02	98.2
	62.5	55.73	0.86	331	49	102	114	1.65	9.0		20.02	99.6
	65	57.54	0.87	331	49	103	114	1.65	9.0		20.14	99.5
10	67.5	59.34	0.86	331	49	103	115	1.65	9.0		20.02	98.3
	70	61.13	0.86	331	49	104	116	1.65	9.0		20.02	98.3
	72.5	62.95	0.85	332	49	104	116	1.6	9.0		19.92	99.7
11	75	64.74	0.79	331	50	105	117	1.55	9.0		19.19	98.7

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 26, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	405.2		
Static Pressure	-2.630 "H_2O	**WCBDA (g)**	8.8		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.51 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%	8.25
CO2%	10.54
COppm	19.4

Measured H2O
14.8 %

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	66.51	0.79	332	50	106	118	1.55	10.0		19.20	101.0
	80	68.29	0.77	333	50	106	118	1.5	10.0		18.97	101.5
12	82.5	70.05	0.78	333	50	106	118	1.5	10.0		19.09	101.7
	85	71.78	0.78	332	50	107	119	1.5	10.0		19.08	99.3
	87.5	73.50	0.78	332	51	107	119	1.5	10.0		19.08	98.5
	90	75.22								0.51		98.5
1	0	75.73	0.68	329	74	101	103	1.2	2.0		17.78	
	2.5	77.33	0.67	332	52	100	103	1.2	2.5		17.69	99.8
	5	78.96	0.68	331	47	100	103	1.2	2.5		17.81	102.7
2	7.5	80.57	0.68	331	47	99	104	1.2	3.0		17.81	100.6
	10	82.16	0.67	331	47	99	104	1.2	3.0		17.67	99.4
	12.5	83.73	0.67	331	47	99	105	1.2	3.0		17.67	98.8
3	15	85.33	0.65	331	47	99	106	1.15	3.0		17.41	100.6
	17.5	86.91	0.65	331	47	99	106	1.15	3.5		17.41	100.8
	20	88.47	0.65	331	47	99	107	1.2	3.5		17.41	99.5
4	22.5	90.03	0.66	331	47	99	107	1.2	3.5		17.54	99.5
	25	91.60	0.64	332	47	99	108	1.2	3.5		17.29	99.3
	27.5	93.17	0.65	331	48	99	108	1.2	4.0		17.41	100.8
5	30	94.73	0.63	332	48	100	109	1.15	4.0		17.15	99.4
	32.5	96.28	0.62	331	48	100	109	1.15	4.0		17.00	100.2
	35	97.83	0.61	330	48	100	110	1.15	4.0		16.85	100.9
6	37.5	99.37	0.67	331	48	100	110	1.25	4.5		17.67	100.9
	40	100.97	0.66	331	48	101	111	1.25	4.5		17.54	100.1
	42.5	102.57	0.66	331	48	101	112	1.25	4.5		17.54	100.7
7	45	104.16	0.65	331	49	101	112	1.25	4.5		17.41	100.0
	47.5	105.74	0.66	331	49	102	112	1.25	4.5		17.54	100.1
	50	107.31	0.65	331	49	102	112	1.25	4.5		17.41	98.6
8	52.5	108.93	0.82	332	49	102	113	1.55	6.5		19.57	102.6
	55	110.68	0.81	333	49	102	113	1.6	7.0		19.46	98.7
	57.5	112.46	0.81	333	49	103	114	1.6	7.0		19.46	101.1
9	60	114.24	0.82	333	50	103	114	1.6	7.0		19.58	100.9

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit #1
Date:	May 26, 2017	**Operator:**	TS

Pitot Factor	0.849	**Filter (mg)**	0		
DGMCF	1.008	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	405.2		
Static Pressure	-2.630 "H_2O	**WCBDA (g)**	8.8		
Nozzle	0.2374 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.51 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%	8.25
CO2%	10.54
COppm	19.4

Measured H2O
14.8 %

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 %
	62.5	116.03	0.82	333	50	103	115	1.6	7.0		19.58	**100.8**
	65	117.82	0.81	332	50	104	115	1.55	7.5		19.45	**100.8**
10	67.5	119.60	0.85	332	50	104	116	1.65	8.0		19.92	**100.6**
	70	121.41	0.86	333	50	104	116	1.65	8.0		20.05	**99.8**
	72.5	123.24	0.86	334	50	105	117	1.65	8.0		20.06	**100.4**
11	75	125.06	0.84	333	50	105	117	1.6	8.0		19.81	**99.8**
	77.5	126.88	0.85	333	50	105	117	1.6	8.0		19.93	**100.9**
	80	128.70	0.84	332	50	106	118	1.6	8.0		19.80	**100.3**
12	82.5	130.49	0.84	331	50	106	118	1.6	8.5		19.79	**99.0**
	85	132.29	0.84	330	50	106	118	1.6	8.5		19.78	**99.5**
	87.5	134.10	0.85	331	51	106	119	1.6	8.5		19.91	**99.9**
	90	135.90										**98.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 2
Test No.:	1 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.982
NOZZLE DIAMETER	5.97 mm
DRY REF GAS VOLUME SAMPLED	2.940 m^3
AVGERGE ISOKINETICITY	98.0 %
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	167.0 °C
AVERAGE GAS MOISTURE BY VOLUME	15.0 %
AVERAGE GAS VELOCITY	17.70 m/s
BAROMETRIC PRESSURE (Station)	99.255 Kpa
STATIC PRESSURE	-0.622 Kpa
ABSOLUTE GAS PRESSURE	98.633 Kpa
OXYGEN CONCENTRATION	8 %
CARBON DIOXIDE CONCENTRATION	10.68 %
CARBON MONOXIDE CONCENTRATION	19.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.15 m^3/s
DRY REF GAS FLOWRATE	14.66 Rm^3/s
DRY ADJ GAS FLOWRATE	19.10 Rm^3/s
WET REF GAS FLOWRATE	17.25 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.940 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 25, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	371.4		
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	9.3		
Nozzle	0.2349 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.46 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
CO2%	10.68
COppm	19.6

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	38.48	0.61	330	76	80	81	1	1.5		16.82	
	2.5	39.97	0.61	330	47	80	81	1	1.5		16.82	101.9
	5	41.36	0.62	331	50	80	82	1	2.0		16.97	95.1
2	7.5	42.79	0.62	332	49	80	83	1	2.5		16.98	97.0
	10	44.23	0.65	332	49	81	84	1.1	3.0		17.38	97.6
	12.5	45.70	0.69	333	49	81	85	1.2	3.5		17.92	97.2
3	15	47.27	0.72	333	48	81	86	1.25	4.0		18.31	100.7
	17.5	48.87	0.72	334	46	81	87	1.2	4.0		18.32	100.4
	20	50.42	0.72	334	47	82	87	1.2	4.0		18.32	97.2
4	22.5	51.96	0.71	335	47	82	88	1.15	4.0		18.20	96.5
	25	53.49	0.71	335	47	82	88	1.15	4.0		18.20	96.5
	27.5	55.02	0.71	335	47	83	89	1.15	4.0		18.20	96.5
5	30	56.55	0.7	333	47	83	90	1.2	5.0		18.05	96.4
	32.5	58.09	0.71	333	47	83	90	1.25	5.5		18.18	97.5
	35	59.71	0.7	333	46	83	90	1.2	5.5		18.05	101.8
6	37.5	61.25	0.7	333	47	84	91	1.2	5.5		18.05	97.5
	40	62.87	0.7	333	47	84	91	1.2	5.5		18.05	102.4
	42.5	64.41	0.73	333	47	84	91	1.3	6.0		18.43	97.3
7	45	66.05	0.82	333	47	84	91	1.5	7.0		19.54	101.5
	47.5	67.78	0.83	333	47	85	92	1.5	7.5		19.65	101.1
	50	69.56	0.8	333	46	85	93	1.35	7.0		19.30	103.2
8	52.5	71.25	0.78	331	46	85	93	1.3	6.5		19.03	99.6
	55	72.90	0.76	330	47	85	93	1.25	6.5		18.77	98.4
	57.5	74.53	0.73	330	47	86	93	1.2	6.5		18.40	98.4
9	60	76.10	0.72	328	47	86	94	1.2	7.0		18.25	96.6
	62.5	77.67	0.74	329	48	86	94	1.2	7.0		18.51	97.1
	65	79.27	0.74	329	48	86	94	1.2	7.0		18.51	97.6
10	67.5	80.81	0.74	329	48	86	94	1.2	7.5		18.51	94.0
	70	82.38	0.76	330	48	86	94	1.25	8.0		18.77	95.8
	72.5	84.02	0.76	330	48	87	95	1.25	8.5		18.77	98.8
11	75	85.65	0.69	330	48	87	95	1.15	8.0		17.89	98.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 25, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	371.4		
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	9.3		
Nozzle	0.2349 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.46 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
CO2%	10.68
COppm	19.6

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 %
	77.5	87.20	0.72	329	48	87	95	1.2	8.5		18.26	97.8
	80	88.77	0.7	330	49	87	95	1.15	8.5		18.02	96.9
12	82.5	90.33	0.63	325	49	87	95	1.05	8.5		17.04	97.7
	85	91.83	0.63	325	49	87	95	1.05	8.5		17.04	98.7
	87.5	93.32	0.63	325	50	87	95	1.05	8.5		17.04	98.1
	90	94.80								0.46		97.4
1	0	95.26	0.54	335	76	84	84	0.85	2.0		15.87	
	2.5	96.57	0.56	335	58	83	84	0.9	2.0		16.16	94.9
	5	97.92	0.56	336	48	83	85	0.9	2.0		16.17	96.1
2	7.5	99.30	0.56	336	46	83	85	0.9	2.0		16.17	98.2
	10	100.69	0.54	336	46	82	86	0.85	2.0		15.88	98.9
	12.5	102.01	0.56	335	46	83	87	0.9	3.0		16.16	95.7
3	15	103.35	0.56	335	46	82	87	0.95	3.0		16.16	95.1
	17.5	104.72	0.57	335	45	83	88	0.95	3.0		16.31	97.4
	20	106.09	0.54	334	45	83	88	0.9	3.0		15.86	96.3
4	22.5	107.45	0.58	335	46	83	89	1	3.5		16.45	98.2
	25	108.88	0.57	337	46	83	89	1	3.5		16.33	99.6
	27.5	110.31	0.57	337	46	83	90	1	3.5		16.33	100.6
5	30	111.72	0.58	337	46	84	90	1	4.0		16.47	99.1
	32.5	113.12	0.57	337	46	84	90	0.95	4.0		16.33	97.5
	35	114.51	0.57	336	47	84	91	0.95	4.0		16.32	97.6
6	37.5	115.89	0.59	336	46	84	91	1	4.0		16.60	96.7
	40	117.33	0.57	336	46	84	91	0.95	4.0		16.32	99.2
	42.5	118.76	0.57	336	46	84	91	0.95	4.0		16.32	100.3
7	45	120.11	0.76	335	47	85	91	1.25	5.5		18.83	94.6
	47.5	121.70	0.77	334	47	85	92	1.25	6.0		18.94	96.5
	50	123.32	0.77	334	46	85	93	1.25	6.0		18.94	97.5
8	52.5	124.94	0.77	333	46	85	93	1.25	6.0		18.93	97.4
	55	126.58	0.77	333	257	85	93	1.25	6.0		18.93	98.5
	57.5	128.20	0.76	334	46	85	94	1.25	6.5		18.82	97.3
9	60	129.83	0.78	334	46	85	94	1.3	7.0		19.07	98.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 25, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.31 "Hg	**CWTR (g)**	371.4		
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	9.3		
Nozzle	0.2349 inches				
Stack Diameter	4.500 ft	**Leak Check Volume**		0.46 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
CO2%	10.68
COppm	19.6

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 %
	62.5	131.48	0.76	334	47	86	94	1.3	7.0		18.82	98.5
	65	133.10	0.75	333	46	86	94	1.3	7.0		18.68	97.9
10	67.5	134.76	0.76	333	46	86	94	1.35	7.0		18.81	100.9
	70	136.37	0.72	333	46	94	94	1.25	7.5		18.31	97.2
	72.5	137.94	0.72	333	46	86	94	1.25	7.5		18.31	96.7
11	75	139.54	0.72	333	47	86	94	1.25	7.5		18.31	99.2
	77.5	141.10	0.72	329	47	86	95	1.25	7.5		18.26	96.8
	80	142.70	0.59	329	47	86	95	1.05	6.5		16.53	98.9
12	82.5	144.15	0.63	329	47	86	95	1.05	6.5		17.08	99.0
	85	145.63	0.62	329	48	87	95	1.05	7.0		16.94	97.7
	87.5	147.10	0.64	329	48	87	95	1.05	7.0		17.22	97.8
	90	148.58										96.9

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 2
Test No.:	2 - SVOC
Date:	May 25, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.982
NOZZLE DIAMETER	5.95 mm
DRY REF GAS VOLUME SAMPLED	2.886 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	167.7 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	17.63 m/s
BAROMETRIC PRESSURE (Station)	99.018 Kpa
STATIC PRESSURE	-0.622 Kpa
ABSOLUTE GAS PRESSURE	98.395 Kpa
OXYGEN CONCENTRATION	7.91 %
CARBON DIOXIDE CONCENTRATION	10.62 %
CARBON MONOXIDE CONCENTRATION	23.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.04 m^3/s
DRY REF GAS FLOWRATE	14.45 Rm^3/s
DRY ADJ GAS FLOWRATE	18.96 Rm^3/s
WET REF GAS FLOWRATE	17.11 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.886 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 25, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	383.3		
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	5.2		
Nozzle	0.2343 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%	7.91
CO2%	10.62
COppm	23.1

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	52.01	0.57	337	72	79	82	0.9	2.0		16.37	
	2.5	53.39	0.59	337	65	79	81	0.95	2.0		16.65	98.9
	5	54.77	0.57	336	61	79	81	0.9	2.0		16.36	97.3
2	7.5	56.16	0.67	337	58	79	82	1.1	3.0		17.75	99.6
	10	57.66	0.67	337	55	79	83	1.1	3.0		17.75	99.2
	12.5	59.18	0.7	337	53	79	84	1.1	3.5		18.14	100.4
3	15	60.71	0.72	337	52	80	84	1.2	4.0		18.40	98.8
	17.5	62.27	0.7	336	52	80	85	1.15	4.0		18.13	99.3
	20	63.82	0.7	335	51	80	86	1.15	4.0		18.12	99.9
4	22.5	65.33	0.68	335	51	80	87	1.1	4.0		17.86	97.1
	25	66.82	0.71	336	51	80	87	1.2	4.5		18.26	97.1
	27.5	68.36	0.71	336	51	81	88	1.2	4.5		18.26	98.3
5	30	69.93	0.69	336	50	81	88	1.05	4.0		18.00	100.1
	32.5	71.40	0.67	336	51	81	89	1.05	4.0		17.74	95.0
	35	72.88	0.67	335	51	81	89	1.1	4.0		17.72	97.0
6	37.5	74.40	0.68	335	51	82	89	1.15	5.0		17.86	99.6
	40	75.95	0.69	335	51	82	90	1.1	5.0		17.99	100.7
	42.5	77.48	0.7	335	51	82	90	1.15	5.5		18.12	98.6
7	45	79.04	0.78	335	52	82	90	1.25	6.0		19.12	99.8
	47.5	80.66	0.74	335	52	83	91	1.15	6.0		18.63	98.2
	50	82.23	0.74	335	52	83	91	1.15	6.0		18.63	97.5
8	52.5	83.78	0.77	334	52	83	91	1.2	6.5		18.99	96.3
	55	85.38	0.76	333	53	83	91	1.2	6.5		18.85	97.4
	57.5	86.98	0.76	333	53	84	91	1.2	7.0		18.85	97.9
9	60	88.59	0.8	333	53	84	91	1.3	8.0		19.34	98.5
	62.5	90.26	0.76	334	52	84	92	1.2	7.5		18.87	99.6
	65	91.87	0.77	333	53	84	92	1.25	7.5		18.98	98.4
10	67.5	93.48	0.77	333	53	84	92	1.25	7.5		18.98	97.7
	70	95.09	0.78	333	53	85	92	1.25	7.5		19.10	97.7
	72.5	96.70	0.78	334	53	85	93	1.25	8.0		19.11	97.0
11	75	98.32	0.69	332	53	85	93	1.05	7.5		17.95	97.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 25, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	383.3		
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	5.2		
Nozzle	0.2343 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%	7.91
CO2%	10.62
COppm	23.1

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 %
	77.5	99.84	0.66	326	54	85	93	1.05	7.5		17.49	97.2
	80	101.35	0.66	325	54	85	93	1.05	7.5		17.48	98.4
12	82.5	102.88	0.65	325	55	85	93	1	7.5		17.35	99.6
	85	104.35	0.64	324	55	85	93	1	7.5		17.20	96.4
	87.5	105.81	0.64	324	55	85	93	1	7.5		17.20	96.4
	90	107.29								0.42		97.8
1	0	107.71	0.48	332	76	83	87	0.75	1.5		14.97	
	2.5	108.96	0.46	333	60	84	87	0.7	1.5		14.67	96.5
	5	110.17	0.48	333	55	84	86	0.75	1.5		14.98	95.3
2	7.5	111.39	0.51	334	52	84	87	0.8	2.0		15.45	94.2
	10	112.72	0.49	334	51	84	87	0.75	2.0		15.15	99.6
	12.5	113.94	0.51	334	51	83	88	0.8	2.0		15.45	93.2
3	15	115.23	0.52	334	50	83	88	0.85	2.5		15.61	96.6
	17.5	116.58	0.53	335	50	84	89	0.9	2.5		15.76	100.2
	20	117.90	0.52	335	50	84	90	0.9	3.0		15.61	96.9
4	22.5	119.24	0.54	335	50	84	90	0.9	3.0		15.91	99.2
	25	120.57	0.52	335	50	84	90	0.9	3.0		15.61	96.6
	27.5	121.90	0.54	335	50	84	91	0.9	3.0		15.91	98.5
5	30	123.23	0.53	335	50	84	91	0.9	3.0		15.76	96.5
	32.5	124.57	0.51	335	51	85	91	0.8	3.0		15.46	98.2
	35	125.89	0.53	335	51	85	92	0.9	3.0		15.76	98.5
6	37.5	127.23	0.56	335	51	85	92	0.95	3.5		16.20	98.0
	40	128.63	0.55	335	51	85	92	0.95	3.5		16.06	99.6
	42.5	130.03	0.55	335	51	85	92	0.95	3.5		16.06	100.5
7	45	131.37	0.76	335	51	86	93	1.2	5.0		18.88	96.2
	47.5	132.95	0.77	335	51	86	93	1.3	5.5		19.00	96.4
	50	134.59	0.78	335	50	86	94	1.3	5.5		19.12	99.4
8	52.5	136.26	0.79	335	50	86	94	1.35	6.0		19.25	100.5
	55	137.96	0.8	335	51	86	94	1.3	6.0		19.37	101.7
	57.5	139.63	0.79	335	51	86	94	1.3	6.0		19.25	99.2
9	60	141.28	0.79	335	52	87	95	1.3	6.0		19.25	98.7

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 25, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.24 "Hg	**CWTR (g)**	383.3		
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	5.2		
Nozzle	0.2343 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%	7.91
CO2%	10.62
COppm	23.1

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 %
	62.5	142.94	0.8	335	52	87	95	1.3	6.0		19.37	**99.1**
	65	144.55	0.81	334	52	87	95	1.35	6.5		19.48	**95.5**
10	67.5	146.24	0.78	334	52	87	95	1.3	6.5		19.11	**99.6**
	70	147.91	0.77	334	52	87	95	1.25	6.5		18.99	**100.3**
	72.5	149.55	0.76	334	53	87	95	1.25	6.5		18.87	**99.1**
11	75	151.17	0.66	333	53	88	95	1.05	6.0		17.57	**98.5**
	77.5	152.69	0.67	333	53	88	95	1.05	6.0		17.70	**99.0**
	80	154.18	0.7	333	54	88	95	1.1	6.5		18.09	**96.3**
12	82.5	155.70	0.68	333	54	88	95	1.05	6.5		17.83	**96.1**
	85	157.22	0.67	333	54	88	95	1.05	6.5		17.70	**97.5**
	87.5	158.75	0.71	333	54	88	95	1.1	7.0		18.22	**98.9**
	90	160.26										**94.8**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 2
Test No.:	3 - SVOC
Date:	May 26, 2017

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.982
NOZZLE DIAMETER	5.95 mm
DRY REF GAS VOLUME SAMPLED	2.947 m^3
AVGERGE ISOKINETICITY	97.9 %
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	167.2 °C
AVERAGE GAS MOISTURE BY VOLUME	15.4 %
AVERAGE GAS VELOCITY	17.90 m/s
BAROMETRIC PRESSURE (Station)	99.526 Kpa
STATIC PRESSURE	-0.573 Kpa
ABSOLUTE GAS PRESSURE	98.953 Kpa
OXYGEN CONCENTRATION	7.81 %
CARBON DIOXIDE CONCENTRATION	11.03 %
CARBON MONOXIDE CONCENTRATION	17.5 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.45 m^3/s
DRY REF GAS FLOWRATE	14.79 Rm^3/s
DRY ADJ GAS FLOWRATE	19.56 Rm^3/s
WET REF GAS FLOWRATE	17.49 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		2.947 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 Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 26, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	385.2		
Static Pressure	-2.300 "H_2O	**WCBDA (g)**	9.4		
Nozzle	0.2343 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%	7.81
CO2%	11.03
COppm	17.5

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 %
1	0	60.83	0.64	330	78	81	82	1	2.0		17.20	
	2.5	62.26	0.63	330	62	82	83	1	2.0		17.07	96.4
	5	63.71	0.63	330	58	82	83	1	2.0		17.07	98.3
2	7.5	65.10	0.65	330	57	82	85	1.05	2.0		17.34	94.2
	10	66.55	0.66	331	57	82	86	1.1	2.5		17.48	96.6
	12.5	68.03	0.67	331	56	82	86	1.1	2.5		17.61	97.9
3	15	69.51	0.7	331	55	82	87	1.15	3.0		18.00	97.1
	17.5	71.04	0.69	331	54	82	88	1.1	3.0		17.87	98.1
	20	72.55	0.71	331	54	83	88	1.2	3.0		18.13	97.5
4	22.5	74.11	0.7	332	53	83	89	1.15	3.0		18.01	99.2
	25	75.65	0.7	333	52	83	90	1.15	3.0		18.02	98.6
	27.5	77.18	0.71	333	52	83	90	1.15	3.0		18.15	97.9
5	30	78.71	0.71	333	52	84	91	1.15	3.0		18.15	97.2
	32.5	80.25	0.71	332	52	84	91	1.15	4.0		18.14	97.7
	35	81.78	0.68	333	52	84	92	1.15	4.0		17.76	97.0
6	37.5	83.30	0.7	333	52	85	92	1.15	4.0		18.02	98.4
	40	84.89	0.7	334	52	85	92	1.15	4.0		18.04	101.4
	42.5	86.40	0.69	334	52	85	93	1.15	4.0		17.91	96.3
7	45	87.93	0.79	333	52	85	93	1.3	5.0		19.15	98.2
	47.5	89.51	0.8	333	52	86	93	1.3	5.0		19.27	94.8
	50	91.15	0.77	333	52	86	94	1.25	5.0		18.90	97.7
8	52.5	92.77	0.8	333	52	86	94	1.3	5.0		19.27	98.2
	55	94.44	0.82	333	52	86	94	1.35	5.5		19.51	99.4
	57.5	96.12	0.82	333	53	87	95	1.35	5.5		19.51	98.7
9	60	97.80	0.86	333	53	87	95	1.4	6.0		19.98	98.6
	62.5	99.53	0.86	333	53	87	95	1.4	6.0		19.98	99.1
	65	101.27	0.87	334	53	87	95	1.4	6.0		20.11	99.7
10	67.5	102.99	0.85	334	53	87	95	1.4	6.0		19.87	98.0
	70	104.73	0.84	334	53	88	95	1.4	6.0		19.76	100.3
	72.5	106.42	0.84	334	54	88	95	1.4	6.0		19.76	98.0
11	75	108.12	0.73	332	54	88	95	1.2	5.5		18.39	98.5

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 26, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	385.2		
Static Pressure	-2.300 "H_2O	**WCBDA (g)**	9.4		
Nozzle	0.2343 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%	7.81
CO2%	11.03
COppm	17.5

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 %
	77.5	109.69	0.75	332	54	88	95	1.2	5.5		18.64	**97.4**
	80	111.25	0.76	333	55	88	96	1.25	6.0		18.78	**95.5**
12	82.5	112.85	0.71	333	55	88	96	1.15	6.0		18.15	**97.3**
	85	114.41	0.69	332	55	88	96	1.15	6.0		17.88	**98.1**
	87.5	115.98	0.72	332	56	88	96	1.15	6.0		18.27	**100.1**
	90	117.52								0.38		**96.1**
1	0	117.90	0.49	336	79	87	89	0.8	2.0		15.11	
	2.5	119.17	0.5	335	62	86	87	0.8	2.0		15.25	**97.0**
	5	120.45	0.52	335	57	86	88	0.85	3.0		15.55	**97.0**
2	7.5	121.74	0.57	334	55	86	89	0.95	3.5		16.27	**95.7**
	10	123.13	0.56	334	53	85	89	0.9	3.5		16.13	**98.4**
	12.5	124.48	0.56	334	53	85	89	0.9	3.5		16.13	**96.5**
3	15	125.82	0.58	334	53	85	90	1	4.0		16.42	**95.8**
	17.5	127.24	0.55	334	52	85	90	0.9	4.0		15.99	**99.7**
	20	128.61	0.56	334	52	85	90	0.9	4.0		16.13	**98.7**
4	22.5	129.97	0.55	334	53	85	91	0.9	4.5		15.99	**97.1**
	25	131.33	0.58	334	53	85	91	1	5.0		16.42	**97.9**
	27.5	132.75	0.57	334	53	85	91	1	5.0		16.27	**99.6**
5	30	134.18	0.55	334	52	85	91	0.9	5.0		15.99	**101.2**
	32.5	135.56	0.59	334	53	85	91	1	6.0		16.56	**99.4**
	35	136.99	0.58	334	53	85	91	1	6.0		16.42	**99.4**
6	37.5	138.42	0.59	335	53	85	91	1	6.0		16.57	**100.3**
	40	139.82	0.62	335	53	85	92	1	6.0		16.98	**97.4**
	42.5	141.30	0.62	335	53	85	92	1	6.0		16.98	**100.4**
7	45	142.74	0.62	335	53	86	92	1	6.0		16.98	**97.6**
	47.5	144.20	0.78	334	53	86	92	1.25	7.5		19.04	**98.9**
	50	145.85	0.79	334	52	86	93	1.25	7.5		19.16	**99.7**
8	52.5	147.39	0.77	333	52	86	93	1.25	8.0		18.90	**92.3**
	55	149.02	0.77	333	52	86	93	1.25	8.0		18.90	**98.9**
	57.5	150.58	0.79	334	52	86	93	1.3	9.5		19.16	**94.7**
9	60	152.23	0.79	334	52	86	94	1.3	9.5		19.16	**99.0**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	May 26, 2017	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0		
DGMCF	0.982	**Probe (mg)**	0		
Barometric Pressure	29.39 "Hg	**CWTR (g)**	385.2		
Static Pressure	-2.300 "H_2O	**WCBDA (g)**	9.4		
Nozzle	0.2343 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%	7.81
CO2%	11.03
COppm	17.5

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 %
	62.5	153.87	0.78	335	52	86	94	1.3	9.5		19.05	98.3
	65	155.51	0.78	334	53	87	94	1.3	9.5		19.04	99.0
10	67.5	157.15	0.78	334	52	87	94	1.3	9.5		19.04	98.8
	70	158.76	0.77	333	52	87	94	1.25	10.0		18.90	97.0
	72.5	160.38	0.77	333	53	87	94	1.25	10.0		18.90	98.2
11	75	161.99	0.67	331	53	87	94	1.05	9.0		17.61	97.5
	77.5	163.51	0.67	330	53	87	94	1.05	9.0		17.60	98.6
	80	165.02	0.67	331	54	87	95	1.05	9.0		17.61	97.8
12	82.5	166.53	0.68	331	55	87	95	1.05	9.0		17.74	97.8
	85	168.02	0.67	331	55	87	95	1.05	9.0		17.61	95.8
	87.5	169.53	0.7	332	55	87	95	1.1	10.0		18.01	97.8
	90	171.06										97.0

APPENDIX 28

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 May 23, 2017		Test No. 2 May 23, 2017		Test No. 3 May 23, 2017	
	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry
10:47	1.6		11:57	1.0		13:08	1.2	
10:48	1.9		11:58	1.2		13:09	0.4	
10:49	1.6		11:59	0.7		13:10	0.6	
10:50	1.8		12:00	1.2		13:11	1.2	
10:51	1.2		12:01	1.3		13:12	0.8	
10:52	1.5		12:02	1.2		13:13	0.9	
10:53	1.6		12:03	0.7		13:14	0.7	
10:54	1.5		12:04	0.8		13:15	0.2	
10:55	1.4		12:05	1.2		13:16	0.8	
10:56	2.1	1.6	12:06	1.1	1.1	13:17	0.6	0.7
10:57	1.3	1.6	12:07	0.9	1.0	13:18	1.4	0.8
10:58	1.7	1.6	12:08	1.5	1.1	13:19	1.0	0.8
10:59	1.8	1.6	12:09	1.6	1.2	13:20	0.4	0.8
11:00	1.7	1.6	12:10	1.0	1.1	13:21	0.4	0.7
11:01	1.4	1.6	12:11	1.1	1.1	13:22	1.1	0.8
11:02	1.7	1.6	12:12	1.0	1.1	13:23	0.7	0.7
11:03	1.5	1.6	12:13	0.9	1.1	13:24	0.9	0.8
11:04	1.2	1.6	12:14	1.3	1.2	13:25	1.2	0.9
11:05	1.1	1.5	12:15	0.9	1.1	13:26	1.1	0.9
11:06	1.7	1.5	12:16	1.4	1.1	13:27	0.9	0.9
11:07	1.7	1.5	12:17	0.7	1.1	13:28	0.7	0.8
11:08	1.7	1.5	12:18	1.0	1.1	13:29	1.1	0.9
11:09	1.4	1.5	12:19	1.1	1.0	13:30	1.0	0.9
11:10	1.5	1.5	12:20	1.0	1.0	13:31	0.5	0.9
11:11	0.9	1.4	12:21	0.9	1.0	13:32	0.9	0.9
11:12	1.5	1.4	12:22	0.6	1.0	13:33	1.2	0.9
11:13	1.8	1.4	12:23	0.8	1.0	13:34	0.4	0.9
11:14	1.3	1.4	12:24	0.9	0.9	13:35	0.7	0.8
11:15	1.8	1.5	12:25	1.1	0.9	13:36	0.4	0.8
11:16	1.2	1.5	12:26	0.7	0.9	13:37	0.8	0.8
11:17	1.5	1.4	12:27	0.3	0.8	13:38	1.4	0.8
11:18	1.5	1.4	12:28	0.9	0.8	13:39	0.4	0.8
11:19	1.9	1.5	12:29	1.1	0.8	13:40	0.9	0.8
11:20	1.8	1.5	12:30	0.4	0.8	13:41	1.8	0.9
11:21	1.5	1.6	12:31	1.0	0.8	13:42	1.1	0.9
11:22	1.3	1.6	12:32	0.7	0.8	13:43	1.2	0.9
11:23	1.2	1.5	12:33	1.0	0.8	13:44	0.3	0.9
11:24	1.3	1.5	12:34	0.8	0.8	13:45	0.5	0.9
11:25	1.5	1.5	12:35	0.5	0.7	13:46	0.8	0.9
11:26	1.2	1.5	12:36	0.6	0.7	13:47	0.9	0.9
11:27	0.8	1.4	12:37	0.4	0.7	13:48	1.0	0.9
11:28	1.2	1.4	12:38	1.0	0.8	13:49	0.9	0.9
11:29	1.4	1.3	12:39	0.8	0.7	13:50	0.6	0.9
11:30	0.8	1.2	12:40	0.8	0.8	13:51	0.9	0.8
11:31	1.1	1.2	12:41	0.7	0.7	13:52	0.8	0.8
11:32	1.1	1.2	12:42	0.8	0.8	13:53	0.8	0.7
11:33	1.6	1.2	12:43	1.0	0.8	13:54	0.7	0.8
11:34	0.9	1.2	12:44	1.0	0.8	13:55	0.8	0.8
11:35	1.3	1.1	12:45	0.5	0.8	13:56	1.1	0.8
11:36	1.1	1.1	12:46	0.9	0.8	13:57	0.6	0.8
11:37	1.2	1.2	12:47	0.6	0.8	13:58	0.6	0.8
11:38	1.5	1.2	12:48	0.7	0.8	13:59	0.9	0.8
11:39	1.3	1.2	12:49	1.3	0.8	14:00	1.0	0.8
11:40	1.4	1.3	12:50	1.1	0.9	14:01	1.1	0.8
11:41	1.1	1.3	12:51	0.9	0.9	14:02	0.9	0.8
11:42	1.4	1.3	12:52	1.1	0.9	14:03	0.8	0.8
11:43	1.1	1.2	12:53	0.9	0.9	14:04	1.0	0.9
11:44	1.1	1.3	12:54	1.0	0.9	14:05	1.2	0.9
11:45	0.7	1.2	12:55	1.1	1.0	14:06	0.9	0.9
11:46	1.5	1.2	12:56	0.9	1.0	14:07	0.9	0.9
11:47	0.8	1.2	12:57	1.0	1.0	14:08	1.2	1.0
Min	0.7	1.1	Min	0.3	0.7	Min	0.2	0.7
Max	2.1	1.6	Max	1.6	1.2	Max	1.8	1.0
Avg	1.4	1.4	Avg	0.9	0.9	Avg	0.9	0.8

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 BH Outlet
May 24, 2017

	Test No. 1		Test No. 2		Test No. 3	
	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry
11:42	0.7		12:51	1.1		13:58	1.0	
11:43	1.8		12:52	1.4		13:59	1.1	
11:44	1.1		12:53	1.3		14:00	1.1	
11:45	1.4		12:54	1.0		14:01	1.0	
11:46	1.3		12:55	1.0		14:02	1.2	
11:47	1.7		12:56	1.2		14:03	0.5	
11:48	1.0		12:57	1.2		14:04	0.9	
11:49	1.4		12:58	1.0		14:05	1.0	
11:50	1.2		12:59	1.1		14:06	1.3	
11:51	1.2	1.3	13:00	1.4	1.2	14:07	0.9	1.0
11:52	1.1	1.3	13:01	1.0	1.2	14:08	0.9	1.0
11:53	1.4	1.3	13:02	1.2	1.1	14:09	0.9	1.0
11:54	1.2	1.3	13:03	1.3	1.1	14:10	0.8	0.9
11:55	1.2	1.3	13:04	1.2	1.2	14:11	1.2	1.0
11:56	1.2	1.3	13:05	1.4	1.2	14:12	1.0	0.9
11:57	1.3	1.2	13:06	1.0	1.2	14:13	1.2	1.0
11:58	1.0	1.2	13:07	1.2	1.2	14:14	0.8	1.0
11:59	1.1	1.2	13:08	1.2	1.2	14:15	1.2	1.0
12:00	1.4	1.2	13:09	1.3	1.2	14:16	1.1	1.0
12:01	1.1	1.2	13:10	0.8	1.2	14:17	0.8	1.0
12:02	1.3	1.2	13:11	1.2	1.2	14:18	1.3	1.0
12:03	1.3	1.2	13:12	1.2	1.2	14:19	1.1	1.1
12:04	1.2	1.2	13:13	1.2	1.2	14:20	0.8	1.1
12:05	0.8	1.2	13:14	0.9	1.1	14:21	1.0	1.0
12:06	1.4	1.2	13:15	1.0	1.1	14:22	1.0	1.0
12:07	1.0	1.2	13:16	1.1	1.1	14:23	0.9	1.0
12:08	1.3	1.2	13:17	1.0	1.1	14:24	0.8	1.0
12:09	1.1	1.2	13:18	1.0	1.1	14:25	1.2	1.0
12:10	1.2	1.2	13:19	1.2	1.1	14:26	1.2	1.0
12:11	1.2	1.2	13:20	1.0	1.1	14:27	1.1	1.0
12:12	1.2	1.2	13:21	1.3	1.1	14:28	0.8	1.0
12:13	1.3	1.2	13:22	1.1	1.1	14:29	1.1	1.0
12:14	1.2	1.2	13:23	1.0	1.1	14:30	1.2	1.0
12:15	1.1	1.2	13:24	1.0	1.1	14:31	0.9	1.0
12:16	1.1	1.2	13:25	1.4	1.1	14:32	1.0	1.0
12:17	1.2	1.2	13:26	1.1	1.1	14:33	1.3	1.0
12:18	1.1	1.2	13:27	1.0	1.1	14:34	1.2	1.1
12:19	1.1	1.2	13:28	1.0	1.1	14:35	0.9	1.1
12:20	1.2	1.2	13:29	0.9	1.1	14:36	0.9	1.0
12:21	0.9	1.2	13:30	1.2	1.1	14:37	1.0	1.0
12:22	1.1	1.1	13:31	0.9	1.1	14:38	1.3	1.1
12:23	1.2	1.1	13:32	1.0	1.0	14:39	1.1	1.1
12:24	1.2	1.1	13:33	1.1	1.1	14:40	1.0	1.1
12:25	1.1	1.1	13:34	0.9	1.0	14:41	1.0	1.1
12:26	1.3	1.1	13:35	0.9	1.0	14:42	1.0	1.1
12:27	1.3	1.2	13:36	1.1	1.0	14:43	1.2	1.1
12:28	1.3	1.2	13:37	0.8	1.0	14:44	0.7	1.0
12:29	1.6	1.2	13:38	1.2	1.0	14:45	0.8	1.0
12:30	1.2	1.2	13:39	0.9	1.0	14:46	0.8	1.0
12:31	1.0	1.2	13:40	1.3	1.0	14:47	1.1	1.0
12:32	1.2	1.2	13:41	1.1	1.0	14:48	1.0	1.0
12:33	1.3	1.2	13:42	1.1	1.0	14:49	1.0	1.0
12:34	1.2	1.2	13:43	1.1	1.1	14:50	0.8	0.9
12:35	0.9	1.2	13:44	1.1	1.1	14:51	1.1	0.9
12:36	1.0	1.2	13:45	1.2	1.1	14:52	1.0	1.0
12:37	1.1	1.2	13:46	1.3	1.1	14:53	0.8	0.9
12:38	1.2	1.2	13:47	1.0	1.1	14:54	1.0	0.9
12:39	0.9	1.1	13:48	1.2	1.1	14:55	1.1	1.0
12:40	1.2	1.1	13:49	0.9	1.1	14:56	1.3	1.0
12:41	1.7	1.2	13:50	0.9	1.1	14:57	0.8	1.0
12:42	1.1	1.2	13:51	1.1	1.1	14:58	1.2	1.0
Min	0.7	1.1	Min	0.8	1.0	Min	0.5	0.9
Max	1.8	1.3	Max	1.4	1.2	Max	1.3	1.1
Avg	1.2	1.2	Avg	1.1	1.1	Avg	1.0	1.0

Covanta - Durham York Energy Centre

Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet

Test No. 1 May 23, 2017			Test No. 2 May 24, 2017			Test No. 3 May 24, 2017		
	THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg		THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
17:45	0.4		08:00	1.7		09:06	1.1	
17:46	0.8		08:01	1.4		09:07	0.4	
17:47	0.3		08:02	1.3		09:08	1.1	
17:48	0.6		08:03	0.9		09:09	1.0	
17:49	0.5		08:04	0.8		09:10	1.0	
17:50	0.4		08:05	0.2		09:11	0.7	
17:51	0.7		08:06	1.0		09:12	0.8	
17:52	0.8		08:07	1.7		09:13	0.9	
17:53	0.5		08:08	1.4		09:14	0.5	
17:54	0.7	0.6	08:09	0.6	1.1	09:15	0.8	0.8
17:55	0.5	0.6	08:10	0.8	1.0	09:16	1.0	0.8
17:56	0.5	0.6	08:11	1.6	1.0	09:17	1.3	0.9
17:57	0.5	0.6	08:12	1.3	1.0	09:18	0.7	0.9
17:58	0.5	0.6	08:13	1.0	1.0	09:19	0.7	0.8
17:59	0.8	0.6	08:14	0.9	1.1	09:20	1.1	0.8
18:00	0.9	0.6	08:15	0.9	1.1	09:21	0.7	0.8
18:01	0.7	0.6	08:16	1.3	1.1	09:22	1.2	0.9
18:02	0.7	0.6	08:17	0.5	1.0	09:23	0.5	0.9
18:03	0.7	0.7	08:18	1.0	1.0	09:24	0.9	0.9
18:04	0.4	0.6	08:19	0.7	1.0	09:25	1.1	0.9
18:05	0.5	0.6	08:20	1.0	1.0	09:26	0.7	0.9
18:06	0.8	0.6	08:21	1.0	1.0	09:27	0.3	0.8
18:07	0.7	0.7	08:22	0.9	0.9	09:28	0.6	0.8
18:08	0.2	0.6	08:23	1.1	0.9	09:29	0.9	0.8
18:09	1.0	0.7	08:24	0.9	0.9	09:30	0.7	0.8
18:10	0.8	0.6	08:25	1.0	0.9	09:31	0.9	0.8
18:11	0.8	0.7	08:26	0.7	0.9	09:32	1.0	0.8
18:12	0.7	0.7	08:27	1.0	0.9	09:33	0.9	0.8
18:13	0.5	0.6	08:28	0.8	0.9	09:34	0.9	0.8
18:14	0.7	0.7	08:29	1.1	1.0	09:35	0.7	0.8
18:15	0.7	0.7	08:30	0.3	0.9	09:36	0.8	0.8
18:16	0.3	0.6	08:31	1.0	0.9	09:37	0.9	0.8
18:17	0.9	0.7	08:32	1.0	0.9	09:38	1.0	0.9
18:18	0.5	0.7	08:33	0.9	0.9	09:39	0.6	0.8
18:19	0.7	0.6	08:34	0.7	0.9	09:40	1.1	0.9
18:20	0.5	0.6	08:35	0.4	0.8	09:41	1.1	0.9
18:21	0.5	0.6	08:36	1.0	0.8	09:42	1.0	0.9
18:22	0.5	0.6	08:37	0.8	0.8	09:43	1.1	0.9
18:23	0.9	0.6	08:38	0.6	0.8	09:44	1.0	0.9
18:24	0.5	0.6	08:39	0.7	0.7	09:45	0.8	0.9
18:25	0.7	0.6	08:40	1.4	0.9	09:46	1.0	1.0
18:26	0.8	0.6	08:41	1.2	0.9	09:47	1.1	1.0
18:27	0.6	0.6	08:42	0.6	0.8	09:48	0.9	1.0
18:28	0.3	0.6	08:43	0.8	0.8	09:49	0.5	1.0
18:29	0.5	0.6	08:44	1.0	0.9	09:50	1.0	0.9
18:30	0.4	0.6	08:45	0.9	0.9	09:51	1.1	0.9
18:31	0.8	0.6	08:46	0.9	0.9	09:52	1.1	1.0
18:32	0.3	0.6	08:47	1.1	0.9	09:53	0.6	0.9
18:33	0.6	0.6	08:48	0.8	0.9	09:54	0.7	0.9
18:34	0.4	0.5	08:49	1.1	1.0	09:55	1.1	0.9
18:35	0.5	0.5	08:50	0.6	0.9	09:56	0.8	0.9
18:36	0.6	0.5	08:51	0.7	0.8	09:57	0.9	0.9
18:37	0.5	0.5	08:52	0.7	0.9	09:58	0.7	0.9
18:38	0.7	0.5	08:53	1.1	0.9	09:59	0.7	0.9
18:39	0.8	0.6	08:54	1.1	0.9	10:00	1.0	0.9
18:40	0.9	0.6	08:55	0.4	0.8	10:01	1.0	0.9
18:41	1.0	0.6	08:56	0.7	0.8	10:02	0.9	0.8
18:42	1.0	0.7	08:57	0.7	0.8	10:03	0.5	0.8
18:43	0.9	0.7	08:58	1.1	0.8	10:04	0.5	0.8
18:44	0.8	0.8	08:59	0.4	0.7	10:05	0.9	0.8
18:45	0.8	0.8	09:00	0.7	0.8	10:06	0.8	0.8
Min	0.2	0.5	Min	0.2	0.7	Min	0.3	0.8
Max	1.0	0.8	Max	1.7	1.1	Max	1.3	1.0
Avg	0.6	0.6	Avg	0.9	0.9	Avg	0.9	0.9

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 BH Outlet
May 24, 2017

	Test No. 1		Test No. 2		Test No. 3	
	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg	THC - 1 min	THC - 10 min Avg
Time	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry	ppm, dry
15:00	1.9		16:05 2.4		17:10 1.2	
15:01	2.2		16:06 3.0		17:11 0.0	
15:02	2.3		16:07 3.8		17:12 1.3	
15:03	0.7		16:08 2.2		17:13 1.8	
15:04	3.5		16:09 3.3		17:14 0.7	
15:05	1.1		16:10 1.5		17:15 1.1	
15:06	0.9		16:11 2.5		17:16 1.2	
15:07	2.6		16:12 1.8		17:17 0.7	
15:08	1.2		16:13 2.2		17:18 1.1	
15:09	0.8	1.7	16:14 2.7	2.5	17:19 0.9	1.0
15:10	2.5	1.8	16:15 1.8	2.5	17:20 1.4	1.0
15:11	0.4	1.6	16:16 1.7	2.3	17:21 1.3	1.1
15:12	2.2	1.6	16:17 2.2	2.2	17:22 1.0	1.1
15:13	1.5	1.7	16:18 2.9	2.3	17:23 1.0	1.0
15:14	0.0	1.3	16:19 2.1	2.1	17:24 1.1	1.1
15:15	0.9	1.3	16:20 3.0	2.3	17:25 1.1	1.1
15:16	1.5	1.4	16:21 1.9	2.2	17:26 0.8	1.0
15:17	0.0	1.1	16:22 2.9	2.3	17:27 0.9	1.1
15:18	2.0	1.2	16:23 2.1	2.3	17:28 0.7	1.0
15:19	1.4	1.2	16:24 2.4	2.3	17:29 1.3	1.1
15:20	0.7	1.1	16:25 2.3	2.3	17:30 0.3	1.0
15:21	0.6	1.1	16:26 2.5	2.4	17:31 0.8	0.9
15:22	0.8	0.9	16:27 1.9	2.4	17:32 1.0	0.9
15:23	0.7	0.9	16:28 2.4	2.4	17:33 0.2	0.8
15:24	0.7	0.9	16:29 2.2	2.4	17:34 0.7	0.8
15:25	1.5	1.0	16:30 1.8	2.2	17:35 1.6	0.8
15:26	5.9	1.4	16:31 2.6	2.3	17:36 0.5	0.8
15:27	3.8	1.8	16:32 2.4	2.3	17:37 3.1	1.0
15:28	1.8	1.8	16:33 2.3	2.3	17:38 1.7	1.1
15:29	3.7	2.0	16:34 2.0	2.2	17:39 1.4	1.1
15:30	2.3	2.2	16:35 1.5	2.2	17:40 2.0	1.3
15:31	2.5	2.4	16:36 2.7	2.2	17:41 1.2	1.3
15:32	3.8	2.7	16:37 1.6	2.1	17:42 0.6	1.3
15:33	3.0	2.9	16:38 1.4	2.0	17:43 1.2	1.4
15:34	3.8	3.2	16:39 2.0	2.0	17:44 0.7	1.4
15:35	3.4	3.4	16:40 1.7	2.0	17:45 0.5	1.3
15:36	2.0	3.0	16:41 1.0	1.8	17:46 1.3	1.4
15:37	3.1	2.9	16:42 3.0	1.9	17:47 0.6	1.1
15:38	2.2	3.0	16:43 3.1	2.0	17:48 0.6	1.0
15:39	2.9	2.9	16:44 1.9	2.0	17:49 0.4	0.9
15:40	2.9	3.0	16:45 2.9	2.1	17:50 1.0	0.8
15:41	2.9	3.0	16:46 1.3	2.0	17:51 0.5	0.7
15:42	2.3	2.8	16:47 2.1	2.0	17:52 0.5	0.7
15:43	3.1	2.9	16:48 1.5	2.0	17:53 1.4	0.8
15:44	3.0	2.8	16:49 1.6	2.0	17:54 0.5	0.7
15:45	2.5	2.7	16:50 1.0	1.9	17:55 0.1	0.7
15:46	2.7	2.8	16:51 2.4	2.1	17:56 0.7	0.7
15:47	2.2	2.7	16:52 2.4	2.0	17:57 0.9	0.7
15:48	1.5	2.6	16:53 2.4	1.9	17:58 0.9	0.7
15:49	2.3	2.5	16:54 2.4	2.0	17:59 1.0	0.8
15:50	2.2	2.5	16:55 2.8	2.0	18:00 0.3	0.7
15:51	2.1	2.4	16:56 1.7	2.0	18:01 1.2	0.8
15:52	2.8	2.4	16:57 1.9	2.0	18:02 1.3	0.8
15:53	2.4	2.4	16:58 2.3	2.1	18:03 0.6	0.8
15:54	3.3	2.4	16:59 1.5	2.1	18:04 1.4	0.8
15:55	2.5	2.4	17:00 1.2	2.1	18:05 0.9	0.9
15:56	2.4	2.4	17:01 1.7	2.0	18:06 1.1	1.0
15:57	2.0	2.4	17:02 1.2	1.9	18:07 0.9	1.0
15:58	2.2	2.4	17:03 1.2	1.8	18:08 0.5	0.9
15:59	2.3	2.4	17:04 1.4	1.7	18:09 1.1	0.9
16:00	1.9	2.4	17:05 1.1	1.5	18:10 1.0	1.0
Min	0.0	0.9	Min 1.0	1.5	Min 0.0	0.7
Max	5.9	3.4	Max 3.8	2.5	Max 3.1	1.4
Avg	2.1	2.1	Avg 2.1	2.1	Avg 1.0	1.0

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APPENDIX 29

Dispersion Modelling Results
for the May 2017 Testing Program
(15 pages)

TECHNICAL MEMORANDUM

DATE August 11, 2017 **PROJECT No.** 1784320

TO Leon Brasowski
Covanta Energy

CC Anthony Ciccone

FROM Katherine Armstrong **EMAIL** ksarmstrong@golder.com

CALPUFF MODELLING FOR MAY 2017 VOLUNTARY SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

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 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 and Climate Change (MOECC) Point of Impingement (POI) standards listed in Schedule 3 of Ontario Regulation (O.Reg.) 419/05 as of 2011.

Condition 7, Testing, Monitoring and Auditing, of the current ECA requires annual source testing be completed at the DYEC for over 100 different contaminants. According to Schedule "E" Source Testing Procedures, of the ECA, 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 modelling results for the Voluntary May 2017 source testing program using the same CALPUFF model and other input data sets used in the ESDM Report, however, the results are compared to O.Reg. 419/05 limits currently in effect.

2.0 EMISSION RATES

Voluntary source testing was completed by Ortech Environmental in May 2017 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 MOECC 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

As part of the ECA application, the MOECC approved the use of the CALPUFF modelling software and CALMET meteorological data to demonstrate compliance with Ontario Regulation 419/05 Schedule 3 standards at the DYEC. As a result, the same modelling approach has been taken for this update. The following models and pre- and post-processors were used in the assessment:

- CALMET diagnostic meteorological model (v. 5.8, level 070623);
- CALPUFF dispersion model (v. 6.263, level 080827);
- CALPOST post processor (v. 6.221, Level 080724);
- BPIP building downwash pre processor (v. 04274);
- POSTUTIL post processor (v.1.64, Level 101025).

These model versions are consistent with those used in the original ESDM report. Dispersion Modelling inputs are described in the following subsections.

3.1 Model Domain

The CALPUFF Model domain used in this assessment is the same as the domain used in the previous Environmental Assessment (EA) and ESDM Report. It extends 40 km by 30 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.

3.2 Meteorology, Land Use and Terrain Data

The meteorology and terrain data used in this assessment is the same as the meteorology and terrain data used in the EA and ESDM Report.

3.3 Receptors

The receptors used in this assessment are the same as the receptors used in the ESDM Report. 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. 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 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 500m) and the grid size (250m), 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.

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 Point of Impingement (POI) limits based on an annual averaging period. 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. The flag MCHEM is set to 1 for model runs used to produce concentrations of particulate matter. This setting requires the input of monthly background ozone concentrations. The monthly background ozone data used

in the modelling of secondary particulate matter is consistent with that used in the EA and is summarised below in Table 1.

Table 1: Background Ozone Concentrations used for Chemical Transformation Modelling

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

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 ESDM report

3.9 Dispersion Modelling Options

The options used in the CALPUFF dispersion model are summarized in the Table 1. The model options used are 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 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*

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
MCHEM	1 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	1 (For SPM, PM_{10} and $PM_{2.5}$) 0 (All other Contaminants)	Chemical Transformation Scheme 0 = chemical transformation not modeled 1 = transformation rates computed internally (MESOPUFF II 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
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 shore line
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

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]	Exit velocity [m/s]	Exhaust Temperature [K]
STCK1	87.6 (No Change)	1.7 (No Change)	23.35 (UPDATED)	413.7 (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.

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. The resulting dispersion factors are presented in Table 4, below:

Table 4: Modelling Dispersion Factors

Averaging Period	10-min	½- hr	1-hr	24-hr	30-day	Annual
Dispersion Factor [µg/m³ per g/s]	31.46	22.89	19.07	1.01	0.11	0.03

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 Schedule 3 standards listed in O.Reg. 419/05 and in the case of $PM_{2.5}$ and PM_{10}, the MOECC AAQC.

The MOECC has recently updated the list of standards and guidelines for facilities to assess their emissions against, namely the Air Contaminants Benchmark (ACB) List, dated December 2016, 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 MOECC POI Limits'. Where applicable, predicted POI concentrations of Contaminants with No MOECC POI Limits were screened against the Benchmark 2 screening levels in the ACB List or the de minimus limit. For contaminants with No MOECC POI Limits whose predicted POI concentrations

The modelled concentrations of all compounds assessed were below their relevant MOECC 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 MOECC guidance document "Procedure for preparing an Emission Summary and Dispersion Modelling Report" (PIBs 3614e04, March 2017).

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 21% of the relevant limit.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for the DYEC was updated to reflect data obtained from Voluntary May 2017 source testing. A summary of the changes made to the modelling are provided in Table 5, below.

Table 5: ECA Concordance Table

Modelling Inputs	Changes from ESDM Report
Emission Rates	Updated to use May 2017 Source Testing Data. List of contaminants assessed expanded to include all contaminants for which source testing data was performed.
Model and Model Version	No Change
Meteorology and Terrain data	No Change
Receptors	No Change
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 updated to match EA.
Emission Summary Table	Updated to include new O.Reg. 419/05 standards introduced in 2016 and contaminants that were not included in the ESDM report but for which source testing data was available.

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.

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Principal

KSA/ADC/ng

https://golderassociates.sharepoint.com/sites/16154g/deliverables/1784320-tm-rev0 11aug2017 covanta updated modelling memo.docx

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 - May 2017 Source Testing Conditions	52.99	141	1.7	87.6	(680538, 4860346)	1 – methylnaphthalene	630-08-0	1.22E-07	1,24, annual	ST	Above-Average	100%
							1,1,2-Trichloroethane	7446-09-5	1.53E-05	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	N/A	6.25E-08	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	N/A	1.35E-07	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	N/A	4.51E-07	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	N/A	1.14E-07	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	N/A	1.08E-06	1,24, annual	ST	Above-Average	100%
							1,2-Dichloroethane	7439-92-1	1.51E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichloropropane	7440-43-9	1.51E-05	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	7439-97-6	2.04E-07	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	7664-39-3	7.54E-05	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	N/A	1.88E-06	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	7647-01-0	9.38E-07	1,24, annual	ST	Above-Average	100%
							1-Methylphenanthrene	7664-41-7	9.91E-08	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	10102-44-0	2.17E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,5-tetrachlorophenol	10102-44-1	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	N/A	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	7440-36-0	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	7440-38-2	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	7440-39-3	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	7440-41-7	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	18540-29-9	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	7440-47-3	3.13E-07	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	7440-48-4	5.27E-07	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	7440-02-0	3.29E-07	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	7440-22-4	3.13E-07	1,24, annual	ST	Above-Average	100%
							2-Butanone	7782-49-2	2.72E-05	1,24, annual	ST	Above-Average	100%
							2-Chloronaphthalene	7440-28-0	6.25E-08	1,24, annual	ST	Above-Average	100%
							2-Methylanthracene	7440-62-2	9.34E-08	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	7440-66-6	3.54E-07	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	95-50-1	3.13E-07	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-50-1	3.13E-07	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	95-94-3	3.13E-07	1,24, annual	ST	Above-Average	100%
							3-Methylchloranthene	120-82-1	3.13E-07	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	58-90-2	3.13E-07	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	88-06-2	5.55E-07	1,24, annual	ST	Above-Average	100%
							7,12-Dimethylbenz(a)anthracene	120-83-2	6.25E-08	1,24, annual	ST	Above-Average	100%
							9,10-Dimethylanthracene	87-86-5	9.38E-08	1,24, annual	ST	Above-Average	100%
							9-Methylphenanthrene	118-74-1	1.12E-07	1,24, annual	ST	Above-Average	100%
							Acenaphthene	608-93-5	6.25E-08	1,24, annual	ST	Above-Average	4%
							Acenaphthylene	208-96-8	8.62E-08	1,24, annual	ST	Above-Average	3%
							Acetaldehyde	83-32-9	4.90E-05	1,24, annual	ST	Above-Average	86%
							Acetone	120-12-7	1.55E-04	1,24, annual	ST	Above-Average	100%
							Acrolein	56-55-3	1.55E-04	1,24, annual	ST	Above-Average	98%
							Ammonia	205-99-2	3.31E-02	1,24, annual	ST	Above-Average	100%

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 [%]
							Anthracene	207-08-9	6.87E-08	1,24, annual	ST	Above-Average	15%
							Antimony	238-84-6	2.42E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	243-17-4	1.69E-06	1,24, annual	ST	Above-Average	100%
							Barium	191-24-2	9.84E-05	1,24, annual	ST	Above-Average	100%
							Benzene	50-32-8	9.01E-05	1,24, annual	ST	Above-Average	26%
							Benzo(a)anthracene	192-97-2	6.25E-08	1,24, annual	ST	Above-Average	23%
							Benzo(a)fluorene	92-51-3	6.25E-08	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	218-01-9	8.28E-08	1,24, annual	ST	Above-Average	50%
							Benzo(b)fluoranthene	215-58-7	6.74E-08	1,24, annual	ST	Above-Average	16%
							Benzo(b)fluorene	53-70-3	6.25E-08	1,24, annual	ST	Above-Average	100%
							Benzo(e)pyrene	206-44-0	2.99E-07	1,24, annual	ST	Above-Average	100%
							Benzo(g,h,i)perylene	86-73-7	1.25E-06	1,24, annual	ST	Above-Average	100%
							Benzo(k)fluoranthene	193-39-5	1.02E-07	1,24, annual	ST	Above-Average	59%
							Beryllium	90-12-0	1.69E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	91-57-6	1.28E-06	1,24, annual	ST	Above-Average	100%
							Bromodichloromethane	91-20-3	1.51E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	198-55-0	1.51E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	85-01-8	1.36E-04	1,24, annual	ST	Above-Average	100%
							Cadmium	129-00-0	3.65E-06	1,24, annual	ST	Above-Average	100%
							Carbon Monoxide	119-64-2	5.68E-01	1,24, annual	ST	Above-Average	69%
							Carbon tetrachloride	84-15-1	1.51E-05	1,24, annual	ST	Above-Average	100%
							Chlorobenzene	75-07-0	1.29E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	71-43-2	1.67E-05	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	75-27-4	3.87E-05	1,24, annual	ST	Above-Average	100%
							Chrysene	75-25-2	6.25E-08	1,24, annual	ST	Above-Average	11%
							Cobalt	74-83-9	6.74E-06	1,24, annual	ST	Above-Average	100%
							Copper	56-23-5	3.65E-05	1,24, annual	ST	Above-Average	100%
							Coronene	67-66-3	9.36E-07	1,24, annual	ST	Above-Average	100%
							Cumene (Isopropylbenzene)	75-71-8	3.02E-05	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,c)anthracene	75-34-3	6.25E-08	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,e)pyrene	75-09-2	3.13E-07	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	100-41-4	6.25E-08	1,24, annual	ST	Above-Average	36%
							Dibromochloromethane	106-93-4	1.51E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	50-00-0	7.54E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	127-18-4	1.51E-05	1,24, annual	ST	Above-Average	100%
							Dichloromethane	108-88-3	1.62E-04	1,24, annual	ST	Above-Average	100%
							Dioxins, Furans and Dioxin- like PCBs	71-55-6	2.30E-10	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	86-42-0	1.51E-05	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	79-01-6	3.02E-05	1,24, annual	ST	Above-Average	100%
							Fluoranthene	75-69-4	3.03E-07	1,24, annual	ST	Above-Average	19%
							Fluorides	75-01-4	5.06E-03	1,24, annual	ST	Above-Average	100%
							Fluorine	1330-20-7	1.42E-07	1,24, annual	ST	Above-Average	100%
							Formaldehyde	7440-50-8	1.99E-04	1,24, annual	ST	Above-Average	89%
							Hexachlorobenzene	7439-96-5	6.25E-08	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7439-98-7	1.52E-01	1,24, annual	ST	Above-Average	100%
							Indeno(1,2,3 – cd)pyrene	541-73-1	1.77E-07	1,24, annual	ST	Above-Average	57%
							Lead	106-46-7	1.07E-05	1,24, annual	ST	Above-Average	100%

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 [%]
							M&P-Xylene	108-70-3	4.52E-05	1,24, annual	ST	Above-Average	100%
							Manganese	87-61-6	2.90E-05	1,24, annual	ST	Above-Average	100%
							Mercury	634-66-2	4.92E-06	1,24, annual	ST	Above-Average	100%
							Mesitylene (1,3,5-Trimethylbenzene)	95-57-8	3.02E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	108-43-0	1.59E-04	1,24, annual	ST	Above-Average	100%
							m-Terphenyl	106-48-9	2.80E-07	1,24, annual	ST	Above-Average	100%
							Naphthalene	87-65-0	7.80E-07	1,24, annual	ST	Above-Average	2%
							Nickel	591-35-5	5.19E-05	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	576-24-9	4.33E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	95-77-2	4.33E+00	1,24, annual	ST	Above-Average	44%
							O-terphenyl	933-75-5	6.96E-08	1,24, annual	ST	Above-Average	100%
							O-Xylene	933-78-8	1.51E-05	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	95-95-4	7.36E-08	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	15950-66-0	3.13E-07	1,24, annual	ST	Above-Average	100%
							Perylene	609-19-8	6.25E-08	1,24, annual	ST	Above-Average	100%
							Phenanthrene	935-95-5	7.50E-07	1,24, annual	ST	Above-Average	5%
							Picene	4901-51-3	3.13E-07	1,24, annual	ST	Above-Average	100%
							PM10 (Condensable and Filterable)	91-58-7	1.86E-01	1,24, annual	ST	Above-Average	100%
							PM10 (Filterable Only)	191-07-1	1.95E-02	1,24, annual	ST	Above-Average	100%
							PM2.5 (Condensable and Filterable)	192-65-4	1.81E-01	1,24, annual	ST	Above-Average	100%
							PM2.5 (Filterable Only)	781-43-1	1.36E-02	1,24, annual	ST	Above-Average	100%
							Polychlorinated Biphenyls (PCB)	57-97-6	2.30E-10	1,24, annual	ST	Above-Average	100%
							p-Terphenyl	613-12-7	3.10E-07	1,24, annual	ST	Above-Average	100%
							Pyrene	56-49-5	5.40E-07	1,24, annual	ST	Above-Average	31%
							Selenium	832-69-9	8.43E-06	1,24, annual	ST	Above-Average	100%
							Silver	883-20-5	1.69E-06	1,24, annual	ST	Above-Average	100%
							Styrene	213-46-7	3.02E-05	1,24, annual	ST	Above-Average	100%
							Sulphur Dioxide	92-06-8	6.00E-02	1,24, annual	ST	Above-Average	76%
							Tetrachloroethene	92-94-4	2.66E-05	1,24, annual	ST	Above-Average	100%
							Tetralin	217-59-4	9.74E-07	1,24, annual	ST	Above-Average	100%
							Thallium	67-64-1	1.69E-06	1,24, annual	ST	Above-Average	100%
							Toluene	106-99-0	1.54E-04	1,24, annual	ST	Above-Average	63%
							Total Chromium (and compounds)	78-93-3	3.87E-05	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Condensable and Filterable)	108-90-7	2.09E-01	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable Only)	98-82-8	4.25E-02	1,24, annual	ST	Above-Average	100%
							trans,1,2-Dichloroethene	124-48-1	1.51E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethane, 1,1,1 -	107-06-2	1.51E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	156-60-5	1.53E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	78-87-5	2.66E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	108-67-8	3.02E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	100-42-5	7.54E-05	1,24, annual	ST	Above-Average	100%
							Triphenylene	79-00-5	6.25E-08	1,24, annual	ST	Above-Average	100%
							Vanadium	76-13-1	8.43E-07	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	179601-23-1	3.02E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	95-47-6	6.03E-05	1,24, annual	ST	Above-Average	49%
							Zinc	107-02-8	1.39E-04	1,24, annual	ST	Above-Average	100%

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	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	4.8768	(680513,4860332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	3.9624	(680517,4860333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
		0.31	Ambient	0.10	12.4	(680537,4860391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	14%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	17%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	17%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	31%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	11%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	24%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	43%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	100%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	30%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	30%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	74%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	37%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	51%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	11%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	14%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	2%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	98%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	97%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	96%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	100%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	95%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	85%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	81%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	69%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	77%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	89%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	84%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	41%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	50%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	43%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	64%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	100%

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration [µg/m³]	Averaging Period	MOECC POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MOECC Limit [%]	Notes	Version of Date of ACB List
1 – methylnaphthalene	90-12-0	1.22E-07	Calpuff	1.24E-07	24-hour	12	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
1,2,4 – Trichlorobenzene	120-82-1	4.51E-07	Calpuff	4.57E-07	24-hour	400	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
1,2,4,5-Tetrachlorobenzene	95-94-3	1.14E-07	Calpuff	1.16E-07	24-hour	1	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
1,2-Dichlorobenzene	95-50-1	1.08E-06	Calpuff	2.06E-05	1-hour	30500	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
2 – methylnaphthalene	91-57-6	2.17E-07	Calpuff	2.20E-07	24-hour	10	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
2,3,4,6-Tetrachlorophenol	58-90-2	3.13E-07	Calpuff	3.17E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
2,4,6-Trichlorophenol	88-06-2	5.27E-07	Calpuff	5.34E-07	24-hour	1.5	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
2,4-Dichlorophenol	120-83-2	3.29E-07	Calpuff	3.34E-07	24-hour	77	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
3-Methylchloranthene	56-49-5	3.13E-07	Calpuff	3.17E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
7,12-Dimethylbenz(a)anthracene	57-97-6	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Acenaphthene	83-32-9	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Acenaphthylene	208-96-8	8.62E-08	Calpuff	8.74E-08	24-hour	3.5	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Acetaldehyde	75-07-0	4.90E-05	Calpuff	4.97E-05	24-hour	500	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Acetaldehyde	75-07-0	4.90E-05	Calpuff	1.12E-03	1/2-hour	500	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Acetaldehyde	75-07-0	4.90E-05	Calpuff	4.97E-05	24-hour	5000	—	Sch. 6	URT	—	<1%		
Acrolein	107-02-8	1.55E-04	Calpuff	1.57E-04	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Acrolein	107-02-8	1.55E-04	Calpuff	2.96E-03	1-hour	4.5	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Acrolein	107-02-8	1.55E-04	Calpuff	1.57E-04	24-hour	4	—	Sch. 6	URT	—	<1%		
Ammonia	7664-41-7	3.31E-02	Calpuff	3.36E-02	24-hour	100	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Ammonia	7664-41-7	3.31E-02	Calpuff	3.36E-02	24-hour	1000	—	Sch. 6	URT	—	<1%		
Anthracene	120-12-7	6.87E-08	Calpuff	6.97E-08	24-hour	0.2	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Antimony	7440-36-0	2.42E-06	Calpuff	2.46E-06	24-hour	25	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Arsenic	7440-38-2	1.69E-06	Calpuff	1.71E-06	24-hour	0.3	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Barium	7440-39-3	9.84E-05	Calpuff	9.99E-05	24-hour	10	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Benzene	71-43-2	9.01E-05	Calpuff	2.83E-06	Annual	0.45	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 19, Table 2, 3, URT - Note 4, Table 4)	13/12/2016
Benzene	71-43-2	9.01E-05	Calpuff	9.14E-05	24-hour	100	—	Sch. 6	URT	—	<1%		
Benzene	71-43-2	9.01E-05	Calpuff	9.14E-05	24-hour	4.5	—	—	AAV	—	<1%		
Benzo(a)anthracene	56-55-3	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Benzo(a)fluorene	238-84-6	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Benzo(a)pyrene	50-32-8	8.28E-08	Calpuff	2.60E-09	Annual	0.00001	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 7, 19, Table 2, 3, URT - Note 4, Table 4)	13/12/2016
Benzo(a)pyrene	50-32-8	8.28E-08	Calpuff	8.40E-08	24-hour	0.005	—	Sch. 6	URT	—	<1%		
Benzo(a)pyrene	50-32-8	8.28E-08	Calpuff	8.40E-08	24-hour	0.0001	—	—	AAV	—	<1%		
Benzo(b)fluoranthene	205-99-2	6.74E-08	Calpuff	6.84E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Benzo(b)fluorene	243-17-4	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Benzo(e)pyrene	192-97-2	2.99E-07	Calpuff	3.03E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
Benzo(g,h,i)perylene	191-24-2	1.25E-06	Calpuff	1.27E-06	24-hour	1.2	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Benzo(k)fluoranthene	207-08-9	1.02E-07	Calpuff	1.03E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
Beryllium	7440-41-7	1.69E-06	Calpuff	1.71E-06	24-hour	0.01	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Biphenyl	92-51-3	1.28E-06	Calpuff	1.30E-06	24-hour	0.1	—	—	De Minimus	—	<1%		
Bromodichloromethane	75-27-4	1.51E-05	Calpuff	1.53E-05	24-hour	0.01	—	—	De Minimus	—	<1%		
Bromoform	75-25-2	1.51E-05	Calpuff	1.53E-05	24-hour	55	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Bromomethane	74-83-9	1.36E-04	Calpuff	1.38E-04	24-hour	1350	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Cadmium	7440-43-9	3.65E-06	Calpuff	3.70E-06	24-hour	0.025	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Cadmium	7440-43-9	3.65E-06	Calpuff	3.70E-06	24-hour	0.25	—	Sch. 6	URT	—	<1%		
Carbon Monoxide	630-08-0	5.68E-01	Calpuff	1.30E+01	1/2-hour	6000	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 9)	13/12/2016
Carbon tetrachloride	56-23-5	1.51E-05	Calpuff	1.53E-05	24-hour	2.4	Health	Sch. 3	Standard	B1	<1%	ACB List (Note URT - Note 4, Table 4)	13/12/2016
Carbon tetrachloride	56-23-5	1.51E-05	Calpuff	1.53E-05	24-hour	24	—	Sch. 6	URT	—	<1%		
Chloroform	67-66-3	1.67E-05	Calpuff	1.70E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Chloroform	67-66-3	1.67E-05	Calpuff	1.70E-05	24-hour	100	—	Sch. 6	URT	—	<1%		
Chromium (hexavalent)	18540-29-9	3.87E-05	Calpuff	3.93E-05	24-hour	0.1	—	—	De Minimus	—	<1%		
Chrysene	218-01-9	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Cobalt	7440-48-4	6.74E-06	Calpuff	6.83E-06	24-hour	0.1	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Copper	7440-50-8	3.65E-05	Calpuff	3.70E-05	24-hour	50	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Dibenzo(a,c)anthracene	215-58-7	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Dibenzo(a,h)anthracene	53-70-3	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Dichlorodifluoromethane	75-71-8	7.54E-05	Calpuff	7.65E-05	24-hour	500000	Health	Sch. 3	Guideline	B1	<1%	ACB List (Note 10)	13/12/2016

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration [µg/m³]	Averaging Period	MOECC POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MOECC Limit [%]	Notes	Version of Date of ACB List
Dichloroethene, 1,1 -	75-34-3	1.51E-05	Calpuff	1.53E-05	24-hour	165	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Dichloroethene, 1,1 -	75-34-3	1.51E-05	Calpuff	1.53E-05	24-hour	1650	—	Sch. 6	URT	—	<1%		
Dichloromethane	75-09-2	1.62E-04	Calpuff	1.64E-04	24-hour	220	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Dichloromethane	75-09-2	1.62E-04	Calpuff	1.64E-04	24-hour	22000	—	Sch. 6	URT	—	<1%		
Dioxins, Furans and Dioxin- like PCBs	N/A	2.30E-10	Calpuff	2.33E-10	24-hour	0.0000001	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 8, 8a, Table 1, URT - Note 4, Table 4)	13/12/2016
Ethylbenzene	100-41-4	1.51E-05	Calpuff	1.53E-05	24-hour	1000	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Ethylbenzene	100-41-4	1.51E-05	Calpuff	4.74E-04	10-minute	1900	Odour	Sch. 3	Guideline	B1	<1%	ACB List (Note 2, 3)	13/12/2016
Ethylbenzene	100-41-4	1.51E-05	Calpuff	1.53E-05	24-hour	10000	—	Sch. 6	URT	—	<1%		
Ethylene Dibromide	106-93-4	3.02E-05	Calpuff	3.06E-05	24-hour	3	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Fluoranthene	206-44-0	3.03E-07	Calpuff	3.07E-07	24-hour	140	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Fluorides	7664-39-3	5.06E-03	Calpuff	5.13E-03	24-hour	0.86	Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2, 20)	13/12/2016
Fluorides	7664-39-3	5.06E-03	Calpuff	5.75E-04	30-day	0.34	Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2, 20)	13/12/2016
Fluorides	7664-39-3	5.06E-03	Calpuff	5.13E-03	24-hour	1.72	Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2, 20)	13/12/2016
Fluorides	7664-39-3	5.06E-03	Calpuff	5.75E-04	30-day	0.69	Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2, 20)	13/12/2016
Fluorides	7664-39-3	5.06E-03	Calpuff	5.13E-03	24-hour	3.44	Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2, 20)	13/12/2016
Fluorides	7664-39-3	5.06E-03	Calpuff	5.75E-04	30-day	1.38	Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2, 20)	13/12/2016
Fluorine	86-73-7	1.42E-07	Calpuff	1.44E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
Formaldehyde	50-00-0	1.99E-04	Calpuff	2.02E-04	24-hour	65	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Hexachlorobenzene	118-74-1	6.25E-08	Calpuff	6.34E-08	24-hour	0.011	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Hexachlorobenzene	118-74-1	6.25E-08	Calpuff	6.34E-08	24-hour	0.01	—	—	De Minimus	—	<1%		
Hydrogen Chloride	7647-01-0	1.52E-01	Calpuff	1.54E-01	24-hour	20	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Hydrogen Chloride	7647-01-0	1.52E-01	Calpuff	1.54E-01	24-hour	200	—	Sch. 6	URT	—	<1%		
Indeno(1,2,3 – cd)pyrene	193-39-5	1.77E-07	Calpuff	1.80E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
Lead	7439-92-1	1.07E-05	Calpuff	1.09E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Lead	7439-92-1	1.07E-05	Calpuff	1.22E-06	30-day	0.2	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Lead	7439-92-1	1.07E-05	Calpuff	1.09E-05	24-hour	2	—	Sch. 6	URT	—	<1%		
Manganese	7439-96-5	2.90E-05	Calpuff	2.94E-05	24-hour	0.4	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Manganese	7439-96-5	2.90E-05	Calpuff	2.94E-05	24-hour	4	—	Sch. 6	URT	—	<1%		
Mercury	7439-97-6	4.92E-06	Calpuff	4.99E-06	24-hour	2	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Molybdenum	7439-98-7	1.59E-04	Calpuff	1.62E-04	24-hour	120	Particulate	Sch. 3	Guideline	B1	<1%		13/12/2016
Naphthalene	91-20-3	7.80E-07	Calpuff	7.91E-07	24-hour	22.5	Health	Sch. 3	Guideline	B1	<1%	ACB List (Note 2, 3)	13/12/2016
Naphthalene	91-20-3	7.80E-07	Calpuff	2.45E-05	10-minute	50	Odour	Sch. 3	Guideline	B1	<1%	ACB List (Note 2, 3)	13/12/2016
Nickel	7440-02-0	5.19E-05	Calpuff	1.63E-06	Annual	0.04	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 19, Table 2, 3, URT - Note 4, Table 4)	13/12/2016
Nickel	7440-02-0	5.19E-05	Calpuff	5.27E-05	24-hour	2	—	Sch. 6	URT	—	<1%		
Nickel	7440-02-0	5.19E-05	Calpuff	5.27E-05	24-hour	0.4	—	—	AAV	—	<1%		
Nitrogen Oxides	10102-44-0	4.33E+00	Calpuff	4.39E+00	24-hour	200	Health	Sch. 3	Standard	B1	<1%	ACB List (Notes 2, 17)	13/12/2016
Nitrogen Oxides	10102-44-0	4.33E+00	Calpuff	8.25E+01	1-hour	400	Health	Sch. 3	Standard	B1	21%	ACB List (Notes 2, 17)	13/12/2016
O-terphenyl	84-15-1	6.96E-08	Calpuff	7.06E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
PM_{10} (Condensable and Filterable)	N/A	1.86E-01	Calpuff	0.44	24-hour	50	—	—	AAQC	—	<1%		
PM_{10} (Filterable Only)	N/A	1.95E-02	Calpuff	0.27	24-hour	50	—	—	AAQC	—	<1%		
$PM_{2.5}$ (Condensable and Filterable)	N/A	1.81E-01	Calpuff	0.43	24-hour	30	—	—	AAQC	—	<1%		
$PM_{2.5}$ (Filterable Only)	N/A	1.36E-02	Calpuff	0.26	24-hour	30	—	—	AAQC	—	<1%		
Pentachlorobenzene	608-93-5	7.36E-08	Calpuff	7.46E-08	24-hour	3	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Pentachlorophenol	87-86-5	3.13E-07	Calpuff	3.17E-07	24-hour	20	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Perylene	198-55-0	6.25E-08	Calpuff	6.34E-08	24-hour	0.1	—	—	De Minimus	—	<1%		
Phenanthrene	85-01-8	7.50E-07	Calpuff	7.61E-07	24-hour	0.1	—	—	De Minimus	—	<1%		
Pyrene	129-00-0	5.40E-07	Calpuff	5.48E-07	24-hour	0.2	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Selenium	7782-49-2	8.43E-06	Calpuff	8.55E-06	24-hour	10	Health	Sch. 3	Guideline	B1	<1%		13/12/2016
Silver	7440-22-4	1.69E-06	Calpuff	1.71E-06	24-hour	1	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Sulphur Dioxide	7446-09-5	6.00E-02	Calpuff	6.08E-02	24-hour	275	Health & Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2)	13/12/2016
Sulphur Dioxide	7446-09-5	6.00E-02	Calpuff	1.14E+00	1-hour	690	Health & Vegetation	Sch. 3	Standard	B1	<1%	ACB List (Note 2)	13/12/2016
Tetrachloroethene	127-18-4	2.66E-05	Calpuff	2.70E-05	24-hour	360	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Tetrachloroethene	127-18-4	2.66E-05	Calpuff	2.70E-05	24-hour	3600	—	Sch. 6	URT	—	<1%		
Tetralin	119-64-2	9.74E-07	Calpuff	9.87E-07	24-hour	1200	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016

Appendix B
Emission Summary Table

Contaminant	CAS No.	Total Facility Emission Rate [g/s]	Air Dispersion Model Used	Maximum POI Concentration [µg/m³]	Averaging Period	MOECC POI Limit [µg/m³]	Limiting Effect	Schedule	Source	Benchmark	Percentage of MOECC Limit [%]	Notes	Version of Date of ACB List
Thallium	7440-28-0	1.69E-06	Calpuff	1.71E-06	24-hour	0.24	Health	Sch. 3	SL-JSL	B2	<1%		13/12/2016
Toluene	108-88-3	1.54E-04	Calpuff	1.56E-04	24-hour	2000	Odour	Sch. 3	Guideline	B1	<1%	ACB List (To be updated - Note 5)	13/12/2016
Total Chromium (and compounds)	7440-47-3	3.87E-05	Calpuff	1.21E-06	Annual	0.00014	Health	Sch. 3	Standard	B1	<1%	ACB List (Notes 11, 19, Table 2, 3, URT - Note 4, Table 4)	13/12/2016
Total Chromium (and compounds)	7440-47-3	3.87E-05	Calpuff	3.93E-05	24-hour	0.5	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 11a, URT - Note 4, Table 4)	13/12/2016
Total Chromium (and compounds)	7440-47-3	3.87E-05	Calpuff	3.93E-05	24-hour	5	—	Sch. 6	URT	—	<1%		
Total Chromium (and compounds)	7440-47-3	3.87E-05	Calpuff	3.93E-05	24-hour	0.07	—	Sch. 6	URT	—	<1%		
Total Chromium (and compounds)	7440-47-3	3.87E-05	Calpuff	3.93E-05	24-hour	0.0014	—	—	AAV	—	<1%		
Total Particulate Matter (Condensable and Filterable)	N/A	2.09E-01	Calpuff	0.46	24-hour	120	Visibility	Sch. 3	Standard	B1	<1%		13/12/2016
Total Particulate Matter (Filterable only)	N/A	4.25E-02	Calpuff	0.29	24-hour	120	Visibility	Sch. 3	Standard	B1	<1%		
Trichloroethane, 1,1,1 -	71-55-6	1.51E-05	Calpuff	1.53E-05	24-hour	115000	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Trichloroethene	86-42-0	1.53E-05	Calpuff	1.55E-05	24-hour	0.1	—	—	De Minimus	—	<1%		
Trichloroethylene, 1,1,2 -	79-01-6	2.66E-05	Calpuff	2.70E-05	24-hour	12	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Trichloroethylene, 1,1,2 -	79-01-6	2.66E-05	Calpuff	2.70E-05	24-hour	1200	—	Sch. 6	URT	—	<1%		
Trichlorofluoromethane	75-69-4	3.02E-05	Calpuff	3.06E-05	24-hour	6000	Health	Sch. 3	Guideline	B1	<1%	ACB List (Note 10)	13/12/2016
Vanadium	7440-62-2	8.43E-07	Calpuff	8.55E-07	24-hour	2	Health	Sch. 3	Standard	B1	<1%		13/12/2016
Vinyl chloride	75-01-4	3.02E-05	Calpuff	3.06E-05	24-hour	1	Health	Sch. 3	Standard	B1	<1%	ACB List (URT - Note 4, Table 4)	13/12/2016
Vinyl chloride	75-01-4	3.02E-05	Calpuff	3.06E-05	24-hour	100	—	Sch. 6	URT	—	<1%		
Xylenes, m-, p- and o-	1330-20-7	6.03E-05	Calpuff	6.12E-05	24-hour	730	Health	Sch. 3	Standard	B1	<1%	ACB List (Note 2, URT - Note 4, Table 4)	13/12/2016
Xylenes, m-, p- and o-	1330-20-7	6.03E-05	Calpuff	1.90E-03	10-minute	3000	Odour	Sch. 3	Guideline	B1	<1%	ACB List (Note 2, 3)	13/12/2016
Xylenes, m-, p- and o-	1330-20-7	6.03E-05	Calpuff	6.12E-05	24-hour	7300	—	Sch. 6	URT	—	<1%		
Zinc	7440-66-6	1.39E-04	Calpuff	1.41E-04	24-hour	120	Particulate	Sch. 3	Standard	B1	<1%		13/12/2016

APPENDIX 30

DYEC CEMS 1-Hour Average Data
(4 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet											Scrubber Inlet
		O_2	CO_2	CO		SO_2		NOx		HCl		THC	O_2
		%	kg/m^3	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	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
23-May-17	6:00	8.87	0.19	10		0		119		2		0	8
23-May-17	7:00	8.61	0.19	9		0		123		2		0	8
23-May-17	8:00	8.39	0.19	11		0		112		2		0	8
23-May-17	9:00	8.34	0.20	16	11.5	0		106		2		0	8
23-May-17	10:00	8.68	0.19	15	12.8	0		103		2		0	8
23-May-17	11:00	8.20	0.20	12	13.5	0		110		2		0	8
23-May-17	12:00	8.48	0.19	10	13.3	0		106		2		0	8
23-May-17	13:00	8.66	0.19	8	11.3	0		105		2		0	8
23-May-17	14:00	8.33	0.20	11	10.3	0		110		2		0	8
23-May-17	15:00	8.47	0.19	14	10.8	0		112		2		0	8
23-May-17	16:00	8.44	0.19	15	12.0	0		111		2		0	8
23-May-17	17:00	8.51	0.19	16	14.0	0		102		2		0	8
23-May-17	18:00	8.59	0.19	13	14.5	0		107		2		0	8
23-May-17	19:00	8.57	0.19	14	14.5	0		109		2		0	8
23-May-17	20:00	9.37	0.18	14	14.3	0		98		2		0	9
23-May-17	21:00	9.35	0.18	17	14.5	0		117		2		0	9
23-May-17	22:00	8.91	0.19	13	14.5	0		115		2		0	8
23-May-17	23:00	8.69	0.19	11	13.8	0		101		2		0	8
24-May-17	0:00	8.43	0.19	12	13.3	0		112		2		0	8
24-May-17	1:00	8.78	0.19	15	12.8	0		110		2		0	8
24-May-17	2:00	8.81	0.19	14	13.0	0		103		2		0	8
24-May-17	3:00	9.09	0.18	12	13.3	0		108		2		0	9
24-May-17	4:00	9.09	0.18	12	13.3	0		120		2		0	9
24-May-17	5:00	9.07	0.18	12	12.5	0	0.0	124	110	2	2.0	0	9
24-May-17	6:00	9.02	0.18	13	12.3	0	0.0	102	109	2	2.0	0	9
24-May-17	7:00	8.62	0.19	13	12.5	0	0.0	133	110	2	2.0	0	8
24-May-17	8:00	8.66	0.19	12	12.5	0	0.0	108	110	2	2.0	0	8
24-May-17	9:00	8.65	0.19	12	12.5	0	0.0	110	110	2	2.0	0	8
24-May-17	10:00	8.47	0.19	16	13.3	0	0.0	112	110	2	2.0	0	8
24-May-17	11:00	8.64	0.19	13	13.3	0	0.0	92	109	2	2.0	0	8
24-May-17	12:00	8.54	0.19	9	12.5	0	0.0	109	110	2	2.0	0	8
24-May-17	13:00	8.61	0.19	9	11.8	0	0.0	111	110	2	2.0	0	8
24-May-17	14:00	8.62	0.19	10	10.3	0	0.0	105	110	2	2.0	0	8
24-May-17	15:00	8.48	0.19	10	9.5	0	0.0	109	110	2	2.0	0	8
24-May-17	16:00	8.48	0.19	16	11.3	0	0.0	111	110	2	2.0	0	8
24-May-17	17:00	8.37	0.19	12	12.0	0	0.0	102	110	2	2.0	0	8
24-May-17	18:00	8.60	0.19	14	13.0	0	0.0	112	110	2	2.0	0	8
24-May-17	19:00	8.38	0.19	10	13.0	0	0.0	107	110	2	2.0	0	8
24-May-17	20:00	8.29	0.19	9	11.3	0	0.0	105	110	2	2.0	0	8
24-May-17	21:00	7.99	0.20	12	11.3	0	0.0	117	110	2	2.0	0	8
24-May-17	22:00	8.14	0.20	13	11.0	0	0.0	111	110	2	2.0	0	8
24-May-17	23:00	8.19	0.19	9	10.8	0	0.0	105	110	2	2.0	0	8
25-May-17	0:00	7.93	0.20	12	11.5	0	0.0	110	110	2	2.0	0	8
25-May-17	1:00	8.27	0.19	9	10.8	0	0.0	111	110	2	2.0	0	8
25-May-17	2:00	8.03	0.20	10	10.0	0	0.0	110	110	2	2.0	0	8
25-May-17	3:00	8.22	0.19	12	10.8	0	0.0	114	110	2	2.0	0	8
25-May-17	4:00	8.43	0.19	11	10.5	0	0.0	102	110	2	2.0	0	8
25-May-17	5:00	8.25	0.19	12	11.3	0	0.0	124	110	2	2.0	0	8
25-May-17	6:00	7.69	0.20	11	11.5	0	0.0	104	110	2	2.0	0	8
25-May-17	7:00	8.37	0.19	11	11.3	0	0.0	127	110	2	2.0	0	8
25-May-17	8:00	9.08	0.18	17	12.8	0	0.0	112	110	2	2.0	0	9
25-May-17	9:00	8.58	0.19	15	13.5	0	0.0	108	110	2	2.0	0	8
25-May-17	10:00	8.61	0.19	8	12.8	0	0.0	113	110	2	2.0	0	8
25-May-17	11:00	8.73	0.19	11	12.8	0	0.0	105	110	2	2.0	0	8
25-May-17	12:00	8.56	0.19	9	10.8	0	0.0	114	110	2	2.0	0	8
25-May-17	13:00	8.34	0.19	9	9.3	0	0.0	107	110	2	2.0	0	8
25-May-17	14:00	8.42	0.19	11	10.0	0	0.0	111	110	2	2.0	0	8
25-May-17	15:00	8.95	0.18	16	11.3	0	0.0	95	110	2	2.0	0	9
25-May-17	16:00	8.47	0.19	16	13.0	0	0.0	111	110	2	2.0	0	8
25-May-17	17:00	8.54	0.19	18	15.3	0	0.0	109	110	2	2.0	0	8
25-May-17	18:00	8.59	0.19	12	15.5	0	0.0	105	110	2	2.0	0	8
25-May-17	19:00	8.40	0.19	12	14.5	0	0.0	107	110	2	2.0	0	8
25-May-17	20:00	8.25	0.19	13	13.8	0	0.0	113	110	2	2.0	0	8
25-May-17	21:00	8.39	0.19	17	13.5	0	0.0	106	110	2	2.0	0	8
25-May-17	22:00	8.35	0.19	17	14.8	0	0.0	105	110	2	2.0	0	8
25-May-17	23:00	8.39	0.19	13	15.0	0	0.0	109	110	2	2.0	0	8
26-May-17	0:00	8.32	0.19	11	14.5	0	0.0	108	110	3	2.0	0	8
26-May-17	1:00	8.42	0.19	14	13.8	0	0.0	106	109	3	2.1	0	8
26-May-17	2:00	8.45	0.19	10	12.0	0	0.0	109	109	2	2.1	0	8
26-May-17	3:00	8.39	0.19	13	12.0	0	0.0	112	109	3	2.1	0	8
26-May-17	4:00	8.23	0.19	21	14.5	0	0.0	97	109	2	2.1	0	8
26-May-17	5:00	8.48	0.19	13	14.3	0	0.0	123	109	2	2.1	0	8

Covanta - Durham York Energy Centre
Boiler No. 1 CEMS

		BH Outlet											Scrubber Inlet
		O_2	CO_2	CO		SO_2		NOx		HCl		THC	O_2
		%	kg/m^3	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	%
	Time	1-hr	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
26-May-17	6:00	8.57	0.19	11	14.5	0	0.0	108	109	2	2.1	0	8
26-May-17	7:00	8.65	0.19	16	15.3	0	0.0	123	109	3	2.2	0	8
26-May-17	8:00	8.41	0.19	16	14.0	0	0.0	110	109	2	2.2	0	8
26-May-17	9:00	8.31	0.19	20	15.8	0	0.0	107	109	3	2.2	0	8
26-May-17	10:00	8.76	0.19	13	16.3	0	0.0	102	108	3	2.3	0	8
26-May-17	11:00	8.81	0.19	16	16.3	0	0.0	111	109	3	2.3	0	8
26-May-17	12:00	8.74	0.19	19	17.0	0	0.0	118	109	3	2.3	0	8
26-May-17	13:00	8.90	0.19	17	16.3	0	0.0	96	108	3	2.4	0	9
26-May-17	14:00	8.68	0.19	11	15.8	0	0.0	112	108	2	2.4	0	8
26-May-17	15:00	8.70	0.19	10	14.3	0	0.0	106	109	3	2.4	0	8
26-May-17	16:00	8.22	0.20	12	12.5	0	0.0	107	109	2	2.4	0	8
26-May-17	17:00	8.72	0.19	11	11.0	0	0.0	103	108	2	2.4	0	8
26-May-17	18:00	8.72	0.19	15	12.0	0	0.0	104	108	3	2.5	0	8
	Min	7.69	0.18	8	9.3	0	0.0	92	108	2	2.0	0	8
	Max	9.37	0.20	21	17.0	0	0.0	133	110	3	2.5	0	9
	Avg	8.54	0.19	13	12.9	0	0.0	109	110	2	2.1	0	8
	Std Dev	0.29	0.004	2.8	1.8	-	-	7.03	0.5	0.3	0.1	-	0.3

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet											Scrubber Inlet
		O_2	CO_2	CO		SO_2		NOx		HCl		THC	O_2
		%	kg/m^3	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	1-hr	Rolling 4-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	Rolling 24-hr	1-hr	1-hr
23-May-17	6:00	8.09	0.20	10		0		108		3		0	8
23-May-17	7:00	8.01	0.20	10		0		120		1		0	8
23-May-17	8:00	7.90	0.20	11		0		111		1		0	8
23-May-17	9:00	8.13	0.20	11	10.5	0		110		1		0	8
23-May-17	10:00	8.00	0.20	11	10.8	0		105		1		0	8
23-May-17	11:00	7.98	0.20	10	10.8	0		106		1		0	8
23-May-17	12:00	7.95	0.20	7	9.8	0		120		0		0	8
23-May-17	13:00	7.97	0.20	13	10.3	0		108		1		0	8
23-May-17	14:00	8.01	0.20	15	11.3	0		103		0		0	8
23-May-17	15:00	8.36	0.19	22	14.3	0		114		0		0	8
23-May-17	16:00	8.06	0.20	17	16.8	0		105		0		0	8
23-May-17	17:00	7.73	0.20	22	19.0	0		106		1		0	8
23-May-17	18:00	7.99	0.20	19	20.0	0		113		1		0	8
23-May-17	19:00	8.10	0.20	13	17.8	0		110		1		0	8
23-May-17	20:00	8.85	0.18	16	17.5	0		112		1		0	9
23-May-17	21:00	8.83	0.18	20	17.0	0		106		0		0	9
23-May-17	22:00	8.42	0.19	17	16.5	0		118		0		0	8
23-May-17	23:00	8.05	0.20	17	17.5	0		109		0		0	8
24-May-17	0:00	8.25	0.19	16	17.5	0		114		1		0	8
24-May-17	1:00	8.54	0.19	14	16.0	0		109		0		0	8
24-May-17	2:00	8.60	0.19	16	15.8	0		107		0		0	8
24-May-17	3:00	8.91	0.18	14	15.0	0		111		0		0	9
24-May-17	4:00	8.71	0.19	15	14.8	0		130		0		0	8
24-May-17	5:00	9.37	0.18	14	14.8	0	0.0	121	112	0	0.6	0	9
24-May-17	6:00	8.70	0.19	19	15.5	0	0.0	126	112	2	0.5	0	8
24-May-17	7:00	8.30	0.19	16	16.0	0	0.0	113	112	3	0.6	0	8
24-May-17	8:00	8.23	0.19	17	16.5	0	0.0	113	112	3	0.7	0	8
24-May-17	9:00	8.15	0.20	13	16.3	0	0.0	113	112	3	0.8	0	8
24-May-17	10:00	8.39	0.19	11	14.3	0	0.0	109	112	4	0.9	0	8
24-May-17	11:00	8.49	0.19	13	13.5	0	0.0	110	113	3	1.0	0	8
24-May-17	12:00	8.16	0.19	12	12.3	0	0.0	108	112	3	1.1	0	8
24-May-17	13:00	8.43	0.19	10	11.5	0	0.0	107	112	3	1.2	0	8
24-May-17	14:00	7.98	0.20	10	11.3	0	0.0	113	112	3	1.3	0	8
24-May-17	15:00	8.08	0.19	14	11.5	0	0.0	108	112	4	1.5	0	8
24-May-17	16:00	7.95	0.20	25	14.8	0	0.0	116	113	3	1.6	0	8
24-May-17	17:00	7.83	0.20	19	17.0	0	0.0	106	113	4	1.8	0	8
24-May-17	18:00	8.04	0.20	20	19.5	0	0.0	109	112	4	1.9	0	8
24-May-17	19:00	7.91	0.20	17	20.3	0	0.0	112	113	4	2.0	0	8
24-May-17	20:00	7.67	0.20	16	18.0	0	0.0	111	112	4	2.1	0	7
24-May-17	21:00	7.83	0.20	13	16.5	0	0.0	113	113	3	2.3	0	8
24-May-17	22:00	7.90	0.20	14	15.0	0	0.0	110	112	4	2.4	0	8
24-May-17	23:00	7.50	0.21	10	13.3	0	0.0	110	112	4	2.6	0	7
25-May-17	0:00	7.66	0.20	15	13.0	0	0.0	106	112	4	2.7	0	7
25-May-17	1:00	7.86	0.20	15	13.5	0	0.0	123	113	3	2.8	0	8
25-May-17	2:00	7.71	0.20	16	14.0	0	0.0	105	113	4	3.0	0	7
25-May-17	3:00	7.90	0.20	11	14.3	0	0.0	114	113	4	3.2	0	8
25-May-17	4:00	7.60	0.20	23	16.3	0	0.0	118	112	3	3.3	0	7
25-May-17	5:00	8.22	0.19	18	17.0	0	0.0	120	112	3	3.4	0	8
25-May-17	6:00	7.93	0.20	13	16.3	0	0.0	119	112	4	3.5	0	8
25-May-17	7:00	7.70	0.20	15	17.3	0	0.0	118	112	4	3.5	0	7
25-May-17	8:00	7.92	0.20	21	16.8	0	0.0	109	112	4	3.6	0	8
25-May-17	9:00	7.83	0.20	20	17.3	0	0.0	114	112	4	3.6	0	7
25-May-17	10:00	8.74	0.18	17	18.3	0	0.0	116	112	4	3.6	0	8
25-May-17	11:00	8.44	0.19	16	18.5	0	0.0	108	112	4	3.7	0	8
25-May-17	12:00	8.19	0.20	12	16.3	0	0.0	104	112	4	3.7	0	8
25-May-17	13:00	8.14	0.19	11	14.0	0	0.0	118	113	3	3.7	0	8
25-May-17	14:00	8.09	0.19	12	12.8	0	0.0	101	112	4	3.8	0	8
25-May-17	15:00	8.69	0.19	21	14.0	0	0.0	118	112	4	3.8	0	8
25-May-17	16:00	8.26	0.19	16	15.0	0	0.0	105	112	4	3.8	0	8
25-May-17	17:00	8.21	0.19	23	18.0	0	0.0	111	112	4	3.8	0	8
25-May-17	18:00	7.94	0.20	19	19.8	0	0.0	117	113	4	3.8	0	8
25-May-17	19:00	8.15	0.19	15	18.3	0	0.0	109	112	5	3.8	0	8
25-May-17	20:00	8.27	0.19	19	19.0	0	0.0	111	112	5	3.9	0	8
25-May-17	21:00	7.87	0.20	29	20.5	0	0.0	108	112	4	3.9	0	8
25-May-17	22:00	8.17	0.19	21	21.0	0	0.0	116	112	4	3.9	0	8
25-May-17	23:00	7.99	0.19	22	22.8	0	0.0	104	112	4	3.9	0	8
26-May-17	0:00	7.86	0.20	19	22.8	0	0.0	114	113	4	3.9	0	8
26-May-17	1:00	8.19	0.19	15	19.3	0	0.0	107	112	4	4.0	0	8
26-May-17	2:00	8.20	0.19	16	18.0	0	0.0	111	112	4	4.0	0	8
26-May-17	3:00	8.28	0.19	17	16.8	0	0.0	112	112	4	4.0	0	8
26-May-17	4:00	7.77	0.20	19	16.8	0	0.0	118	112	4	4.0	0	8
26-May-17	5:00	7.68	0.20	16	17.0	0	0.0	112	112	4	4.0	0	8

Covanta - Durham York Energy Centre
Boiler No. 2 CEMS

		BH Outlet											Scrubber Inlet
		O_2	CO_2	CO		SO_2		NOx		HCl		THC	O_2
		%	kg/m^3	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	%
	Time	1-hr	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
26-May-17	6:00	7.88	0.20	13	16.3	0	0.0	113	111	6	4.1	0	8
26-May-17	7:00	7.87	0.20	15	15.8	0	0.0	122	112	5	4.2	0	7
26-May-17	8:00	8.22	0.19	13	14.3	0	0.0	109	112	5	4.2	0	8
26-May-17	9:00	8.25	0.19	13	13.5	0	0.0	106	111	5	4.3	0	8
26-May-17	10:00	7.86	0.20	17	14.5	0	0.0	114	111	5	4.3	0	8
26-May-17	11:00	8.02	0.20	13	14.0	0	0.0	114	111	4	4.3	0	8
26-May-17	12:00	7.69	0.20	18	15.3	0	0.0	110	112	4	4.3	0	7
26-May-17	13:00	8.06	0.19	15	15.8	0	0.0	110	111	4	4.3	0	8
26-May-17	14:00	8.09	0.20	14	15.0	0	0.0	117	112	5	4.4	0	8
26-May-17	15:00	8.38	0.19	16	15.8	0	0.0	114	112	5	4.4	0	8
26-May-17	16:00	8.09	0.20	16	15.3	0	0.0	107	112	4	4.4	0	8
26-May-17	17:00	8.46	0.19	19	16.3	0	0.0	108	112	5	4.5	0	8
26-May-17	18:00	8.07	0.20	18	17.3	0	0.0	113	112	5	4.5	0	8
	Min	7.50	0.18	7	9.8	0	0.0	101	111	0	0.5	0	7
	Max	9.37	0.21	29	22.8	0	0.0	130	113	6	4.5	0	9
	Avg	8.13	0.20	16	15.8	0	0.0	112	112	3	3.1	0	8
	Std Dev	0.33	0.01	3.9	2.8	-	-	5.42	0.4	1.7	1.2	-	0.4