Report No. 21698

ORTECH

Report:

Covanta Durham York Renewable Energy Limited Partnership Durham York Energy Centre 2016 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX

Date: December 22, 2016



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1	December 22, 2016	None

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EXECUTIVE SUMMARY

ORTECH Consulting Inc. (ORTECH) completed an emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario between October 25 and November 3, 2016. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the third comprehensive Schedule E source testing program conducted at the facility; the initial source testing program was conducted in September/October 2015 and a voluntary test program was conducted in May 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 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.

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 October 25 and October 26, 2016 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. 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 only 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, was 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)*	-	-	-	386	-
Average Combustion Zone Temp. (°C)*	-	-	-	1231	-
Steam (tonnes/day)*	-	-	-	797	-
MSW Combusted (tonnes/day)*	-	-	-	222	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	1271	-
Carbon Injection (kg/day)*	-	-	-	130	-
Lime Injection (kg/day)*	-	-	-	4772	-
Filterable Particulate (mg/Rm^3) (1)	0.97	0.78	1.09	0.95	9
PM_{10} with Condensable (mg/Rm^3) (1)	<6.16	<6.22	<6.56	<6.31	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<5.80	<5.85	<6.21	<5.95	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.13	<0.14	<0.14	<0.14	-
Ammonia (mg/Rm^3) (1)	1.36	1.44	1.24	1.35	-
Cadmium (µg/Rm^3) (1)	0.048	0.11	0.065	0.074	7
Lead (µg/Rm^3) (1)	0.53	0.40	0.25	0.39	50
Mercury (µg/Rm^3) (1)	0.067	0.038	0.047	0.051	15
Antimony (µg/Rm^3) (1)	<0.17	<0.17	<0.16	<0.17	-
Arsenic (µg/Rm^3) (1)	<0.042	<0.042	<0.041	<0.042	-
Barium (µg/Rm^3) (1)	3.31	3.05	3.95	3.44	-
Beryllium (µg/Rm^3) (1)	<0.042	<0.042	<0.041	<0.042	-
Chromium (µg/Rm^3) (1)	1.04	5.66	0.70	2.47	-
Cobalt (µg/Rm^3) (1)	0.040	0.037	0.022	0.033	-
Copper (µg/Rm^3) (1)	1.73	1.78	1.54	1.68	-
Molybdenum (µg/Rm^3) (1)	4.89	4.74	4.82	4.81	-
Nickel (µg/Rm^3) (1)	1.10	1.18	0.74	1.01	-
Selenium (µg/Rm^3) (1)	<0.11	<0.11	<0.10	<0.10	-
Silver (µg/Rm^3) (1)	<0.084	<0.085	<0.082	<0.084	-
Thallium (µg/Rm^3) (1)	<0.21	<0.21	<0.20	<0.21	-
Vanadium (µg/Rm^3) (1)	<0.032	<0.032	<0.031	<0.031	-
Zinc (µg/Rm^3) (1)	5.90	4.67	3.59	4.72	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<7.62	<5.86	<14.8	<9.44	60
Total Chlorobenzenes (ng/Rm^3)(1)	<278	<275	<280	<278	-
Total Chlorophenols (ng/Rm^3)(1)	<583	<577	<588	<583	-
Total PAHs (ng/Rm^3)(1)	<1999	<1978	<2018	<1998	-
Total VOCs (µg/Rm^3) (1)	<261	<188	<244	<231	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	1004	804	1051	953	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	6.7	3.5	3.5	4.6	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

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)*	-	-	-	1216	-
Steam (tonnes/day)*	-	-	-	796	-
MSW Combusted (tonnes/day)*	-	-	-	218	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	1308	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	5174	-
Filterable Particulate (mg/Rm^3) (1)	0.94	1.17	1.01	1.04	9
PM_{10} with Condensable (mg/Rm^3) (1)	<10.2	<10.1	<8.74	<9.67	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<9.91	<9.71	<8.41	<9.34	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.14	<0.14	<0.15	<0.14	-
Ammonia (mg/Rm^3) (1)	1.29	1.31	1.03	1.21	-
Cadmium (µg/Rm^3) (1)	0.20	0.060	0.10	0.12	7
Lead (µg/Rm^3) (1)	0.26	0.37	0.23	0.28	50
Mercury (µg/Rm^3) (1)	0.032	0.028	0.036	0.032	15
Antimony (µg/Rm^3) (1)	<0.17	<0.17	<0.17	<0.17	-
Arsenic (µg/Rm^3) (1)	<0.042	<0.043	<0.043	<0.042	-
Barium (µg/Rm^3) (1)	3.14	2.97	2.12	2.74	-
Beryllium (µg/Rm^3) (1)	<0.042	<0.043	<0.043	<0.042	-
Chromium (µg/Rm^3) (1)	0.68	1.58	0.67	0.98	-
Cobalt (µg/Rm^3) (1)	0.014	0.011	<0.011	<0.012	-
Copper (µg/Rm^3) (1)	1.55	1.56	3.38	2.16	-
Molybdenum (µg/Rm^3) (1)	4.96	5.00	4.79	4.92	-
Nickel (µg/Rm^3) (1)	0.67	0.99	0.57	0.75	-
Selenium (µg/Rm^3) (1)	<0.10	<0.11	<0.11	<0.11	-
Silver (µg/Rm^3) (1)	<0.084	<0.086	<0.086	<0.085	-
Thallium (µg/Rm^3) (1)	<0.21	<0.21	<0.21	<0.21	-
Vanadium (µg/Rm^3) (1)	<0.031	<0.032	<0.032	<0.032	-
Zinc (µg/Rm^3) (1)	4.29	5.19	1.13	3.54	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<6.75	<6.50	<5.96	<6.40	60
Total Chlorobenzenes (ng/Rm^3)(1)	<325	<356	<319	<333	-
Total Chlorophenols (ng/Rm^3)(1)	<818	<607	<574	<666	-
Total PAHs (ng/Rm^3)(1)	<2343	<2426	<2295	<2355	-
Total VOCs (µg/Rm^3) (1)	<219	<214	<217	<217	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	708	886	874	822	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	4.3	4.7	3.0	4.0	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

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)	7.3	11.4	18.3	40
	Hydrogen Chloride (mg/Rm^3)(2)	0.4	1.2	1.8	9
	Nitrogen Oxides (mg/Rm^3)(2)	111	112	113	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0.8	1.3	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3)(1)	10.3	15.7	25.8	40
	Hydrogen Chloride (mg/Rm^3)(2)	0.8	1.2	1.6	9
	Nitrogen Oxides (mg/Rm^3)(2)	112	113	115	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0.9	3.1	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 October/November 2016 emission testing program was performed by Golder Associates. A summary of the results are provided in the tables appended to this report (Appendix 33) 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 793 tonnes of steam per day for each Boiler (approximately 98% 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 an emission testing program at the Durham York Energy Centre (DYEC) located in Courtice, Ontario. The emission testing program was performed to satisfy the requirements of the Ontario Ministry of the Environment and Climate Change (MOECC) Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX. Section 7(1) of the ECA states that "the owner shall perform annual source testing, in accordance with the procedures and schedule outlined in the attached Schedule E, to determine the rates of emissions of the test contaminants from the stack. The program shall be conducted not later than six months after the commencement date of operation of the facility/equipment and subsequent source testing programs shall be conducted once every calendar year thereafter". This program is the third comprehensive Schedule E source testing program conducted at the facility; the initial source testing program was conducted in September/October 2015 and a voluntary test program was conducted in May 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 as 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.

Prior to commencing the test program, a Pre-Test Plan detailing the sampling methodology was prepared and submitted to the MOECC for review and approval. Provided in Appendix 5 is a copy of the Pre-Test Plan acceptance letter received from the MOECC, dated August 24, 2016, indicating acceptance of the proposed sampling strategy. A copy of the Amended Environmental Compliance Approval is also provided in Appendix 5.

The emission testing program was conducted between October 25 and November 3, 2016. Triplicate emission tests were completed for each of the test parameters listed in Schedule D of the ECA.

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. The two 6-inch sampling ports were used for all isokinetic and non-isokinetic sampling.

The BH Outlet duct has an inside diameter of 1.37 meters (54 inches) at the sampling ports. The two six 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 October 25 and October 26, 2016 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 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 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 performed at each sample location are provided collectively 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 was used
- 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 fifteen minutes for a total actual sampling time of three hundred and sixty 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 twelve minutes for a total actual sampling time of two hundred and eighty-eight minutes. Each test at the Quench Inlet locations required a total of four filters, two filters per traverse.

At five minute time increments at the BH Outlet and four 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 glass 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 at Boiler No. 1, from October 25 to October 28, 2016 and October 31, 2016, was used to assess against the in-stack emission limit stated in the ECA. The data measured by the DYEC CEMS at Boiler No. 2, from October 25 to 27, 2016 and November 1 to 3, 2016, was used to assess against the in-stack emission limit stated in the ECA.

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 of each Boiler on October 25, 2016. Triplicate one-hour tests were also conducted at the BH Outlet of each Boiler on October 26, 2016. 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 Maxxam (Mississauga location). 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 report is 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 in the inorganic analytical report 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 Maxxam 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 the inorganic analytical report 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 Maxxam 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 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 LC/UV. 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 ± 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 9.0% well within the acceptable limit of less than ±20%, for elements that are greater than 5 times the minimum detection limit.
- One blank spike (performed as a pre-digestion spike) was analyzed. All of the recovery results were between 91-115%. The acceptable limit is 85-115% of the true value.
- One matrix spike (performed as a post digestion spike) was analyzed. All of the recovery results were between 84-107%. 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.

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 1.2% well within the acceptable limit of less than ±20%, for fractions that are greater than 5 times the minimum detection limit.
- One blank spike (performed as a pre-digestion spike) was analyzed. All of the recovery results were between 97-107% within the acceptable limit of 90-110% of the true value.
- One matrix spike (performed as a post digestion spike) was analyzed. All of the recovery results were between 97-106% 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 involved IC/SPEC. 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 2% well within the acceptable limit of less than ±20%, for compounds that are greater than 5 times the minimum detection limit.
- Blank spike samples were analyzed with the test samples. The recovery results of the blank spike samples were 100% for hydrogen chloride, 103% for hydrogen fluoride and 103% for ammonia, within the acceptable range of 90-110%.
- Matrix spike (spike confirmation) samples were analyzed with every 20 samples to confirm the identity of each peak. The recovery results of the matrix spike samples were 85% for hydrogen chloride, 95% for hydrogen fluoride and 101% 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 LC/UV. Laboratory control samples, a spike sample and a travel spike sample were analyzed with the test samples. The travel spike sample was spiked with 10 µg each of acetaldehyde, formaldehyde and acrolein by the laboratory, taken to the site for the duration of the testing program then returned to the laboratory for analysis. The recoveries for the travel spike were <20% for acrolein, 74% for formaldehyde and 72% for acetaldehyde. The travel 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 formaldehyde detected in the blank sample was similar to, and in some cases greater than, the concentrations detected in the test samples. The test results for formaldehyde may be elevated due to the high blank results.

Acrolein was not detected in any of the test samples, blank train samples or travel spike sample in quantities greater than the detection limit.

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.

After extraction of the dioxin and furan train samples, staff at Maxxam added internal standards to all samples prior to analysis and surrogate standards were added to the filters and XAD resin prior to extraction. The analytical reports include the lists of the analytical surrogate standards and internal standards used. The analysis of samples involved complex sample extraction and cleanup, followed by GC/MS or HRMS/MS analysis.

The quality assurance activities conducted by the analytical laboratory are detailed in the Quality Assurance Report provided in the analytical report. The report notes that there was a low recovery for D12-Perylene surrogate for Test No. 3 (36%) at BH Outlet No. 2. There was a high recovery for C13-23478 Penta CDF for Test No. 2 (142%) and Test No. 3 (138%) at BH Outlet No. 1.

All other QA/QC activities met the performance specifications as stated in the analytical report. The dioxin and furan surrogate recoveries were between 50-130%, except for C13-23478 Penta CDF for Test No. 2 and Test No. 3 at BH Outlet No. 1 as stated above.

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 and 1,2,3,6,7,8-hexachlorodibenzofuran isomer for some of the test results. This response produces a positive bias on these isomers. 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.

Reference methods for the analysis of dioxins/furans such as US EPA Method 23 and 1613B each has a comment that any positive result for the 2,3,7,8-TCDF isomer that was detected using the primary column should be confirmed using a secondary column. Maxxam typically performs this confirmation when the primary column result is above the RDL (Reportable Detection Limit). The RDL represents the lowest calibration standard and hence any result above the RDL has reasonable certainty that the value is positive. During time sensitive projects, the primary column and secondary column analysis at Maxxam is performed concurrently and the secondary column confirmation result is reported for 2,3,7,8-TCDF isomer below the RDL. Second column confirmation data was reported by Maxxam and used to calculate emission data for all tests except for the three tests at the Unit 2 BH Outlet and the Unit 2 blank sample. Maxxam did not analyze these samples using a secondary column, therefore the primary column results were used to calculate emission data for the Unit 2 BH Outlet tests.

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.

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

The analytical report includes the list of surrogate standards used. The surrogate recoveries for each of the surrogates should be between 50-150%. The recoveries for each sample were between 90-124%.

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 October 25 and October 26, 2016.

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 at Boiler No. 1 are provided in Appendix 24 to Appendix 27, respectively.

Emission test calculations for the particulate and metals, particle size, acid gases, and SVOC tests conducted at Boiler No. 2 are provided in Appendix 28 to Appendix 31, 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)	168	142	169	138
Moisture by Volume (%)	14.9	15.2	15.1	15.4
Velocity (m/s)	19.1	18.9	18.4	18.1
Static Pressure (kPa)	-0.55	-2.80	-0.62	-2.46
Absolute Pressure (kPa)	100.0	97.9	99.5	98.2
Carbon Dioxide by Volume (%)**	10.3	10.2	10.3	10.5
Oxygen by Volume (%)**	8.47	9.22	8.01	8.74

* 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)	28.2	28.0	27.1	26.7
Dry Reference Flowrate (Rm^3/s)**	16.0	16.5	15.2	15.8
Dry Adjusted Flowrate (Rm^3/s)***	20.1	19.4	19.8	19.5
Wet Reference Flowrate (Rm^3/s)**	18.8	19.4	17.9	18.7

* 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 location is summarized below:

Particulate Emission Parameter	Boiler No. 1 BH Outlet	Boiler No. 2 BH Outlet
Actual Conc. (mg/m^3)	0.66	0.77
Dry Reference Conc. (mg/Rm^3)*	1.12	1.30
Dry Adjusted Conc. (mg/Rm^3)**	0.95	1.04
Wet Reference Conc. (mg/Rm^3)*	0.95	1.10
Emission Rate (mg/s)	19.1	20.4

* 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 (0.95 mg/Rm^3, adjusted to 11% oxygen) and the Boiler No. 2 BH Outlet (1.04 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 2.40 mg and 1.1 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 2.40 mg and 1.7 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)	<0.70	<0.51	<0.45	<0.27
Dry Reference Conc. (mg/Rm^3)*	<1.18	<0.86	<0.76	<0.46
Dry Adjusted Conc. (mg/Rm^3)**	<1.01	<0.71	<0.65	<0.38
Wet Reference Conc. (mg/Rm^3)*	<1.01	<0.73	<0.65	<0.39
Emission Rate (mg/s)	<19.5	<13.8	<12.6	<7.36

* at 25°C and 1 atmosphere

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

Although the particle size distribution tests and the particulate and metals tests were conducted on different days, it is noted that the PM_{10} emission data for Boiler No. 1 is reported to be greater than the total particulate emission data measured using the particulate and metals test trains. This is mainly due to the higher detection limits and the smaller sample volume for the particle size test trains relative to the particulate and metals trains. It is noted that the PM_{10} and $PM_{2.5}$ is reported to be below the detection limit for all tests at Boiler No. 1 and Boiler No. 2. The data was not blank corrected.

Condensable particulate emission data obtained from the back-half of each of the particle size distribution tests conducted at 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)	3.17	5.76	<0.50	<0.76
Dry Reference Conc. (mg/Rm^3)*	5.34	9.62	<0.84	<1.27
Dry Adjusted Conc. (mg/Rm^3)**	4.58	7.92	<0.72	<1.04
Wet Reference Conc. (mg/Rm^3)*	4.57	8.19	<0.72	<1.08
Emission Rate (mg/s)	88.2	155	<13.9	<20.4

* 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 1.8 mg for the inorganic fraction. The amount of condensable particulate detected in the blank sampling train for Boiler No. 2 was 1.4 mg for the inorganic 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. Organic condensable particulate matter was not detected in quantities greater than the detection limit in the blank trains.

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)	<4.37	<7.03	<4.12	<6.79
Dry Reference Conc. (mg/Rm^3)*	<7.36	<11.8	<6.94	<11.4
Dry Adjusted Conc. (mg/Rm^3)**	<6.31	<9.67	<5.95	<9.34
Wet Reference Conc. (mg/Rm^3)*	<6.30	<10.0	<5.94	<9.66
Emission Rate (mg/s)	<122	<189	<115	<183

* at 25°C and 1 atmosphere

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

7.5 Acid Gases

Hydrogen chloride, hydrogen fluoride and ammonia emission data for the tests conducted at the BH Outlet of each Boiler are presented in Table 9 (Appendix 1 and Appendix 2). Hydrogen fluoride was not detected in any of the test samples in quantities greater than the detection limit. The detection limit was used to calculate hydrogen fluoride emission data. Hydrogen chloride and ammonia were detected in quantities greater than the detection limit in all of the 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 Emission Parameter	Hydrogen Chloride		Hydrogen Fluoride		Ammonia	
	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2	Boiler No. 1	Boiler No. 2
Actual Conc. (mg/m^3)	3.27	2.01	<0.094	<0.10	0.93	0.90
Dry Reference Conc. (mg/Rm^3)*	5.55	3.37	<0.16	<0.18	1.59	1.52
Dry Adjusted Conc. (mg/Rm^3)**	4.71	2.68	<0.14	<0.14	1.35	1.21
Wet Reference Conc. (mg/Rm^3)*	4.71	2.84	<0.14	<0.15	1.35	1.28
Emission Rate (mg/s)	94.1	52.9	<2.72	<2.77	26.9	23.9
Dry Adjusted Conc. (ppm)**	3.16	1.80	<0.17	<0.17	1.94	1.74

* 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 for Boiler No. 1 for October 25 to October 28, 2016 and October 31, 2016. DYEC CEMS data was provided for Boiler No. 2 for October 25 to 27, 2016 and November 1 to 3, 2016. 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)	-	10.4	9.96
Carbon Dioxide (kg/Rm^3, 1-hr)**	-	0.19	0.20
Carbon Monoxide (mg/Rm^3, 4-hr)*	40	18.3	25.8
Sulphur Dioxide (mg/Rm^3, 24-hr)*	35	1.3	3.1
Nitrogen Oxides (mg/Rm^3, 24-hr)*	121	113	115
Hydrogen Chloride (mg/Rm^3, 24-hr)*	9	1.8	1.6
Total Hydrocarbons (mg/Rm^3, 1-hr)*	-	1	0
Quench Inlet: Oxygen (%, 1-hr)	-	10	9

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

Total hydrocarbon concentration data was measured by ORTECH on October 25, 2016 at the Quench Inlet and on October 26, 2016 at the 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)*	-	1.5	1.7
Total Hydrocarbons (10-minute)**	-	1.4	1.7
Quench Inlet: Total Hydrocarbons (1-minute)*	-	4.6	4.0
Total Hydrocarbons (10-minute)**	50	4.6	4.0

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

The one-minute average total hydrocarbon data and the 10-minute total hydrocarbon data measured by ORTECH and expressed on a dry basis as equivalent methane is provided in Appendix 32.

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)	0.051	0.089
Dry Reference Conc. (µg/Rm^3)*	0.087	0.15
Dry Adjusted Conc. (µg/Rm^3)**	0.074	0.12
Wet Reference Conc. (µg/Rm^3)*	0.074	0.13
Emission Rate (mg/s)	0.0015	0.0023

* 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)	0.27	0.21
Dry Reference Conc. (µg/Rm^3)*	0.46	0.36
Dry Adjusted Conc. (µg/Rm^3)**	0.39	0.28
Wet Reference Conc. (µg/Rm^3)*	0.39	0.30
Emission Rate (mg/s)	0.0079	0.0056

* 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 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)	0.035	0.024
Dry Reference Conc. (µg/Rm^3)*	0.060	0.040
Dry Adjusted Conc. (µg/Rm^3)**	0.051	0.032
Wet Reference Conc. (µg/Rm^3)*	0.051	0.034
Emission Rate (mg/s)	0.0010	0.00063

* 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, 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)	3.34	0.19	3.30	0.16
Dry Reference Conc. (ng/Rm^3)*	5.88	0.32	5.88	0.27
Dry Adjusted Conc. (ng/Rm^3)**	4.69	0.27	4.51	0.22
Wet Reference Conc. (ng/Rm^3)*	5.00	0.27	4.98	0.23
Emission Rate (ng/s)	94.2	5.09	89.5	4.21

* 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)	31.0	0.17	31.4	0.068
Dry Reference Conc. (ng/Rm^3)*	54.7	0.28	56.0	0.12
Dry Adjusted Conc. (ng/Rm^3)**	43.6	0.24	42.9	0.095
Wet Reference Conc. (ng/Rm^3)*	46.5	0.24	47.4	0.098
Emission Rate (ng/s)	877	4.51	853	1.83

* 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, provides a new framework for calculating dioxin and furan toxicity equivalent concentrations which includes emission data for 12 dioxin-like PCBs.

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)	603	6.18	554	4.37
Dry Reference Conc. (pg TEQ/Rm^3)*	1063	10.5	988	7.41
Dry Adjusted Conc. (pg TEQ/Rm^3)**	848	8.82	757	6.07
Wet Reference Conc. (pg TEQ/Rm^3)*	904	8.85	836	6.26
Emission Rate (ng TEQ/s)	17.0	0.17	15.0	0.12

* 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)*	953	<9.44	822	<6.40

* 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)	<195	<240
Dry Reference Conc. (ng/Rm^3)*	<330	<407
Dry Adjusted Conc. (ng/Rm^3)**	<278	<333
Wet Reference Conc. (ng/Rm^3)*	<279	<344
Emission Rate (µg/s)	<5.25	<6.42

* 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). 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 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)	<409	<480
Dry Reference Conc. (ng/Rm^3)*	<694	<813
Dry Adjusted Conc. (ng/Rm^3)**	<583	<666
Wet Reference Conc. (ng/Rm^3)*	<586	<687
Emission Rate (µg/s)	<11.0	<12.8

* 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. None of the PAH compounds were detected in quantities greater than the detection limits for any of the tests performed at either unit.

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)	<1401	<1699
Dry Reference Conc. (ng/Rm^3)*	<2379	<2877
Dry Adjusted Conc. (ng/Rm^3)**	<1998	<2355
Wet Reference Conc. (ng/Rm^3)*	<2009	<2430
Emission Rate (µg/s)	<37.8	<45.3

* 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).

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)	<41.5	<41.8	52.7	48.1	<41.5	<41.8
Dry Reference Conc. (µg/Rm^3)*	<70.4	<70.8	97.0	81.4	<70.4	<70.8
Dry Adjusted Conc. (µg/Rm^3)**	<58.9	<58.0	81.2	66.6	<58.9	<58.0
Wet Reference Conc. (µg/Rm^3)*	<59.3	<59.8	81.7	68.8	<59.3	<59.8
Emission Rate (mg/s)	<1.12	<1.12	1.54	1.28	<1.12	<1.12

* at 25°C and 1 atmosphere

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

Formaldehyde was detected in the blank samples in quantities similar to those found in the test samples. Acetaldehyde was not detected in any of the test samples or in either of the blank samples. Acrolein was not detected in the blank samples or any of the test 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.

7.11 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)	<22.4	<24.6
Dry Reference Conc. (µg/Rm^3)*	<38.0	<41.7
Dry Adjusted Conc. (µg/Rm^3)**	<31.8	<34.2
Wet Reference Conc. (µg/Rm^3)*	<32.0	<35.2
Emission Rate (mg/s)	<0.60	<0.66

* 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)*	<276	<265
Dry Adjusted Conc. (µg/Rm^3)**	<231	<217
Emission Rate (mg/s)	<4.38	<4.18

* 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 33. 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 October/November emission testing program was well below the applicable standard, guideline or upper risk threshold.

Also, at the request of the MOECC, additional dispersion modelling (using CALPUFF model Version 6.263) was completed for dioxin and furans as measured during the May 2016 source testing program. Dispersion modelling results for the May 2016 source testing program and responses to comments made on the original modelling are detailed in Appendix 34.

The predicted POI concentration of dioxins and furans, calculated based on the average total emission rate, measured in the May 2016 emission testing program was well below the applicable POI limit.

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 for Boiler No. 1 for October 25 to October 28, 2016 and October 31, 2016. DYEC CEMS data was provided for Boiler No. 2 for October 25 to 27, 2016 and November 1 to 3, 2016. 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 35.

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.

The DYEC AMESA Dioxin and Furan sampling monitor was operating during the SVOC emission testing conducted on each Boiler. AMESA samples were collected by Covanta personnel and a representative of AMESA during each SVOC test period and were submitted to Maxxam for analysis. The volume sampled for each AMESA sample was supplied to ORTECH by Covanta and the emission data was calculated by ORTECH using the volumetric flowrates measured during the corresponding isokinetic SVOC test conducted by ORTECH during the source testing program. The AMESA dioxin and furan emission data and analytical report for the samples collected are provided in Appendix 36.

The AMESA cartridge and the probe rinse sample were collected for each isokinetic test and analyzed separately. The dioxin and furan emission data was calculated in two ways; with the probe rinse and AMESA cartridge combined and with the AMESA cartridge only. A comparison of the dioxin and furan toxicity equivalent factor results, calculated using the NATO/CCMS (1989) toxicity equivalence factors and the full detection limit is summarized below.

Unit No.	Test No.	AMESA with Probe Rinse (pg TEQ/Rm^3*)	AMESA without Probe Rinse (pg TEQ/Rm^3*)	Stack Test (pg TEQ/Rm^3*)
1	1	<279	<26.2	<7.62
1	2	<159	<15.7	<5.86
1	3	<60.4	<12.9	<14.8
1	Average	<166	<18.3	<9.44
2	1	<397	<34.1	<6.75
2	2	<324	<31.3	<6.50
2	3	<193	<20.0	<5.96
2	Average	<305	<28.4	<6.40

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

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
25-Oct-16	384	402	0	1236	1227	793	795	213	213	1238	1222	126	126	4652	4953
26-Oct-16	275	0	362	1235	1209	797	799	223	213	1060	1199	139	126	4790	5142
27-Oct-16	405	0	0	1233	1202	797	797	226	222	1282	1303	132	131	4976	5439
28-Oct-16	380	0	-	1217	-	802	-	225	-	1306	-	126	-	4578	-
31-Oct-16	385	107	-	1235	-	798	-	221	-	1471	-	125	-	4863	-
01-Nov-16	393	-	0	-	1225	-	793	-	225	-	1490	-	126	-	5312
02-Nov-16	373	-	0	-	1219	-	793	-	210	-	1286	-	126	-	5052
03-Nov-16	381	-	0	-	1216	-	799	-	223	-	1345	-	125	-	5143
Average	385	102	60.3	1231	1216	797	796	222	218	1271	1308	130	127	4772	5174

* 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 793 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 October 25, 2016 at the Quench Inlet sampling locations and on October 26, 2016 at the BH Outlet sampling locations. The total hydrocarbon data measured by ORTECH at the Quench Inlet sample locations was used to assess against 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)*	-	-	-	386	-
Average Combustion Zone Temp. (°C)*	-	-	-	1231	-
Steam (tonnes/day)*	-	-	-	797	-
MSW Combusted (tonnes/day)*	-	-	-	222	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	1271	-
Carbon Injection (kg/day)*	-	-	-	130	-
Lime Injection (kg/day)*	-	-	-	4772	-
Filterable Particulate (mg/Rm^3) (1)	0.97	0.78	1.09	0.95	9
PM_{10} with Condensable (mg/Rm^3) (1)	<6.16	<6.22	<6.56	<6.31	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<5.80	<5.85	<6.21	<5.95	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.13	<0.14	<0.14	<0.14	-
Ammonia (mg/Rm^3) (1)	1.36	1.44	1.24	1.35	-
Cadmium (µg/Rm^3) (1)	0.048	0.11	0.065	0.074	7
Lead (µg/Rm^3) (1)	0.53	0.40	0.25	0.39	50
Mercury (µg/Rm^3) (1)	0.067	0.038	0.047	0.051	15
Antimony (µg/Rm^3) (1)	<0.17	<0.17	<0.16	<0.17	-
Arsenic (µg/Rm^3) (1)	<0.042	<0.042	<0.041	<0.042	-
Barium (µg/Rm^3) (1)	3.31	3.05	3.95	3.44	-
Beryllium (µg/Rm^3) (1)	<0.042	<0.042	<0.041	<0.042	-
Chromium (µg/Rm^3) (1)	1.04	5.66	0.70	2.47	-
Cobalt (µg/Rm^3) (1)	0.040	0.037	0.022	0.033	-
Copper (µg/Rm^3) (1)	1.73	1.78	1.54	1.68	-
Molybdenum (µg/Rm^3) (1)	4.89	4.74	4.82	4.81	-
Nickel (µg/Rm^3) (1)	1.10	1.18	0.74	1.01	-
Selenium (µg/Rm^3) (1)	<0.11	<0.11	<0.10	<0.10	-
Silver (µg/Rm^3) (1)	<0.084	<0.085	<0.082	<0.084	-
Thallium (µg/Rm^3) (1)	<0.21	<0.21	<0.20	<0.21	-
Vanadium (µg/Rm^3) (1)	<0.032	<0.032	<0.031	<0.031	-
Zinc (µg/Rm^3) (1)	5.90	4.67	3.59	4.72	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<7.62	<5.86	<14.8	<9.44	60
Total Chlorobenzenes (ng/Rm^3)(1)	<278	<275	<280	<278	-
Total Chlorophenols (ng/Rm^3)(1)	<583	<577	<588	<583	-
Total PAHs (ng/Rm^3)(1)	<1999	<1978	<2018	<1998	-
Total VOCs (µg/Rm^3) (1)	<261	<188	<244	<231	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	1004	804	1051	953	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	6.7	3.5	3.5	4.6	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

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)*	-	-	-	1216	-
Steam (tonnes/day)*	-	-	-	796	-
MSW Combusted (tonnes/day)*	-	-	-	218	-
NOx Reagent Injection Rate (liters/day)*	-	-	-	1308	-
Carbon Injection (kg/day)*	-	-	-	127	-
Lime Injection (kg/day)*	-	-	-	5174	-
Filterable Particulate (mg/Rm^3) (1)	0.94	1.17	1.01	1.04	9
PM_{10} with Condensable (mg/Rm^3) (1)	<10.2	<10.1	<8.74	<9.67	-
$PM_{2.5}$ with Condensable (mg/Rm^3) (1)	<9.91	<9.71	<8.41	<9.34	-
Hydrogen Fluoride (mg/Rm^3) (1)	<0.14	<0.14	<0.15	<0.14	-
Ammonia (mg/Rm^3) (1)	1.29	1.31	1.03	1.21	-
Cadmium (µg/Rm^3) (1)	0.20	0.060	0.10	0.12	7
Lead (µg/Rm^3) (1)	0.26	0.37	0.23	0.28	50
Mercury (µg/Rm^3) (1)	0.032	0.028	0.036	0.032	15
Antimony (µg/Rm^3) (1)	<0.17	<0.17	<0.17	<0.17	-
Arsenic (µg/Rm^3) (1)	<0.042	<0.043	<0.043	<0.042	-
Barium (µg/Rm^3) (1)	3.14	2.97	2.12	2.74	-
Beryllium (µg/Rm^3) (1)	<0.042	<0.043	<0.043	<0.042	-
Chromium (µg/Rm^3) (1)	0.68	1.58	0.67	0.98	-
Cobalt (µg/Rm^3) (1)	0.014	0.011	<0.011	<0.012	-
Copper (µg/Rm^3) (1)	1.55	1.56	3.38	2.16	-
Molybdenum (µg/Rm^3) (1)	4.96	5.00	4.79	4.92	-
Nickel (µg/Rm^3) (1)	0.67	0.99	0.57	0.75	-
Selenium (µg/Rm^3) (1)	<0.10	<0.11	<0.11	<0.11	-
Silver (µg/Rm^3) (1)	<0.084	<0.086	<0.086	<0.085	-
Thallium (µg/Rm^3) (1)	<0.21	<0.21	<0.21	<0.21	-
Vanadium (µg/Rm^3) (1)	<0.031	<0.032	<0.032	<0.032	-
Zinc (µg/Rm^3) (1)	4.29	5.19	1.13	3.54	-
Dioxins and Furans (pg TEQ/Rm^3)(3)	<6.75	<6.50	<5.96	<6.40	60
Total Chlorobenzenes (ng/Rm^3)(1)	<325	<356	<319	<333	-
Total Chlorophenols (ng/Rm^3)(1)	<818	<607	<574	<666	-
Total PAHs (ng/Rm^3)(1)	<2343	<2426	<2295	<2355	-
Total VOCs (µg/Rm^3) (1)	<219	<214	<217	<217	-
Quench Inlet Dioxins and Furans (pg TEQ/Rm^3)(3)	708	886	874	822	-
Quench Inlet Organic Matter (THC) (ppm, dry)(2)	4.3	4.7	3.0	4.0	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

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)	7.3	11.4	18.3	40
	Hydrogen Chloride (mg/Rm^3)(2)	0.4	1.2	1.8	9
	Nitrogen Oxides (mg/Rm^3)(2)	111	112	113	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0.8	1.3	35
Boiler No. 2	Carbon Monoxide (mg/Rm^3)(1)	10.3	15.7	25.8	40
	Hydrogen Chloride (mg/Rm^3)(2)	0.8	1.2	1.6	9
	Nitrogen Oxides (mg/Rm^3)(2)	112	113	115	121
	Sulphur Dioxide (mg/Rm^3)(2)	0	0.9	3.1	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 Start	Sampling Period Finish	Sampling Time* min
1	October 25, 2016	8:45	11:54	180
2	October 25, 2016	12:48	15:57	180
3	October 27, 2016	8:14	13:10	180

Paticle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 26, 2016	8:09	10:17	114.2
2	October 26, 2016	11:05	13:11	120
3	October 26, 2016	14:13	16:16	120.1

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 25, 2016	8:46	9:46	60
2	October 25, 2016	10:40	11:40	60
3	October 25, 2016	12:51	13:51	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 27, 2016	8:18	14:42	360
2	October 28, 2016	8:04	14:28	360
3	October 31, 2016	10:17	16:34	360

* 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	October 28, 2016	11:32	12:32	60
2	October 28, 2016	12:43	13:43	60
3	October 31, 2016	12:18	13:18	60

Volatile Organic Compounds Trains

Test Number	Tube Pair	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	1	October 28, 2016	8:06	8:26	20
	2	October 28, 2016	8:32	8:52	20
	3	October 28, 2016	8:59	9:19	20
	4	October 28, 2016	9:27	9:47	20
2	1	October 28, 2016	13:56	14:16	20
	2	October 28, 2016	14:23	14:43	20
	3	October 28, 2016	14:51	15:11	20
	4	October 28, 2016	15:20	15:40	20
3	1	October 31, 2016	10:21	10:41	20
	2	October 31, 2016	10:48	11:08	20
	3	October 31, 2016	11:16	11:36	20
	4	October 31, 2016	11:43	12:03	20

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	October 26, 2016	9:45	10:45	60
2	October 26, 2016	10:53	11:53	60
3	October 26, 2016	12:00	13:00	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	0.846	0.988	6.46	4.013	99.4
2	0.846	0.988	6.46	4.063	99.5
3	0.846	0.988	6.46	4.071	99.4

Paticle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.846	0.989	4.50	1.231	96.2
2	0.846	0.989	4.50	1.139	86.2
3	0.846	0.989	4.50	1.204	95.7

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	0.993	6.48	1.287	97.2
2	0.848	0.993	6.48	1.219	99.1
3	0.848	0.993	6.48	1.243	100.1

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	0.848	0.993	6.47	7.583	98.9
2	0.848	0.993	6.47	7.575	99.5
3	0.848	0.993	6.47	7.538	99.3

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	144	15.3	19.5	-2.80	98.2	10.3	9.18
2	144	15.3	19.7	-2.80	98.2	10.1	9.35
3	142	15.5	19.9	-2.81	97.3	10.2	9.05
Average	143	15.4	19.7	-2.81	97.9	10.2	9.19

Paticle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	142	14.0	18.8	-2.80	97.8	9.88	9.81
2	142	14.6	19.3	-2.80	97.8	10.3	9.30
3	143	15.2	18.6	-2.80	98.6	10.5	9.00
Average	142	14.6	18.9	-2.80	98.0	10.2	9.37

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	142	14.6	18.8	-2.80	98.1	10.1	9.42
2	143	16.2	17.8	-2.80	98.2	10.4	8.97
3	142	16.2	18.0	-2.80	98.2	10.4	9.03
Average	142	15.7	18.2	-2.80	98.2	10.3	9.14

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	15.4	18.5	-2.81	97.2	10.1	9.11
2	139	15.9	18.3	-2.94	97.8	10.4	8.96
3	140	15.4	18.1	-2.61	98.3	10.2	9.20
Average	140	15.6	18.3	-2.79	97.8	10.3	9.09

* 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	28.7	16.9	20.0	19.9
2	29.0	17.1	19.9	20.1
3	29.4	17.1	20.5	20.3
Average	29.1	17.0	20.1	20.1

Paticle Size Distribution Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.7	16.5	18.5	19.2
2	28.5	16.9	19.8	19.7
3	27.4	16.2	19.5	19.1
Average	27.9	16.5	19.3	19.3

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	27.7	16.5	19.1	19.3
2	26.3	15.3	18.5	18.3
3	26.5	15.5	18.6	18.5
Average	26.9	15.8	18.7	18.7

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.3	16.0	19.0	18.9
2	27.0	15.9	19.1	18.9
3	26.7	15.8	18.7	18.7
Average	27.0	15.9	18.9	18.8

* 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 Probe Rinse mg	Main Filter mg	Total mg	Dry Gas Volume Sampled Rm^3*	Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Particulate Emission Rate mg/s
1	2.4	2.20	4.60	4.013	0.67	1.15	0.97	0.97	19.3
2	2.6	1.10	3.70	4.063	0.54	0.91	0.78	0.77	15.5
3	2.4	2.90	5.30	4.071	0.76	1.30	1.09	1.10	22.3
Average					0.66	1.12	0.95	0.95	19.1
Blank	1.1	2.4	3.5						

* 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 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	<1.0	1.231	<0.48	<0.81	<0.72	<0.70	<13.4
2	<1.0	1.139	<0.52	<0.88	<0.75	<0.75	<14.8
3	<0.7	1.204	<0.34	<0.58	<0.48	<0.49	<9.42
Average			<0.45	<0.76	<0.65	<0.65	<12.6
Blank	<0.6						

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	<1.5	1.231	<0.73	<1.22	<1.09	<1.05	<20.1
2	<1.5	1.139	<0.78	<1.32	<1.12	<1.13	<22.3
3	<1.2	1.204	<0.59	<1.00	<0.83	<0.85	<16.1
Average			<0.70	<1.18	<1.01	<1.01	<19.5
Blank	<1.1						

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

Inorganic Condensable Particulate

Test	Total Collected	Dry Volume Sampled	Inorganic Condensable Particulate Concentration				Emission Rate
			Actual	Dry Reference	Dry Adjusted	Wet Reference	
No.	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	6.0	1.231	2.90	4.87	4.35	4.19	80.4
2	5.8	1.139	3.02	5.09	4.35	4.37	86.1
3	7.3	1.204	3.58	6.06	5.04	5.14	98.2
Average			3.17	5.34	4.58	4.57	88.2
Blank	1.8						

Organic Condensable Particulate

Test	Total Collected	Dry Volume Sampled	Organic Condensable Particulate Concentration				Emission Rate
			Actual	Dry Reference	Dry Adjusted	Wet Reference	
No.	mg	Rm^3*	mg/m^3	mg/Rm^3*	mg/Rm^3**	mg/Rm^3*	mg/s
1	<1.0	1.231	<0.48	<0.81	<0.72	<0.70	<13.4
2	<1.0	1.139	<0.52	<0.88	<0.75	<0.75	<14.8
3	<1.0	1.204	<0.49	<0.83	<0.69	<0.70	<13.5
Average			<0.50	<0.84	<0.72	<0.72	<13.9
Blank	<1.0						

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

Hydrogen Chloride

Test No.	HCl Collected µg	Dry Volume Sampled Rm³*	Hydrogen Chloride Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	HCl Emission Rate mg/s
1	7100	1.287	3.25	5.52	4.66	4.69	93.2
2	6300	1.219	3.04	5.17	4.37	4.39	87.3
3	7400	1.243	3.51	5.95	5.12	5.06	102
Average			3.27	5.55	4.71	4.71	94.1
Blank	<200						

Hydrogen Fluoride

Test No.	HF Collected µg	Dry Volume Sampled Rm³*	Hydrogen Fluoride Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	HF Emission Rate mg/s
1	<200	1.287	<0.092	<0.16	<0.13	<0.13	<2.63
2	<200	1.219	<0.097	<0.16	<0.14	<0.14	<2.77
3	<200	1.243	<0.095	<0.16	<0.14	<0.14	<2.75
Average			<0.094	<0.16	<0.14	<0.14	<2.72
Blank	<200						

Ammonia

Test No.	Ammonia Collected µg	Dry Volume Sampled Rm³*	Ammonia Concentration Actual mg/m³	Dry Reference mg/Rm³*	Dry Adjusted mg/Rm³**	Wet Reference mg/Rm³*	Ammonia Emission Rate mg/s
1	2077	1.287	0.95	1.61	1.36	1.37	27.3
2	2077	1.219	1.00	1.70	1.44	1.45	28.8
3	1794	1.243	0.85	1.44	1.24	1.23	24.7
Average			0.93	1.59	1.35	1.35	26.9
Blank	<23.6						

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 October 25 to October 28, 2016 and October 31, 2016

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	8.38	9.12	10.36
BH Outlet	Carbon Dioxide (kg/Rm^3, 1 hr Avg) *	0.16	0.18	0.19
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	5	11	24
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	7.3	11.4	18.3
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	1	17
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.8	1.3
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	93	112	140
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	111	112	113
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	1	4
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.4	1.2	1.8
BH Outlet	Total Hydrocarbons (mg/Rm^3, 1 hr Avg) *	0	0	1
Quench Inlet	Oxygen (%, 1 hr Avg)	8	9	10

Data measured by the ORTECH CEMS on October 26, 2016

Sampling Location	Test No.	Parameter	Minimum	Average	Maximum
BH Outlet	1	Total Hydrocarbons (ppm dry, 1-min Avg)	0	0.9	3.3
BH Outlet	2	Total Hydrocarbons (ppm dry, 1-min Avg)	0.5	2.2	3.6
BH Outlet	3	Total Hydrocarbons (ppm dry, 1-min Avg)	0	1.3	4.3
Average		Total Hydrocarbons (ppm dry, 1-min Avg)		1.5	

* 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	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	7.9	7.8	15.7
Beryllium	<0.20	<0.050	<0.20
Cadmium	0.23	<0.050	0.23
Chromium	3.95	0.98	4.93
Cobalt	<0.20	0.189	0.19
Copper	<4.0	8.2	8.20
Lead	1.28	1.22	2.50
Manganese	2.4	1.38	3.78
Mercury *	<0.015	0.32	0.32
Molybdenum	23.2	<0.25	23.2
Nickel	3.8	1.44	5.24
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	17	11.0	28.0
Total			<95.5

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	6.3	8.1	14.4
Beryllium	<0.20	<0.050	<0.20
Cadmium	0.28	0.230	0.51
Chromium	24.1	2.66	26.8
Cobalt	<0.20	0.176	0.18
Copper	<4.0	8.4	8.40
Lead	1.12	0.76	1.88
Manganese	3.2	1.45	4.65
Mercury *	<0.015	0.18	0.18
Molybdenum	22.4	<0.25	22.4
Nickel	4.2	1.40	5.60
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	15	7.1	22.1
Total			<110

* 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 µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	7.0	12.3	19.3
Beryllium	<0.20	<0.050	<0.20
Cadmium	0.25	0.069	0.32
Chromium	2.36	1.07	3.43
Cobalt	<0.20	0.105	0.11
Copper	<4.0	7.5	7.50
Lead	0.58	0.64	1.22
Manganese	2.1	1.44	3.54
Mercury *	<0.015	0.23	0.23
Molybdenum	23.5	<0.25	23.5
Nickel	2.3	1.30	3.60
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	11	6.5	17.5
Total			<83.5

* Includes the permanganate impingers

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

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

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.80	<0.12	<0.20	<0.17	<0.17	<0.0034
Arsenic	<0.20	<0.029	<0.050	<0.042	<0.042	<0.00084
Barium	15.7	2.30	3.91	3.31	3.32	0.066
Beryllium	<0.20	<0.029	<0.050	<0.042	<0.042	<0.00084
Cadmium	0.23	0.034	0.057	0.048	0.049	0.00097
Chromium	4.93	0.72	1.23	1.04	1.04	0.021
Cobalt	0.19	0.028	0.047	0.040	0.040	0.00080
Copper	8.20	1.20	2.04	1.73	1.74	0.035
Lead	2.50	0.37	0.62	0.53	0.53	0.011
Manganese	3.78	0.55	0.94	0.80	0.80	0.016
Mercury	0.32	0.047	0.079	0.067	0.067	0.0013
Molybdenum	23.2	3.40	5.78	4.89	4.91	0.098
Nickel	5.24	0.77	1.31	1.10	1.11	0.022
Selenium	<0.50	<0.073	<0.12	<0.11	<0.11	<0.0021
Silver	<0.40	<0.059	<0.10	<0.084	<0.085	<0.0017
Thallium	<1.00	<0.15	<0.25	<0.21	<0.21	<0.0042
Vanadium	<0.15	<0.022	<0.037	<0.032	<0.032	<0.00063
Zinc	28.0	4.11	6.98	5.90	5.93	0.12
Total	<95.5	<14.0	<23.8	<20.1	<20.2	<0.40

Dry Gas Volume Sampled (Rm³*) :	4.013
Actual Flowrate (m³/s) :	28.7
Dry Reference Flowrate (Rm³/s*) :	16.9
Dry Adjusted Flowrate (Rm³/s**) :	20.0
Wet Reference Flowrate (Rm³/s*) :	19.9

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.80	<0.12	<0.20	<0.17	<0.17	<0.0034
Arsenic	<0.20	<0.029	<0.049	<0.042	<0.042	<0.00084
Barium	14.4	2.09	3.54	3.05	3.02	0.061
Beryllium	<0.20	<0.029	<0.049	<0.042	<0.042	<0.00084
Cadmium	0.51	0.074	0.13	0.11	0.11	0.0021
Chromium	26.8	3.88	6.59	5.66	5.60	0.11
Cobalt	0.18	0.026	0.043	0.037	0.037	0.00074
Copper	8.40	1.22	2.07	1.78	1.76	0.035
Lead	1.88	0.27	0.46	0.40	0.39	0.0079
Manganese	4.65	0.67	1.14	0.98	0.97	0.020
Mercury	0.18	0.026	0.044	0.038	0.038	0.00076
Molybdenum	22.4	3.25	5.51	4.74	4.69	0.094
Nickel	5.60	0.81	1.38	1.18	1.17	0.024
Selenium	<0.50	<0.073	<0.12	<0.11	<0.10	<0.0021
Silver	<0.40	<0.058	<0.098	<0.085	<0.084	<0.0017
Thallium	<1.00	<0.15	<0.25	<0.21	<0.21	<0.0042
Vanadium	<0.15	<0.022	<0.037	<0.032	<0.031	<0.00063
Zinc	22.1	3.21	5.44	4.67	4.63	0.093
Total	<110	<16.0	<27.1	<23.3	<23.1	<0.46

Dry Gas Volume Sampled (Rm³*) :	4.063
Actual Flowrate (m³/s) :	29.0
Dry Reference Flowrate (Rm³/s*) :	17.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	20.1

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.80	<0.11	<0.20	<0.16	<0.17	<0.0034
Arsenic	<0.20	<0.029	<0.049	<0.041	<0.041	<0.00084
Barium	19.3	2.76	4.74	3.95	3.99	0.081
Beryllium	<0.20	<0.029	<0.049	<0.041	<0.041	<0.00084
Cadmium	0.32	0.046	0.078	0.065	0.066	0.0013
Chromium	3.43	0.49	0.84	0.70	0.71	0.014
Cobalt	0.11	0.015	0.026	0.022	0.022	0.00044
Copper	7.50	1.07	1.84	1.54	1.55	0.032
Lead	1.22	0.17	0.30	0.25	0.25	0.0051
Manganese	3.54	0.51	0.87	0.73	0.73	0.015
Mercury	0.23	0.033	0.056	0.047	0.048	0.00097
Molybdenum	23.5	3.36	5.77	4.82	4.86	0.099
Nickel	3.60	0.51	0.88	0.74	0.74	0.015
Selenium	<0.50	<0.071	<0.12	<0.10	<0.10	<0.0021
Silver	<0.40	<0.057	<0.098	<0.082	<0.083	<0.0017
Thallium	<1.00	<0.14	<0.25	<0.20	<0.21	<0.0042
Vanadium	<0.15	<0.021	<0.037	<0.031	<0.031	<0.00063
Zinc	17.5	2.50	4.30	3.59	3.62	0.074
Total	<83.5	<11.9	<20.5	<17.1	<17.3	<0.35

Dry Gas Volume Sampled (Rm³*) :	4.071
Actual Flowrate (m³/s) :	29.4
Dry Reference Flowrate (Rm³/s*) :	17.1
Dry Adjusted Flowrate (Rm³/s**) :	20.5
Wet Reference Flowrate (Rm³/s*) :	20.3

* 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/m³	µg/m³	µg/m³	µg/m³	%
Antimony	<0.12	<0.12	<0.11	<0.12	1.3
Arsenic	<0.029	<0.029	<0.029	<0.029	1.3
Barium	2.30	2.09	2.76	2.38	14.3
Beryllium	<0.029	<0.029	<0.029	<0.029	1.3
Cadmium	0.034	0.074	0.046	0.051	40.5
Chromium	0.72	3.88	0.49	1.70	112
Cobalt	0.028	0.026	0.015	0.023	29.9
Copper	1.20	1.22	1.07	1.16	7.0
Lead	0.37	0.27	0.17	0.27	35.5
Manganese	0.55	0.67	0.51	0.58	15.0
Mercury	0.047	0.026	0.033	0.035	29.5
Molybdenum	3.40	3.25	3.36	3.34	2.4
Nickel	0.77	0.81	0.51	0.70	23.1
Selenium	<0.073	<0.073	<0.071	<0.072	1.3
Silver	<0.059	<0.058	<0.057	<0.058	1.3
Thallium	<0.15	<0.15	<0.14	<0.14	1.3
Vanadium	<0.022	<0.022	<0.021	<0.022	1.3
Zinc	4.11	3.21	2.50	3.27	24.6
Total	<14.0	<16.0	<11.9	<14.0	14.6

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

Metal	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.20	<0.20	<0.20	<0.20	0.8
Arsenic	<0.050	<0.049	<0.049	<0.049	0.8
Barium	3.91	3.54	4.74	4.07	15.1
Beryllium	<0.050	<0.049	<0.049	<0.049	0.8
Cadmium	0.057	0.13	0.078	0.087	40.1
Chromium	1.23	6.59	0.84	2.89	111
Cobalt	0.047	0.043	0.026	0.039	29.3
Copper	2.04	2.07	1.84	1.98	6.2
Lead	0.62	0.46	0.30	0.46	35.0
Manganese	0.94	1.14	0.87	0.99	14.5
Mercury	0.079	0.044	0.056	0.060	29.4
Molybdenum	5.78	5.51	5.77	5.69	2.7
Nickel	1.31	1.38	0.88	1.19	22.4
Selenium	<0.12	<0.12	<0.12	<0.12	0.8
Silver	<0.10	<0.098	<0.098	<0.099	0.8
Thallium	<0.25	<0.25	<0.25	<0.25	0.8
Vanadium	<0.037	<0.037	<0.037	<0.037	0.8
Zinc	6.98	5.44	4.30	5.57	24.1
Total	<23.8	<27.1	<20.5	<23.8	13.9

* 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	<0.17	<0.17	<0.16	<0.17	1.7
Arsenic	<0.042	<0.042	<0.041	<0.042	1.7
Barium	3.31	3.05	3.95	3.44	13.6
Beryllium	<0.042	<0.042	<0.041	<0.042	1.7
Cadmium	0.048	0.11	0.065	0.074	41.4
Chromium	1.04	5.66	0.70	2.47	112
Cobalt	0.040	0.037	0.022	0.033	30.1
Copper	1.73	1.78	1.54	1.68	7.5
Lead	0.53	0.40	0.25	0.39	35.3
Manganese	0.80	0.98	0.73	0.83	16.0
Mercury	0.067	0.038	0.047	0.051	28.9
Molybdenum	4.89	4.74	4.82	4.81	1.5
Nickel	1.10	1.18	0.74	1.01	23.6
Selenium	<0.11	<0.11	<0.10	<0.10	1.7
Silver	<0.084	<0.085	<0.082	<0.084	1.7
Thallium	<0.21	<0.21	<0.20	<0.21	1.7
Vanadium	<0.032	<0.032	<0.031	<0.031	1.7
Zinc	5.90	4.67	3.59	4.72	24.5
Total	<20.1	<23.3	<17.1	<20.2	15.4

** 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
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.17	<0.17	<0.17	<0.17	1.1
Arsenic	<0.042	<0.042	<0.041	<0.042	1.1
Barium	3.32	3.02	3.99	3.44	14.5
Beryllium	<0.042	<0.042	<0.041	<0.042	1.1
Cadmium	0.049	0.11	0.066	0.074	40.4
Chromium	1.04	5.60	0.71	2.45	111
Cobalt	0.040	0.037	0.022	0.033	29.7
Copper	1.74	1.76	1.55	1.68	6.7
Lead	0.53	0.39	0.25	0.39	35.3
Manganese	0.80	0.97	0.73	0.84	14.9
Mercury	0.067	0.038	0.048	0.051	29.4
Molybdenum	4.91	4.69	4.86	4.82	2.4
Nickel	1.11	1.17	0.74	1.01	22.9
Selenium	<0.11	<0.10	<0.10	<0.10	1.1
Silver	<0.085	<0.084	<0.083	<0.084	1.1
Thallium	<0.21	<0.21	<0.21	<0.21	1.1
Vanadium	<0.032	<0.031	<0.031	<0.031	1.1
Zinc	5.93	4.63	3.62	4.72	24.5
Total	<20.2	<23.1	<17.3	<20.2	14.4

* 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	<0.0034	<0.0034	<0.0034	<0.0034	0.1
Arsenic	<0.00084	<0.00084	<0.00084	<0.00084	0.1
Barium	0.066	0.061	0.081	0.069	15.3
Beryllium	<0.00084	<0.00084	<0.00084	<0.00084	0.1
Cadmium	0.00097	0.0021	0.0013	0.0015	40.6
Chromium	0.021	0.11	0.014	0.049	112
Cobalt	0.00080	0.00074	0.00044	0.00066	29.0
Copper	0.035	0.035	0.032	0.034	6.0
Lead	0.011	0.0079	0.0051	0.0079	34.4
Manganese	0.016	0.020	0.015	0.017	14.7
Mercury	0.0013	0.00076	0.00097	0.0010	28.7
Molybdenum	0.098	0.094	0.099	0.097	2.4
Nickel	0.022	0.024	0.015	0.020	22.3
Selenium	<0.0021	<0.0021	<0.0021	<0.0021	0.1
Silver	<0.0017	<0.0017	<0.0017	<0.0017	0.1
Thallium	<0.0042	<0.0042	<0.0042	<0.0042	0.1
Vanadium	<0.00063	<0.00063	<0.00063	<0.00063	0.1
Zinc	0.12	0.093	0.074	0.095	23.5
Total	<0.40	<0.46	<0.35	<0.41	14.0

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	<0.12	<0.20	<0.17	<0.17	<0.0034
Arsenic	<0.029	<0.049	<0.042	<0.042	<0.00084
Barium	2.38	4.07	3.44	3.44	0.069
Beryllium	<0.029	<0.049	<0.042	<0.042	<0.00084
Cadmium	0.051	0.087	0.074	0.074	0.0015
Chromium	1.70	2.89	2.47	2.45	0.049
Cobalt	0.023	0.039	0.033	0.033	0.00066
Copper	1.16	1.98	1.68	1.68	0.034
Lead	0.27	0.46	0.39	0.39	0.0079
Manganese	0.58	0.99	0.83	0.84	0.017
Mercury	0.035	0.060	0.051	0.051	0.0010
Molybdenum	3.34	5.69	4.81	4.82	0.097
Nickel	0.70	1.19	1.01	1.01	0.020
Selenium	<0.072	<0.12	<0.10	<0.10	<0.0021
Silver	<0.058	<0.099	<0.084	<0.084	<0.0017
Thallium	<0.14	<0.25	<0.21	<0.21	<0.0042
Vanadium	<0.022	<0.037	<0.031	<0.031	<0.00063
Zinc	3.27	5.57	4.72	4.72	0.095
Total	<14.0	<23.8	<20.2	<20.2	<0.41

* 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	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	6.1	7.3	13.4
Beryllium	<0.20	<0.050	<0.20
Cadmium	<0.20	<0.050	<0.20
Chromium	2.56	0.93	3.49
Cobalt	<0.20	<0.050	<0.050
Copper	<4.0	7.7	7.70
Lead	0.42	0.39	0.81
Manganese	2.0	6.32	8.32
Mercury *	<0.015	<0.02	<0.020
Molybdenum	24.3	<0.25	24.3
Nickel	1.2	1.00	2.20
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	<10	<2.5	<10.0
Total			73.7

* 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. 1 BH Outlet
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	187	0.014	0.025	0.021	0.021	0.39
Pentachlorodibenzo-p-dioxins	314	0.024	0.041	0.035	0.035	0.66
Hexachlorodibenzo-p-dioxins	992	0.077	0.13	0.11	0.11	2.09
Heptachlorodibenzo-p-dioxins	768	0.059	0.10	0.085	0.086	1.62
Octachlorodibenzo-p-dioxin	894	0.069	0.12	0.099	0.10	1.89
Total	3155	0.24	0.42	0.35	0.35	6.66

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	328	0.025	0.043	0.036	0.037	0.69
Pentachlorodibenzofurans	436	0.034	0.057	0.048	0.049	0.92
Hexachlorodibenzofurans	309	0.024	0.041	0.034	0.034	0.65
Heptachlorodibenzofurans	287	0.022	0.038	0.032	0.032	0.61
Octachlorodibenzofuran	123	0.0095	0.016	0.014	0.014	0.26
Total	1483	0.11	0.20	0.16	0.17	3.13

Dry Gas Volume Sampled (Rm^3*) :	7.583
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	16.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	131	0.010	0.017	0.014	0.015	0.27
Pentachlorodibenzo-p-dioxins	266	0.021	0.035	0.029	0.030	0.56
Hexachlorodibenzo-p-dioxins	268	0.021	0.035	0.029	0.030	0.56
Heptachlorodibenzo-p-dioxins	674	0.052	0.089	0.074	0.075	1.41
Octachlorodibenzo-p-dioxin	680	0.053	0.090	0.075	0.076	1.43
Total	2019	0.16	0.27	0.22	0.22	4.24

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	218	0.017	0.029	0.024	0.024	0.46
Pentachlorodibenzofurans	254	0.020	0.034	0.028	0.028	0.53
Hexachlorodibenzofurans	215	0.017	0.028	0.024	0.024	0.45
Heptachlorodibenzofurans	224	0.017	0.030	0.025	0.025	0.47
Octachlorodibenzofuran	103	0.0080	0.014	0.011	0.011	0.22
Total	1014	0.079	0.13	0.11	0.11	2.13

Dry Gas Volume Sampled (Rm³*) :	7.575
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

TABLE 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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	196	0.015	0.026	0.022	0.022	0.41
Pentachlorodibenzo-p-dioxins	257	0.020	0.034	0.029	0.029	0.54
Hexachlorodibenzo-p-dioxins	733	0.058	0.097	0.082	0.082	1.54
Heptachlorodibenzo-p-dioxins	448	0.035	0.059	0.050	0.050	0.94
Octachlorodibenzo-p-dioxin	459	0.036	0.061	0.051	0.051	0.96
Total	2093	0.16	0.28	0.23	0.23	4.39

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1910	0.15	0.25	0.21	0.21	4.00
Pentachlorodibenzofurans	1100	0.086	0.15	0.12	0.12	2.31
Hexachlorodibenzofurans	511	0.040	0.068	0.057	0.057	1.07
Heptachlorodibenzofurans	340	0.027	0.045	0.038	0.038	0.71
Octachlorodibenzofuran	83.2	0.0065	0.011	0.0093	0.0093	0.17
Total	3944	0.31	0.52	0.44	0.44	8.27

Dry Gas Volume Sampled (Rm³*) :	7.538
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* 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 Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.014	0.010	0.015	0.013	20.8
Pentachlorodibenzo-p-dioxins	0.024	0.021	0.020	0.022	10.3
Hexachlorodibenzo-p-dioxins	0.077	0.021	0.058	0.052	54.9
Heptachlorodibenzo-p-dioxins	0.059	0.052	0.035	0.049	25.4
Octachlorodibenzo-p-dioxin	0.069	0.053	0.036	0.053	31.4
Total	0.24	0.16	0.16	0.19	25.6

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	0.025	0.017	0.15	0.064	116
Pentachlorodibenzofurans	0.034	0.020	0.086	0.047	75.4
Hexachlorodibenzofurans	0.024	0.017	0.040	0.027	44.6
Heptachlorodibenzofurans	0.022	0.017	0.027	0.022	21.0
Octachlorodibenzofuran	0.0095	0.0080	0.0065	0.0080	18.6
Total	0.11	0.079	0.31	0.17	74.1

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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.025	0.017	0.026	0.023	20.7
Pentachlorodibenzo-p-dioxins	0.041	0.035	0.034	0.037	10.7
Hexachlorodibenzo-p-dioxins	0.13	0.035	0.097	0.088	55.1
Heptachlorodibenzo-p-dioxins	0.10	0.089	0.059	0.083	25.8
Octachlorodibenzo-p-dioxin	0.12	0.090	0.061	0.090	31.8
Total	0.42	0.27	0.28	0.32	26.0

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.043	0.029	0.25	0.11	116
Pentachlorodibenzofurans	0.057	0.034	0.15	0.079	74.9
Hexachlorodibenzofurans	0.041	0.028	0.068	0.046	44.2
Heptachlorodibenzofurans	0.038	0.030	0.045	0.038	20.7
Octachlorodibenzofuran	0.016	0.014	0.011	0.014	19.0
Total	0.20	0.13	0.52	0.28	73.6

* 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	0.021	0.014	0.022	0.019	21.4
Pentachlorodibenzo-p-dioxins	0.035	0.029	0.029	0.031	10.9
Hexachlorodibenzo-p-dioxins	0.11	0.029	0.082	0.074	55.4
Heptachlorodibenzo-p-dioxins	0.085	0.074	0.050	0.070	25.6
Octachlorodibenzo-p-dioxin	0.099	0.075	0.051	0.075	31.8
Total	0.35	0.22	0.23	0.27	26.3

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	0.036	0.024	0.21	0.091	116
Pentachlorodibenzofurans	0.048	0.028	0.12	0.067	75.5
Hexachlorodibenzofurans	0.034	0.024	0.057	0.038	44.8
Heptachlorodibenzofurans	0.032	0.025	0.038	0.032	21.4
Octachlorodibenzofuran	0.014	0.011	0.0093	0.011	19.0
Total	0.16	0.11	0.44	0.24	74.2

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.021	0.015	0.022	0.019	20.9
Pentachlorodibenzo-p-dioxins	0.035	0.030	0.029	0.031	11.0
Hexachlorodibenzo-p-dioxins	0.11	0.030	0.082	0.074	55.3
Heptachlorodibenzo-p-dioxins	0.086	0.075	0.050	0.070	25.9
Octachlorodibenzo-p-dioxin	0.10	0.076	0.051	0.076	32.0
Total	0.35	0.22	0.23	0.27	26.3

Furans

Congener Group	Wet reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.037	0.024	0.21	0.092	116
Pentachlorodibenzofurans	0.049	0.028	0.12	0.067	75.0
Hexachlorodibenzofurans	0.034	0.024	0.057	0.039	44.3
Heptachlorodibenzofurans	0.032	0.025	0.038	0.032	20.9
Octachlorodibenzofuran	0.014	0.011	0.0093	0.011	19.2
Total	0.17	0.11	0.44	0.24	73.7

* 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	0.39	0.27	0.41	0.36	20.6
Pentachlorodibenzo-p-dioxins	0.66	0.56	0.54	0.59	11.3
Hexachlorodibenzo-p-dioxins	2.09	0.56	1.54	1.40	55.4
Heptachlorodibenzo-p-dioxins	1.62	1.41	0.94	1.32	26.4
Octachlorodibenzo-p-dioxin	1.89	1.43	0.96	1.43	32.4
Total	6.66	4.24	4.39	5.09	26.6

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	0.69	0.46	4.00	1.72	115
Pentachlorodibenzofurans	0.92	0.53	2.31	1.25	74.4
Hexachlorodibenzofurans	0.65	0.45	1.07	0.72	43.6
Heptachlorodibenzofurans	0.61	0.47	0.71	0.60	20.4
Octachlorodibenzofuran	0.26	0.22	0.17	0.22	19.6
Total	3.13	2.13	8.27	4.51	73.1

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 ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.013	0.023	0.019	0.019	0.36
Pentachlorodibenzo-p-dioxins	0.022	0.037	0.031	0.031	0.59
Hexachlorodibenzo-p-dioxins	0.052	0.088	0.074	0.074	1.40
Heptachlorodibenzo-p-dioxins	0.049	0.083	0.070	0.070	1.32
Octachlorodibenzo-p-dioxin	0.053	0.090	0.075	0.076	1.43
Total	0.19	0.32	0.27	0.27	5.09

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.064	0.11	0.091	0.092	1.72
Pentachlorodibenzofurans	0.047	0.079	0.067	0.067	1.25
Hexachlorodibenzofurans	0.027	0.046	0.038	0.039	0.72
Heptachlorodibenzofurans	0.022	0.038	0.032	0.032	0.60
Octachlorodibenzofuran	0.0080	0.014	0.011	0.011	0.22
Total	0.17	0.28	0.24	0.24	4.51

* At 25°C and 1 atmosphere

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

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

Dioxins

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<14	<11
Pentachlorodibenzo-p-dioxins	<13	<6.8
Hexachlorodibenzo-p-dioxins	<24	<21
Heptachlorodibenzo-p-dioxins	<5.2	<3.9
Octachlorodibenzo-p-dioxin	16.8	11.3
Total	<73.0	<54.0

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<5.0	<6.4
Pentachlorodibenzofurans	<5.4	<6.7
Hexachlorodibenzofurans	<4.6	<4.7
Heptachlorodibenzofurans	<5.9	4.9
Octachlorodibenzofuran	<6.0	<2.7
Total	<26.9	<25.4

"<" 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 pg	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	<5.5	<0.43	<0.73	<0.61	<0.61	<0.012
12378-pentachlorodibenzo-p-dioxin	12.8	0.99	1.69	1.42	1.43	0.027
123478-hexachlorodibenzo-p-dioxin	18.3	1.41	2.41	2.03	2.04	0.039
123678-hexachlorodibenzo-p-dioxin	43.7	3.38	5.76	4.85	4.88	0.092
123789-hexachlorodibenzo-p-dioxin	40.3	3.11	5.31	4.48	4.50	0.085
1234678-heptachlorodibenzo-p-dioxin	386	29.8	50.9	42.9	43.1	0.81
Octachlorodibenzo-p-dioxin	894	69.1	118	99.3	99.8	1.89
2378-tetrachlorodibenzofuran	15.1	1.17	1.99	1.68	1.69	0.032
12378-pentachlorodibenzofuran	28.3	2.19	3.73	3.14	3.16	0.060
23478-pentachlorodibenzofuran	43.9	3.39	5.79	4.88	4.90	0.093
123478-hexachlorodibenzofuran	63.0	4.87	8.31	7.00	7.03	0.13
123678-hexachlorodibenzofuran	38.6	2.98	5.09	4.29	4.31	0.081
234678-hexachlorodibenzofuran	40.8	3.15	5.38	4.53	4.55	0.086
123789-hexachlorodibenzofuran	<5.1	<0.39	<0.67	<0.57	<0.57	<0.011
1234678-heptachlorodibenzofuran	178	13.8	23.5	19.8	19.9	0.38
1234789-heptachlorodibenzofuran	22.0	1.70	2.90	2.44	2.46	0.046
Octachlorodibenzofuran	123	9.51	16.2	13.7	13.7	0.26
PCB 81	<72	<5.56	<9.49	<8.00	<8.04	<0.15
PCB 77	170	13.1	22.4	18.9	19.0	0.36
PCB 123	<100	<7.73	<13.2	<11.1	<11.2	<0.21
PCB 118	3600	278	475	400	402	7.60
PCB 114	<91	<7.03	<12.0	<10.1	<10.2	<0.19
PCB 105	1000	77.3	132	111	112	2.11
PCB 126	<94	<7.27	<12.4	<10.4	<10.5	<0.20
PCB 167	<84	<6.49	<11.1	<9.33	<9.38	<0.18
PCB 156 + PCB 157	130	10.0	17.1	14.4	14.5	0.27
PCB 169	<84	<6.49	<11.1	<9.33	<9.38	<0.18
PCB 189	<38	<2.94	<5.01	<4.22	<4.24	<0.080
Total Dioxins & Furans Only	<1958	<151	<258	<217	<219	<4.13
Total PCBs Only	<5463	<422	<720	<607	<610	<11.5
Total Dioxins & Furans and PCBs	<7421	<574	<979	<824	<829	<15.7

Dry Gas Volume Sampled (Rm³*) :	7.583
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 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 pg	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	<5.2	<0.40	<0.69	<0.57	<0.58	<0.011
12378-pentachlorodibenzo-p-dioxin	9.2	0.72	1.21	1.01	1.02	0.019
123478-hexachlorodibenzo-p-dioxin	15.9	1.24	2.10	1.75	1.77	0.033
123678-hexachlorodibenzo-p-dioxin	39.7	3.09	5.24	4.36	4.41	0.083
123789-hexachlorodibenzo-p-dioxin	39.7	3.09	5.24	4.36	4.41	0.083
1234678-heptachlorodibenzo-p-dioxin	332	25.8	43.8	36.5	36.9	0.70
Octachlorodibenzo-p-dioxin	680	52.9	89.8	74.7	75.5	1.43
2378-tetrachlorodibenzofuran	<10	<0.78	<1.32	<1.10	<1.11	<0.021
12378-pentachlorodibenzofuran	15.8	1.23	2.09	1.74	1.75	0.033
23478-pentachlorodibenzofuran	31.3	2.43	4.13	3.44	3.48	0.066
123478-hexachlorodibenzofuran	48.0	3.73	6.34	5.27	5.33	0.10
123678-hexachlorodibenzofuran	26.5	2.06	3.50	2.91	2.94	0.056
234678-hexachlorodibenzofuran	28.2	2.19	3.72	3.10	3.13	0.059
123789-hexachlorodibenzofuran	<6.9	<0.54	<0.91	<0.76	<0.77	<0.014
1234678-heptachlorodibenzofuran	128	9.95	16.9	14.1	14.2	0.27
1234789-heptachlorodibenzofuran	22.4	1.74	2.96	2.46	2.49	0.047
Octachlorodibenzofuran	103	8.01	13.6	11.3	11.4	0.22
PCB 81	<110	<8.55	<14.5	<12.1	<12.2	<0.23
PCB 77	<110	<8.55	<14.5	<12.1	<12.2	<0.23
PCB 123	<96	<7.46	<12.7	<10.5	<10.7	<0.20
PCB 118	1800	140	238	198	200	3.78
PCB 114	<86	<6.69	<11.4	<9.5	<9.55	<0.18
PCB 105	570	44.3	75.2	62.6	63.3	1.20
PCB 126	<89	<6.92	<11.7	<9.78	<9.88	<0.19
PCB 167	<100	<7.77	<13.2	<11.0	<11.1	<0.21
PCB 156 + PCB 157	<96	<7.46	<12.7	<10.5	<10.7	<0.20
PCB 169	<100	<7.77	<13.2	<11.0	<11.1	<0.21
PCB 189	<55	<4.28	<7.26	<6.04	<6.11	<0.12
Total Dioxins & Furans Only	<1542	<120	<204	<169	<171	<3.24
Total PCBs Only	<3212	<250	<424	<353	<357	<6.74
Total Dioxins & Furans and PCBs	<4754	<370	<628	<522	<528	<9.98

Dry Gas Volume Sampled (Rm^3*) :	7.575
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

TABLE 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 pg	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	12.9	1.01	1.71	1.45	1.45	0.027
12378-pentachlorodibenzo-p-dioxin	16.1	1.26	2.14	1.80	1.80	0.034
123478-hexachlorodibenzo-p-dioxin	17.0	1.33	2.26	1.91	1.91	0.036
123678-hexachlorodibenzo-p-dioxin	35.8	2.81	4.75	4.01	4.01	0.075
123789-hexachlorodibenzo-p-dioxin	38.0	2.98	5.04	4.26	4.26	0.080
1234678-heptachlorodibenzo-p-dioxin	220	17.3	29.2	24.7	24.7	0.46
Octachlorodibenzo-p-dioxin	459	36.0	60.9	51.4	51.4	0.96
2378-tetrachlorodibenzofuran	57.2	4.49	7.59	6.41	6.41	0.12
12378-pentachlorodibenzofuran	93.3	7.32	12.4	10.5	10.5	0.20
23478-pentachlorodibenzofuran	115	9.03	15.3	12.9	12.9	0.24
123478-hexachlorodibenzofuran	136	10.7	18.0	15.2	15.2	0.29
123678-hexachlorodibenzofuran	<85	<6.67	<11.3	<9.53	<9.53	<0.18
234678-hexachlorodibenzofuran	58.5	4.59	7.76	6.56	6.56	0.12
123789-hexachlorodibenzofuran	12.4	0.97	1.64	1.39	1.39	0.026
1234678-heptachlorodibenzofuran	226	17.7	30.0	25.3	25.3	0.47
1234789-heptachlorodibenzofuran	29.5	2.32	3.91	3.31	3.31	0.062
Octachlorodibenzofuran	83.2	6.53	11.0	9.33	9.33	0.17
PCB 81	<94	<7.38	<12.5	<10.5	<10.5	<0.20
PCB 77	92	7.22	12.2	10.3	10.3	0.19
PCB 123	<87	<6.83	<11.5	<9.75	<9.75	<0.18
PCB 118	1200	94.2	159	135	135	2.52
PCB 114	<78	<6.12	<10.3	<8.74	<8.74	<0.16
PCB 105	<340	<26.7	<45.1	<38.1	<38.1	<0.71
PCB 126	<80	<6.28	<10.6	<8.97	<8.97	<0.17
PCB 167	<76	<5.97	<10.1	<8.52	<8.52	<0.16
PCB 156 + PCB 157	<71	<5.57	<9.42	<7.96	<7.96	<0.15
PCB 169	<77	<6.04	<10.2	<8.63	<8.63	<0.16
PCB 189	<43	<3.38	<5.70	<4.82	<4.82	<0.090
Total Dioxins & Furans Only	<1695	<133	<225	<190	<190	<3.55
Total PCBs Only	<2238	<176	<297	<251	<251	<4.69
Total Dioxins & Furans and PCBs	<3933	<309	<522	<441	<441	<8.24

Dry Gas Volume Sampled (Rm³*) :	7.538
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* 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 Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.43	<0.40	1.01	<0.61	56.3
12378-pentachlorodibenzo-p-dioxin	0.99	0.72	1.26	0.99	27.7
123478-hexachlorodibenzo-p-dioxin	1.41	1.24	1.33	1.33	6.7
123678-hexachlorodibenzo-p-dioxin	3.38	3.09	2.81	3.09	9.2
123789-hexachlorodibenzo-p-dioxin	3.11	3.09	2.98	3.06	2.3
1234678-heptachlorodibenzo-p-dioxin	29.8	25.8	17.3	24.3	26.4
Octachlorodibenzo-p-dioxin	69.1	52.9	36.0	52.7	31.4
2378-tetrachlorodibenzofuran	1.17	<0.78	4.49	<2.14	95.1
12378-pentachlorodibenzofuran	2.19	1.23	7.32	3.58	91.6
23478-pentachlorodibenzofuran	3.39	2.43	9.03	4.95	72.0
123478-hexachlorodibenzofuran	4.87	3.73	10.7	6.43	58.0
123678-hexachlorodibenzofuran	2.98	2.06	<6.67	<3.91	62.5
234678-hexachlorodibenzofuran	3.15	2.19	4.59	3.31	36.5
123789-hexachlorodibenzofuran	<0.39	<0.54	0.97	<0.63	47.6
1234678-heptachlorodibenzofuran	13.8	9.95	17.7	13.8	28.2
1234789-heptachlorodibenzofuran	1.70	1.74	2.32	1.92	17.9
Octachlorodibenzofuran	9.51	8.01	6.53	8.02	18.6
PCB 81	<5.56	<8.55	<7.38	<7.17	21.0
PCB 77	13.1	<8.55	7.22	<9.64	32.2
PCB 123	<7.73	<7.46	<6.83	<7.34	6.3
PCB 118	278	140	94.2	171	56.1
PCB 114	<7.03	<6.69	<6.12	<6.61	6.9
PCB 105	77.3	44.3	<26.7	<49.4	52.0
PCB 126	<7.27	<6.92	<6.28	<6.82	7.3
PCB 167	<6.49	<7.77	<5.97	<6.74	13.8
PCB 156 + PCB 157	10.0	<7.46	<5.57	<7.69	29.2
PCB 169	<6.49	<7.77	<6.04	<6.77	13.3
PCB 189	<2.94	<4.28	<3.38	<3.53	19.3
Total Dioxins & Furans Only	<151	<120	<133	<135	11.7
Total PCBs Only	<422	<250	<176	<283	44.8
Total Dioxins & Furans and PCBs	<574	<370	<309	<417	33.2

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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.73	<0.69	1.71	<1.04	55.8
12378-pentachlorodibenzo-p-dioxin	1.69	1.21	2.14	1.68	27.4
123478-hexachlorodibenzo-p-dioxin	2.41	2.10	2.26	2.26	7.0
123678-hexachlorodibenzo-p-dioxin	5.76	5.24	4.75	5.25	9.7
123789-hexachlorodibenzo-p-dioxin	5.31	5.24	5.04	5.20	2.7
1234678-heptachlorodibenzo-p-dioxin	50.9	43.8	29.2	41.3	26.8
Octachlorodibenzo-p-dioxin	118	89.8	60.9	89.5	31.8
2378-tetrachlorodibenzofuran	1.99	<1.32	7.59	<3.63	94.7
12378-pentachlorodibenzofuran	3.73	2.09	12.4	6.07	91.1
23478-pentachlorodibenzofuran	5.79	4.13	15.3	8.39	71.5
123478-hexachlorodibenzofuran	8.31	6.34	18.0	10.9	57.5
123678-hexachlorodibenzofuran	5.09	3.50	<11.3	<6.62	62.1
234678-hexachlorodibenzofuran	5.38	3.72	7.76	5.62	36.1
123789-hexachlorodibenzofuran	<0.67	<0.91	1.64	<1.08	47.1
1234678-heptachlorodibenzofuran	23.5	16.9	30.0	23.5	27.9
1234789-heptachlorodibenzofuran	2.90	2.96	3.91	3.26	17.5
Octachlorodibenzofuran	16.2	13.6	11.0	13.6	19.0
PCB 81	<9.49	<14.5	<12.5	<12.2	20.8
PCB 77	22.4	<14.5	12.2	<16.4	32.7
PCB 123	<13.2	<12.7	<11.5	<12.5	6.8
PCB 118	475	238	159	291	56.6
PCB 114	<12.0	<11.4	<10.3	<11.2	7.4
PCB 105	132	75.2	<45.1	<84.1	52.4
PCB 126	<12.4	<11.7	<10.6	<11.6	7.8
PCB 167	<11.1	<13.2	<10.1	<11.5	13.9
PCB 156 + PCB 157	17.1	<12.7	<9.42	<13.1	29.7
PCB 169	<11.1	<13.2	<10.2	<11.5	13.4
PCB 189	<5.01	<7.26	<5.70	<5.99	19.2
Total Dioxins & Furans Only	<258	<204	<225	<229	12.1
Total PCBs Only	<720	<424	<297	<480	45.2
Total Dioxins & Furans and PCBs	<979	<628	<522	<709	33.7

* 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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.61	<0.57	1.45	<0.88	56.4
12378-pentachlorodibenzo-p-dioxin	1.42	1.01	1.80	1.41	28.1
123478-hexachlorodibenzo-p-dioxin	2.03	1.75	1.91	1.90	7.5
123678-hexachlorodibenzo-p-dioxin	4.85	4.36	4.01	4.41	9.6
123789-hexachlorodibenzo-p-dioxin	4.48	4.36	4.26	4.37	2.5
1234678-heptachlorodibenzo-p-dioxin	42.9	36.5	24.7	34.7	26.6
Octachlorodibenzo-p-dioxin	99.3	74.7	51.4	75.2	31.8
2378-tetrachlorodibenzofuran	1.68	<1.10	6.41	<3.06	95.2
12378-pentachlorodibenzofuran	3.14	1.74	10.5	5.11	91.6
23478-pentachlorodibenzofuran	4.88	3.44	12.9	7.07	72.0
123478-hexachlorodibenzofuran	7.00	5.27	15.2	9.17	58.1
123678-hexachlorodibenzofuran	4.29	2.91	<9.53	<5.58	62.6
234678-hexachlorodibenzofuran	4.53	3.10	6.56	4.73	36.7
123789-hexachlorodibenzofuran	<0.57	<0.76	1.39	<0.90	47.6
1234678-heptachlorodibenzofuran	19.8	14.1	25.3	19.7	28.6
1234789-heptachlorodibenzofuran	2.44	2.46	3.31	2.74	18.0
Octachlorodibenzofuran	13.7	11.3	9.33	11.4	19.0
PCB 81	<8.00	<12.1	<10.5	<10.2	20.2
PCB 77	18.9	<12.1	10.3	<13.8	32.9
PCB 123	<11.1	<10.5	<9.75	<10.5	6.5
PCB 118	400	198	135	244	56.8
PCB 114	<10.1	<9.5	<8.74	<9.43	7.2
PCB 105	111	62.6	<38.1	<70.6	52.6
PCB 126	<10.4	<9.78	<8.97	<9.73	7.6
PCB 167	<9.33	<11.0	<8.52	<9.61	13.1
PCB 156 + PCB 157	14.4	<10.5	<7.96	<11.0	29.7
PCB 169	<9.33	<11.0	<8.63	<9.65	12.6
PCB 189	<4.22	<6.04	<4.82	<5.03	18.5
Total Dioxins & Furans Only	<217	<169	<190	<192	12.5
Total PCBs Only	<607	<353	<251	<404	45.4
Total Dioxins & Furans and PCBs	<824	<522	<441	<596	33.9

* 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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.61	<0.58	1.45	<0.88	55.9
12378-pentachlorodibenzo-p-dioxin	1.43	1.02	1.80	1.42	27.6
123478-hexachlorodibenzo-p-dioxin	2.04	1.77	1.91	1.90	7.3
123678-hexachlorodibenzo-p-dioxin	4.88	4.41	4.01	4.43	9.8
123789-hexachlorodibenzo-p-dioxin	4.50	4.41	4.26	4.39	2.8
1234678-heptachlorodibenzo-p-dioxin	43.1	36.9	24.7	34.9	26.9
Octachlorodibenzo-p-dioxin	99.8	75.5	51.4	75.6	32.0
2378-tetrachlorodibenzofuran	1.69	<1.11	6.41	<3.07	94.8
12378-pentachlorodibenzofuran	3.16	1.75	10.5	5.12	91.2
23478-pentachlorodibenzofuran	4.90	3.48	12.9	7.09	71.6
123478-hexachlorodibenzofuran	7.03	5.33	15.2	9.20	57.6
123678-hexachlorodibenzofuran	4.31	2.94	<9.53	<5.59	62.1
234678-hexachlorodibenzofuran	4.55	3.13	6.56	4.75	36.2
123789-hexachlorodibenzofuran	<0.57	<0.77	1.39	<0.91	47.1
1234678-heptachlorodibenzofuran	19.9	14.2	25.3	19.8	28.1
1234789-heptachlorodibenzofuran	2.46	2.49	3.31	2.75	17.5
Octachlorodibenzofuran	13.7	11.4	9.33	11.5	19.2
PCB 81	<8.04	<12.2	<10.5	<10.3	20.5
PCB 77	19.0	<12.2	10.3	<13.8	32.9
PCB 123	<11.2	<10.7	<9.75	<10.5	6.8
PCB 118	402	200	135	245	56.8
PCB 114	<10.2	<9.55	<8.74	<9.48	7.5
PCB 105	112	63.3	<38.1	<71.0	52.6
PCB 126	<10.5	<9.88	<8.97	<9.78	7.9
PCB 167	<9.38	<11.1	<8.52	<9.67	13.6
PCB 156 + PCB 157	14.5	<10.7	<7.96	<11.0	29.8
PCB 169	<9.38	<11.1	<8.63	<9.70	13.1
PCB 189	<4.24	<6.11	<4.82	<5.06	18.9
Total Dioxins & Furans Only	<219	<171	<190	<193	12.4
Total PCBs Only	<610	<357	<251	<406	45.5
Total Dioxins & Furans and PCBs	<829	<528	<441	<599	34.0

* 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 Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.012	<0.011	0.027	<0.017	55.2
12378-pentachlorodibenzo-p-dioxin	0.027	0.019	0.034	0.027	27.1
123478-hexachlorodibenzo-p-dioxin	0.039	0.033	0.036	0.036	7.3
123678-hexachlorodibenzo-p-dioxin	0.092	0.083	0.075	0.084	10.3
123789-hexachlorodibenzo-p-dioxin	0.085	0.083	0.080	0.083	3.3
1234678-heptachlorodibenzo-p-dioxin	0.81	0.70	0.46	0.66	27.4
Octachlorodibenzo-p-dioxin	1.89	1.43	0.96	1.43	32.4
2378-tetrachlorodibenzofuran	0.032	<0.021	0.12	<0.058	94.2
12378-pentachlorodibenzofuran	0.060	0.033	0.20	0.096	90.6
23478-pentachlorodibenzofuran	0.093	0.066	0.24	0.13	70.9
123478-hexachlorodibenzofuran	0.13	0.10	0.29	0.17	56.9
123678-hexachlorodibenzofuran	0.081	0.056	<0.18	<0.11	61.5
234678-hexachlorodibenzofuran	0.086	0.059	0.12	0.089	35.6
123789-hexachlorodibenzofuran	<0.011	<0.014	0.026	<0.017	46.5
1234678-heptachlorodibenzofuran	0.38	0.27	0.47	0.37	27.5
1234789-heptachlorodibenzofuran	0.046	0.047	0.062	0.052	16.9
Octachlorodibenzofuran	0.26	0.22	0.17	0.22	19.6
PCB 81	<0.15	<0.23	<0.20	<0.19	20.5
PCB 77	0.36	<0.23	0.19	<0.26	33.3
PCB 123	<0.21	<0.20	<0.18	<0.20	7.4
PCB 118	7.60	3.78	2.52	4.63	57.1
PCB 114	<0.19	<0.18	<0.16	<0.18	8.0
PCB 105	2.11	1.20	<0.71	<1.34	53.0
PCB 126	<0.20	<0.19	<0.17	<0.18	8.4
PCB 167	<0.18	<0.21	<0.16	<0.18	14.1
PCB 156 + PCB 157	0.27	<0.20	<0.15	<0.21	30.3
PCB 169	<0.18	<0.21	<0.16	<0.18	13.5
PCB 189	<0.080	<0.12	<0.090	<0.095	19.1
Total Dioxins & Furans Only	<4.13	<3.24	<3.55	<3.64	12.5
Total PCBs Only	<11.5	<6.74	<4.69	<7.65	45.8
Total Dioxins & Furans and PCBs	<15.7	<9.98	<8.24	<11.3	34.3

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 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	<0.61	<1.04	<0.88	<0.88	<0.017
12378-pentachlorodibenzo-p-dioxin	0.99	1.68	1.41	1.42	0.027
123478-hexachlorodibenzo-p-dioxin	1.33	2.26	1.90	1.90	0.036
123678-hexachlorodibenzo-p-dioxin	3.09	5.25	4.41	4.43	0.084
123789-hexachlorodibenzo-p-dioxin	3.06	5.20	4.37	4.39	0.083
1234678-heptachlorodibenzo-p-dioxin	24.3	41.3	34.7	34.9	0.66
Octachlorodibenzo-p-dioxin	52.7	89.5	75.2	75.6	1.43
2378-tetrachlorodibenzofuran	<2.14	<3.63	<3.06	<3.07	<0.058
12378-pentachlorodibenzofuran	3.58	6.07	5.11	5.12	0.096
23478-pentachlorodibenzofuran	4.95	8.39	7.07	7.09	0.13
123478-hexachlorodibenzofuran	6.43	10.9	9.17	9.20	0.17
123678-hexachlorodibenzofuran	<3.91	<6.62	<5.58	<5.59	<0.11
234678-hexachlorodibenzofuran	3.31	5.62	4.73	4.75	0.089
123789-hexachlorodibenzofuran	<0.63	<1.08	<0.90	<0.91	<0.017
1234678-heptachlorodibenzofuran	13.8	23.5	19.7	19.8	0.37
1234789-heptachlorodibenzofuran	1.92	3.26	2.74	2.75	0.052
Octachlorodibenzofuran	8.02	13.6	11.4	11.5	0.22
PCB 81	<7.17	<12.2	<10.2	<10.3	<0.19
PCB 77	<9.64	<16.4	<13.8	<13.8	<0.26
PCB 123	<7.34	<12.5	<10.5	<10.5	<0.20
PCB 118	171	291	244	245	4.63
PCB 114	<6.61	<11.2	<9.43	<9.48	<0.18
PCB 105	<49.4	<84.1	<70.6	<71.0	<1.34
PCB 126	<6.82	<11.6	<9.73	<9.78	<0.18
PCB 167	<6.74	<11.5	<9.61	<9.67	<0.18
PCB 156 + PCB 157	<7.69	<13.1	<11.0	<11.0	<0.21
PCB 169	<6.77	<11.5	<9.65	<9.70	<0.18
PCB 189	<3.53	<5.99	<5.03	<5.06	<0.095
Total Dioxins & Furans Only	<135	<229	<192	<193	<3.64
Total PCBs Only	<283	<480	<404	<406	<7.65
Total Dioxins & Furans and PCBs	<417	<709	<596	<599	<11.3

* 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 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	<5.5	<5.2
12378-pentachlorodibenzo-p-dioxin	<5.5	<5.3
123478-hexachlorodibenzo-p-dioxin	<4.7	<4.7
123678-hexachlorodibenzo-p-dioxin	<4.8	<4.7
123789-hexachlorodibenzo-p-dioxin	<4.4	<4.3
1234678-heptachlorodibenzo-p-dioxin	<5.2	<3.9
Octachlorodibenzo-p-dioxin	16.8	11.3
2378-tetrachlorodibenzofuran	<5.0	<2.7
12378-pentachlorodibenzofuran	<5.4	<6.7
23478-pentachlorodibenzofuran	<5.4	<6.7
123478-hexachlorodibenzofuran	<4.5	<4.6
123678-hexachlorodibenzofuran	<4.3	<4.4
234678-hexachlorodibenzofuran	<4.7	<4.9
123789-hexachlorodibenzofuran	<5.0	<5.1
1234678-heptachlorodibenzofuran	<5.5	4.9
1234789-heptachlorodibenzofuran	<6.5	<4.5
Octachlorodibenzofuran	<6.0	<5.9
PCB 81	<72	<41
PCB 77	<70	<40
PCB 123	<40	<25
PCB 118	<36	<22
PCB 114	<36	<22
PCB 105	<36	<22
PCB 126	<37	<23
PCB 167	<13	<12
PCB 156 + PCB 157	<12	<11
PCB 169	<13	<12
PCB 189	<27	<22
Total Dioxins & Furans Only	<99.2	<89.8
Total PCBs Only	<392	<252
Total Dioxins & Furans and PCBs	<491	<342

"<" 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	<0.43	<0.40	1.01	<0.61
12378-pentachlorodibenzo-p-dioxin	1.000	0.99	0.72	1.26	0.99
123478-hexachlorodibenzo-p-dioxin	0.100	0.14	0.12	0.13	0.13
123678-hexachlorodibenzo-p-dioxin	0.100	0.34	0.31	0.28	0.31
123789-hexachlorodibenzo-p-dioxin	0.100	0.31	0.31	0.30	0.31
1234678-heptachlorodibenzo-p-dioxin	0.010	0.30	0.26	0.17	0.24
Octachlorodibenzo-p-dioxin	0.0003	0.021	0.016	0.011	0.016
2378-tetrachlorodibenzofuran	0.100	0.12	<0.078	0.45	<0.21
12378-pentachlorodibenzofuran	0.030	0.066	0.037	0.22	0.11
23478-pentachlorodibenzofuran	0.300	1.02	0.73	2.71	1.49
123478-hexachlorodibenzofuran	0.100	0.49	0.37	1.07	0.64
123678-hexachlorodibenzofuran	0.100	0.30	0.21	<0.67	<0.39
234678-hexachlorodibenzofuran	0.100	0.32	0.22	0.46	0.33
123789-hexachlorodibenzofuran	0.100	<0.039	<0.054	0.097	<0.063
1234678-heptachlorodibenzofuran	0.010	0.14	0.10	0.18	0.14
1234789-heptachlorodibenzofuran	0.010	0.017	0.017	0.023	0.019
Octachlorodibenzofuran	0.0003	0.0029	0.0024	0.0020	0.0024
PCB 81	0.0003	<0.0017	<0.0026	<0.0022	<0.0021
PCB 77	0.0001	0.0013	<0.00086	0.00072	<0.00096
PCB 123	0.00003	<0.00023	<0.00022	<0.00020	<0.00022
PCB 118	0.00003	0.0083	0.0042	0.0028	0.0051
PCB 114	0.00003	<0.00021	<0.00020	<0.00018	<0.00020
PCB 105	0.00003	0.0023	0.0013	<0.00080	<0.0015
PCB 126	0.100	<0.73	<0.69	<0.63	<0.68
PCB 167	0.00003	<0.00019	<0.00023	<0.00018	<0.00020
PCB 156 + PCB 157	0.00003	0.00030	<0.00022	<0.00017	<0.00023
PCB 169	0.030	<0.19	<0.23	<0.18	<0.20
PCB 189	0.00003	<0.000088	<0.00013	<0.00010	<0.00011
Total Dioxins & Furans Only		<5.02	<3.95	<9.04	<6.01
Total PCBs Only		<0.94	<0.94	<0.82	<0.90
Total Dioxins & Furans and PCBs		<5.96	<4.89	<9.86	<6.90

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	<0.73	<0.69	1.71	<1.04
12378-pentachlorodibenzo-p-dioxin	1.000	1.69	1.21	2.14	1.68
123478-hexachlorodibenzo-p-dioxin	0.100	0.24	0.21	0.23	0.23
123678-hexachlorodibenzo-p-dioxin	0.100	0.58	0.52	0.47	0.53
123789-hexachlorodibenzo-p-dioxin	0.100	0.53	0.52	0.50	0.52
1234678-heptachlorodibenzo-p-dioxin	0.010	0.51	0.44	0.29	0.41
Octachlorodibenzo-p-dioxin	0.0003	0.035	0.027	0.018	0.027
2378-tetrachlorodibenzofuran	0.100	0.20	<0.13	0.76	<0.36
12378-pentachlorodibenzofuran	0.030	0.11	0.063	0.37	0.18
23478-pentachlorodibenzofuran	0.300	1.74	1.24	4.58	2.52
123478-hexachlorodibenzofuran	0.100	0.83	0.63	1.80	1.09
123678-hexachlorodibenzofuran	0.100	0.51	0.35	<1.13	<0.66
234678-hexachlorodibenzofuran	0.100	0.54	0.37	0.78	0.56
123789-hexachlorodibenzofuran	0.100	<0.067	<0.091	0.16	<0.11
1234678-heptachlorodibenzofuran	0.010	0.23	0.17	0.30	0.23
1234789-heptachlorodibenzofuran	0.010	0.029	0.030	0.039	0.033
Octachlorodibenzofuran	0.0003	0.0049	0.0041	0.0033	0.0041
PCB 81	0.0003	<0.0028	<0.0044	<0.0037	<0.0036
PCB 77	0.0001	0.0022	<0.0015	0.0012	<0.0016
PCB 123	0.00003	<0.00040	<0.00038	<0.00035	<0.00037
PCB 118	0.00003	0.014	0.0071	0.0048	0.0087
PCB 114	0.00003	<0.00036	<0.00034	<0.00031	<0.00034
PCB 105	0.00003	0.0040	0.0023	<0.0014	<0.0025
PCB 126	0.100	<1.24	<1.17	<1.06	<1.16
PCB 167	0.00003	<0.00033	<0.00040	<0.00030	<0.00034
PCB 156 + PCB 157	0.00003	0.00051	<0.00038	<0.00028	<0.00039
PCB 169	0.030	<0.33	<0.40	<0.31	<0.34
PCB 189	0.00003	<0.00015	<0.00022	<0.00017	<0.00018
Total Dioxins & Furans Only		<8.57	<6.71	<15.3	<10.2
Total PCBs Only		<1.60	<1.59	<1.38	<1.52
Total Dioxins & Furans and PCBs		<10.2	<8.30	<16.7	<11.7

* 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	<0.61	<0.57	1.45	<0.88
12378-pentachlorodibenzo-p-dioxin	1.000	1.42	1.01	1.80	1.41
123478-hexachlorodibenzo-p-dioxin	0.100	0.20	0.17	0.19	0.19
123678-hexachlorodibenzo-p-dioxin	0.100	0.49	0.44	0.40	0.44
123789-hexachlorodibenzo-p-dioxin	0.100	0.45	0.44	0.43	0.44
1234678-heptachlorodibenzo-p-dioxin	0.010	0.43	0.36	0.25	0.35
Octachlorodibenzo-p-dioxin	0.0003	0.030	0.022	0.015	0.023
2378-tetrachlorodibenzofuran	0.100	0.17	<0.11	0.64	<0.31
12378-pentachlorodibenzofuran	0.030	0.094	0.052	0.31	0.15
23478-pentachlorodibenzofuran	0.300	1.46	1.03	3.87	2.12
123478-hexachlorodibenzofuran	0.100	0.70	0.53	1.52	0.92
123678-hexachlorodibenzofuran	0.100	0.43	0.29	<0.95	<0.56
234678-hexachlorodibenzofuran	0.100	0.45	0.31	0.66	0.47
123789-hexachlorodibenzofuran	0.100	<0.057	<0.076	0.14	<0.090
1234678-heptachlorodibenzofuran	0.010	0.20	0.14	0.25	0.20
1234789-heptachlorodibenzofuran	0.010	0.024	0.025	0.033	0.027
Octachlorodibenzofuran	0.0003	0.0041	0.0034	0.0028	0.0034
PCB 81	0.0003	<0.0024	<0.0036	<0.0032	<0.0031
PCB 77	0.0001	0.0019	<0.0012	0.0010	<0.0014
PCB 123	0.00003	<0.00033	<0.00032	<0.00029	<0.00031
PCB 118	0.00003	0.012	0.0059	0.0040	0.0073
PCB 114	0.00003	<0.00030	<0.00028	<0.00026	<0.00028
PCB 105	0.00003	0.0033	0.0019	<0.0011	<0.0021
PCB 126	0.100	<1.04	<0.98	<0.90	<0.97
PCB 167	0.00003	<0.00028	<0.00033	<0.00026	<0.00029
PCB 156 + PCB 157	0.00003	0.00043	<0.00032	<0.00024	<0.00033
PCB 169	0.030	<0.28	<0.33	<0.26	<0.29
PCB 189	0.00003	<0.00013	<0.00018	<0.00014	<0.00015
Total Dioxins & Furans Only		<7.22	<5.58	<12.9	<8.57
Total PCBs Only		<1.34	<1.32	<1.17	<1.28
Total Dioxins & Furans and PCBs		<8.56	<6.91	<14.1	<9.85

* 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	0.31	0.29	1.45	0.68
12378-pentachlorodibenzo-p-dioxin	1.000	1.42	1.01	1.80	1.41
123478-hexachlorodibenzo-p-dioxin	0.100	0.20	0.17	0.19	0.19
123678-hexachlorodibenzo-p-dioxin	0.100	0.49	0.44	0.40	0.44
123789-hexachlorodibenzo-p-dioxin	0.100	0.45	0.44	0.43	0.44
1234678-heptachlorodibenzo-p-dioxin	0.010	0.43	0.36	0.25	0.35
Octachlorodibenzo-p-dioxin	0.0003	0.030	0.022	0.015	0.023
2378-tetrachlorodibenzofuran	0.100	0.17	0.055	0.64	0.29
12378-pentachlorodibenzofuran	0.030	0.094	0.052	0.31	0.15
23478-pentachlorodibenzofuran	0.300	1.46	1.03	3.87	2.12
123478-hexachlorodibenzofuran	0.100	0.70	0.53	1.52	0.92
123678-hexachlorodibenzofuran	0.100	0.43	0.29	0.48	0.40
234678-hexachlorodibenzofuran	0.100	0.45	0.31	0.66	0.47
123789-hexachlorodibenzofuran	0.100	0.028	0.038	0.14	0.068
1234678-heptachlorodibenzofuran	0.010	0.20	0.14	0.25	0.20
1234789-heptachlorodibenzofuran	0.010	0.024	0.025	0.033	0.027
Octachlorodibenzofuran	0.0003	0.0041	0.0034	0.0028	0.0034
PCB 81	0.0003	0.0012	0.0018	0.0016	0.0015
PCB 77	0.0001	0.0019	0.00060	0.0010	0.0012
PCB 123	0.00003	0.00017	0.00016	0.00015	0.00016
PCB 118	0.00003	0.012	0.0059	0.0040	0.0073
PCB 114	0.00003	0.00015	0.00014	0.00013	0.00014
PCB 105	0.00003	0.0033	0.0019	0.00057	0.0019
PCB 126	0.100	0.52	0.49	0.45	0.49
PCB 167	0.00003	0.00014	0.00016	0.00013	0.00014
PCB 156 + PCB 157	0.00003	0.00043	0.00016	0.00012	0.00024
PCB 169	0.030	0.14	0.16	0.13	0.14
PCB 189	0.00003	0.000063	0.000091	0.000072	0.000075
Total Dioxins & Furans Only		6.88	5.21	12.4	8.17
Total PCBs Only		0.68	0.66	0.59	0.64
Total Dioxins & Furans and PCBs		7.56	5.87	13.0	8.82

* 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	<0.61	<0.57	1.45	<0.88
12378-pentachlorodibenzo-p-dioxin	0.500	0.71	0.51	0.90	0.71
123478-hexachlorodibenzo-p-dioxin	0.100	0.20	0.17	0.19	0.19
123678-hexachlorodibenzo-p-dioxin	0.100	0.49	0.44	0.40	0.44
123789-hexachlorodibenzo-p-dioxin	0.100	0.45	0.44	0.43	0.44
1234678-heptachlorodibenzo-p-dioxin	0.010	0.43	0.36	0.25	0.35
Octachlorodibenzo-p-dioxin	0.001	0.099	0.075	0.051	0.075
2378-tetrachlorodibenzofuran	0.100	0.17	<0.11	0.64	<0.31
12378-pentachlorodibenzofuran	0.050	0.16	0.087	0.52	0.26
23478-pentachlorodibenzofuran	0.500	2.44	1.72	6.45	3.53
123478-hexachlorodibenzofuran	0.100	0.70	0.53	1.52	0.92
123678-hexachlorodibenzofuran	0.100	0.43	0.29	<0.95	<0.56
234678-hexachlorodibenzofuran	0.100	0.45	0.31	0.66	0.47
123789-hexachlorodibenzofuran	0.100	<0.057	<0.076	0.14	<0.090
1234678-heptachlorodibenzofuran	0.010	0.20	0.14	0.25	0.20
1234789-heptachlorodibenzofuran	0.010	0.024	0.025	0.033	0.027
Octachlorodibenzofuran	0.001	0.014	0.011	0.0093	0.011
Total Dioxins & Furans		<7.62	<5.86	<14.8	<9.44
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	<0.61	<0.58	1.45	<0.88
12378-pentachlorodibenzo-p-dioxin	1.000	1.43	1.02	1.80	1.42
123478-hexachlorodibenzo-p-dioxin	0.100	0.20	0.18	0.19	0.19
123678-hexachlorodibenzo-p-dioxin	0.100	0.49	0.44	0.40	0.44
123789-hexachlorodibenzo-p-dioxin	0.100	0.45	0.44	0.43	0.44
1234678-heptachlorodibenzo-p-dioxin	0.010	0.43	0.37	0.25	0.35
Octachlorodibenzo-p-dioxin	0.0003	0.030	0.023	0.015	0.023
2378-tetrachlorodibenzofuran	0.100	0.17	<0.11	0.64	<0.31
12378-pentachlorodibenzofuran	0.030	0.095	0.053	0.31	0.15
23478-pentachlorodibenzofuran	0.300	1.47	1.04	3.87	2.13
123478-hexachlorodibenzofuran	0.100	0.70	0.53	1.52	0.92
123678-hexachlorodibenzofuran	0.100	0.43	0.29	<0.95	<0.56
234678-hexachlorodibenzofuran	0.100	0.46	0.31	0.66	0.47
123789-hexachlorodibenzofuran	0.100	<0.057	<0.077	0.14	<0.091
1234678-heptachlorodibenzofuran	0.010	0.20	0.14	0.25	0.20
1234789-heptachlorodibenzofuran	0.010	0.025	0.025	0.033	0.028
Octachlorodibenzofuran	0.0003	0.0041	0.0034	0.0028	0.0034
PCB 81	0.0003	<0.0024	<0.0037	<0.0032	<0.0031
PCB 77	0.0001	0.0019	<0.0012	0.0010	<0.0014
PCB 123	0.00003	<0.00033	<0.00032	<0.00029	<0.00032
PCB 118	0.00003	0.012	0.0060	0.0040	0.0074
PCB 114	0.00003	<0.00030	<0.00029	<0.00026	<0.00028
PCB 105	0.00003	0.0033	0.0019	<0.0011	<0.0021
PCB 126	0.100	<1.05	<0.99	<0.90	<0.98
PCB 167	0.00003	<0.00028	<0.00033	<0.00026	<0.00029
PCB 156 + PCB 157	0.00003	0.00044	<0.00032	<0.00024	<0.00033
PCB 169	0.030	<0.28	<0.33	<0.26	<0.29
PCB 189	0.00003	<0.00013	<0.00018	<0.00014	<0.00015
Total Dioxins & Furans Only		<7.25	<5.64	<12.9	<8.60
Total PCBs Only		<1.35	<1.34	<1.17	<1.28
Total Dioxins & Furans and PCBs		<8.61	<6.98	<14.1	<9.89

* 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 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	<0.012	<0.011	0.027	<0.017
12378-pentachlorodibenzo-p-dioxin	1.000	0.027	0.019	0.034	0.027
123478-hexachlorodibenzo-p-dioxin	0.100	0.0039	0.0033	0.0036	0.0036
123678-hexachlorodibenzo-p-dioxin	0.100	0.0092	0.0083	0.0075	0.0084
123789-hexachlorodibenzo-p-dioxin	0.100	0.0085	0.0083	0.0080	0.0083
1234678-heptachlorodibenzo-p-dioxin	0.010	0.0081	0.0070	0.0046	0.0066
Octachlorodibenzo-p-dioxin	0.0003	0.00057	0.00043	0.00029	0.00043
2378-tetrachlorodibenzofuran	0.100	0.0032	<0.0021	0.012	<0.0058
12378-pentachlorodibenzofuran	0.030	0.0018	0.00099	0.0059	0.0029
23478-pentachlorodibenzofuran	0.300	0.028	0.020	0.072	0.040
123478-hexachlorodibenzofuran	0.100	0.013	0.010	0.029	0.017
123678-hexachlorodibenzofuran	0.100	0.0081	0.0056	<0.018	<0.011
234678-hexachlorodibenzofuran	0.100	0.0086	0.0059	0.012	0.0089
123789-hexachlorodibenzofuran	0.100	<0.0011	<0.0014	0.0026	<0.0017
1234678-heptachlorodibenzofuran	0.010	0.0038	0.0027	0.0047	0.0037
1234789-heptachlorodibenzofuran	0.010	0.00046	0.00047	0.00062	0.00052
Octachlorodibenzofuran	0.0003	0.000078	0.000065	0.000052	0.000065
PCB 81	0.0003	<0.000046	<0.000069	<0.000059	<0.000058
PCB 77	0.0001	0.000036	<0.000023	0.000019	<0.000026
PCB 123	0.00003	<0.0000063	<0.0000060	<0.0000055	<0.0000059
PCB 118	0.00003	0.00023	0.00011	0.000075	0.00014
PCB 114	0.00003	<0.0000058	<0.0000054	<0.0000049	<0.0000054
PCB 105	0.00003	0.000063	0.000036	<0.000021	<0.000040
PCB 126	0.100	<0.020	<0.019	<0.017	<0.018
PCB 167	0.00003	<0.0000053	<0.0000063	<0.0000048	<0.0000055
PCB 156 + PCB 157	0.00003	0.0000082	<0.0000060	<0.0000045	<0.0000062
PCB 169	0.030	<0.0053	<0.0063	<0.0048	<0.0055
PCB 189	0.00003	<0.0000024	<0.0000035	<0.0000027	<0.0000029
Total Dioxins & Furans Only		<0.14	<0.11	<0.24	<0.16
Total PCBs Only		<0.026	<0.025	<0.022	<0.024
Total Dioxins & Furans and PCBs		<0.16	<0.13	<0.26	<0.19

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	<0.61	<1.04	<0.88	<0.88	<0.017
12378-pentachlorodibenzo-p-dioxin	0.99	1.68	1.41	1.42	0.027
123478-hexachlorodibenzo-p-dioxin	0.13	0.23	0.19	0.19	0.0036
123678-hexachlorodibenzo-p-dioxin	0.31	0.53	0.44	0.44	0.0084
123789-hexachlorodibenzo-p-dioxin	0.31	0.52	0.44	0.44	0.0083
1234678-heptachlorodibenzo-p-dioxin	0.24	0.41	0.35	0.35	0.0066
Octachlorodibenzo-p-dioxin	0.016	0.027	0.023	0.023	0.00043
2378-tetrachlorodibenzofuran	<0.21	<0.36	<0.31	<0.31	<0.0058
12378-pentachlorodibenzofuran	0.11	0.18	0.15	0.15	0.0029
23478-pentachlorodibenzofuran	1.49	2.52	2.12	2.13	0.040
123478-hexachlorodibenzofuran	0.64	1.09	0.92	0.92	0.017
123678-hexachlorodibenzofuran	<0.39	<0.66	<0.56	<0.56	<0.011
234678-hexachlorodibenzofuran	0.33	0.56	0.47	0.47	0.0089
123789-hexachlorodibenzofuran	<0.063	<0.11	<0.090	<0.091	<0.0017
1234678-heptachlorodibenzofuran	0.14	0.23	0.20	0.20	0.0037
1234789-heptachlorodibenzofuran	0.019	0.033	0.027	0.028	0.00052
Octachlorodibenzofuran	0.0024	0.0041	0.0034	0.0034	0.000065
PCB 81	<0.0021	<0.0036	<0.0031	<0.0031	<0.000058
PCB 77	<0.00096	<0.0016	<0.0014	<0.0014	<0.000026
PCB 123	<0.00022	<0.00037	<0.00031	<0.00032	<0.0000059
PCB 118	0.0051	0.0087	0.0073	0.0074	0.00014
PCB 114	<0.00020	<0.00034	<0.00028	<0.00028	<0.0000054
PCB 105	<0.0015	<0.0025	<0.0021	<0.0021	<0.000040
PCB 126	<0.68	<1.16	<0.97	<0.98	<0.018
PCB 167	<0.00020	<0.00034	<0.00029	<0.00029	<0.0000055
PCB 156 + PCB 157	<0.00023	<0.00039	<0.00033	<0.00033	<0.0000062
PCB 169	<0.20	<0.34	<0.29	<0.29	<0.0055
PCB 189	<0.00011	<0.00018	<0.00015	<0.00015	<0.0000029
Total Dioxins & Furans Only	<6.01	<10.2	<8.57	<8.60	<0.16
Total PCBs Only	<0.90	<1.52	<1.28	<1.28	<0.024
Total Dioxins & Furans and PCBs	<6.90	<11.7	<9.85	<9.89	<0.19

* At 25°C and 1 atmosphere

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

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

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

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

Specific Isomer	Actual Concentration pg TEQ/m³	Dry Reference Concentration pg TEQ/Rm³*	Dry Adjusted Concentration pg TEQ/Rm³**	Wet Reference Concentration pg TEQ/Rm³*	Emission Rate ng TEQ/s
2378-tetrachlorodibenzo-p-dioxin	0.48	0.81	0.68	0.68	0.013
12378-pentachlorodibenzo-p-dioxin	0.99	1.68	1.41	1.42	0.027
123478-hexachlorodibenzo-p-dioxin	0.13	0.23	0.19	0.19	0.0036
123678-hexachlorodibenzo-p-dioxin	0.31	0.53	0.44	0.44	0.0084
123789-hexachlorodibenzo-p-dioxin	0.31	0.52	0.44	0.44	0.0083
1234678-heptachlorodibenzo-p-dioxin	0.24	0.41	0.35	0.35	0.0066
Octachlorodibenzo-p-dioxin	0.016	0.027	0.023	0.023	0.00043
2378-tetrachlorodibenzofuran	0.20	0.34	0.29	0.29	0.0054
12378-pentachlorodibenzofuran	0.11	0.18	0.15	0.15	0.0029
23478-pentachlorodibenzofuran	1.49	2.52	2.12	2.13	0.040
123478-hexachlorodibenzofuran	0.64	1.09	0.92	0.92	0.017
123678-hexachlorodibenzofuran	0.28	0.47	0.40	0.40	0.0075
234678-hexachlorodibenzofuran	0.33	0.56	0.47	0.47	0.0089
123789-hexachlorodibenzofuran	0.048	0.081	0.068	0.069	0.0013
1234678-heptachlorodibenzofuran	0.14	0.23	0.20	0.20	0.0037
1234789-heptachlorodibenzofuran	0.019	0.033	0.027	0.028	0.00052
Octachlorodibenzofuran	0.0024	0.0041	0.0034	0.0034	0.000065
PCB 81	0.0011	0.0018	0.0015	0.0015	0.000029
PCB 77	0.00082	0.0014	0.0012	0.0012	0.000022
PCB 123	0.00011	0.00019	0.00016	0.00016	0.0000030
PCB 118	0.0051	0.0087	0.0073	0.0074	0.00014
PCB 114	0.000099	0.00017	0.00014	0.00014	0.0000027
PCB 105	0.0013	0.0023	0.0019	0.0019	0.000037
PCB 126	0.34	0.58	0.49	0.49	0.0092
PCB 167	0.00010	0.00017	0.00014	0.00015	0.0000027
PCB 156 + PCB 157	0.00017	0.00028	0.00024	0.00024	0.0000045
PCB 169	0.10	0.17	0.14	0.15	0.0027
PCB 189	0.000053	0.000090	0.000075	0.000076	0.0000014
Total Dioxins & Furans Only	5.73	9.71	8.17	8.21	0.15
Total PCBs Only	0.45	0.77	0.64	0.65	0.012
Total Dioxins & Furans and PCBs	6.18	10.5	8.82	8.85	0.17

* 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 µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
1,4-Dichlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
1,2-Dichlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Dichlorobenzene	<0.75	<58.0	<98.9	<83.3	<83.7	<1.58
1,3,5-trichlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
1,2,4-trichlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
1,2,3-trichlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Trichlorobenzene	<0.75	<58.0	<98.9	<83.3	<83.7	<1.58
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
1,2,3,4-tetrachlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Tetrachlorobenzene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
Pentachlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Hexachlorobenzene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Chlorobenzenes	<2.50	<193	<330	<278	<279	<5.27

Dry Gas Volume Sampled (Rm³*) :	7.583
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

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

Specific Isomer	Total Collected µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
1,4-Dichlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
1,2-Dichlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Dichlorobenzene	<0.75	<58.3	<99.0	<82.4	<83.3	<1.57
1,3,5-trichlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
1,2,4-trichlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
1,2,3-trichlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Trichlorobenzene	<0.75	<58.3	<99.0	<82.4	<83.3	<1.57
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
1,2,3,4-tetrachlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Tetrachlorobenzene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
Pentachlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Hexachlorobenzene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Chlorobenzenes	<2.50	<194	<330	<275	<278	<5.25

Dry Gas Volume Sampled (Rm³*) :	7.575
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

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

Specific Isomer	Total Collected µg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
1,3-Dichlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
1,4-Dichlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
1,2-Dichlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Dichlorobenzene	<0.75	<58.9	<99.5	<84.1	<84.1	<1.57
1,3,5-trichlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
1,2,4-trichlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
1,2,3-trichlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Trichlorobenzene	<0.75	<58.9	<99.5	<84.1	<84.1	<1.57
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
1,2,3,4-tetrachlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Tetrachlorobenzene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
Pentachlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Hexachlorobenzene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Chlorobenzenes	<2.50	<196	<332	<280	<280	<5.24

Dry Gas Volume Sampled (Rm^3*) :	7.538
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	18.7

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
1,3-Dichlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
1,4-Dichlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
1,2-Dichlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
Total Dichlorobenzene	<58.0	<58.3	<58.9	<58.4	0.8
1,3,5-trichlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
1,2,4-trichlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
1,2,3-trichlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
Total Trichlorobenzene	<58.0	<58.3	<58.9	<58.4	0.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<19.3	<19.4	<19.6	<19.5	0.8
1,2,3,4-tetrachlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
Total Tetrachlorobenzene	<38.6	<38.9	<39.3	<38.9	0.8
Pentachlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
Hexachlorobenzene	<19.3	<19.4	<19.6	<19.5	0.8
Total Chlorobenzenes	<193	<194	<196	<195	0.8

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

Specific Isomer	Dry Reference Concentration Test No. 1 ng/Rm^3*	Test No. 2 ng/Rm^3*	Test No. 3 ng/Rm^3*	Average ng/Rm^3*	Coefficient of Variation %
1,3-Dichlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
1,4-Dichlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
1,2-Dichlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
Total Dichlorobenzene	<98.9	<99.0	<99.5	<99.1	0.3
1,3,5-trichlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
1,2,4-trichlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
1,2,3-trichlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
Total Trichlorobenzene	<98.9	<99.0	<99.5	<99.1	0.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<33.0	<33.0	<33.2	<33.0	0.3
1,2,3,4-tetrachlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
Total Tetrachlorobenzene	<65.9	<66.0	<66.3	<66.1	0.3
Pentachlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
Hexachlorobenzene	<33.0	<33.0	<33.2	<33.0	0.3
Total Chlorobenzenes	<330	<330	<332	<330	0.3

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
1,4-Dichlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
1,2-Dichlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
Total Dichlorobenzene	<83.3	<82.4	<84.1	<83.3	1.0
1,3,5-trichlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
1,2,4-trichlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
1,2,3-trichlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
Total Trichlorobenzene	<83.3	<82.4	<84.1	<83.3	1.0
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<27.8	<27.5	<28.0	<27.8	1.0
1,2,3,4-tetrachlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
Total Tetrachlorobenzene	<55.5	<54.9	<56.0	<55.5	1.0
Pentachlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
Hexachlorobenzene	<27.8	<27.5	<28.0	<27.8	1.0
Total Chlorobenzenes	<278	<275	<280	<278	1.0

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
1,3-Dichlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
1,4-Dichlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
1,2-Dichlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
Total Dichlorobenzene	<83.7	<83.3	<84.1	<83.7	0.5
1,3,5-trichlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
1,2,4-trichlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
1,2,3-trichlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
Total Trichlorobenzene	<83.7	<83.3	<84.1	<83.7	0.5
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<27.9	<27.8	<28.0	<27.9	0.5
1,2,3,4-tetrachlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
Total Tetrachlorobenzene	<55.8	<55.5	<56.0	<55.8	0.5
Pentachlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
Hexachlorobenzene	<27.9	<27.8	<28.0	<27.9	0.5
Total Chlorobenzenes	<279	<278	<280	<279	0.5

* 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 %
1,3-Dichlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
1,4-Dichlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
1,2-Dichlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
Total Dichlorobenzene	<1.58	<1.57	<1.57	<1.58	0.3
1,3,5-trichlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
1,2,4-trichlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
1,2,3-trichlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
Total Trichlorobenzene	<1.58	<1.57	<1.57	<1.58	0.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.53	<0.52	<0.52	<0.53	0.3
1,2,3,4-tetrachlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
Total Tetrachlorobenzene	<1.05	<1.05	<1.05	<1.05	0.3
Pentachlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
Hexachlorobenzene	<0.53	<0.52	<0.52	<0.53	0.3
Total Chlorobenzenes	<5.27	<5.25	<5.24	<5.25	0.3

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

Specific Isomer	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
1,3-Dichlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
1,4-Dichlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
1,2-Dichlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
Total Dichlorobenzene	<58.4	<99.1	<83.3	<83.7	<1.58
1,3,5-trichlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
1,2,4-trichlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
1,2,3-trichlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
Total Trichlorobenzene	<58.4	<99.1	<83.3	<83.7	<1.58
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<19.5	<33.0	<27.8	<27.9	<0.53
1,2,3,4-tetrachlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
Total Tetrachlorobenzene	<38.9	<66.1	<55.5	<55.8	<1.05
Pentachlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
Hexachlorobenzene	<19.5	<33.0	<27.8	<27.9	<0.53
Total Chlorobenzenes	<195	<330	<278	<279	<5.25

* 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 µg	Laboratory Blank Total µg
1,3-Dichlorobenzene	<0.25	<0.25
1,4-Dichlorobenzene	<0.25	<0.25
1,2-Dichlorobenzene	<0.25	<0.25
Total Dichlorobenzene	<0.75	<0.75
1,3,5-trichlorobenzene	<0.25	<0.25
1,2,4-trichlorobenzene	<0.25	<0.25
1,2,3-trichlorobenzene	<0.25	<0.25
Total Trichlorobenzene	<0.75	<0.75
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.25	<0.25
1,2,3,4-tetrachlorobenzene	<0.25	<0.25
Total Tetrachlorobenzene	<0.50	<0.50
Pentachlorobenzene	<0.25	<0.25
Hexachlorobenzene	<0.25	<0.25
Total Chlorobenzenes	<2.50	<2.50

"<" 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 µg	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	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
3-monochlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
4-monochlorophenol	<1.0	<77.3	<132	<111	<112	<2.11
Total Monochlorophenols	<1.50	<116	<198	<167	<167	<3.16
2,6-dichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,4 & 2,5-dichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
3,5-dichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,3-dichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
3,4-dichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Dichlorophenols	<1.25	<96.6	<165	<139	<140	<2.64
2,4,6-trichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,3,6-trichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,3,5-trichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,4,5-trichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,3,4-trichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
3,4,5-trichlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Trichlorophenols	<1.50	<116	<198	<167	<167	<3.16
2,3,5,6-tetrachlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,3,4,6-tetrachlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2,3,4,5-tetrachlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Tetrachlorophenols	<0.75	<58.0	<98.9	<83.3	<83.7	<1.58
Pentachlorophenol	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total Chlorophenols	<5.25	<406	<692	<583	<586	<11.1

Dry Gas Volume Sampled (Rm^3*) :	7.583
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	16.0
Dry Adjusted Flowrate (Rm^3/s**) :	19.0
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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 µg	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	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
3-monochlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
4-monochlorophenol	<1.0	<77.7	<132	<110	<111	<2.10
Total Monochlorophenols	<1.50	<117	<198	<165	<167	<3.15
2,6-dichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,4 & 2,5-dichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
3,5-dichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,3-dichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
3,4-dichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Dichlorophenols	<1.25	<97.2	<165	<137	<139	<2.62
2,4,6-trichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,3,6-trichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,3,5-trichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,4,5-trichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,3,4-trichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
3,4,5-trichlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Trichlorophenols	<1.50	<117	<198	<165	<167	<3.15
2,3,5,6-tetrachlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,3,4,6-tetrachlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2,3,4,5-tetrachlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Tetrachlorophenols	<0.75	<58.3	<99.0	<82.4	<83.3	<1.57
Pentachlorophenol	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total Chlorophenols	<5.25	<408	<693	<577	<583	<11.0

Dry Gas Volume Sampled (Rm³*) :	7.575
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

TABLE 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 µg	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	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
3-monochlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
4-monochlorophenol	<1.0	<78.5	<133	<112	<112	<2.10
Total Monochlorophenols	<1.50	<118	<199	<168	<168	<3.14
2,6-dichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,4 & 2,5-dichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
3,5-dichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,3-dichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
3,4-dichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Dichlorophenols	<1.25	<98.1	<166	<140	<140	<2.62
2,4,6-trichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,3,6-trichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,3,5-trichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,4,5-trichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,3,4-trichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
3,4,5-trichlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Trichlorophenols	<1.50	<118	<199	<168	<168	<3.14
2,3,5,6-tetrachlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,3,4,6-tetrachlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2,3,4,5-tetrachlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Tetrachlorophenols	<0.75	<58.9	<99.5	<84.1	<84.1	<1.57
Pentachlorophenol	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total Chlorophenols	<5.25	<412	<696	<588	<588	<11.0

Dry Gas Volume Sampled (Rm^3*) :	7.538
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	18.7

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
2-monochlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
3-monochlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
4-monochlorophenol	<77.3	<77.7	<78.5	<77.8	0.8
Total Monochlorophenols	<116	<117	<118	<117	0.8
2,6-dichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,4 & 2,5-dichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
3,5-dichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,3-dichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
3,4-dichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
Total Dichlorophenols	<96.6	<97.2	<98.1	<97.3	0.8
2,4,6-trichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,3,6-trichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,3,5-trichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,4,5-trichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,3,4-trichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
3,4,5-trichlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
Total Trichlorophenols	<116	<117	<118	<117	0.8
2,3,5,6-tetrachlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,3,4,6-tetrachlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
2,3,4,5-tetrachlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
Total Tetrachlorophenols	<58.0	<58.3	<58.9	<58.4	0.8
Pentachlorophenol	<19.3	<19.4	<19.6	<19.5	0.8
Total Chlorophenols	<406	<408	<412	<409	0.8

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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
3-monochlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
4-monochlorophenol	<132	<132	<133	<132	0.3
Total Monochlorophenols	<198	<198	<199	<198	0.3
2,6-dichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,4 & 2,5-dichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
3,5-dichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,3-dichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
3,4-dichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
Total Dichlorophenols	<165	<165	<166	<165	0.3
2,4,6-trichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,3,6-trichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,3,5-trichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,4,5-trichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,3,4-trichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
3,4,5-trichlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
Total Trichlorophenols	<198	<198	<199	<198	0.3
2,3,5,6-tetrachlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,3,4,6-tetrachlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
2,3,4,5-tetrachlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
Total Tetrachlorophenols	<98.9	<99.0	<99.5	<99.1	0.3
Pentachlorophenol	<33.0	<33.0	<33.2	<33.0	0.3
Total Chlorophenols	<692	<693	<696	<694	0.3

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
3-monochlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
4-monochlorophenol	<111	<110	<112	<111	1.0
Total Monochlorophenols	<167	<165	<168	<167	1.0
2,6-dichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,4 & 2,5-dichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
3,5-dichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,3-dichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
3,4-dichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
Total Dichlorophenols	<139	<137	<140	<139	1.0
2,4,6-trichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,3,6-trichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,3,5-trichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,4,5-trichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,3,4-trichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
3,4,5-trichlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
Total Trichlorophenols	<167	<165	<168	<167	1.0
2,3,5,6-tetrachlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,3,4,6-tetrachlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
2,3,4,5-tetrachlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
Total Tetrachlorophenols	<83.3	<82.4	<84.1	<83.3	1.0
Pentachlorophenol	<27.8	<27.5	<28.0	<27.8	1.0
Total Chlorophenols	<583	<577	<588	<583	1.0

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
3-monochlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
4-monochlorophenol	<112	<111	<112	<112	0.5
Total Monochlorophenols	<167	<167	<168	<167	0.5
2,6-dichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,4 & 2,5-dichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
3,5-dichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,3-dichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
3,4-dichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
Total Dichlorophenols	<140	<139	<140	<139	0.5
2,4,6-trichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,3,6-trichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,3,5-trichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,4,5-trichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,3,4-trichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
3,4,5-trichlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
Total Trichlorophenols	<167	<167	<168	<167	0.5
2,3,5,6-tetrachlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,3,4,6-tetrachlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
2,3,4,5-tetrachlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
Total Tetrachlorophenols	<83.7	<83.3	<84.1	<83.7	0.5
Pentachlorophenol	<27.9	<27.8	<28.0	<27.9	0.5
Total Chlorophenols	<586	<583	<588	<586	0.5

* 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	<0.53	<0.52	<0.52	<0.53	0.3
3-monochlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
4-monochlorophenol	<2.11	<2.10	<2.10	<2.10	0.3
Total Monochlorophenols	<3.16	<3.15	<3.14	<3.15	0.3
2,6-dichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,4 & 2,5-dichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
3,5-dichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,3-dichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
3,4-dichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
Total Dichlorophenols	<2.64	<2.62	<2.62	<2.63	0.3
2,4,6-trichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,3,6-trichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,3,5-trichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,4,5-trichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,3,4-trichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
3,4,5-trichlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
Total Trichlorophenols	<3.16	<3.15	<3.14	<3.15	0.3
2,3,5,6-tetrachlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,3,4,6-tetrachlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
2,3,4,5-tetrachlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
Total Tetrachlorophenols	<1.58	<1.57	<1.57	<1.58	0.3
Pentachlorophenol	<0.53	<0.52	<0.52	<0.53	0.3
Total Chlorophenols	<11.1	<11.0	<11.0	<11.0	0.3

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/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate µg/s
2-monochlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
3-monochlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
4-monochlorophenol	<77.8	<132	<111	<112	<2.10
Total Monochlorophenols	<117	<198	<167	<167	<3.15
2,6-dichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,4 & 2,5-dichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
3,5-dichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,3-dichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
3,4-dichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
Total Dichlorophenols	<97.3	<165	<139	<139	<2.63
2,4,6-trichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,3,6-trichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,3,5-trichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,4,5-trichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,3,4-trichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
3,4,5-trichlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
Total Trichlorophenols	<117	<198	<167	<167	<3.15
2,3,5,6-tetrachlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,3,4,6-tetrachlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
2,3,4,5-tetrachlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
Total Tetrachlorophenols	<58.4	<99.1	<83.3	<83.7	<1.58
Pentachlorophenol	<19.5	<33.0	<27.8	<27.9	<0.53
Total Chlorophenols	<409	<694	<583	<586	<11.0

* 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 µg	Blank Train Total µg
2-monochlorophenol	<0.25	<0.25
3-monochlorophenol	<0.25	<0.25
4-monochlorophenol	<0.25	<0.25
Total Monochlorophenols	<0.75	<0.75
2,6-dichlorophenol	<0.25	<0.25
2,4 & 2,5-dichlorophenol	<0.25	<0.25
3,5-dichlorophenol	<0.25	<0.25
2,3-dichlorophenol	<0.25	<0.25
3,4-dichlorophenol	<0.25	<0.25
Total Dichlorophenols	<1.25	<1.25
2,4,6-trichlorophenol	<0.25	<0.25
2,3,6-trichlorophenol	<0.25	<0.25
2,3,5-trichlorophenol	<0.25	<0.25
2,4,5-trichlorophenol	<0.25	<0.25
2,3,4-trichlorophenol	<0.25	<0.25
3,4,5-trichlorophenol	<0.25	<0.25
Total Trichlorophenols	<1.50	<1.50
2,3,5,6-tetrachlorophenol	<0.25	<0.25
2,3,4,6-tetrachlorophenol	<0.25	<0.25
2,3,4,5-tetrachlorophenol	<0.25	<0.25
Total Tetrachlorophenols	<0.75	<0.75
Pentachlorophenol	<0.25	<0.25
Total Chlorophenols	<4.50	<4.50

"<" 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 µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Acenaphthylene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Anthracene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Benzo(a)anthracene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Benzo(b)fluoranthene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Benzo(k)fluoranthene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Benzo(a)fluorene	<1.0	<77.3	<132	<111	<112	<2.11
Benzo(b)fluorene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
Benzo(g,h,i)perylene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Benzo(a)pyrene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Benzo(e)pyrene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
Biphenyl	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
2-Chloronaphthalene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
Chrysene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Coronene	<1.0	<77.3	<132	<111	<112	<2.11
Dibenzo(a,c)anthracene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Dibenz(a,h)anthracene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Dibenzo(a,e)pyrene	<1.0	<77.3	<132	<111	<112	<2.11
9,10-Dimethylanthracene	<1.0	<77.3	<132	<111	<112	<2.11
7,12-Dimethylbenzo(a)anthracene	<1.0	<77.3	<132	<111	<112	<2.11
Fluoranthene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Fluorene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Indeno(1,2,3-cd)pyrene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
2-Methylanthracene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
3-Methylcholanthrene	<1.0	<77.3	<132	<111	<112	<2.11
1-Methylnaphthalene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
2-Methylnaphthalene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
1-Methylphenanthrene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
9-Methylphenanthrene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Naphthalene	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
Perylene	<1.0	<77.3	<132	<111	<112	<2.11
Phenanthrene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Picene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Pyrene	<0.3	<19.3	<33.0	<27.8	<27.9	<0.53
Tetralin	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
m-Terphenyl	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
o-Terphenyl	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
p-Terphenyl	<0.50	<38.6	<65.9	<55.5	<55.8	<1.05
Triphenylene	<0.25	<19.3	<33.0	<27.8	<27.9	<0.53
Total	<18.0	<1391	<2374	<1999	<2010	<38.0

Dry Gas Volume Sampled (Rm³*) :	7.583
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

TABLE 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
	µg	ng/m³	ng/Rm³*	ng/Rm³**	ng/Rm³*	µg/s
Acenaphthene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Acenaphthylene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Anthracene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Benzo(a)anthracene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Benzo(b)fluoranthene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Benzo(k)fluoranthene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Benzo(a)fluorene	<1.0	<77.7	<132	<110	<111	<2.10
Benzo(b)fluorene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
Benzo(g,h,i)perylene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Benzo(a)pyrene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Benzo(e)pyrene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
Biphenyl	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
2-Chloronaphthalene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
Chrysene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Coronene	<1.0	<77.7	<132	<110	<111	<2.10
Dibenzo(a,c)anthracene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Dibenz(a,h)anthracene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Dibenzo(a,e)pyrene	<1.0	<77.7	<132	<110	<111	<2.10
9,10-Dimethylanthracene	<1.0	<77.7	<132	<110	<111	<2.10
7,12-Dimethylbenzo(a)anthracene	<1.0	<77.7	<132	<110	<111	<2.10
Fluoranthene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Fluorene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Indeno(1,2,3-cd)pyrene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
2-Methylanthracene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
3-Methylcholanthrene	<1.0	<77.7	<132	<110	<111	<2.10
1-Methylnaphthalene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
2-Methylnaphthalene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
1-Methylphenanthrene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
9-Methylphenanthrene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Naphthalene	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
Perylene	<1.0	<77.7	<132	<110	<111	<2.10
Phenanthrene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Picene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Pyrene	<0.3	<19.4	<33.0	<27.5	<27.8	<0.52
Tetralin	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
m-Terphenyl	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
o-Terphenyl	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
p-Terphenyl	<0.50	<38.9	<66.0	<54.9	<55.5	<1.05
Triphenylene	<0.25	<19.4	<33.0	<27.5	<27.8	<0.52
Total	<18.0	<1399	<2376	<1978	<1999	<37.8

Dry Gas Volume Sampled (Rm^3*) :	7.575
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere

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

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

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

Compound	Total Collected µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Acenaphthylene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Anthracene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Benzo(a)anthracene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Benzo(b)fluoranthene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Benzo(k)fluoranthene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Benzo(a)fluorene	<1.0	<78.5	<133	<112	<112	<2.10
Benzo(b)fluorene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
Benzo(g,h,i)perylene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Benzo(a)pyrene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Benzo(e)pyrene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
Biphenyl	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
2-Chloronaphthalene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
Chrysene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Coronene	<1.0	<78.5	<133	<112	<112	<2.10
Dibenzo(a,c)anthracene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Dibenz(a,h)anthracene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Dibenzo(a,e)pyrene	<1.0	<78.5	<133	<112	<112	<2.10
9,10-Dimethylanthracene	<1.0	<78.5	<133	<112	<112	<2.10
7,12-Dimethylbenzo(a)anthracene	<1.0	<78.5	<133	<112	<112	<2.10
Fluoranthene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Fluorene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Indeno(1,2,3-cd)pyrene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
2-Methylanthracene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
3-Methylcholanthrene	<1.0	<78.5	<133	<112	<112	<2.10
1-Methylnaphthalene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
2-Methylnaphthalene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
1-Methylphenanthrene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
9-Methylphenanthrene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Naphthalene	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
Perylene	<1.0	<78.5	<133	<112	<112	<2.10
Phenanthrene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Picene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Pyrene	<0.3	<19.6	<33.2	<28.0	<28.0	<0.52
Tetralin	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
m-Terphenyl	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
o-Terphenyl	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
p-Terphenyl	<0.50	<39.3	<66.3	<56.0	<56.0	<1.05
Triphenylene	<0.25	<19.6	<33.2	<28.0	<28.0	<0.52
Total	<18.0	<1413	<2388	<2018	<2018	<37.7

Dry Gas Volume Sampled (Rm³*) :	7.538
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<19.3	<19.4	<19.6	<19.5	0.8
Acenaphthylene	<19.3	<19.4	<19.6	<19.5	0.8
Anthracene	<19.3	<19.4	<19.6	<19.5	0.8
Benzo(a)anthracene	<19.3	<19.4	<19.6	<19.5	0.8
Benzo(b)fluoranthene	<19.3	<19.4	<19.6	<19.5	0.8
Benzo(k)fluoranthene	<19.3	<19.4	<19.6	<19.5	0.8
Benzo(a)fluorene	<77.3	<77.7	<78.5	<77.8	0.8
Benzo(b)fluorene	<38.6	<38.9	<39.3	<38.9	0.8
Benzo(g,h,i)perylene	<19.3	<19.4	<19.6	<19.5	0.8
Benzo(a)pyrene	<19.3	<19.4	<19.6	<19.5	0.8
Benzo(e)pyrene	<38.6	<38.9	<39.3	<38.9	0.8
Biphenyl	<38.6	<38.9	<39.3	<38.9	0.8
2-Chloronaphthalene	<38.6	<38.9	<39.3	<38.9	0.8
Chrysene	<19.3	<19.4	<19.6	<19.5	0.8
Coronene	<77.3	<77.7	<78.5	<77.8	0.8
Dibenzo(a,c)anthracene	<19.3	<19.4	<19.6	<19.5	0.8
Dibenz(a,h)anthracene	<19.3	<19.4	<19.6	<19.5	0.8
Dibenzo(a,e)pyrene	<77.3	<77.7	<78.5	<77.8	0.8
9,10-Dimethylanthracene	<77.3	<77.7	<78.5	<77.8	0.8
7,12-Dimethylbenzo(a)anthracene	<77.3	<77.7	<78.5	<77.8	0.8
Fluoranthene	<19.3	<19.4	<19.6	<19.5	0.8
Fluorene	<19.3	<19.4	<19.6	<19.5	0.8
Indeno(1,2,3-cd)pyrene	<19.3	<19.4	<19.6	<19.5	0.8
2-Methylanthracene	<38.6	<38.9	<39.3	<38.9	0.8
3-Methylcholanthrene	<77.3	<77.7	<78.5	<77.8	0.8
1-Methylnaphthalene	<38.6	<38.9	<39.3	<38.9	0.8
2-Methylnaphthalene	<19.3	<19.4	<19.6	<19.5	0.8
1-Methylphenanthrene	<38.6	<38.9	<39.3	<38.9	0.8
9-Methylphenanthrene	<19.3	<19.4	<19.6	<19.5	0.8
Naphthalene	<38.6	<38.9	<39.3	<38.9	0.8
Perylene	<77.3	<77.7	<78.5	<77.8	0.8
Phenanthrene	<19.3	<19.4	<19.6	<19.5	0.8
Picene	<19.3	<19.4	<19.6	<19.5	0.8
Pyrene	<19.3	<19.4	<19.6	<19.5	0.8
Tetralin	<38.6	<38.9	<39.3	<38.9	0.8
m-Terphenyl	<38.6	<38.9	<39.3	<38.9	0.8
o-Terphenyl	<38.6	<38.9	<39.3	<38.9	0.8
p-Terphenyl	<38.6	<38.9	<39.3	<38.9	0.8
Triphenylene	<19.3	<19.4	<19.6	<19.5	0.8
Total	<1391	<1399	<1413	<1401	0.8

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

Compound	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	<33.0	<33.0	<33.2	<33.0	0.3
Acenaphthylene	<33.0	<33.0	<33.2	<33.0	0.3
Anthracene	<33.0	<33.0	<33.2	<33.0	0.3
Benzo(a)anthracene	<33.0	<33.0	<33.2	<33.0	0.3
Benzo(b)fluoranthene	<33.0	<33.0	<33.2	<33.0	0.3
Benzo(k)fluoranthene	<33.0	<33.0	<33.2	<33.0	0.3
Benzo(a)fluorene	<132	<132	<133	<132	0.3
Benzo(b)fluorene	<65.9	<66.0	<66.3	<66.1	0.3
Benzo(g,h,i)perylene	<33.0	<33.0	<33.2	<33.0	0.3
Benzo(a)pyrene	<33.0	<33.0	<33.2	<33.0	0.3
Benzo(e)pyrene	<65.9	<66.0	<66.3	<66.1	0.3
Biphenyl	<65.9	<66.0	<66.3	<66.1	0.3
2-Chloronaphthalene	<65.9	<66.0	<66.3	<66.1	0.3
Chrysene	<33.0	<33.0	<33.2	<33.0	0.3
Coronene	<132	<132	<133	<132	0.3
Dibenzo(a,c)anthracene	<33.0	<33.0	<33.2	<33.0	0.3
Dibenz(a,h)anthracene	<33.0	<33.0	<33.2	<33.0	0.3
Dibenzo(a,e)pyrene	<132	<132	<133	<132	0.3
9,10-Dimethylanthracene	<132	<132	<133	<132	0.3
7,12-Dimethylbenzo(a)anthracene	<132	<132	<133	<132	0.3
Fluoranthene	<33.0	<33.0	<33.2	<33.0	0.3
Fluorene	<33.0	<33.0	<33.2	<33.0	0.3
Indeno(1,2,3-cd)pyrene	<33.0	<33.0	<33.2	<33.0	0.3
2-Methylanthracene	<65.9	<66.0	<66.3	<66.1	0.3
3-Methylcholanthrene	<132	<132	<133	<132	0.3
1-Methylnaphthalene	<65.9	<66.0	<66.3	<66.1	0.3
2-Methylnaphthalene	<33.0	<33.0	<33.2	<33.0	0.3
1-Methylphenanthrene	<65.9	<66.0	<66.3	<66.1	0.3
9-Methylphenanthrene	<33.0	<33.0	<33.2	<33.0	0.3
Naphthalene	<65.9	<66.0	<66.3	<66.1	0.3
Perylene	<132	<132	<133	<132	0.3
Phenanthrene	<33.0	<33.0	<33.2	<33.0	0.3
Picene	<33.0	<33.0	<33.2	<33.0	0.3
Pyrene	<33.0	<33.0	<33.2	<33.0	0.3
Tetralin	<65.9	<66.0	<66.3	<66.1	0.3
m-Terphenyl	<65.9	<66.0	<66.3	<66.1	0.3
o-Terphenyl	<65.9	<66.0	<66.3	<66.1	0.3
p-Terphenyl	<65.9	<66.0	<66.3	<66.1	0.3
Triphenylene	<33.0	<33.0	<33.2	<33.0	0.3
Total	<2374	<2376	<2388	<2379	0.3

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<27.8	<27.5	<28.0	<27.8	1.0
Acenaphthylene	<27.8	<27.5	<28.0	<27.8	1.0
Anthracene	<27.8	<27.5	<28.0	<27.8	1.0
Benzo(a)anthracene	<27.8	<27.5	<28.0	<27.8	1.0
Benzo(b)fluoranthene	<27.8	<27.5	<28.0	<27.8	1.0
Benzo(k)fluoranthene	<27.8	<27.5	<28.0	<27.8	1.0
Benzo(a)fluorene	<111	<110	<112	<111	1.0
Benzo(b)fluorene	<55.5	<54.9	<56.0	<55.5	1.0
Benzo(g,h,i)perylene	<27.8	<27.5	<28.0	<27.8	1.0
Benzo(a)pyrene	<27.8	<27.5	<28.0	<27.8	1.0
Benzo(e)pyrene	<55.5	<54.9	<56.0	<55.5	1.0
Biphenyl	<55.5	<54.9	<56.0	<55.5	1.0
2-Chloronaphthalene	<55.5	<54.9	<56.0	<55.5	1.0
Chrysene	<27.8	<27.5	<28.0	<27.8	1.0
Coronene	<111	<110	<112	<111	1.0
Dibenzo(a,c)anthracene	<27.8	<27.5	<28.0	<27.8	1.0
Dibenz(a,h)anthracene	<27.8	<27.5	<28.0	<27.8	1.0
Dibenzo(a,e)pyrene	<111	<110	<112	<111	1.0
9,10-Dimethylanthracene	<111	<110	<112	<111	1.0
7,12-Dimethylbenzo(a)anthracene	<111	<110	<112	<111	1.0
Fluoranthene	<27.8	<27.5	<28.0	<27.8	1.0
Fluorene	<27.8	<27.5	<28.0	<27.8	1.0
Indeno(1,2,3-cd)pyrene	<27.8	<27.5	<28.0	<27.8	1.0
2-Methylanthracene	<55.5	<54.9	<56.0	<55.5	1.0
3-Methylcholanthrene	<111	<110	<112	<111	1.0
1-Methylnaphthalene	<55.5	<54.9	<56.0	<55.5	1.0
2-Methylnaphthalene	<27.8	<27.5	<28.0	<27.8	1.0
1-Methylphenanthrene	<55.5	<54.9	<56.0	<55.5	1.0
9-Methylphenanthrene	<27.8	<27.5	<28.0	<27.8	1.0
Naphthalene	<55.5	<54.9	<56.0	<55.5	1.0
Perylene	<111	<110	<112	<111	1.0
Phenanthrene	<27.8	<27.5	<28.0	<27.8	1.0
Picene	<27.8	<27.5	<28.0	<27.8	1.0
Pyrene	<27.8	<27.5	<28.0	<27.8	1.0
Tetralin	<55.5	<54.9	<56.0	<55.5	1.0
m-Terphenyl	<55.5	<54.9	<56.0	<55.5	1.0
o-Terphenyl	<55.5	<54.9	<56.0	<55.5	1.0
p-Terphenyl	<55.5	<54.9	<56.0	<55.5	1.0
Triphenylene	<27.8	<27.5	<28.0	<27.8	1.0
Total	<1999	<1978	<2018	<1998	1.0

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	<27.9	<27.8	<28.0	<27.9	0.5
Acenaphthylene	<27.9	<27.8	<28.0	<27.9	0.5
Anthracene	<27.9	<27.8	<28.0	<27.9	0.5
Benzo(a)anthracene	<27.9	<27.8	<28.0	<27.9	0.5
Benzo(b)fluoranthene	<27.9	<27.8	<28.0	<27.9	0.5
Benzo(k)fluoranthene	<27.9	<27.8	<28.0	<27.9	0.5
Benzo(a)fluorene	<112	<111	<112	<112	0.5
Benzo(b)fluorene	<55.8	<55.5	<56.0	<55.8	0.5
Benzo(g,h,i)perylene	<27.9	<27.8	<28.0	<27.9	0.5
Benzo(a)pyrene	<27.9	<27.8	<28.0	<27.9	0.5
Benzo(e)pyrene	<55.8	<55.5	<56.0	<55.8	0.5
Biphenyl	<55.8	<55.5	<56.0	<55.8	0.5
2-Chloronaphthalene	<55.8	<55.5	<56.0	<55.8	0.5
Chrysene	<27.9	<27.8	<28.0	<27.9	0.5
Coronene	<112	<111	<112	<112	0.5
Dibenzo(a,c)anthracene	<27.9	<27.8	<28.0	<27.9	0.5
Dibenz(a,h)anthracene	<27.9	<27.8	<28.0	<27.9	0.5
Dibenzo(a,e)pyrene	<112	<111	<112	<112	0.5
9,10-Dimethylanthracene	<112	<111	<112	<112	0.5
7,12-Dimethylbenzo(a)anthracene	<112	<111	<112	<112	0.5
Fluoranthene	<27.9	<27.8	<28.0	<27.9	0.5
Fluorene	<27.9	<27.8	<28.0	<27.9	0.5
Indeno(1,2,3-cd)pyrene	<27.9	<27.8	<28.0	<27.9	0.5
2-Methylanthracene	<55.8	<55.5	<56.0	<55.8	0.5
3-Methylcholanthrene	<112	<111	<112	<112	0.5
1-Methylnaphthalene	<55.8	<55.5	<56.0	<55.8	0.5
2-Methylnaphthalene	<27.9	<27.8	<28.0	<27.9	0.5
1-Methylphenanthrene	<55.8	<55.5	<56.0	<55.8	0.5
9-Methylphenanthrene	<27.9	<27.8	<28.0	<27.9	0.5
Naphthalene	<55.8	<55.5	<56.0	<55.8	0.5
Perylene	<112	<111	<112	<112	0.5
Phenanthrene	<27.9	<27.8	<28.0	<27.9	0.5
Picene	<27.9	<27.8	<28.0	<27.9	0.5
Pyrene	<27.9	<27.8	<28.0	<27.9	0.5
Tetralin	<55.8	<55.5	<56.0	<55.8	0.5
m-Terphenyl	<55.8	<55.5	<56.0	<55.8	0.5
o-Terphenyl	<55.8	<55.5	<56.0	<55.8	0.5
p-Terphenyl	<55.8	<55.5	<56.0	<55.8	0.5
Triphenylene	<27.9	<27.8	<28.0	<27.9	0.5
Total	<2010	<1999	<2018	<2009	0.5

* 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	<0.53	<0.52	<0.52	<0.53	0.3
Acenaphthylene	<0.53	<0.52	<0.52	<0.53	0.3
Anthracene	<0.53	<0.52	<0.52	<0.53	0.3
Benzo(a)anthracene	<0.53	<0.52	<0.52	<0.53	0.3
Benzo(b)fluoranthene	<0.53	<0.52	<0.52	<0.53	0.3
Benzo(k)fluoranthene	<0.53	<0.52	<0.52	<0.53	0.3
Benzo(a)fluorene	<2.11	<2.10	<2.10	<2.10	0.3
Benzo(b)fluorene	<1.05	<1.05	<1.05	<1.05	0.3
Benzo(g,h,i)perylene	<0.53	<0.52	<0.52	<0.53	0.3
Benzo(a)pyrene	<0.53	<0.52	<0.52	<0.53	0.3
Benzo(e)pyrene	<1.05	<1.05	<1.05	<1.05	0.3
Biphenyl	<1.05	<1.05	<1.05	<1.05	0.3
2-Chloronaphthalene	<1.05	<1.05	<1.05	<1.05	0.3
Chrysene	<0.53	<0.52	<0.52	<0.53	0.3
Coronene	<2.11	<2.10	<2.10	<2.10	0.3
Dibenzo(a,c)anthracene	<0.53	<0.52	<0.52	<0.53	0.3
Dibenz(a,h)anthracene	<0.53	<0.52	<0.52	<0.53	0.3
Dibenzo(a,e)pyrene	<2.11	<2.10	<2.10	<2.10	0.3
9,10-Dimethylanthracene	<2.11	<2.10	<2.10	<2.10	0.3
7,12-Dimethylbenzo(a)anthracene	<2.11	<2.10	<2.10	<2.10	0.3
Fluoranthene	<0.53	<0.52	<0.52	<0.53	0.3
Fluorene	<0.53	<0.52	<0.52	<0.53	0.3
Indeno(1,2,3-cd)pyrene	<0.53	<0.52	<0.52	<0.53	0.3
2-Methylanthracene	<1.05	<1.05	<1.05	<1.05	0.3
3-Methylcholanthrene	<2.11	<2.10	<2.10	<2.10	0.3
1-Methylnaphthalene	<1.05	<1.05	<1.05	<1.05	0.3
2-Methylnaphthalene	<0.53	<0.52	<0.52	<0.53	0.3
1-Methylphenanthrene	<1.05	<1.05	<1.05	<1.05	0.3
9-Methylphenanthrene	<0.53	<0.52	<0.52	<0.53	0.3
Naphthalene	<1.05	<1.05	<1.05	<1.05	0.3
Perylene	<2.11	<2.10	<2.10	<2.10	0.3
Phenanthrene	<0.53	<0.52	<0.52	<0.53	0.3
Picene	<0.53	<0.52	<0.52	<0.53	0.3
Pyrene	<0.53	<0.52	<0.52	<0.53	0.3
Tetralin	<1.05	<1.05	<1.05	<1.05	0.3
m-Terphenyl	<1.05	<1.05	<1.05	<1.05	0.3
o-Terphenyl	<1.05	<1.05	<1.05	<1.05	0.3
p-Terphenyl	<1.05	<1.05	<1.05	<1.05	0.3
Triphenylene	<0.53	<0.52	<0.52	<0.53	0.3
Total	<38.0	<37.8	<37.7	<37.8	0.3

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

Compound	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<19.5	<33.0	<27.8	<27.9	<0.53
Acenaphthylene	<19.5	<33.0	<27.8	<27.9	<0.53
Anthracene	<19.5	<33.0	<27.8	<27.9	<0.53
Benzo(a)anthracene	<19.5	<33.0	<27.8	<27.9	<0.53
Benzo(b)fluoranthene	<19.5	<33.0	<27.8	<27.9	<0.53
Benzo(k)fluoranthene	<19.5	<33.0	<27.8	<27.9	<0.53
Benzo(a)fluorene	<77.8	<132	<111	<112	<2.10
Benzo(b)fluorene	<38.9	<66.1	<55.5	<55.8	<1.05
Benzo(g,h,i)perylene	<19.5	<33.0	<27.8	<27.9	<0.53
Benzo(a)pyrene	<19.5	<33.0	<27.8	<27.9	<0.53
Benzo(e)pyrene	<38.9	<66.1	<55.5	<55.8	<1.05
Biphenyl	<38.9	<66.1	<55.5	<55.8	<1.05
2-Chloronaphthalene	<38.9	<66.1	<55.5	<55.8	<1.05
Chrysene	<19.5	<33.0	<27.8	<27.9	<0.53
Coronene	<77.8	<132	<111	<112	<2.10
Dibenzo(a,c)anthracene	<19.5	<33.0	<27.8	<27.9	<0.53
Dibenz(a,h)anthracene	<19.5	<33.0	<27.8	<27.9	<0.53
Dibenzo(a,e)pyrene	<77.8	<132	<111	<112	<2.10
9,10-Dimethylanthracene	<77.8	<132	<111	<112	<2.10
7,12-Dimethylbenzo(a)anthracene	<77.8	<132	<111	<112	<2.10
Fluoranthene	<19.5	<33.0	<27.8	<27.9	<0.53
Fluorene	<19.5	<33.0	<27.8	<27.9	<0.53
Indeno(1,2,3-cd)pyrene	<19.5	<33.0	<27.8	<27.9	<0.53
2-Methylanthracene	<38.9	<66.1	<55.5	<55.8	<1.05
3-Methylcholanthrene	<77.8	<132	<111	<112	<2.10
1-Methylnaphthalene	<38.9	<66.1	<55.5	<55.8	<1.05
2-Methylnaphthalene	<19.5	<33.0	<27.8	<27.9	<0.53
1-Methylphenanthrene	<38.9	<66.1	<55.5	<55.8	<1.05
9-Methylphenanthrene	<19.5	<33.0	<27.8	<27.9	<0.53
Naphthalene	<38.9	<66.1	<55.5	<55.8	<1.05
Perylene	<77.8	<132	<111	<112	<2.10
Phenanthrene	<19.5	<33.0	<27.8	<27.9	<0.53
Picene	<19.5	<33.0	<27.8	<27.9	<0.53
Pyrene	<19.5	<33.0	<27.8	<27.9	<0.53
Tetralin	<38.9	<66.1	<55.5	<55.8	<1.05
m-Terphenyl	<38.9	<66.1	<55.5	<55.8	<1.05
o-Terphenyl	<38.9	<66.1	<55.5	<55.8	<1.05
p-Terphenyl	<38.9	<66.1	<55.5	<55.8	<1.05
Triphenylene	<19.5	<33.0	<27.8	<27.9	<0.53
Total	<1401	<2379	<1998	<2009	<37.8

* 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 µg	Laboratory Blank µg
Acenaphthene	<0.25	<0.25
Acenaphthylene	<0.25	<0.25
Anthracene	<0.25	<0.25
Benzo(a)anthracene	<0.25	<0.25
Benzo(b)fluoranthene	<0.25	<0.25
Benzo(k)fluoranthene	<0.25	<0.25
Benzo(a)fluorene	<1.0	<1.0
Benzo(b)fluorene	<0.50	<0.50
Benzo(g,h,i)perylene	<0.25	<0.25
Benzo(a)pyrene	<0.25	<0.25
Benzo(e)pyrene	<0.50	<0.50
Biphenyl	<0.50	<0.50
2-Chloronaphthalene	<0.50	<0.50
Chrysene	<0.25	<0.25
Coronene	<1.0	<1.0
Dibenzo(a,c)anthracene	<0.25	<0.25
Dibenz(a,h)anthracene	<0.25	<0.25
Dibenzo(a,e)pyrene	<1.0	<1.0
9,10-Dimethylanthracene	<1.0	<1.0
7,12-Dimethylbenzo(a)anthracene	<1.0	<1.0
Fluoranthene	<0.25	<0.25
Fluorene	<0.25	<0.25
Indeno(1,2,3-cd)pyrene	<0.25	<0.25
2-Methylanthracene	<0.50	<0.50
3-Methylcholanthrene	<1.0	<1.0
1-Methylnaphthalene	<0.50	<0.50
2-Methylnaphthalene	<0.25	<0.25
1-Methylphenanthrene	<0.50	<0.50
9-Methylphenanthrene	<0.25	<0.25
Naphthalene	<0.50	<0.50
Perylene	<1.0	<1.0
Phenanthrene	<0.25	<0.25
Picene	<0.25	<0.25
Pyrene	<0.3	<0.3
Tetralin	<0.50	<0.50
m-Terphenyl	<0.50	<0.50
o-Terphenyl	<0.50	<0.50
p-Terphenyl	<0.50	<0.50
Triphenylene	<0.25	<0.25
Total	<18.0	<18.0

"<" 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 Rm³*	Actual µg/m³	Acetaldehyde Concentration Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acetaldehyde Emission Rate mg/s
1	<2	0.0279	<42.3	<71.8	<59.8	<60.4	<1.14
2	<2	0.0300	<39.3	<66.7	<55.6	<56.1	<1.06
3	<2	0.0275	<43.1	<72.8	<61.5	<61.5	<1.15
Average			<41.5	<70.4	<58.9	<59.3	<1.12
Blank	<2						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Actual µg/m³	Formaldehyde Concentration Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Formaldehyde Emission Rate mg/s
1	3.3	0.0279	69.8	118	98.6	99.7	1.88
2	1.9	0.0300	37.3	63.4	52.8	53.3	1.01
3	3.0	0.0275	64.6	109	92.2	92.2	1.72
Average			57.2	97.0	81.2	81.7	1.54
Blank	2.8						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Actual µg/m³	Acrolein Concentration Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acrolein Emission Rate mg/s
1	<2	0.0279	<42.3	<71.8	<59.8	<60.4	<1.14
2	<2	0.0300	<39.3	<66.7	<55.6	<56.1	<1.06
3	<2	0.0275	<43.1	<72.8	<61.5	<61.5	<1.15
Average			<41.5	<70.4	<58.9	<59.3	<1.12
Blank	<2						

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 Run No. 1 Tube 1A/1B	Run No. 2 Tube 2A/2B	Run No. 3 Tube 3A/3B	Average	Coefficient of Variation	Total Collected
	µg	µg	µg	µg	%	µg
Acetone	0.202	<0.045	0.089	<0.11	72.3	<0.34
Benzene	0.0256	0.0203	0.0234	0.023	11.5	0.069
Bromodichloromethane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Bromoform	<0.014	<0.014	<0.014	<0.014	-	<0.042
Bromomethane	0.046	0.029	0.022	0.032	38.2	0.097
1,3-Butadiene	<0.025	<0.025	<0.025	<0.025	-	<0.075
2-Butanone	<0.036	<0.036	<0.036	<0.036	-	<0.11
Carbon Tetrachloride	<0.016	<0.016	<0.016	<0.016	-	<0.048
Chlorobenzene	<0.011	<0.011	<0.011	<0.011	-	<0.033
Chloroform	0.014	0.012	0.013	0.013	7.7	0.039
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Dibromochloromethane	<0.0090	<0.0090	<0.0090	<0.0090	-	<0.027
Dichlorodifluoromethane	<0.020	<0.020	<0.020	<0.020	-	<0.060
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070	<0.0070	-	<0.021
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	-	<0.030
1,1-Dichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,2-Dichloropropane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Ethylbenzene	0.034	<0.014	<0.014	<0.021	55.9	<0.062
Ethylene Dibromide	<0.010	<0.010	<0.010	<0.010	-	<0.030
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Methylene Chloride	<0.019	<0.019	<0.019	<0.019	-	<0.057
Styrene	0.030	<0.012	<0.012	<0.018	57.7	<0.054
Tetrachloroethene	0.054	<0.018	<0.018	<0.030	69.3	<0.090
Toluene	0.718	0.283	0.294	0.43	57.5	1.30
1,1,1-Trichloroethane	<0.014	<0.014	<0.014	<0.014	-	<0.042
Trichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,1,2-Trichloroethane	<0.016	<0.016	<0.016	<0.016	-	<0.048
Trichlorotrifluoroethane	<0.025	<0.025	<0.025	<0.025	-	<0.075
Trichlorofluoromethane	<0.010	<0.010	<0.010	<0.010	-	<0.030
M&P-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
O-Xylene	0.034	<0.015	<0.015	<0.021	51.4	<0.064
Vinyl Chloride	<0.013	<0.013	<0.013	<0.013	-	<0.039
Total	<1.52	<0.81	<0.86	<1.07	37.1	<3.20

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0215
Run No. 2	0.0204
Run No. 3	0.0206

* 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 of Variation	Total Collected
	Run No. 1 Tube 5A/5B	Run No. 2 Tube 6A/6B	Run No. 4 Tube 8A/8B	Average		
	µg	µg	µg	µg	%	µg
Acetone	<0.045	<0.045	0.069	<0.053	26.1	<0.16
Benzene	0.0286	0.0268	0.0287	0.028	3.8	0.084
Bromodichloromethane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Bromoform	<0.014	<0.014	<0.014	<0.014	-	<0.042
Bromomethane	<0.015	<0.015	<0.015	<0.015	-	<0.045
1,3-Butadiene	<0.025	<0.025	<0.025	<0.025	-	<0.075
2-Butanone	<0.036	<0.036	<0.036	<0.036	-	<0.11
Carbon Tetrachloride	<0.016	<0.016	<0.016	<0.016	-	<0.048
Chlorobenzene	<0.011	<0.011	<0.011	<0.011	-	<0.033
Chloroform	0.014	0.013	0.014	0.014	4.2	0.041
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Dibromochloromethane	<0.0090	<0.0090	<0.0090	<0.0090	-	<0.027
Dichlorodifluoromethane	<0.020	<0.020	<0.020	<0.020	-	<0.060
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070	<0.0070	-	<0.021
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	-	<0.030
1,1-Dichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,2-Dichloropropane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Ethylbenzene	<0.014	<0.014	<0.014	<0.014	-	<0.042
Ethylene Dibromide	<0.010	<0.010	<0.010	<0.010	-	<0.030
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Methylene Chloride	<0.019	<0.019	<0.019	<0.019	-	<0.057
Styrene	<0.012	<0.012	<0.012	<0.012	-	<0.036
Tetrachloroethene	<0.018	<0.018	<0.018	<0.018	-	<0.054
Toluene	0.088	0.049	0.046	0.061	38.4	0.18
1,1,1-Trichloroethane	<0.014	<0.014	<0.014	<0.014	-	<0.042
Trichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,1,2-Trichloroethane	<0.016	<0.016	<0.016	<0.016	-	<0.048
Trichlorotrifluoroethane	<0.025	<0.025	<0.025	<0.025	-	<0.075
Trichlorofluoromethane	<0.010	<0.010	<0.010	<0.010	-	<0.030
M&P-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
O-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
Vinyl Chloride	<0.013	<0.013	<0.013	<0.013	-	<0.039
Total	<0.61	<0.57	<0.60	<0.59	3.5	<1.78

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0208
Run No. 2	0.0211
Run No. 4	0.0204

* 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 of Variation	Total Collected
	Run No. 1 Tube 9A/9B	Run No. 2 Tube 10A/10B	Run No. 4 Tube 12A/12B	Average		
	µg	µg	µg	µg	%	µg
Acetone	0.078	0.055	<0.045	<0.059	28.5	<0.18
Benzene	0.0356	0.0326	0.0291	0.032	10.0	0.097
Bromodichloromethane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Bromoform	<0.014	<0.014	<0.014	<0.014	-	<0.042
Bromomethane	<0.015	0.016	<0.015	<0.015	3.8	<0.046
1,3-Butadiene	<0.025	<0.025	<0.025	<0.025	-	<0.075
2-Butanone	<0.036	<0.036	<0.036	<0.036	-	<0.11
Carbon Tetrachloride	<0.016	<0.016	<0.016	<0.016	-	<0.048
Chlorobenzene	<0.011	<0.011	<0.011	<0.011	-	<0.033
Chloroform	0.013	0.013	0.015	0.014	8.4	0.041
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Dibromochloromethane	<0.0090	<0.0090	<0.0090	<0.0090	-	<0.027
Dichlorodifluoromethane	<0.020	<0.020	<0.020	<0.020	-	<0.060
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070	<0.0070	-	<0.021
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	-	<0.030
1,1-Dichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,2-Dichloropropane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Ethylbenzene	<0.014	<0.014	<0.014	<0.014	-	<0.042
Ethylene Dibromide	<0.010	<0.010	<0.010	<0.010	-	<0.030
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Methylene Chloride	<0.019	<0.019	<0.019	<0.019	-	<0.057
Styrene	<0.012	<0.012	<0.012	<0.012	-	<0.036
Tetrachloroethene	<0.018	<0.018	<0.018	<0.018	-	<0.054
Toluene	0.169	0.170	0.209	0.18	12.5	0.55
1,1,1-Trichloroethane	<0.014	<0.014	<0.014	<0.014	-	<0.042
Trichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,1,2-Trichloroethane	<0.016	<0.016	<0.016	<0.016	-	<0.048
Trichlorotrifluoroethane	<0.025	<0.025	<0.025	<0.025	-	<0.075
Trichlorofluoromethane	<0.010	<0.010	<0.010	<0.010	-	<0.030
M&P-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
O-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
Vinyl Chloride	<0.013	<0.013	<0.013	<0.013	-	<0.039
Total	<0.73	<0.71	<0.74	<0.73	2.0	<2.18

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0214
Run No. 2	0.0203
Run No. 4	0.0218

* 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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.34	<3.16	<5.37	<4.47	<4.52	<0.085
Benzene	0.069	0.65	1.11	0.92	0.93	0.018
Bromodichloromethane	<0.033	<0.31	<0.53	<0.44	<0.44	<0.0084
Bromoform	<0.042	<0.40	<0.67	<0.56	<0.57	<0.011
Bromomethane	0.097	0.91	1.55	1.29	1.30	0.025
1,3-Butadiene	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
2-Butanone	<0.11	<1.02	<1.73	<1.44	<1.45	<0.027
Carbon Tetrachloride	<0.048	<0.45	<0.77	<0.64	<0.65	<0.012
Chlorobenzene	<0.033	<0.31	<0.53	<0.44	<0.44	<0.0084
Chloroform	0.039	0.37	0.62	0.52	0.52	0.0099
Cumene (Isopropylbenzene)	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
Dibromochloromethane	<0.027	<0.25	<0.43	<0.36	<0.36	<0.0069
Dichlorodifluoromethane	<0.060	<0.57	<0.96	<0.80	<0.81	<0.015
1,2-Dichloroethane	<0.021	<0.20	<0.34	<0.28	<0.28	<0.0053
trans,1,2-Dichloroethene	<0.030	<0.28	<0.48	<0.40	<0.40	<0.0076
1,1-Dichloroethene	<0.033	<0.31	<0.53	<0.44	<0.44	<0.0084
1,2-Dichloropropane	<0.033	<0.31	<0.53	<0.44	<0.44	<0.0084
Ethylbenzene	<0.062	<0.58	<0.99	<0.83	<0.83	<0.016
Ethylene Dibromide	<0.030	<0.28	<0.48	<0.40	<0.40	<0.0076
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
Methylene Chloride	<0.057	<0.54	<0.91	<0.76	<0.77	<0.014
Styrene	<0.054	<0.51	<0.86	<0.72	<0.73	<0.014
Tetrachloroethene	<0.090	<0.85	<1.44	<1.20	<1.21	<0.023
Toluene	1.30	12.2	20.7	17.2	17.4	0.33
1,1,1-Trichloroethane	<0.042	<0.40	<0.67	<0.56	<0.57	<0.011
Trichloroethene	<0.033	<0.31	<0.53	<0.44	<0.44	<0.0084
1,1,2-Trichloroethane	<0.048	<0.45	<0.77	<0.64	<0.65	<0.012
Trichlorotrifluoroethane	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
Trichlorofluoromethane	<0.030	<0.28	<0.48	<0.40	<0.40	<0.0076
M&P-Xylene	<0.045	<0.42	<0.72	<0.60	<0.61	<0.011
O-Xylene	<0.064	<0.60	<1.02	<0.85	<0.86	<0.016
Vinyl Chloride	<0.039	<0.37	<0.62	<0.52	<0.52	<0.0099
Total	<3.20	<30.1	<51.1	<42.6	<43.0	<0.81

Dry Gas Volume Sampled (Rm³*) :	0.0625
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.16	<1.50	<2.55	<2.13	<2.15	<0.041
Benzene	0.084	0.80	1.35	1.12	1.14	0.021
Bromodichloromethane	<0.033	<0.31	<0.53	<0.44	<0.45	<0.0084
Bromoform	<0.042	<0.40	<0.67	<0.56	<0.57	<0.011
Bromomethane	<0.045	<0.43	<0.72	<0.60	<0.61	<0.011
1,3-Butadiene	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
2-Butanone	<0.11	<1.02	<1.73	<1.44	<1.46	<0.028
Carbon Tetrachloride	<0.048	<0.45	<0.77	<0.64	<0.65	<0.012
Chlorobenzene	<0.033	<0.31	<0.53	<0.44	<0.45	<0.0084
Chloroform	0.041	0.39	0.66	0.55	0.55	0.010
Cumene (Isopropylbenzene)	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
Dibromochloromethane	<0.027	<0.26	<0.43	<0.36	<0.36	<0.0069
Dichlorodifluoromethane	<0.060	<0.57	<0.96	<0.80	<0.81	<0.015
1,2-Dichloroethane	<0.021	<0.20	<0.34	<0.28	<0.28	<0.0054
trans,1,2-Dichloroethene	<0.030	<0.28	<0.48	<0.40	<0.41	<0.0077
1,1-Dichloroethene	<0.033	<0.31	<0.53	<0.44	<0.45	<0.0084
1,2-Dichloropropane	<0.033	<0.31	<0.53	<0.44	<0.45	<0.0084
Ethylbenzene	<0.042	<0.40	<0.67	<0.56	<0.57	<0.011
Ethylene Dibromide	<0.030	<0.28	<0.48	<0.40	<0.41	<0.0077
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
Methylene Chloride	<0.057	<0.54	<0.92	<0.76	<0.77	<0.015
Styrene	<0.036	<0.34	<0.58	<0.48	<0.49	<0.0092
Tetrachloroethene	<0.054	<0.51	<0.87	<0.72	<0.73	<0.014
Toluene	0.18	1.73	2.94	2.45	2.47	0.047
1,1,1-Trichloroethane	<0.042	<0.40	<0.67	<0.56	<0.57	<0.011
Trichloroethene	<0.033	<0.31	<0.53	<0.44	<0.45	<0.0084
1,1,2-Trichloroethane	<0.048	<0.45	<0.77	<0.64	<0.65	<0.012
Trichlorotrifluoroethane	<0.075	<0.71	<1.20	<1.00	<1.01	<0.019
Trichlorofluoromethane	<0.030	<0.28	<0.48	<0.40	<0.41	<0.0077
M&P-Xylene	<0.045	<0.43	<0.72	<0.60	<0.61	<0.011
O-Xylene	<0.045	<0.43	<0.72	<0.60	<0.61	<0.011
Vinyl Chloride	<0.039	<0.37	<0.63	<0.52	<0.53	<0.010
Total	<1.78	<16.8	<28.6	<23.8	<24.1	<0.45

Dry Gas Volume Sampled (Rm³*) :	0.0623
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere

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

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	<0.18	<1.66	<2.81	<2.37	<2.37	<0.044
Benzene	0.097	0.91	1.53	1.30	1.30	0.024
Bromodichloromethane	<0.033	<0.31	<0.52	<0.44	<0.44	<0.0082
Bromoform	<0.042	<0.39	<0.66	<0.56	<0.56	<0.010
Bromomethane	<0.046	<0.43	<0.72	<0.61	<0.61	<0.011
1,3-Butadiene	<0.075	<0.70	<1.18	<1.00	<1.00	<0.019
2-Butanone	<0.11	<1.01	<1.70	<1.44	<1.44	<0.027
Carbon Tetrachloride	<0.048	<0.45	<0.76	<0.64	<0.64	<0.012
Chlorobenzene	<0.033	<0.31	<0.52	<0.44	<0.44	<0.0082
Chloroform	0.041	0.38	0.65	0.55	0.55	0.010
Cumene (Isopropylbenzene)	<0.075	<0.70	<1.18	<1.00	<1.00	<0.019
Dibromochloromethane	<0.027	<0.25	<0.43	<0.36	<0.36	<0.0067
Dichlorodifluoromethane	<0.060	<0.56	<0.95	<0.80	<0.80	<0.015
1,2-Dichloroethane	<0.021	<0.20	<0.33	<0.28	<0.28	<0.0052
trans,1,2-Dichloroethene	<0.030	<0.28	<0.47	<0.40	<0.40	<0.0075
1,1-Dichloroethene	<0.033	<0.31	<0.52	<0.44	<0.44	<0.0082
1,2-Dichloropropane	<0.033	<0.31	<0.52	<0.44	<0.44	<0.0082
Ethylbenzene	<0.042	<0.39	<0.66	<0.56	<0.56	<0.010
Ethylene Dibromide	<0.030	<0.28	<0.47	<0.40	<0.40	<0.0075
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.70	<1.18	<1.00	<1.00	<0.019
Methylene Chloride	<0.057	<0.53	<0.90	<0.76	<0.76	<0.014
Styrene	<0.036	<0.34	<0.57	<0.48	<0.48	<0.0090
Tetrachloroethene	<0.054	<0.50	<0.85	<0.72	<0.72	<0.013
Toluene	0.55	5.11	8.64	7.30	7.30	0.14
1,1,1-Trichloroethane	<0.042	<0.39	<0.66	<0.56	<0.56	<0.010
Trichloroethene	<0.033	<0.31	<0.52	<0.44	<0.44	<0.0082
1,1,2-Trichloroethane	<0.048	<0.45	<0.76	<0.64	<0.64	<0.012
Trichlorotrifluoroethane	<0.075	<0.70	<1.18	<1.00	<1.00	<0.019
Trichlorofluoromethane	<0.030	<0.28	<0.47	<0.40	<0.40	<0.0075
M&P-Xylene	<0.045	<0.42	<0.71	<0.60	<0.60	<0.011
O-Xylene	<0.045	<0.42	<0.71	<0.60	<0.60	<0.011
Vinyl Chloride	<0.039	<0.36	<0.61	<0.52	<0.52	<0.0097
Total	<2.18	<20.3	<34.3	<29.0	<29.0	<0.54

Dry Gas Volume Sampled (Rm^3*) :	0.0635
Actual Flowrate (m^3/s) :	26.7
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	18.7
Wet Reference Flowrate (Rm^3/s*) :	18.7

* 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
	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$
Acetone	<3.16	<1.50	<1.66	<2.11
Benzene	0.65	0.80	0.91	0.79
Bromodichloromethane	<0.31	<0.31	<0.31	<0.31
Bromoform	<0.40	<0.40	<0.39	<0.39
Bromomethane	0.91	<0.43	<0.43	<0.59
1,3-Butadiene	<0.71	<0.71	<0.70	<0.70
2-Butanone	<1.02	<1.02	<1.01	<1.02
Carbon Tetrachloride	<0.45	<0.45	<0.45	<0.45
Chlorobenzene	<0.31	<0.31	<0.31	<0.31
Chloroform	0.37	0.39	0.38	0.38
Cumene (Isopropylbenzene)	<0.71	<0.71	<0.70	<0.70
Dibromochloromethane	<0.25	<0.26	<0.25	<0.25
Dichlorodifluoromethane	<0.57	<0.57	<0.56	<0.56
1,2-Dichloroethane	<0.20	<0.20	<0.20	<0.20
trans,1,2-Dichloroethene	<0.28	<0.28	<0.28	<0.28
1,1-Dichloroethene	<0.31	<0.31	<0.31	<0.31
1,2-Dichloropropane	<0.31	<0.31	<0.31	<0.31
Ethylbenzene	<0.58	<0.40	<0.39	<0.46
Ethylene Dibromide	<0.28	<0.28	<0.28	<0.28
Mesitylene (1,3,5-Trimethylbenzene)	<0.71	<0.71	<0.70	<0.70
Methylene Chloride	<0.54	<0.54	<0.53	<0.54
Styrene	<0.51	<0.34	<0.34	<0.39
Tetrachloroethene	<0.85	<0.51	<0.50	<0.62
Toluene	12.2	1.73	5.11	6.35
1,1,1-Trichloroethane	<0.40	<0.40	<0.39	<0.39
Trichloroethene	<0.31	<0.31	<0.31	<0.31
1,1,2-Trichloroethane	<0.45	<0.45	<0.45	<0.45
Trichlorotrifluoroethane	<0.71	<0.71	<0.70	<0.70
Trichlorofluoromethane	<0.28	<0.28	<0.28	<0.28
M&P-Xylene	<0.42	<0.43	<0.42	<0.42
O-Xylene	<0.60	<0.43	<0.42	<0.48
Vinyl Chloride	<0.37	<0.37	<0.36	<0.37
Total	<30.1	<16.8	<20.3	<22.4

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/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*
Acetone	<5.37	<2.55	<2.81	<3.58
Benzene	1.11	1.35	1.53	1.33
Bromodichloromethane	<0.53	<0.53	<0.52	<0.53
Bromoform	<0.67	<0.67	<0.66	<0.67
Bromomethane	1.55	<0.72	<0.72	<1.00
1,3-Butadiene	<1.20	<1.20	<1.18	<1.20
2-Butanone	<1.73	<1.73	<1.70	<1.72
Carbon Tetrachloride	<0.77	<0.77	<0.76	<0.76
Chlorobenzene	<0.53	<0.53	<0.52	<0.53
Chloroform	0.62	0.66	0.65	0.64
Cumene (Isopropylbenzene)	<1.20	<1.20	<1.18	<1.20
Dibromochloromethane	<0.43	<0.43	<0.43	<0.43
Dichlorodifluoromethane	<0.96	<0.96	<0.95	<0.96
1,2-Dichloroethane	<0.34	<0.34	<0.33	<0.33
trans,1,2-Dichloroethene	<0.48	<0.48	<0.47	<0.48
1,1-Dichloroethene	<0.53	<0.53	<0.52	<0.53
1,2-Dichloropropane	<0.53	<0.53	<0.52	<0.53
Ethylbenzene	<0.99	<0.67	<0.66	<0.78
Ethylene Dibromide	<0.48	<0.48	<0.47	<0.48
Mesitylene (1,3,5-Trimethylbenzene)	<1.20	<1.20	<1.18	<1.20
Methylene Chloride	<0.91	<0.92	<0.90	<0.91
Styrene	<0.86	<0.58	<0.57	<0.67
Tetrachloroethene	<1.44	<0.87	<0.85	<1.05
Toluene	20.7	2.94	8.64	10.8
1,1,1-Trichloroethane	<0.67	<0.67	<0.66	<0.67
Trichloroethene	<0.53	<0.53	<0.52	<0.53
1,1,2-Trichloroethane	<0.77	<0.77	<0.76	<0.76
Trichlorotrifluoroethane	<1.20	<1.20	<1.18	<1.20
Trichlorofluoromethane	<0.48	<0.48	<0.47	<0.48
M&P-Xylene	<0.72	<0.72	<0.71	<0.72
O-Xylene	<1.02	<0.72	<0.71	<0.82
Vinyl Chloride	<0.62	<0.63	<0.61	<0.62
Total	<51.1	<28.6	<34.3	<38.0

* 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/Rm³*	μg/Rm³*	μg/Rm³*	μg/Rm³*
Acetone	<4.47	<2.13	<2.37	<2.99
Benzene	0.92	1.12	1.30	1.11
Bromodichloromethane	<0.44	<0.44	<0.44	<0.44
Bromoform	<0.56	<0.56	<0.56	<0.56
Bromomethane	1.29	<0.60	<0.61	<0.84
1,3-Butadiene	<1.00	<1.00	<1.00	<1.00
2-Butanone	<1.44	<1.44	<1.44	<1.44
Carbon Tetrachloride	<0.64	<0.64	<0.64	<0.64
Chlorobenzene	<0.44	<0.44	<0.44	<0.44
Chloroform	0.52	0.55	0.55	0.54
Cumene (Isopropylbenzene)	<1.00	<1.00	<1.00	<1.00
Dibromochloromethane	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	<0.80	<0.80	<0.80	<0.80
1,2-Dichloroethane	<0.28	<0.28	<0.28	<0.28
trans,1,2-Dichloroethene	<0.40	<0.40	<0.40	<0.40
1,1-Dichloroethene	<0.44	<0.44	<0.44	<0.44
1,2-Dichloropropane	<0.44	<0.44	<0.44	<0.44
Ethylbenzene	<0.83	<0.56	<0.56	<0.65
Ethylene Dibromide	<0.40	<0.40	<0.40	<0.40
Mesitylene (1,3,5-Trimethylbenzene)	<1.00	<1.00	<1.00	<1.00
Methylene Chloride	<0.76	<0.76	<0.76	<0.76
Styrene	<0.72	<0.48	<0.48	<0.56
Tetrachloroethene	<1.20	<0.72	<0.72	<0.88
Toluene	17.2	2.45	7.30	8.99
1,1,1-Trichloroethane	<0.56	<0.56	<0.56	<0.56
Trichloroethene	<0.44	<0.44	<0.44	<0.44
1,1,2-Trichloroethane	<0.64	<0.64	<0.64	<0.64
Trichlorotrifluoroethane	<1.00	<1.00	<1.00	<1.00
Trichlorofluoromethane	<0.40	<0.40	<0.40	<0.40
M&P-Xylene	<0.60	<0.60	<0.60	<0.60
O-Xylene	<0.85	<0.60	<0.60	<0.68
Vinyl Chloride	<0.52	<0.52	<0.52	<0.52
Total	<42.6	<23.8	<29.0	<31.8

* 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	<4.52	<2.15	<2.37	<3.01
Benzene	0.93	1.14	1.30	1.12
Bromodichloromethane	<0.44	<0.45	<0.44	<0.44
Bromoform	<0.57	<0.57	<0.56	<0.56
Bromomethane	1.30	<0.61	<0.61	<0.84
1,3-Butadiene	<1.01	<1.01	<1.00	<1.01
2-Butanone	<1.45	<1.46	<1.44	<1.45
Carbon Tetrachloride	<0.65	<0.65	<0.64	<0.64
Chlorobenzene	<0.44	<0.45	<0.44	<0.44
Chloroform	0.52	0.55	0.55	0.54
Cumene (Isopropylbenzene)	<1.01	<1.01	<1.00	<1.01
Dibromochloromethane	<0.36	<0.36	<0.36	<0.36
Dichlorodifluoromethane	<0.81	<0.81	<0.80	<0.81
1,2-Dichloroethane	<0.28	<0.28	<0.28	<0.28
trans,1,2-Dichloroethene	<0.40	<0.41	<0.40	<0.40
1,1-Dichloroethene	<0.44	<0.45	<0.44	<0.44
1,2-Dichloropropane	<0.44	<0.45	<0.44	<0.44
Ethylbenzene	<0.83	<0.57	<0.56	<0.65
Ethylene Dibromide	<0.40	<0.41	<0.40	<0.40
Mesitylene (1,3,5-Trimethylbenzene)	<1.01	<1.01	<1.00	<1.01
Methylene Chloride	<0.77	<0.77	<0.76	<0.77
Styrene	<0.73	<0.49	<0.48	<0.56
Tetrachloroethene	<1.21	<0.73	<0.72	<0.89
Toluene	17.4	2.47	7.30	9.06
1,1,1-Trichloroethane	<0.57	<0.57	<0.56	<0.56
Trichloroethene	<0.44	<0.45	<0.44	<0.44
1,1,2-Trichloroethane	<0.65	<0.65	<0.64	<0.64
Trichlorotrifluoroethane	<1.01	<1.01	<1.00	<1.01
Trichlorofluoromethane	<0.40	<0.41	<0.40	<0.40
M&P-Xylene	<0.61	<0.61	<0.60	<0.60
O-Xylene	<0.86	<0.61	<0.60	<0.69
Vinyl Chloride	<0.52	<0.53	<0.52	<0.52
Total	<43.0	<24.1	<29.0	<32.0

* 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	<0.085	<0.041	<0.044	<0.057
Benzene	0.018	0.021	0.024	0.021
Bromodichloromethane	<0.0084	<0.0084	<0.0082	<0.0083
Bromoform	<0.011	<0.011	<0.010	<0.011
Bromomethane	0.025	<0.011	<0.011	<0.016
1,3-Butadiene	<0.019	<0.019	<0.019	<0.019
2-Butanone	<0.027	<0.028	<0.027	<0.027
Carbon Tetrachloride	<0.012	<0.012	<0.012	<0.012
Chlorobenzene	<0.0084	<0.0084	<0.0082	<0.0083
Chloroform	0.0099	0.010	0.010	0.010
Cumene (Isopropylbenzene)	<0.019	<0.019	<0.019	<0.019
Dibromochloromethane	<0.0069	<0.0069	<0.0067	<0.0068
Dichlorodifluoromethane	<0.015	<0.015	<0.015	<0.015
1,2-Dichloroethane	<0.0053	<0.0054	<0.0052	<0.0053
trans,1,2-Dichloroethene	<0.0076	<0.0077	<0.0075	<0.0076
1,1-Dichloroethene	<0.0084	<0.0084	<0.0082	<0.0083
1,2-Dichloropropane	<0.0084	<0.0084	<0.0082	<0.0083
Ethylbenzene	<0.016	<0.011	<0.010	<0.012
Ethylene Dibromide	<0.0076	<0.0077	<0.0075	<0.0076
Mesitylene (1,3,5-Trimethylbenzene)	<0.019	<0.019	<0.019	<0.019
Methylene Chloride	<0.014	<0.015	<0.014	<0.014
Styrene	<0.014	<0.0092	<0.0090	<0.011
Tetrachloroethene	<0.023	<0.014	<0.013	<0.017
Toluene	0.33	0.047	0.14	0.17
1,1,1-Trichloroethane	<0.011	<0.011	<0.010	<0.011
Trichloroethene	<0.0084	<0.0084	<0.0082	<0.0083
1,1,2-Trichloroethane	<0.012	<0.012	<0.012	<0.012
Trichlorotrifluoroethane	<0.019	<0.019	<0.019	<0.019
Trichlorofluoromethane	<0.0076	<0.0077	<0.0075	<0.0076
M&P-Xylene	<0.011	<0.011	<0.011	<0.011
O-Xylene	<0.016	<0.011	<0.011	<0.013
Vinyl Chloride	<0.0099	<0.010	<0.0097	<0.0099
Total	<0.81	<0.45	<0.54	<0.60

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	<2.11	<3.58	<2.99	<3.01	<0.057
Benzene	0.79	1.33	1.11	1.12	0.021
Bromodichloromethane	<0.31	<0.53	<0.44	<0.44	<0.0083
Bromoform	<0.39	<0.67	<0.56	<0.56	<0.011
Bromomethane	<0.59	<1.00	<0.84	<0.84	<0.016
1,3-Butadiene	<0.70	<1.20	<1.00	<1.01	<0.019
2-Butanone	<1.02	<1.72	<1.44	<1.45	<0.027
Carbon Tetrachloride	<0.45	<0.76	<0.64	<0.64	<0.012
Chlorobenzene	<0.31	<0.53	<0.44	<0.44	<0.0083
Chloroform	0.38	0.64	0.54	0.54	0.010
Cumene (Isopropylbenzene)	<0.70	<1.20	<1.00	<1.01	<0.019
Dibromochloromethane	<0.25	<0.43	<0.36	<0.36	<0.0068
Dichlorodifluoromethane	<0.56	<0.96	<0.80	<0.81	<0.015
1,2-Dichloroethane	<0.20	<0.33	<0.28	<0.28	<0.0053
trans,1,2-Dichloroethene	<0.28	<0.48	<0.40	<0.40	<0.0076
1,1-Dichloroethene	<0.31	<0.53	<0.44	<0.44	<0.0083
1,2-Dichloropropane	<0.31	<0.53	<0.44	<0.44	<0.0083
Ethylbenzene	<0.46	<0.78	<0.65	<0.65	<0.012
Ethylene Dibromide	<0.28	<0.48	<0.40	<0.40	<0.0076
Mesitylene (1,3,5-Trimethylbenzene)	<0.70	<1.20	<1.00	<1.01	<0.019
Methylene Chloride	<0.54	<0.91	<0.76	<0.77	<0.014
Styrene	<0.39	<0.67	<0.56	<0.56	<0.011
Tetrachloroethene	<0.62	<1.05	<0.88	<0.89	<0.017
Toluene	6.35	10.8	8.99	9.06	0.17
1,1,1-Trichloroethane	<0.39	<0.67	<0.56	<0.56	<0.011
Trichloroethene	<0.31	<0.53	<0.44	<0.44	<0.0083
1,1,2-Trichloroethane	<0.45	<0.76	<0.64	<0.64	<0.012
Trichlorotrifluoroethane	<0.70	<1.20	<1.00	<1.01	<0.019
Trichlorofluoromethane	<0.28	<0.48	<0.40	<0.40	<0.0076
M&P-Xylene	<0.42	<0.72	<0.60	<0.60	<0.011
O-Xylene	<0.48	<0.82	<0.68	<0.69	<0.013
Vinyl Chloride	<0.37	<0.62	<0.52	<0.52	<0.0099
Total	<22.4	<38.0	<31.8	<32.0	<0.60

* 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 30A/30B µg	Field Blank Tube 29A/29B µg	Method Blank µg
Acetone	<0.045	<0.045	<0.045
Benzene	<0.0090	<0.0090	<0.0090
Bromodichloromethane	<0.011	<0.011	<0.011
Bromoform	<0.014	<0.014	<0.014
Bromomethane	<0.015	<0.015	<0.015
1,3-Butadiene	<0.025	<0.025	<0.025
2-Butanone	<0.036	<0.036	<0.036
Carbon Tetrachloride	<0.016	<0.016	<0.016
Chlorobenzene	<0.011	<0.011	<0.011
Chloroform	<0.011	<0.011	<0.011
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025
Dibromochloromethane	<0.0090	<0.0090	<0.0090
Dichlorodifluoromethane	<0.020	<0.020	<0.020
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010
1,1-Dichloroethene	<0.011	<0.011	<0.011
1,2-Dichloropropane	<0.011	<0.011	<0.011
Ethylbenzene	<0.014	<0.014	<0.014
Ethylene Dibromide	<0.010	<0.010	<0.010
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025
Methylene Chloride	<0.019	<0.019	<0.019
Styrene	<0.012	<0.012	<0.012
Tetrachloroethene	<0.018	<0.018	<0.018
Toluene	<0.014	<0.014	<0.014
1,1,1-Trichloroethane	<0.014	<0.014	<0.014
Trichloroethene	<0.011	<0.011	<0.011
1,1,2-Trichloroethane	<0.016	<0.016	<0.016
Trichlorotrifluoroethane	<0.025	<0.025	<0.025
Trichlorofluoromethane	<0.010	<0.010	<0.010
M&P-Xylene	<0.015	<0.015	<0.015
O-Xylene	<0.015	<0.015	<0.015
Vinyl Chloride	<0.013	<0.013	<0.013
Total	<0.52	<0.52	<0.52

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 Start	Sampling Period Finish	Sampling Time* min
1	October 26, 2016	8:09	11:22	180
2	October 26, 2016	12:17	15:27	180
3	October 27, 2016	11:45	14:51	180

Paticle Size Distribution Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 25, 2016	8:47	10:55	120.1
2	October 25, 2016	11:57	14:00	120.1
3	October 25, 2016	15:17	17:22	120.3

Acid Gases Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 26, 2026	8:10	9:10	60
2	October 26, 2016	10:03	11:03	60
3	October 26, 2016	12:21	13:21	60

Semi-Volatile Organic Compounds Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	November 1, 2016	9:35	15:46	360
2	November 2, 2016	8:06	14:18	360
3	November 3, 2016	8:08	14:20	360

* 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	November 1, 2016	11:25	12:25	60
2	November 2, 2016	10:00	11:00	60
3	November 3, 2016	9:54	10:54	60

Volatile Organic Compounds Trains

Test Number	Tube Pair	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	1	November 1, 2016	9:37	9:57	20
	2	November 1, 2016	10:03	10:23	20
	3	November 1, 2016	10:29	10:49	20
	4	November 1, 2016	10:55	11:15	20
2	1	November 2, 2016	8:07	8:27	20
	2	November 2, 2016	8:33	8:53	20
	3	November 2, 2016	8:59	9:19	20
	4	November 2, 2016	9:26	9:46	20
3	1	November 3, 2016	8:10	8:30	20
	2	November 3, 2016	8:35	8:55	20
	3	November 3, 2016	9:00	9:20	20
	4	November 3, 2016	9:25	9:45	20

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	October 26, 2016	15:00	16:00	60
2	October 26, 2016	16:05	17:05	60
3	October 26, 2016	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	0.846	0.988	6.46	3.792	100.6
2	0.846	0.988	6.46	3.747	99.8
3	0.847	0.989	6.46	3.778	100.9

Paticle Size Distribution Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.846	0.989	4.50	1.291	102.9
2	0.846	0.989	4.50	1.208	99.1
3	0.846	0.989	4.50	1.233	96.2

Acid Gases Trains

Test No.	Pitot Tube Coefficient	Dry Gas Meter Factor	Nozzle Diameter mm	Gas Volume Sampled Rm^3 *	Percentage of Isokineticity %
1	0.848	0.993	6.48	1.162	98.0
2	0.848	0.993	6.48	1.143	100.5
3	0.848	0.993	6.48	1.102	98.2

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	0.848	0.989	6.47	7.595	99.6
2	0.848	0.989	6.47	7.323	99.4
3	0.848	0.989	6.47	7.614	98.7

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	141	15.9	17.9	-2.37	99.3	11.0	8.44
2	138	15.1	17.7	-2.37	99.1	10.8	8.52
3	138	15.6	18.0	-2.68	97.2	10.4	8.70
Average	139	15.5	17.9	-2.47	98.5	10.7	8.55

Paticle Size Distribution Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	139	15.1	18.2	-2.30	98.6	10.4	8.93
2	139	15.9	18.1	-2.30	98.7	10.6	8.73
3	139	14.5	18.5	-2.30	98.7	10.3	8.97
Average	139	15.2	18.3	-2.30	98.7	10.4	8.88

Acid Gases Trains **

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	140	15.7	16.8	-2.37	99.3	10.9	8.45
2	139	16.4	16.2	-2.37	99.3	11.1	8.45
3	137	14.5	15.5	-2.37	99.2	10.7	8.61
Average	139	15.5	16.2	-2.37	99.2	10.9	8.50

Semi-Volatile Organics Trains

Test No.	Gas Temp. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	137	15.7	18.3	-2.66	97.1	10.2	8.89
2	137	15.8	17.6	-2.66	97.8	10.2	8.91
3	137	15.2	18.3	-2.54	97.5	10.4	8.61
Average	137	15.6	18.1	-2.62	97.5	10.3	8.80

* 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	26.5	15.7	19.8	18.7
2	26.1	15.7	19.6	18.5
3	26.6	15.6	19.3	18.5
Average	26.4	15.7	19.6	18.6

Paticle 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	16.1	19.5	18.9
2	26.7	15.8	19.4	18.8
3	27.3	16.5	19.9	19.2
Average	27.0	16.1	19.6	19.0

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	24.8	14.8	18.6	17.5
2	23.9	14.2	17.8	16.9
3	23.0	14.0	17.3	16.3
Average	23.9	14.3	17.9	16.9

Semi-Volatile Organics Trains

Test No.	Actual Flowrate m^3/s	Dry Reference Flowrate Rm^3/s *	Dry Adjusted Flowrate Rm^3/s **	Wet Reference Flowrate Rm^3/s*
1	27.0	15.9	19.3	18.8
2	26.0	15.3	18.6	18.2
3	27.1	16.1	19.9	19.0
Average	26.7	15.8	19.3	18.7

* 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 Probe Rinse mg	Main Filter mg	Total mg	Dry Gas Volume Sampled Rm^3*	Particulate Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Particulate Emission Rate mg/s
1	2.6	1.90	4.50	3.792	0.70	1.19	0.94	1.00	18.7
2	3.4	2.10	5.50	3.747	0.88	1.47	1.17	1.25	23.0
3	2.4	2.30	4.70	3.778	0.73	1.24	1.01	1.05	19.4
Average					0.77	1.30	1.04	1.10	20.4
Blank	1.7	2.4	4.1						

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

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 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	<0.5	1.291	<0.23	<0.39	<0.32	<0.33	<6.24
2	<0.7	1.208	<0.34	<0.58	<0.47	<0.49	<9.16
3	<0.5	1.233	<0.25	<0.41	<0.34	<0.35	<6.69
Average			<0.27	<0.46	<0.38	<0.39	<7.36
Blank	<0.5						

PM_{10}

Test No.	Total Collected mg	Dry Volume Sampled Rm^3*	PM_{10} Concentration Actual mg/m^3	Dry Reference mg/Rm^3*	Dry Adjusted mg/Rm^3**	Wet Reference mg/Rm^3*	Emission Rate mg/s
1	<1.0	1.291	<0.46	<0.77	<0.64	<0.66	<12.5
2	<1.2	1.208	<0.59	<0.99	<0.81	<0.83	<15.7
3	<1.0	1.233	<0.49	<0.81	<0.67	<0.70	<13.4
Average			<0.51	<0.86	<0.71	<0.73	<13.8
Blank	<1.0						

* 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 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	14	1.291	6.49	10.8	8.95	9.24	175
2	11	1.208	5.39	9.11	7.42	7.65	144
3	11	1.233	5.39	8.92	7.40	7.67	147
Average			5.76	9.62	7.92	8.19	155
Blank	1.4						

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	<1.0	1.291	<0.46	<0.77	<0.64	<0.66	<12.5
2	2.7	1.208	1.32	2.24	1.82	1.88	35.3
3	<1.0	1.233	<0.49	<0.81	<0.67	<0.70	<13.4
Average			<0.76	<1.27	<1.04	<1.08	<20.4
Blank	<1.0						

* 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 µg	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	4200	1.162	2.14	3.61	2.87	3.03	56.7
2	3800	1.143	1.97	3.32	2.64	2.79	52.2
3	3500	1.102	1.91	3.18	2.54	2.70	49.9
Average			2.01	3.37	2.68	2.84	52.9
Blank	<200						

Hydrogen Fluoride

Test No.	HF Collected µg	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	<200	1.162	<0.10	<0.17	<0.14	<0.14	<2.70
2	<200	1.143	<0.10	<0.17	<0.14	<0.15	<2.75
3	<200	1.102	<0.11	<0.18	<0.15	<0.15	<2.85
Average			<0.10	<0.18	<0.14	<0.15	<2.77
Blank	<200						

Ammonia

Test No.	Ammonia Collected µg	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	1888	1.162	0.96	1.63	1.29	1.36	25.5
2	1888	1.143	0.98	1.65	1.31	1.39	25.9
3	1416	1.102	0.77	1.29	1.03	1.09	20.2
Average			0.90	1.52	1.21	1.28	23.9
Blank	<23.6						

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 October 25 - 27, 2016 and November 1 - 3, 2016

Sampling Location	Parameter	Minimum	Average	Maximum
BH Outlet	Oxygen (%, 1 hr Avg)	7.56	8.71	9.96
BH Outlet	Carbon Dioxide (kg/Rm^3, 1 hr Avg) *	0.17	0.19	0.20
BH Outlet	Carbon Monoxide (mg/Rm^3, 1 hr Avg) *	7	16	55
BH Outlet	Carbon Monoxide (mg/Rm^3, 4 hr Avg) *	10.3	15.7	25.8
BH Outlet	Sulphur Dioxide (mg/Rm^3, 1 hr Avg) *	0	1	11
BH Outlet	Sulphur Dioxide (mg/Rm^3, 24 hr Avg) *	0	0.9	3.1
BH Outlet	Nitrogen Oxides (mg/Rm^3, 1 hr Avg) *	97	113	154
BH Outlet	Nitrogen Oxides (mg/Rm^3, 24 hr Avg) *	112	113	115
BH Outlet	Hydrogen Chloride (mg/Rm^3, 1 hr Avg) *	0	1	4
BH Outlet	Hydrogen Chloride (mg/Rm^3, 24 hr Avg) *	0.8	1.2	1.6
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 October 26, 2016

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	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	6.0	9.0	15.0
Beryllium	<0.20	<0.050	<0.20
Cadmium	0.89	0.057	0.95
Chromium	2.37	0.90	3.27
Cobalt	<0.20	0.065	0.065
Copper	<4.0	7.4	7.40
Lead	0.62	0.61	1.23
Manganese	2.1	1.33	3.43
Mercury *	<0.015	0.155	0.16
Molybdenum	23.7	<0.25	23.7
Nickel	2.1	1.11	3.21
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	15	5.5	20.5
Total			<82.2

* Includes the permanganate impingers

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

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

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	6.2	7.7	13.9
Beryllium	<0.20	<0.050	<0.20
Cadmium	0.23	0.051	0.28
Chromium	5.51	1.86	7.37
Cobalt	<0.20	0.053	0.053
Copper	<4.0	7.3	7.30
Lead	1.24	0.48	1.72
Manganese	2.6	2.02	4.62
Mercury *	<0.015	0.13	0.13
Molybdenum	23.4	<0.25	23.4
Nickel	3.9	0.74	4.64
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	18	6.3	24.3
Total			<91.0

* 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. 2 BH Outlet
Metals Analyses Test No. 3

Metal	Probe & Filter Hydrofluoric Acid Digest µg	Impingers & Rinses µg	Total Collected µg
Antimony	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	<6.0	9.9	9.90
Beryllium	<0.20	<0.050	<0.20
Cadmium	0.47	<0.050	0.47
Chromium	2.00	1.15	3.15
Cobalt	<0.20	<0.050	<0.050
Copper	7.6	8.2	15.8
Lead	0.57	0.50	1.07
Manganese	2.1	2.09	4.19
Mercury *	<0.015	0.17	0.17
Molybdenum	22.4	<0.25	22.4
Nickel	1.4	1.28	2.68
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	<10	5.3	5.30
Total			<68.4

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.80	<0.12	<0.21	<0.17	<0.18	<0.0033
Arsenic	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00083
Barium	15.0	2.34	3.96	3.14	3.32	0.062
Beryllium	<0.20	<0.031	<0.053	<0.042	<0.044	<0.00083
Cadmium	0.95	0.15	0.25	0.20	0.21	0.0039
Chromium	3.27	0.51	0.86	0.68	0.72	0.014
Cobalt	0.065	0.010	0.017	0.014	0.014	0.00027
Copper	7.40	1.16	1.95	1.55	1.64	0.031
Lead	1.23	0.19	0.32	0.26	0.27	0.0051
Manganese	3.43	0.54	0.90	0.72	0.76	0.014
Mercury	0.16	0.024	0.041	0.032	0.034	0.00064
Molybdenum	23.7	3.70	6.25	4.96	5.25	0.098
Nickel	3.21	0.50	0.85	0.67	0.71	0.013
Selenium	<0.50	<0.078	<0.13	<0.10	<0.11	<0.0021
Silver	<0.40	<0.062	<0.11	<0.084	<0.089	<0.0017
Thallium	<1.00	<0.16	<0.26	<0.21	<0.22	<0.0041
Vanadium	<0.15	<0.023	<0.040	<0.03	<0.033	<0.00062
Zinc	20.5	3.20	5.41	4.29	4.54	0.085
Total	<82.2	<12.8	<21.7	<17.2	<18.2	<0.34

Dry Gas Volume Sampled (Rm³*) :	3.792
Actual Flowrate (m³/s) :	26.5
Dry Reference Flowrate (Rm³/s*) :	15.7
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.7

* 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 µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.80	<0.13	<0.21	<0.17	<0.18	<0.0034
Arsenic	<0.20	<0.032	<0.053	<0.043	<0.045	<0.00084
Barium	13.9	2.23	3.71	2.97	3.15	0.058
Beryllium	<0.20	<0.032	<0.053	<0.043	<0.045	<0.00084
Cadmium	0.28	0.045	0.075	0.060	0.064	0.0012
Chromium	7.37	1.18	1.97	1.58	1.67	0.031
Cobalt	0.053	0.0085	0.014	0.011	0.012	0.00022
Copper	7.30	1.17	1.95	1.56	1.65	0.031
Lead	1.72	0.28	0.46	0.37	0.39	0.0072
Manganese	4.62	0.74	1.23	0.99	1.05	0.019
Mercury	0.13	0.021	0.035	0.028	0.029	0.00054
Molybdenum	23.4	3.76	6.24	5.00	5.30	0.098
Nickel	4.64	0.74	1.24	0.99	1.05	0.019
Selenium	<0.50	<0.080	<0.13	<0.11	<0.11	<0.0021
Silver	<0.40	<0.064	<0.11	<0.086	<0.091	<0.0017
Thallium	<1.00	<0.16	<0.27	<0.21	<0.23	<0.0042
Vanadium	<0.15	<0.024	<0.040	<0.032	<0.034	<0.00063
Zinc	24.3	3.90	6.49	5.19	5.50	0.10
Total	<91.0	<14.6	<24.3	<19.4	<20.6	<0.38

Dry Gas Volume Sampled (Rm^3*) :	3.747
Actual Flowrate (m^3/s) :	26.1
Dry Reference Flowrate (Rm^3/s*) :	15.7
Dry Adjusted Flowrate (Rm^3/s**) :	19.6
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 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Metals Emission Data Test No. 3

Metal	Total Collected µg	Actual Concentration µg/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Antimony	<0.80	<0.12	<0.21	<0.17	<0.18	<0.0033
Arsenic	<0.20	<0.031	<0.053	<0.043	<0.045	<0.00083
Barium	9.90	1.54	2.62	2.12	2.21	0.041
Beryllium	<0.20	<0.031	<0.053	<0.043	<0.045	<0.00083
Cadmium	0.47	0.073	0.12	0.10	0.10	0.0019
Chromium	3.15	0.49	0.83	0.67	0.70	0.013
Cobalt	<0.050	<0.0078	<0.013	<0.011	<0.011	<0.00021
Copper	15.8	2.45	4.18	3.38	3.53	0.065
Lead	1.07	0.17	0.28	0.23	0.24	0.0044
Manganese	4.19	0.65	1.11	0.90	0.94	0.017
Mercury	0.17	0.026	0.045	0.036	0.038	0.00070
Molybdenum	22.4	3.48	5.93	4.79	5.00	0.092
Nickel	2.68	0.42	0.71	0.57	0.60	0.011
Selenium	<0.50	<0.078	<0.13	<0.11	<0.11	<0.0021
Silver	<0.40	<0.062	<0.11	<0.086	<0.089	<0.0017
Thallium	<1.00	<0.16	<0.26	<0.21	<0.22	<0.0041
Vanadium	<0.15	<0.023	<0.040	<0.032	<0.033	<0.00062
Zinc	5.30	0.82	1.40	1.13	1.18	0.022
Total	<68.4	<10.6	<18.1	<14.6	<15.3	<0.28

Dry Gas Volume Sampled (Rm³*) :	3.778
Actual Flowrate (m³/s) :	26.6
Dry Reference Flowrate (Rm³/s*) :	15.6
Dry Adjusted Flowrate (Rm³/s**) :	19.3
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

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	<0.12	<0.13	<0.12	<0.13	1.8
Arsenic	<0.031	<0.032	<0.031	<0.031	1.8
Barium	2.34	2.23	1.54	2.04	21.5
Beryllium	<0.031	<0.032	<0.031	<0.031	1.8
Cadmium	0.15	0.045	0.073	0.089	60.0
Chromium	0.51	1.18	0.49	0.73	54.2
Cobalt	0.010	0.0085	<0.0078	<0.0088	13.9
Copper	1.16	1.17	2.45	1.59	46.7
Lead	0.19	0.28	0.17	0.21	27.2
Manganese	0.54	0.74	0.65	0.64	16.0
Mercury	0.024	0.021	0.026	0.024	11.7
Molybdenum	3.70	3.76	3.48	3.65	4.1
Nickel	0.50	0.74	0.42	0.55	30.8
Selenium	<0.078	<0.080	<0.078	<0.079	1.8
Silver	<0.062	<0.064	<0.062	<0.063	1.8
Thallium	<0.16	<0.16	<0.16	<0.16	1.8
Vanadium	<0.023	<0.024	<0.023	<0.024	1.8
Zinc	3.20	3.90	0.82	2.64	61.1
Total	<12.8	<14.6	<10.6	<12.7	15.7

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

Metal	Dry Reference Concentration				Coefficient
	Test No. 1	Test No. 2	Test No. 3	Average	of Variation
	µg/Rm³*	µg/Rm³*	µg/Rm³*	µg/Rm³*	%
Antimony	<0.21	<0.21	<0.21	<0.21	0.6
Arsenic	<0.053	<0.053	<0.053	<0.053	0.6
Barium	3.96	3.71	2.62	3.43	20.7
Beryllium	<0.053	<0.053	<0.053	<0.053	0.6
Cadmium	0.25	0.075	0.12	0.15	60.2
Chromium	0.86	1.97	0.83	1.22	52.9
Cobalt	0.017	0.014	<0.013	<0.015	13.8
Copper	1.95	1.95	4.18	2.69	47.8
Lead	0.32	0.46	0.28	0.36	25.9
Manganese	0.90	1.23	1.11	1.08	15.3
Mercury	0.041	0.035	0.045	0.040	12.9
Molybdenum	6.25	6.24	5.93	6.14	3.0
Nickel	0.85	1.24	0.71	0.93	29.5
Selenium	<0.13	<0.13	<0.13	<0.13	0.6
Silver	<0.11	<0.11	<0.11	<0.11	0.6
Thallium	<0.26	<0.27	<0.26	<0.27	0.6
Vanadium	<0.040	<0.040	<0.040	<0.040	0.6
Zinc	5.41	6.49	1.40	4.43	60.4
Total	<21.7	<24.3	<18.1	<21.4	14.5

* 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	<0.17	<0.17	<0.17	<0.17	1.3
Arsenic	<0.042	<0.043	<0.043	<0.042	1.3
Barium	3.14	2.97	2.12	2.74	19.9
Beryllium	<0.042	<0.043	<0.043	<0.042	1.3
Cadmium	0.20	0.060	0.10	0.12	59.3
Chromium	0.68	1.58	0.67	0.98	53.0
Cobalt	0.014	0.011	<0.011	<0.012	12.8
Copper	1.55	1.56	3.38	2.16	48.8
Lead	0.26	0.37	0.23	0.28	25.8
Manganese	0.72	0.99	0.90	0.87	15.9
Mercury	0.032	0.028	0.036	0.032	13.3
Molybdenum	4.96	5.00	4.79	4.92	2.2
Nickel	0.67	0.99	0.57	0.75	29.4
Selenium	<0.10	<0.11	<0.11	<0.11	1.3
Silver	<0.084	<0.086	<0.086	<0.085	1.3
Thallium	<0.21	<0.21	<0.21	<0.21	1.3
Vanadium	<0.031	<0.032	<0.032	<0.032	1.3
Zinc	4.29	5.19	1.13	3.54	60.2
Total	<17.2	<19.4	<14.6	<17.1	14.1

** 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	<0.18	<0.18	<0.18	<0.18	1.2
Arsenic	<0.044	<0.045	<0.045	<0.045	1.2
Barium	3.32	3.15	2.21	2.89	20.7
Beryllium	<0.044	<0.045	<0.045	<0.045	1.2
Cadmium	0.21	0.064	0.10	0.13	59.7
Chromium	0.72	1.67	0.70	1.03	53.5
Cobalt	0.014	0.012	<0.011	<0.013	13.4
Copper	1.64	1.65	3.53	2.27	47.8
Lead	0.27	0.39	0.24	0.30	26.4
Manganese	0.76	1.05	0.94	0.91	15.8
Mercury	0.034	0.029	0.038	0.034	12.6
Molybdenum	5.25	5.30	5.00	5.18	3.1
Nickel	0.71	1.05	0.60	0.79	30.0
Selenium	<0.11	<0.11	<0.11	<0.11	1.2
Silver	<0.089	<0.091	<0.089	<0.089	1.2
Thallium	<0.22	<0.23	<0.22	<0.22	1.2
Vanadium	<0.033	<0.034	<0.033	<0.034	1.2
Zinc	4.54	5.50	1.18	3.74	60.6
Total	<18.2	<20.6	<15.3	<18.0	14.8

* 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	<0.0033	<0.0034	<0.0033	<0.0033	0.8
Arsenic	<0.00083	<0.00084	<0.00083	<0.00083	0.8
Barium	0.062	0.058	0.041	0.054	21.0
Beryllium	<0.00083	<0.00084	<0.00083	<0.00083	0.8
Cadmium	0.0039	0.0012	0.0019	0.0023	60.3
Chromium	0.014	0.031	0.013	0.019	53.1
Cobalt	0.00027	0.00022	<0.00021	<0.00023	14.0
Copper	0.031	0.031	0.065	0.042	47.4
Lead	0.0051	0.0072	0.0044	0.0056	26.1
Manganese	0.014	0.019	0.017	0.017	15.3
Mercury	0.00064	0.00054	0.00070	0.00063	12.6
Molybdenum	0.098	0.098	0.092	0.096	3.4
Nickel	0.013	0.019	0.011	0.015	29.7
Selenium	<0.0021	<0.0021	<0.0021	<0.0021	0.8
Silver	<0.0017	<0.0017	<0.0017	<0.0017	0.8
Thallium	<0.0041	<0.0042	<0.0041	<0.0042	0.8
Vanadium	<0.00062	<0.00063	<0.00062	<0.00062	0.8
Zinc	0.085	0.10	0.022	0.070	60.6
Total	<0.34	<0.38	<0.28	<0.33	14.8

TABLE 22
Covanta - Durham York Energy Centre
Boiler No. 2 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	<0.13	<0.21	<0.17	<0.18	<0.0033
Arsenic	<0.031	<0.053	<0.042	<0.045	<0.00083
Barium	2.04	3.43	2.74	2.89	0.054
Beryllium	<0.031	<0.053	<0.042	<0.045	<0.00083
Cadmium	0.089	0.15	0.12	0.13	0.0023
Chromium	0.73	1.22	0.98	1.03	0.019
Cobalt	<0.0088	<0.015	<0.012	<0.013	<0.00023
Copper	1.59	2.69	2.16	2.27	0.042
Lead	0.21	0.36	0.28	0.30	0.0056
Manganese	0.64	1.08	0.87	0.91	0.017
Mercury	0.024	0.040	0.032	0.034	0.00063
Molybdenum	3.65	6.14	4.92	5.18	0.096
Nickel	0.55	0.93	0.75	0.79	0.015
Selenium	<0.079	<0.13	<0.11	<0.11	<0.0021
Silver	<0.063	<0.11	<0.085	<0.089	<0.0017
Thallium	<0.16	<0.27	<0.21	<0.22	<0.0042
Vanadium	<0.024	<0.040	<0.032	<0.034	<0.00062
Zinc	2.64	4.43	3.54	3.74	0.070
Total	<12.7	<21.4	<17.1	<18.0	<0.33

* 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	<0.80	<0.20	<0.80
Arsenic	<0.80	<0.20	<0.20
Barium	<6.0	8.2	8.2
Beryllium	<0.20	<0.050	<0.20
Cadmium	<0.20	<0.050	<0.20
Chromium	7.02	1.06	8.08
Cobalt	<0.20	<0.050	<0.050
Copper	<4.0	7.5	7.50
Lead	0.43	0.39	0.82
Manganese	2.8	1.50	4.30
Mercury *	<0.015	<0.23	<0.23
Molybdenum	49.5	<0.25	49.5
Nickel	17.6	0.85	18.5
Selenium	<2.0	<0.50	<0.50
Silver	<0.40	<0.10	<0.40
Thallium	<1.0	<0.25	<1.00
Vanadium	<0.60	<0.15	<0.15
Zinc	<10	3.5	3.50
Total			<104

* 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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	144	0.011	0.019	0.016	0.016	0.30
Pentachlorodibenzo-p-dioxins	349	0.027	0.046	0.038	0.039	0.73
Hexachlorodibenzo-p-dioxins	460	0.036	0.061	0.050	0.051	0.96
Heptachlorodibenzo-p-dioxins	666	0.052	0.088	0.072	0.074	1.39
Octachlorodibenzo-p-dioxin	345	0.027	0.045	0.037	0.038	0.72
Total	1964	0.15	0.26	0.21	0.22	4.11

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	222	0.017	0.029	0.024	0.025	0.46
Pentachlorodibenzofurans	250	0.019	0.033	0.027	0.028	0.52
Hexachlorodibenzofurans	341	0.026	0.045	0.037	0.038	0.71
Heptachlorodibenzofurans	268	0.021	0.035	0.029	0.030	0.56
Octachlorodibenzofuran	53.2	0.0041	0.0070	0.0058	0.0059	0.11
Total	1134	0.088	0.15	0.12	0.13	2.37

Dry Gas Volume Sampled (Rm³*) :	7.595
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
Note: "<" indicates that the analyte was not detected and the value of the detection limit was used to calculate the emission data.

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

Dioxins

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	135	0.011	0.018	0.015	0.015	0.28
Pentachlorodibenzo-p-dioxins	388	0.031	0.053	0.044	0.045	0.81
Hexachlorodibenzo-p-dioxins	452	0.036	0.062	0.051	0.052	0.94
Heptachlorodibenzo-p-dioxins	630	0.051	0.086	0.071	0.072	1.32
Octachlorodibenzo-p-dioxin	367	0.029	0.050	0.041	0.042	0.77
Total	1972	0.16	0.27	0.22	0.23	4.12

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	143	0.011	0.020	0.016	0.016	0.30
Pentachlorodibenzofurans	133	0.011	0.018	0.015	0.015	0.28
Hexachlorodibenzofurans	282	0.023	0.039	0.032	0.032	0.59
Heptachlorodibenzofurans	193	0.016	0.026	0.022	0.022	0.40
Octachlorodibenzofuran	50.1	0.0040	0.0068	0.0056	0.0058	0.10
Total	801	0.064	0.11	0.090	0.092	1.67

Dry Gas Volume Sampled (Rm^3*) :	7.323
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	18.6
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

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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	140	0.011	0.018	0.015	0.016	0.30
Pentachlorodibenzo-p-dioxins	331	0.026	0.043	0.035	0.037	0.70
Hexachlorodibenzo-p-dioxins	395	0.031	0.052	0.042	0.044	0.84
Heptachlorodibenzo-p-dioxins	656	0.051	0.086	0.070	0.073	1.39
Octachlorodibenzo-p-dioxin	555	0.043	0.073	0.059	0.062	1.17
Total	2077	0.16	0.27	0.22	0.23	4.39

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	91.5	0.0071	0.012	0.0097	0.010	0.19
Pentachlorodibenzofurans	122	0.0095	0.016	0.013	0.014	0.26
Hexachlorodibenzofurans	218	0.017	0.029	0.023	0.024	0.46
Heptachlorodibenzofurans	191	0.015	0.025	0.020	0.021	0.40
Octachlorodibenzofuran	53.9	0.0042	0.0071	0.0057	0.0060	0.11
Total	676	0.053	0.089	0.072	0.075	1.43

Dry Gas Volume Sampled (Rm^3*) :	7.614
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	19.0

* At 25°C and 1 atmosphere

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

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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.011	0.011	0.011	0.011	1.5
Pentachlorodibenzo-p-dioxins	0.027	0.031	0.026	0.028	10.0
Hexachlorodibenzo-p-dioxins	0.036	0.036	0.031	0.034	8.8
Heptachlorodibenzo-p-dioxins	0.052	0.051	0.051	0.051	1.0
Octachlorodibenzo-p-dioxin	0.027	0.029	0.043	0.033	26.7
Total	0.15	0.16	0.16	0.16	3.1

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	0.017	0.011	0.007	0.012	42.3
Pentachlorodibenzofurans	0.019	0.011	0.0095	0.013	40.8
Hexachlorodibenzofurans	0.026	0.023	0.017	0.022	21.5
Heptachlorodibenzofurans	0.021	0.016	0.015	0.017	18.9
Octachlorodibenzofuran	0.0041	0.0040	0.0042	0.0041	2.2
Total	0.088	0.064	0.053	0.068	26.2

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

Dioxins

Congener Group	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzo-p-dioxins	0.019	0.018	0.018	0.019	1.7
Pentachlorodibenzo-p-dioxins	0.046	0.053	0.043	0.047	10.4
Hexachlorodibenzo-p-dioxins	0.061	0.062	0.052	0.058	9.3
Heptachlorodibenzo-p-dioxins	0.088	0.086	0.086	0.087	1.1
Octachlorodibenzo-p-dioxin	0.045	0.050	0.073	0.056	26.2
Total	0.26	0.27	0.27	0.27	2.8

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	0.029	0.020	0.012	0.020	42.6
Pentachlorodibenzofurans	0.033	0.018	0.016	0.022	41.1
Hexachlorodibenzofurans	0.045	0.039	0.029	0.037	21.9
Heptachlorodibenzofurans	0.035	0.026	0.025	0.029	19.2
Octachlorodibenzofuran	0.0070	0.0068	0.0071	0.0070	1.7
Total	0.15	0.11	0.089	0.12	26.6

* At 25°C and 1 atmosphere

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

Dioxins

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.016	0.015	0.015	0.015	2.5
Pentachlorodibenzo-p-dioxins	0.038	0.044	0.035	0.039	11.1
Hexachlorodibenzo-p-dioxins	0.050	0.051	0.042	0.048	10.2
Heptachlorodibenzo-p-dioxins	0.072	0.071	0.070	0.071	1.8
Octachlorodibenzo-p-dioxin	0.037	0.041	0.059	0.046	25.1
Total	0.21	0.22	0.22	0.22	2.1

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	0.024	0.016	0.0097	0.017	43.3
Pentachlorodibenzofurans	0.027	0.015	0.013	0.018	41.8
Hexachlorodibenzofurans	0.037	0.032	0.023	0.031	22.8
Heptachlorodibenzofurans	0.029	0.022	0.020	0.024	19.9
Octachlorodibenzofuran	0.0058	0.0056	0.0057	0.0057	1.3
Total	0.12	0.090	0.072	0.095	27.3

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	0.016	0.015	0.016	0.016	1.8
Pentachlorodibenzo-p-dioxins	0.039	0.045	0.037	0.040	10.0
Hexachlorodibenzo-p-dioxins	0.051	0.052	0.044	0.049	9.0
Heptachlorodibenzo-p-dioxins	0.074	0.072	0.073	0.073	1.3
Octachlorodibenzo-p-dioxin	0.038	0.042	0.062	0.047	26.4
Total	0.22	0.23	0.23	0.23	2.8

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	0.025	0.016	0.010	0.017	42.6
Pentachlorodibenzofurans	0.028	0.015	0.014	0.019	41.2
Hexachlorodibenzofurans	0.038	0.032	0.024	0.032	21.9
Heptachlorodibenzofurans	0.030	0.022	0.021	0.024	19.3
Octachlorodibenzofuran	0.0059	0.0058	0.0060	0.0059	2.2
Total	0.13	0.092	0.075	0.098	26.6

* 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	0.30	0.28	0.30	0.29	3.4
Pentachlorodibenzo-p-dioxins	0.73	0.81	0.70	0.75	7.7
Hexachlorodibenzo-p-dioxins	0.96	0.94	0.84	0.91	7.5
Heptachlorodibenzo-p-dioxins	1.39	1.32	1.39	1.37	3.2
Octachlorodibenzo-p-dioxin	0.72	0.77	1.17	0.89	28.0
Total	4.11	4.12	4.39	4.21	3.8

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	0.46	0.30	0.19	0.32	42.9
Pentachlorodibenzofurans	0.52	0.28	0.26	0.35	41.9
Hexachlorodibenzofurans	0.71	0.59	0.46	0.59	21.5
Heptachlorodibenzofurans	0.56	0.40	0.40	0.46	19.9
Octachlorodibenzofuran	0.11	0.10	0.11	0.11	4.4
Total	2.37	1.67	1.43	1.83	26.8

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 ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.011	0.019	0.015	0.016	0.29
Pentachlorodibenzo-p-dioxins	0.028	0.047	0.039	0.040	0.75
Hexachlorodibenzo-p-dioxins	0.034	0.058	0.048	0.049	0.91
Heptachlorodibenzo-p-dioxins	0.051	0.087	0.071	0.073	1.37
Octachlorodibenzo-p-dioxin	0.033	0.056	0.046	0.047	0.89
Total	0.16	0.27	0.22	0.23	4.21

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.012	0.020	0.017	0.017	0.32
Pentachlorodibenzofurans	0.013	0.022	0.018	0.019	0.35
Hexachlorodibenzofurans	0.022	0.037	0.031	0.032	0.59
Heptachlorodibenzofurans	0.017	0.029	0.024	0.024	0.46
Octachlorodibenzofuran	0.0041	0.0070	0.0057	0.0059	0.11
Total	0.068	0.12	0.095	0.098	1.83

* 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	<16	<18
Pentachlorodibenzo-p-dioxins	<15	<14
Hexachlorodibenzo-p-dioxins	<45	<36
Heptachlorodibenzo-p-dioxins	<7.2	<7.0
Octachlorodibenzo-p-dioxin	27.5	36.2
Total	<111	<111

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	34.8	<6.9
Pentachlorodibenzofurans	<6.7	<5.9
Hexachlorodibenzofurans	<6.9	44.0
Heptachlorodibenzofurans	19.2	26.3
Octachlorodibenzofuran	<7.6	19.4
Total	<75.2	<103

"<" 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 pg	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	<6.3	<0.49	<0.83	<0.68	<0.70	<0.013
12378-pentachlorodibenzo-p-dioxin	8.0	0.62	1.05	0.87	0.89	0.017
123478-hexachlorodibenzo-p-dioxin	25.1	1.95	3.30	2.72	2.80	0.053
123678-hexachlorodibenzo-p-dioxin	63.1	4.89	8.31	6.84	7.03	0.13
123789-hexachlorodibenzo-p-dioxin	59.7	4.63	7.86	6.48	6.65	0.12
1234678-heptachlorodibenzo-p-dioxin	319	24.7	42.0	34.6	35.5	0.67
Octachlorodibenzo-p-dioxin	345	26.8	45.4	37.4	38.4	0.72
2378-tetrachlorodibenzofuran	<43	<3.33	<5.66	<4.66	<4.79	<0.090
12378-pentachlorodibenzofuran	19.1	1.48	2.51	2.07	2.13	0.040
23478-pentachlorodibenzofuran	23.5	1.82	3.09	2.55	2.62	0.049
123478-hexachlorodibenzofuran	66.8	5.18	8.80	7.25	7.44	0.14
123678-hexachlorodibenzofuran	35.2	2.73	4.63	3.82	3.92	0.074
234678-hexachlorodibenzofuran	37.7	2.92	4.96	4.09	4.20	0.079
123789-hexachlorodibenzofuran	<7.4	<0.57	<0.97	<0.80	<0.82	<0.015
1234678-heptachlorodibenzofuran	150	11.6	19.7	16.3	16.7	0.31
1234789-heptachlorodibenzofuran	30.3	2.35	3.99	3.29	3.37	0.063
Octachlorodibenzofuran	53.2	4.12	7.00	5.77	5.92	0.11
PCB 81	<120	<9.30	<15.8	<13.0	<13.4	<0.25
PCB 77	<120	<9.30	<15.8	<13.0	<13.4	<0.25
PCB 123	<140	<10.9	<18.4	<15.2	<15.6	<0.29
PCB 118	780	60.5	103	84.6	86.9	1.63
PCB 114	<130	<10.1	<17.1	<14.1	<14.5	<0.27
PCB 105	250	19.4	32.9	27.1	27.8	0.52
PCB 126	<130	<10.1	<17.1	<14.1	<14.5	<0.27
PCB 167	<80	<6.20	<10.5	<8.68	<8.91	<0.17
PCB 156 + PCB 157	<74	<5.74	<9.74	<8.03	<8.24	<0.15
PCB 169	<81	<6.28	<10.7	<8.79	<9.02	<0.17
PCB 189	<52	<4.03	<6.85	<5.64	<5.79	<0.11
Total Dioxins & Furans Only	<1292	<100	<170	<140	<144	<2.71
Total PCBs Only	<1957	<152	<258	<212	<218	<4.10
Total Dioxins & Furans and PCBs	<3249	<252	<428	<352	<362	<6.80

Dry Gas Volume Sampled (Rm³*) :	7.595
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected pg	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	<8.3	<0.67	<1.13	<0.93	<0.95	<0.017
12378-pentachlorodibenzo-p-dioxin	<7.5	<0.60	<1.02	<0.84	<0.86	<0.016
123478-hexachlorodibenzo-p-dioxin	23.0	1.85	3.14	2.58	2.64	0.048
123678-hexachlorodibenzo-p-dioxin	60.6	4.87	8.28	6.81	6.96	0.13
123789-hexachlorodibenzo-p-dioxin	58.7	4.72	8.02	6.59	6.74	0.12
1234678-heptachlorodibenzo-p-dioxin	303	24.3	41.4	34.0	34.8	0.63
Octachlorodibenzo-p-dioxin	367	29.5	50.1	41.2	42.1	0.77
2378-tetrachlorodibenzofuran	31.8	2.56	4.34	3.57	3.65	0.066
12378-pentachlorodibenzofuran	<8.0	<0.64	<1.09	<0.90	<0.92	<0.017
23478-pentachlorodibenzofuran	19.7	1.58	2.69	2.21	2.26	0.041
123478-hexachlorodibenzofuran	61.8	4.97	8.44	6.94	7.09	0.13
123678-hexachlorodibenzofuran	29.1	2.34	3.97	3.27	3.34	0.061
234678-hexachlorodibenzofuran	36.9	2.97	5.04	4.14	4.24	0.077
123789-hexachlorodibenzofuran	<6.4	<0.51	<0.87	<0.72	<0.73	<0.013
1234678-heptachlorodibenzofuran	112	9.00	15.3	12.6	12.9	0.23
1234789-heptachlorodibenzofuran	17.5	1.41	2.39	1.97	2.01	0.037
Octachlorodibenzofuran	50.1	4.03	6.84	5.63	5.75	0.10
PCB 81	<79	<6.35	<10.8	<8.87	<9.07	<0.17
PCB 77	<77	<6.19	<10.5	<8.65	<8.84	<0.16
PCB 123	<92	<7.39	<12.6	<10.3	<10.6	<0.19
PCB 118	890	71.5	122	100	102	1.86
PCB 114	<82	<6.59	<11.2	<9.21	<9.41	<0.17
PCB 105	<270	<21.7	<36.9	<30.3	<31.0	<0.56
PCB 126	<84	<6.75	<11.5	<9.44	<9.64	<0.18
PCB 167	<88	<7.07	<12.0	<9.88	<10.1	<0.18
PCB 156 + PCB 157	110	8.84	15.0	12.4	12.6	0.23
PCB 169	<89	<7.15	<12.2	<10.0	<10.2	<0.19
PCB 189	<47	<3.78	<6.42	<5.28	<5.40	<0.098
Total Dioxins & Furans Only	<1201	<96.5	<164	<135	<138	<2.51
Total PCBs Only	<1908	<153	<261	<214	<219	<3.99
Total Dioxins & Furans and PCBs	<3109	<250	<425	<349	<357	<6.50

Dry Gas Volume Sampled (Rm³*) :	7.323
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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 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 pg	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	<7.9	<0.62	<1.04	<0.84	<0.88	<0.017
12378-pentachlorodibenzo-p-dioxin	<7.4	<0.58	<0.97	<0.79	<0.82	<0.016
123478-hexachlorodibenzo-p-dioxin	20.1	1.57	2.64	2.14	2.24	0.043
123678-hexachlorodibenzo-p-dioxin	56.9	4.44	7.47	6.05	6.33	0.12
123789-hexachlorodibenzo-p-dioxin	58.5	4.56	7.68	6.22	6.51	0.12
1234678-heptachlorodibenzo-p-dioxin	319	24.9	41.9	33.9	35.5	0.67
Octachlorodibenzo-p-dioxin	555	43.3	72.9	59.0	61.8	1.17
2378-tetrachlorodibenzofuran	35.1	2.74	4.61	3.73	3.91	0.074
12378-pentachlorodibenzofuran	8.4	0.66	1.10	0.89	0.93	0.018
23478-pentachlorodibenzofuran	18.6	1.45	2.44	1.98	2.07	0.039
123478-hexachlorodibenzofuran	<59	<4.60	<7.75	<6.27	<6.57	<0.12
123678-hexachlorodibenzofuran	28.3	2.21	3.72	3.01	3.15	0.060
234678-hexachlorodibenzofuran	30.8	2.40	4.05	3.27	3.43	0.065
123789-hexachlorodibenzofuran	<7.0	<0.55	<0.92	<0.74	<0.78	<0.015
1234678-heptachlorodibenzofuran	119	9.29	15.6	12.6	13.2	0.25
1234789-heptachlorodibenzofuran	18.4	1.44	2.42	1.96	2.05	0.039
Octachlorodibenzofuran	53.9	4.21	7.08	5.73	6.00	0.11
PCB 81	<75	<5.85	<9.85	<7.97	<8.35	<0.16
PCB 77	<73	<5.70	<9.59	<7.76	<8.12	<0.15
PCB 123	<90	<7.02	<11.8	<9.56	<10.0	<0.19
PCB 118	900	70.2	118	95.6	100	1.90
PCB 114	<80	<6.24	<10.5	<8.50	<8.90	<0.17
PCB 105	<260	<20.3	<34.1	<27.6	<28.9	<0.55
PCB 126	<82	<6.40	<10.8	<8.71	<9.13	<0.17
PCB 167	<59	<4.60	<7.75	<6.27	<6.57	<0.12
PCB 156 + PCB 157	<54	<4.21	<7.09	<5.74	<6.01	<0.11
PCB 169	<59	<4.60	<7.75	<6.27	<6.57	<0.12
PCB 189	<37	<2.89	<4.86	<3.93	<4.12	<0.078
Total Dioxins & Furans Only	<1403	<109	<184	<149	<156	<2.97
Total PCBs Only	<1769	<138	<232	<188	<197	<3.74
Total Dioxins & Furans and PCBs	<3172	<248	<417	<337	<353	<6.71

Dry Gas Volume Sampled (Rm³*) :	7.614
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.49	<0.67	<0.62	<0.59	15.6
12378-pentachlorodibenzo-p-dioxin	0.62	<0.60	<0.58	<0.60	3.6
123478-hexachlorodibenzo-p-dioxin	1.95	1.85	1.57	1.79	11.0
123678-hexachlorodibenzo-p-dioxin	4.89	4.87	4.44	4.73	5.4
123789-hexachlorodibenzo-p-dioxin	4.63	4.72	4.56	4.64	1.7
1234678-heptachlorodibenzo-p-dioxin	24.7	24.3	24.9	24.7	1.1
Octachlorodibenzo-p-dioxin	26.8	29.5	43.3	33.2	26.7
2378-tetrachlorodibenzofuran	<3.33	2.56	2.74	<2.88	14.2
12378-pentachlorodibenzofuran	1.48	<0.64	0.66	<0.93	51.8
23478-pentachlorodibenzofuran	1.82	1.58	1.45	1.62	11.6
123478-hexachlorodibenzofuran	5.18	4.97	<4.60	<4.92	5.9
123678-hexachlorodibenzofuran	2.73	2.34	2.21	2.43	11.2
234678-hexachlorodibenzofuran	2.92	2.97	2.40	2.76	11.3
123789-hexachlorodibenzofuran	<0.57	<0.51	<0.55	<0.54	5.5
1234678-heptachlorodibenzofuran	11.6	9.00	9.29	9.97	14.5
1234789-heptachlorodibenzofuran	2.35	1.41	1.44	1.73	31.0
Octachlorodibenzofuran	4.12	4.03	4.21	4.12	2.2
PCB 81	<9.30	<6.35	<5.85	<7.17	26.0
PCB 77	<9.30	<6.19	<5.70	<7.06	27.7
PCB 123	<10.9	<7.39	<7.02	<8.42	25.1
PCB 118	60.5	71.5	70.2	67.4	9.0
PCB 114	<10.1	<6.59	<6.24	<7.64	27.8
PCB 105	19.4	<21.7	<20.3	<20.5	5.7
PCB 126	<10.1	<6.75	<6.40	<7.74	26.2
PCB 167	<6.20	<7.07	<4.60	<5.96	21.0
PCB 156 + PCB 157	<5.74	8.84	<4.21	<6.26	37.6
PCB 169	<6.28	<7.15	<4.60	<6.01	21.5
PCB 189	<4.03	<3.78	<2.89	<3.57	16.9
Total Dioxins & Furans Only	<100	<96.5	<109	<102	6.5
Total PCBs Only	<152	<153	<138	<148	5.7
Total Dioxins & Furans and PCBs	<252	<250	<248	<250	0.9

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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.83	<1.13	<1.04	<1.00	15.5
12378-pentachlorodibenzo-p-dioxin	1.05	<1.02	<0.97	<1.02	4.1
123478-hexachlorodibenzo-p-dioxin	3.30	3.14	2.64	3.03	11.4
123678-hexachlorodibenzo-p-dioxin	8.31	8.28	7.47	8.02	5.9
123789-hexachlorodibenzo-p-dioxin	7.86	8.02	7.68	7.85	2.1
1234678-heptachlorodibenzo-p-dioxin	42.0	41.4	41.9	41.8	0.8
Octachlorodibenzo-p-dioxin	45.4	50.1	72.9	56.1	26.2
2378-tetrachlorodibenzofuran	<5.66	4.34	4.61	<4.87	14.3
12378-pentachlorodibenzofuran	2.51	<1.09	1.10	<1.57	52.1
23478-pentachlorodibenzofuran	3.09	2.69	2.44	2.74	12.0
123478-hexachlorodibenzofuran	8.80	8.44	<7.75	<8.33	6.4
123678-hexachlorodibenzofuran	4.63	3.97	3.72	4.11	11.5
234678-hexachlorodibenzofuran	4.96	5.04	4.05	4.68	11.8
123789-hexachlorodibenzofuran	<0.97	<0.87	<0.92	<0.92	5.4
1234678-heptachlorodibenzofuran	19.7	15.3	15.6	16.9	14.7
1234789-heptachlorodibenzofuran	3.99	2.39	2.42	2.93	31.2
Octachlorodibenzofuran	7.00	6.84	7.08	6.98	1.7
PCB 81	<15.8	<10.8	<9.85	<12.1	26.3
PCB 77	<15.8	<10.5	<9.59	<12.0	28.0
PCB 123	<18.4	<12.6	<11.8	<14.3	25.4
PCB 118	103	122	118	114	8.8
PCB 114	<17.1	<11.2	<10.5	<12.9	28.1
PCB 105	32.9	<36.9	<34.1	<34.6	5.8
PCB 126	<17.1	<11.5	<10.8	<13.1	26.5
PCB 167	<10.5	<12.0	<7.75	<10.1	21.5
PCB 156 + PCB 157	<9.74	15.0	<7.09	<10.6	38.0
PCB 169	<10.7	<12.2	<7.75	<10.2	22.0
PCB 189	<6.85	<6.42	<4.86	<6.04	17.3
Total Dioxins & Furans Only	<170	<164	<184	<173	6.0
Total PCBs Only	<258	<261	<232	<250	6.2
Total Dioxins & Furans and PCBs	<428	<425	<417	<423	1.4

* At 25°C and 1 atmosphere

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

TABLE 39
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.68	<0.93	<0.84	<0.82	15.4
12378-pentachlorodibenzo-p-dioxin	0.87	<0.84	<0.79	<0.83	5.0
123478-hexachlorodibenzo-p-dioxin	2.72	2.58	2.14	2.48	12.4
123678-hexachlorodibenzo-p-dioxin	6.84	6.81	6.05	6.57	6.9
123789-hexachlorodibenzo-p-dioxin	6.48	6.59	6.22	6.43	3.0
1234678-heptachlorodibenzo-p-dioxin	34.6	34.0	33.9	34.2	1.1
Octachlorodibenzo-p-dioxin	37.4	41.2	59.0	45.9	25.1
2378-tetrachlorodibenzofuran	<4.66	3.57	3.73	<3.99	14.8
12378-pentachlorodibenzofuran	2.07	<0.90	0.89	<1.29	52.7
23478-pentachlorodibenzofuran	2.55	2.21	1.98	2.25	12.8
123478-hexachlorodibenzofuran	7.25	6.94	<6.27	<6.82	7.3
123678-hexachlorodibenzofuran	3.82	3.27	3.01	3.36	12.3
234678-hexachlorodibenzofuran	4.09	4.14	3.27	3.84	12.7
123789-hexachlorodibenzofuran	<0.80	<0.72	<0.74	<0.76	5.7
1234678-heptachlorodibenzofuran	16.3	12.6	12.6	13.8	15.3
1234789-heptachlorodibenzofuran	3.29	1.97	1.96	2.40	31.9
Octachlorodibenzofuran	5.77	5.63	5.73	5.71	1.3
PCB 81	<13.0	<8.87	<7.97	<9.95	27.0
PCB 77	<13.0	<8.65	<7.76	<9.81	28.7
PCB 123	<15.2	<10.3	<9.56	<11.7	26.1
PCB 118	84.6	100	95.6	93.4	8.5
PCB 114	<14.1	<9.21	<8.50	<10.6	28.8
PCB 105	27.1	<30.3	<27.6	<28.4	6.1
PCB 126	<14.1	<9.44	<8.71	<10.7	27.2
PCB 167	<8.68	<9.88	<6.27	<8.28	22.2
PCB 156 + PCB 157	<8.03	12.4	<5.74	<8.71	38.6
PCB 169	<8.79	<10.0	<6.27	<8.35	22.8
PCB 189	<5.64	<5.28	<3.93	<4.95	18.2
Total Dioxins & Furans Only	<140	<135	<149	<141	5.1
Total PCBs Only	<212	<214	<188	<205	7.2
Total Dioxins & Furans and PCBs	<352	<349	<337	<346	2.3

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

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

TABLE 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.70	<0.95	<0.88	<0.84	15.3
12378-pentachlorodibenzo-p-dioxin	0.89	<0.86	<0.82	<0.86	3.9
123478-hexachlorodibenzo-p-dioxin	2.80	2.64	2.24	2.56	11.3
123678-hexachlorodibenzo-p-dioxin	7.03	6.96	6.33	6.77	5.6
123789-hexachlorodibenzo-p-dioxin	6.65	6.74	6.51	6.63	1.7
1234678-heptachlorodibenzo-p-dioxin	35.5	34.8	35.5	35.3	1.2
Octachlorodibenzo-p-dioxin	38.4	42.1	61.8	47.4	26.4
2378-tetrachlorodibenzofuran	<4.79	3.65	3.91	<4.12	14.5
12378-pentachlorodibenzofuran	2.13	<0.92	0.93	<1.33	52.2
23478-pentachlorodibenzofuran	2.62	2.26	2.07	2.32	12.0
123478-hexachlorodibenzofuran	7.44	7.09	<6.57	<7.03	6.2
123678-hexachlorodibenzofuran	3.92	3.34	3.15	3.47	11.6
234678-hexachlorodibenzofuran	4.20	4.24	3.43	3.95	11.5
123789-hexachlorodibenzofuran	<0.82	<0.73	<0.78	<0.78	5.7
1234678-heptachlorodibenzofuran	16.7	12.9	13.2	14.3	14.8
1234789-heptachlorodibenzofuran	3.37	2.01	2.05	2.48	31.4
Octachlorodibenzofuran	5.92	5.75	6.00	5.89	2.2
PCB 81	<13.4	<9.07	<8.35	<10.3	26.4
PCB 77	<13.4	<8.84	<8.12	<10.1	28.1
PCB 123	<15.6	<10.6	<10.0	<12.1	25.5
PCB 118	86.9	102	100	96.4	8.6
PCB 114	<14.5	<9.41	<8.90	<10.9	28.2
PCB 105	27.8	<31.0	<28.9	<29.3	5.5
PCB 126	<14.5	<9.64	<9.13	<11.1	26.6
PCB 167	<8.91	<10.1	<6.57	<8.53	21.1
PCB 156 + PCB 157	<8.24	12.6	<6.01	<8.96	37.6
PCB 169	<9.02	<10.2	<6.57	<8.60	21.6
PCB 189	<5.79	<5.40	<4.12	<5.10	17.1
Total Dioxins & Furans Only	<144	<138	<156	<146	6.4
Total PCBs Only	<218	<219	<197	<211	5.9
Total Dioxins & Furans and PCBs	<362	<357	<353	<357	1.2

* 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 Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	<0.013	<0.017	<0.017	<0.016	14.2
12378-pentachlorodibenzo-p-dioxin	0.017	<0.016	<0.016	<0.016	3.9
123478-hexachlorodibenzo-p-dioxin	0.053	0.048	0.043	0.048	10.5
123678-hexachlorodibenzo-p-dioxin	0.13	0.13	0.12	0.13	4.7
123789-hexachlorodibenzo-p-dioxin	0.12	0.12	0.12	0.12	0.9
1234678-heptachlorodibenzo-p-dioxin	0.67	0.63	0.67	0.66	3.4
Octachlorodibenzo-p-dioxin	0.72	0.77	1.17	0.89	28.0
2378-tetrachlorodibenzofuran	<0.090	0.066	0.074	<0.077	15.6
12378-pentachlorodibenzofuran	0.040	<0.017	0.018	<0.025	53.0
23478-pentachlorodibenzofuran	0.049	0.041	0.039	0.043	12.1
123478-hexachlorodibenzofuran	0.14	0.13	<0.12	<0.13	5.9
123678-hexachlorodibenzofuran	0.074	0.061	0.060	0.065	11.9
234678-hexachlorodibenzofuran	0.079	0.077	0.065	0.074	10.2
123789-hexachlorodibenzofuran	<0.015	<0.013	<0.015	<0.015	7.4
1234678-heptachlorodibenzofuran	0.31	0.23	0.25	0.27	15.8
1234789-heptachlorodibenzofuran	0.063	0.037	0.039	0.046	32.1
Octachlorodibenzofuran	0.11	0.10	0.11	0.11	4.4
PCB 81	<0.25	<0.17	<0.16	<0.19	27.0
PCB 77	<0.25	<0.16	<0.15	<0.19	28.7
PCB 123	<0.29	<0.19	<0.19	<0.23	26.1
PCB 118	1.63	1.86	1.90	1.80	8.1
PCB 114	<0.27	<0.17	<0.17	<0.20	28.8
PCB 105	0.52	<0.56	<0.55	<0.55	3.8
PCB 126	<0.27	<0.18	<0.17	<0.21	27.3
PCB 167	<0.17	<0.18	<0.12	<0.16	19.2
PCB 156 + PCB 157	<0.15	0.23	<0.11	<0.17	35.3
PCB 169	<0.17	<0.19	<0.12	<0.16	19.8
PCB 189	<0.11	<0.098	<0.078	<0.095	16.3
Total Dioxins & Furans Only	<2.71	<2.51	<2.97	<2.73	8.4
Total PCBs Only	<4.10	<3.99	<3.74	<3.94	4.6
Total Dioxins & Furans and PCBs	<6.80	<6.50	<6.71	<6.67	2.3

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 pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	<0.59	<1.00	<0.82	<0.84	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.60	<1.02	<0.83	<0.86	<0.016
123478-hexachlorodibenzo-p-dioxin	1.79	3.03	2.48	2.56	0.048
123678-hexachlorodibenzo-p-dioxin	4.73	8.02	6.57	6.77	0.13
123789-hexachlorodibenzo-p-dioxin	4.64	7.85	6.43	6.63	0.12
1234678-heptachlorodibenzo-p-dioxin	24.7	41.8	34.2	35.3	0.66
Octachlorodibenzo-p-dioxin	33.2	56.1	45.9	47.4	0.89
2378-tetrachlorodibenzofuran	<2.88	<4.87	<3.99	<4.12	<0.077
12378-pentachlorodibenzofuran	<0.93	<1.57	<1.29	<1.33	<0.025
23478-pentachlorodibenzofuran	1.62	2.74	2.25	2.32	0.043
123478-hexachlorodibenzofuran	<4.92	<8.33	<6.82	<7.03	<0.13
123678-hexachlorodibenzofuran	2.43	4.11	3.36	3.47	0.065
234678-hexachlorodibenzofuran	2.76	4.68	3.84	3.95	0.074
123789-hexachlorodibenzofuran	<0.54	<0.92	<0.76	<0.78	<0.015
1234678-heptachlorodibenzofuran	9.97	16.9	13.8	14.3	0.27
1234789-heptachlorodibenzofuran	1.73	2.93	2.40	2.48	0.046
Octachlorodibenzofuran	4.12	6.98	5.71	5.89	0.11
PCB 81	<7.17	<12.1	<9.95	<10.3	<0.19
PCB 77	<7.06	<12.0	<9.81	<10.1	<0.19
PCB 123	<8.42	<14.3	<11.7	<12.1	<0.23
PCB 118	67.4	114	93.4	96.4	1.80
PCB 114	<7.64	<12.9	<10.6	<10.9	<0.20
PCB 105	<20.5	<34.6	<28.4	<29.3	<0.55
PCB 126	<7.74	<13.1	<10.7	<11.1	<0.21
PCB 167	<5.96	<10.1	<8.28	<8.53	<0.16
PCB 156 + PCB 157	<6.26	<10.6	<8.71	<8.96	<0.17
PCB 169	<6.01	<10.2	<8.35	<8.60	<0.16
PCB 189	<3.57	<6.04	<4.95	<5.10	<0.095
Total Dioxins & Furans Only	<102	<173	<141	<146	<2.73
Total PCBs Only	<148	<250	<205	<211	<3.94
Total Dioxins & Furans and PCBs	<250	<423	<346	<357	<6.67

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Blank Train pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<7.5	<6.0
12378-pentachlorodibenzo-p-dioxin	<6.3	<8.5
123478-hexachlorodibenzo-p-dioxin	<7.5	<6.2
123678-hexachlorodibenzo-p-dioxin	<7.6	<6.3
123789-hexachlorodibenzo-p-dioxin	<6.9	<5.7
1234678-heptachlorodibenzo-p-dioxin	<7.2	<7.0
Octachlorodibenzo-p-dioxin	27.5	36.2
2378-tetrachlorodibenzofuran	<7.8	<3.2
12378-pentachlorodibenzofuran	<6.7	<5.9
23478-pentachlorodibenzofuran	<6.7	<5.9
123478-hexachlorodibenzofuran	<6.7	11.3
123678-hexachlorodibenzofuran	<6.4	8.1
234678-hexachlorodibenzofuran	<7.1	11.2
123789-hexachlorodibenzofuran	<7.4	13.3
1234678-heptachlorodibenzofuran	19.2	26.3
1234789-heptachlorodibenzofuran	<8.0	<8.2
Octachlorodibenzofuran	<7.6	19.4
PCB 81	<140	<64
PCB 77	<140	<62
PCB 123	<98	<37
PCB 118	<130	<34
PCB 114	<88	<33
PCB 105	<89	<34
PCB 126	<91	<34
PCB 167	<32	<30
PCB 156 + PCB 157	<29	<28
PCB 169	<32	<31
PCB 189	<28	<40
Total Dioxins & Furans Only	<154	<189
Total PCBs Only	<897	<427
Total Dioxins & Furans and PCBs	<1051	<616

"<" 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	<0.49	<0.67	<0.62	<0.59
12378-pentachlorodibenzo-p-dioxin	1.000	0.62	<0.60	<0.58	<0.60
123478-hexachlorodibenzo-p-dioxin	0.100	0.19	0.18	0.16	0.18
123678-hexachlorodibenzo-p-dioxin	0.100	0.49	0.49	0.44	0.47
123789-hexachlorodibenzo-p-dioxin	0.100	0.46	0.47	0.46	0.46
1234678-heptachlorodibenzo-p-dioxin	0.010	0.25	0.24	0.25	0.25
Octachlorodibenzo-p-dioxin	0.0003	0.0080	0.0088	0.013	0.010
2378-tetrachlorodibenzofuran	0.100	<0.33	0.26	0.27	<0.29
12378-pentachlorodibenzofuran	0.030	0.044	<0.019	0.020	<0.028
23478-pentachlorodibenzofuran	0.300	0.55	0.47	0.44	0.49
123478-hexachlorodibenzofuran	0.100	0.52	0.50	<0.46	<0.49
123678-hexachlorodibenzofuran	0.100	0.27	0.23	0.22	0.24
234678-hexachlorodibenzofuran	0.100	0.29	0.30	0.24	0.28
123789-hexachlorodibenzofuran	0.100	<0.057	<0.051	<0.055	<0.054
1234678-heptachlorodibenzofuran	0.010	0.12	0.090	0.093	0.10
1234789-heptachlorodibenzofuran	0.010	0.023	0.014	0.014	0.017
Octachlorodibenzofuran	0.0003	0.0012	0.0012	0.0013	0.0012
PCB 81	0.0003	<0.0028	<0.0019	<0.0018	<0.0022
PCB 77	0.0001	<0.00093	<0.00062	<0.00057	<0.00071
PCB 123	0.00003	<0.00033	<0.00022	<0.00021	<0.00025
PCB 118	0.00003	0.0018	0.0021	0.0021	0.0020
PCB 114	0.00003	<0.00030	<0.00020	<0.00019	<0.00023
PCB 105	0.00003	0.00058	<0.00065	<0.00061	<0.00061
PCB 126	0.100	<1.01	<0.68	<0.64	<0.77
PCB 167	0.00003	<0.00019	<0.00021	<0.00014	<0.00018
PCB 156 + PCB 157	0.00003	<0.00017	0.00027	<0.00013	<0.00019
PCB 169	0.030	<0.19	<0.21	<0.14	<0.18
PCB 189	0.00003	<0.00012	<0.00011	<0.000087	<0.00011
Total Dioxins & Furans Only		<4.72	<4.60	<4.33	<4.55
Total PCBs Only		<1.20	<0.90	<0.78	<0.96
Total Dioxins & Furans and PCBs		<5.92	<5.49	<5.11	<5.51

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	<0.83	<1.13	<1.04	<1.00
12378-pentachlorodibenzo-p-dioxin	1.000	1.05	<1.02	<0.97	<1.02
123478-hexachlorodibenzo-p-dioxin	0.100	0.33	0.31	0.26	0.30
123678-hexachlorodibenzo-p-dioxin	0.100	0.83	0.83	0.75	0.80
123789-hexachlorodibenzo-p-dioxin	0.100	0.79	0.80	0.77	0.79
1234678-heptachlorodibenzo-p-dioxin	0.010	0.42	0.41	0.42	0.42
Octachlorodibenzo-p-dioxin	0.0003	0.014	0.015	0.022	0.017
2378-tetrachlorodibenzofuran	0.100	<0.57	0.43	0.46	<0.49
12378-pentachlorodibenzofuran	0.030	0.075	<0.033	0.033	<0.047
23478-pentachlorodibenzofuran	0.300	0.93	0.81	0.73	0.82
123478-hexachlorodibenzofuran	0.100	0.88	0.84	<0.77	<0.83
123678-hexachlorodibenzofuran	0.100	0.46	0.40	0.37	0.41
234678-hexachlorodibenzofuran	0.100	0.50	0.50	0.40	0.47
123789-hexachlorodibenzofuran	0.100	<0.097	<0.087	<0.092	<0.092
1234678-heptachlorodibenzofuran	0.010	0.20	0.15	0.16	0.17
1234789-heptachlorodibenzofuran	0.010	0.040	0.024	0.024	0.029
Octachlorodibenzofuran	0.0003	0.0021	0.0021	0.0021	0.0021
PCB 81	0.0003	<0.0047	<0.0032	<0.0030	<0.0036
PCB 77	0.0001	<0.0016	<0.0011	<0.00096	<0.0012
PCB 123	0.00003	<0.00055	<0.00038	<0.00035	<0.00043
PCB 118	0.00003	0.0031	0.0036	0.0035	0.0034
PCB 114	0.00003	<0.00051	<0.00034	<0.00032	<0.00039
PCB 105	0.00003	0.00099	<0.0011	<0.0010	<0.0010
PCB 126	0.100	<1.71	<1.15	<1.08	<1.31
PCB 167	0.00003	<0.00032	<0.00036	<0.00023	<0.00030
PCB 156 + PCB 157	0.00003	<0.00029	0.00045	<0.00021	<0.00032
PCB 169	0.030	<0.32	<0.36	<0.23	<0.31
PCB 189	0.00003	<0.00021	<0.00019	<0.00015	<0.00018
Total Dioxins & Furans Only		<8.01	<7.82	<7.28	<7.70
Total PCBs Only		<2.04	<1.52	<1.32	<1.63
Total Dioxins & Furans and PCBs		<10.1	<9.34	<8.60	<9.33

* 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	<0.68	<0.93	<0.84	<0.82
12378-pentachlorodibenzo-p-dioxin	1.000	0.87	<0.84	<0.79	<0.83
123478-hexachlorodibenzo-p-dioxin	0.100	0.27	0.26	0.21	0.25
123678-hexachlorodibenzo-p-dioxin	0.100	0.68	0.68	0.60	0.66
123789-hexachlorodibenzo-p-dioxin	0.100	0.65	0.66	0.62	0.64
1234678-heptachlorodibenzo-p-dioxin	0.010	0.35	0.34	0.34	0.34
Octachlorodibenzo-p-dioxin	0.0003	0.011	0.012	0.018	0.014
2378-tetrachlorodibenzofuran	0.100	<0.47	0.36	0.37	<0.40
12378-pentachlorodibenzofuran	0.030	0.062	<0.027	0.027	<0.039
23478-pentachlorodibenzofuran	0.300	0.76	0.66	0.59	0.67
123478-hexachlorodibenzofuran	0.100	0.72	0.69	<0.63	<0.68
123678-hexachlorodibenzofuran	0.100	0.38	0.33	0.30	0.34
234678-hexachlorodibenzofuran	0.100	0.41	0.41	0.33	0.38
123789-hexachlorodibenzofuran	0.100	<0.080	<0.072	<0.074	<0.076
1234678-heptachlorodibenzofuran	0.010	0.16	0.13	0.13	0.14
1234789-heptachlorodibenzofuran	0.010	0.033	0.020	0.020	0.024
Octachlorodibenzofuran	0.0003	0.0017	0.0017	0.0017	0.0017
PCB 81	0.0003	<0.0039	<0.0027	<0.0024	<0.0030
PCB 77	0.0001	<0.0013	<0.00086	<0.00078	<0.00098
PCB 123	0.00003	<0.00046	<0.00031	<0.00029	<0.00035
PCB 118	0.00003	0.0025	0.0030	0.0029	0.0028
PCB 114	0.00003	<0.00042	<0.00028	<0.00026	<0.00032
PCB 105	0.00003	0.00081	<0.00091	<0.00083	<0.00085
PCB 126	0.100	<1.41	<0.94	<0.87	<1.07
PCB 167	0.00003	<0.00026	<0.00030	<0.00019	<0.00025
PCB 156 + PCB 157	0.00003	<0.00024	0.00037	<0.00017	<0.00026
PCB 169	0.030	<0.26	<0.30	<0.19	<0.25
PCB 189	0.00003	<0.00017	<0.00016	<0.00012	<0.00015
Total Dioxins & Furans Only		<6.60	<6.43	<5.89	<6.31
Total PCBs Only		<1.68	<1.25	<1.07	<1.33
Total Dioxins & Furans and PCBs		<8.28	<7.68	<6.96	<7.64

* 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	0.34	0.47	0.42	0.41
12378-pentachlorodibenzo-p-dioxin	1.000	0.87	0.42	0.39	0.56
123478-hexachlorodibenzo-p-dioxin	0.100	0.27	0.26	0.21	0.25
123678-hexachlorodibenzo-p-dioxin	0.100	0.68	0.68	0.60	0.66
123789-hexachlorodibenzo-p-dioxin	0.100	0.65	0.66	0.62	0.64
1234678-heptachlorodibenzo-p-dioxin	0.010	0.35	0.34	0.34	0.34
Octachlorodibenzo-p-dioxin	0.0003	0.011	0.012	0.018	0.014
2378-tetrachlorodibenzofuran	0.100	0.23	0.36	0.37	0.32
12378-pentachlorodibenzofuran	0.030	0.062	0.013	0.027	0.034
23478-pentachlorodibenzofuran	0.300	0.76	0.66	0.59	0.67
123478-hexachlorodibenzofuran	0.100	0.72	0.69	0.31	0.58
123678-hexachlorodibenzofuran	0.100	0.38	0.33	0.30	0.34
234678-hexachlorodibenzofuran	0.100	0.41	0.41	0.33	0.38
123789-hexachlorodibenzofuran	0.100	0.040	0.036	0.037	0.038
1234678-heptachlorodibenzofuran	0.010	0.16	0.13	0.13	0.14
1234789-heptachlorodibenzofuran	0.010	0.033	0.020	0.020	0.024
Octachlorodibenzofuran	0.0003	0.0017	0.0017	0.0017	0.0017
PCB 81	0.0003	0.0020	0.0013	0.0012	0.0015
PCB 77	0.0001	0.00065	0.00043	0.00039	0.00049
PCB 123	0.00003	0.00023	0.00016	0.00014	0.00018
PCB 118	0.00003	0.0025	0.0030	0.0029	0.0028
PCB 114	0.00003	0.00021	0.00014	0.00013	0.00016
PCB 105	0.00003	0.00081	0.00045	0.00041	0.00056
PCB 126	0.100	0.71	0.47	0.44	0.54
PCB 167	0.00003	0.00013	0.00015	0.000094	0.00012
PCB 156 + PCB 157	0.00003	0.00012	0.00037	0.000086	0.00019
PCB 169	0.030	0.13	0.15	0.094	0.13
PCB 189	0.00003	0.000085	0.000079	0.000059	0.000074
Total Dioxins & Furans Only		5.98	5.49	4.73	5.40
Total PCBs Only		0.84	0.63	0.54	0.67
Total Dioxins & Furans and PCBs		6.83	6.12	5.26	6.07

* 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	<0.68	<0.93	<0.84	<0.82
12378-pentachlorodibenzo-p-dioxin	0.500	0.43	<0.42	<0.39	<0.42
123478-hexachlorodibenzo-p-dioxin	0.100	0.27	0.26	0.21	0.25
123678-hexachlorodibenzo-p-dioxin	0.100	0.68	0.68	0.60	0.66
123789-hexachlorodibenzo-p-dioxin	0.100	0.65	0.66	0.62	0.64
1234678-heptachlorodibenzo-p-dioxin	0.010	0.35	0.34	0.34	0.34
Octachlorodibenzo-p-dioxin	0.001	0.037	0.041	0.059	0.046
2378-tetrachlorodibenzofuran	0.100	<0.47	0.36	0.37	<0.40
12378-pentachlorodibenzofuran	0.050	0.10	<0.045	0.045	<0.064
23478-pentachlorodibenzofuran	0.500	1.27	1.11	0.99	1.12
123478-hexachlorodibenzofuran	0.100	0.72	0.69	<0.63	<0.68
123678-hexachlorodibenzofuran	0.100	0.38	0.33	0.30	0.34
234678-hexachlorodibenzofuran	0.100	0.41	0.41	0.33	0.38
123789-hexachlorodibenzofuran	0.100	<0.080	<0.072	<0.074	<0.076
1234678-heptachlorodibenzofuran	0.010	0.16	0.13	0.13	0.14
1234789-heptachlorodibenzofuran	0.010	0.033	0.020	0.020	0.024
Octachlorodibenzofuran	0.001	0.0058	0.0056	0.0057	0.0057
Total Dioxins & Furans		<6.75	<6.50	<5.96	<6.40
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	<0.70	<0.95	<0.88	<0.84
12378-pentachlorodibenzo-p-dioxin	1.000	0.89	<0.86	<0.82	<0.86
123478-hexachlorodibenzo-p-dioxin	0.100	0.28	0.26	0.22	0.26
123678-hexachlorodibenzo-p-dioxin	0.100	0.70	0.70	0.63	0.68
123789-hexachlorodibenzo-p-dioxin	0.100	0.66	0.67	0.65	0.66
1234678-heptachlorodibenzo-p-dioxin	0.010	0.36	0.35	0.36	0.35
Octachlorodibenzo-p-dioxin	0.0003	0.012	0.013	0.019	0.014
2378-tetrachlorodibenzofuran	0.100	<0.48	0.37	0.39	<0.41
12378-pentachlorodibenzofuran	0.030	0.064	<0.028	0.028	<0.040
23478-pentachlorodibenzofuran	0.300	0.79	0.68	0.62	0.69
123478-hexachlorodibenzofuran	0.100	0.74	0.71	<0.66	<0.70
123678-hexachlorodibenzofuran	0.100	0.39	0.33	0.31	0.35
234678-hexachlorodibenzofuran	0.100	0.42	0.42	0.34	0.40
123789-hexachlorodibenzofuran	0.100	<0.082	<0.073	<0.078	<0.078
1234678-heptachlorodibenzofuran	0.010	0.17	0.13	0.13	0.14
1234789-heptachlorodibenzofuran	0.010	0.034	0.020	0.020	0.025
Octachlorodibenzofuran	0.0003	0.0018	0.0017	0.0018	0.0018
PCB 81	0.0003	<0.0040	<0.0027	<0.0025	<0.0031
PCB 77	0.0001	<0.0013	<0.00088	<0.00081	<0.0010
PCB 123	0.00003	<0.00047	<0.00032	<0.00030	<0.00036
PCB 118	0.00003	0.0026	0.0031	0.0030	0.0029
PCB 114	0.00003	<0.00043	<0.00028	<0.00027	<0.00033
PCB 105	0.00003	0.00084	<0.00093	<0.00087	<0.00088
PCB 126	0.100	<1.45	<0.96	<0.91	<1.11
PCB 167	0.00003	<0.00027	<0.00030	<0.00020	<0.00026
PCB 156 + PCB 157	0.00003	<0.00025	0.00038	<0.00018	<0.00027
PCB 169	0.030	<0.27	<0.31	<0.20	<0.26
PCB 189	0.00003	<0.00017	<0.00016	<0.00012	<0.00015
Total Dioxins & Furans Only		<6.77	<6.57	<6.17	<6.51
Total PCBs Only		<1.73	<1.28	<1.12	<1.38
Total Dioxins & Furans and PCBs		<8.50	<7.85	<7.29	<7.88

* 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	<0.013	<0.017	<0.017	<0.016
12378-pentachlorodibenzo-p-dioxin	1.000	0.017	<0.016	<0.016	<0.016
123478-hexachlorodibenzo-p-dioxin	0.100	0.0053	0.0048	0.0043	0.0048
123678-hexachlorodibenzo-p-dioxin	0.100	0.013	0.013	0.012	0.013
123789-hexachlorodibenzo-p-dioxin	0.100	0.012	0.012	0.012	0.012
1234678-heptachlorodibenzo-p-dioxin	0.010	0.0067	0.0063	0.0067	0.0066
Octachlorodibenzo-p-dioxin	0.0003	0.00022	0.00023	0.00035	0.00027
2378-tetrachlorodibenzofuran	0.100	<0.0090	0.0066	0.0074	<0.0077
12378-pentachlorodibenzofuran	0.030	0.0012	<0.00050	0.00053	<0.00074
23478-pentachlorodibenzofuran	0.300	0.015	0.012	0.012	0.013
123478-hexachlorodibenzofuran	0.100	0.014	0.013	<0.012	<0.013
123678-hexachlorodibenzofuran	0.100	0.0074	0.0061	0.0060	0.0065
234678-hexachlorodibenzofuran	0.100	0.0079	0.0077	0.0065	0.0074
123789-hexachlorodibenzofuran	0.100	<0.0015	<0.0013	<0.0015	<0.0015
1234678-heptachlorodibenzofuran	0.010	0.0031	0.0023	0.0025	0.0027
1234789-heptachlorodibenzofuran	0.010	0.00063	0.00037	0.00039	0.00046
Octachlorodibenzofuran	0.0003	0.000033	0.000031	0.000034	0.000033
PCB 81	0.0003	<0.000075	<0.000050	<0.000048	<0.000057
PCB 77	0.0001	<0.000025	<0.000016	<0.000015	<0.000019
PCB 123	0.00003	<0.0000088	<0.0000058	<0.0000057	<0.0000068
PCB 118	0.00003	0.000049	0.000056	0.000057	0.000054
PCB 114	0.00003	<0.0000082	<0.0000051	<0.0000051	<0.0000061
PCB 105	0.00003	0.000016	<0.000017	<0.000016	<0.000016
PCB 126	0.100	<0.027	<0.018	<0.017	<0.021
PCB 167	0.00003	<0.0000050	<0.0000055	<0.0000037	<0.0000048
PCB 156 + PCB 157	0.00003	<0.0000046	0.0000069	<0.0000034	<0.0000050
PCB 169	0.030	<0.0051	<0.0056	<0.0037	<0.0048
PCB 189	0.00003	<0.0000033	<0.0000029	<0.0000023	<0.0000029
Total Dioxins & Furans Only		<0.13	<0.12	<0.12	<0.12
Total PCBs Only		<0.032	<0.023	<0.021	<0.026
Total Dioxins & Furans and PCBs		<0.16	<0.14	<0.14	<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/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	<0.59	<1.00	<0.82	<0.84	<0.016
12378-pentachlorodibenzo-p-dioxin	<0.60	<1.02	<0.83	<0.86	<0.016
123478-hexachlorodibenzo-p-dioxin	0.18	0.30	0.25	0.26	0.0048
123678-hexachlorodibenzo-p-dioxin	0.47	0.80	0.66	0.68	0.013
123789-hexachlorodibenzo-p-dioxin	0.46	0.79	0.64	0.66	0.012
1234678-heptachlorodibenzo-p-dioxin	0.25	0.42	0.34	0.35	0.0066
Octachlorodibenzo-p-dioxin	0.010	0.017	0.014	0.014	0.00027
2378-tetrachlorodibenzofuran	<0.29	<0.49	<0.40	<0.41	<0.0077
12378-pentachlorodibenzofuran	<0.028	<0.047	<0.039	<0.040	<0.00074
23478-pentachlorodibenzofuran	0.49	0.82	0.67	0.69	0.013
123478-hexachlorodibenzofuran	<0.49	<0.83	<0.68	<0.70	<0.013
123678-hexachlorodibenzofuran	0.24	0.41	0.34	0.35	0.0065
234678-hexachlorodibenzofuran	0.28	0.47	0.38	0.40	0.0074
123789-hexachlorodibenzofuran	<0.054	<0.092	<0.076	<0.078	<0.0015
1234678-heptachlorodibenzofuran	0.10	0.17	0.14	0.14	0.0027
1234789-heptachlorodibenzofuran	0.017	0.029	0.024	0.025	0.00046
Octachlorodibenzofuran	0.0012	0.0021	0.0017	0.0018	0.000033
PCB 81	<0.0022	<0.0036	<0.0030	<0.0031	<0.000057
PCB 77	<0.00071	<0.0012	<0.00098	<0.0010	<0.000019
PCB 123	<0.00025	<0.00043	<0.00035	<0.00036	<0.0000068
PCB 118	0.0020	0.0034	0.0028	0.0029	0.000054
PCB 114	<0.00023	<0.00039	<0.00032	<0.00033	<0.0000061
PCB 105	<0.00061	<0.0010	<0.00085	<0.00088	<0.000016
PCB 126	<0.77	<1.31	<1.07	<1.11	<0.021
PCB 167	<0.00018	<0.00030	<0.00025	<0.00026	<0.0000048
PCB 156 + PCB 157	<0.00019	<0.00032	<0.00026	<0.00027	<0.0000050
PCB 169	<0.18	<0.31	<0.25	<0.26	<0.0048
PCB 189	<0.00011	<0.00018	<0.00015	<0.00015	<0.0000029
Total Dioxins & Furans Only	<4.55	<7.70	<6.31	<6.51	<0.12
Total PCBs Only	<0.96	<1.63	<1.33	<1.38	<0.026
Total Dioxins & Furans and PCBs	<5.51	<9.33	<7.64	<7.88	<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	0.30	0.50	0.41	0.42	0.0079
12378-pentachlorodibenzo-p-dioxin	0.40	0.68	0.56	0.58	0.011
123478-hexachlorodibenzo-p-dioxin	0.18	0.30	0.25	0.26	0.0048
123678-hexachlorodibenzo-p-dioxin	0.47	0.80	0.66	0.68	0.013
123789-hexachlorodibenzo-p-dioxin	0.46	0.79	0.64	0.66	0.012
1234678-heptachlorodibenzo-p-dioxin	0.25	0.42	0.34	0.35	0.0066
Octachlorodibenzo-p-dioxin	0.010	0.017	0.014	0.014	0.00027
2378-tetrachlorodibenzofuran	0.23	0.39	0.32	0.33	0.0062
12378-pentachlorodibenzofuran	0.025	0.042	0.034	0.035	0.00066
23478-pentachlorodibenzofuran	0.49	0.82	0.67	0.69	0.013
123478-hexachlorodibenzofuran	0.41	0.70	0.58	0.59	0.011
123678-hexachlorodibenzofuran	0.24	0.41	0.34	0.35	0.0065
234678-hexachlorodibenzofuran	0.28	0.47	0.38	0.40	0.0074
123789-hexachlorodibenzofuran	0.027	0.046	0.038	0.039	0.00073
1234678-heptachlorodibenzofuran	0.10	0.17	0.14	0.14	0.0027
1234789-heptachlorodibenzofuran	0.017	0.029	0.024	0.025	0.00046
Octachlorodibenzofuran	0.0012	0.0021	0.0017	0.0018	0.000033
PCB 81	0.0011	0.0018	0.0015	0.0015	0.000029
PCB 77	0.00035	0.00060	0.00049	0.00051	0.0000094
PCB 123	0.00013	0.00021	0.00018	0.00018	0.0000034
PCB 118	0.0020	0.0034	0.0028	0.0029	0.000054
PCB 114	0.00011	0.00019	0.00016	0.00016	0.0000031
PCB 105	0.00040	0.00068	0.00056	0.00058	0.000011
PCB 126	0.39	0.66	0.54	0.55	0.010
PCB 167	0.000089	0.00015	0.00012	0.00013	0.0000024
PCB 156 + PCB 157	0.00014	0.00023	0.00019	0.00020	0.0000036
PCB 169	0.090	0.15	0.13	0.13	0.0024
PCB 189	0.000053	0.000091	0.000074	0.000077	0.0000014
Total Dioxins & Furans Only	3.89	6.59	5.40	5.57	0.10
Total PCBs Only	0.48	0.82	0.67	0.69	0.013
Total Dioxins & Furans and PCBs	4.37	7.41	6.07	6.26	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: 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 µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
1,4-Dichlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
1,2-Dichlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Dichlorobenzene	<0.90	<69.8	<118	<97.6	<100	<1.88
1,3,5-trichlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
1,2,4-trichlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
1,2,3-trichlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Trichlorobenzene	<0.90	<69.8	<118	<97.6	<100	<1.88
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
1,2,3,4-tetrachlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Tetrachlorobenzene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
Pentachlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Hexachlorobenzene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Chlorobenzenes	<3.00	<233	<395	<325	<334	<6.28

Dry Gas Volume Sampled (Rm³*) :	7.595
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
1,4-Dichlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
1,2-Dichlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Dichlorobenzene	<0.90	<72.3	<123	<101	<103	<1.88
1,3,5-trichlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
1,2,4-trichlorobenzene	0.47	37.8	64.2	52.8	54.0	0.98
1,2,3-trichlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Trichlorobenzene	<1.07	<86.0	<146	<120	<123	<2.24
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
1,2,3,4-tetrachlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Tetrachlorobenzene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
Pentachlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Hexachlorobenzene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Chlorobenzenes	<3.17	<255	<433	<356	<364	<6.62

Dry Gas Volume Sampled (Rm³*) :	7.323
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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 53
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Emission Data for Chlorobenzenes
Test No. 3

Specific Isomer	Total Collected µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
1,3-Dichlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
1,4-Dichlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
1,2-Dichlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Dichlorobenzene	<0.90	<70.2	<118	<95.6	<100	<1.90
1,3,5-trichlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
1,2,4-trichlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
1,2,3-trichlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Trichlorobenzene	<0.90	<70.2	<118	<95.6	<100	<1.90
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
1,2,3,4-tetrachlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Tetrachlorobenzene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
Pentachlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Hexachlorobenzene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Chlorobenzenes	<3.00	<234	<394	<319	<334	<6.34

Dry Gas Volume Sampled (Rm³*) :	7.614
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
1,3-Dichlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
1,4-Dichlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
1,2-Dichlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
Total Dichlorobenzene	<69.8	<72.3	<70.2	<70.8	1.9
1,3,5-trichlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
1,2,4-trichlorobenzene	<23.3	37.8	<23.4	<28.1	29.6
1,2,3-trichlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
Total Trichlorobenzene	<69.8	<86.0	<70.2	<75.3	12.3
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<23.3	<24.1	<23.4	<23.6	1.9
1,2,3,4-tetrachlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
Total Tetrachlorobenzene	<46.5	<48.2	<46.8	<47.2	1.9
Pentachlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
Hexachlorobenzene	<23.3	<24.1	<23.4	<23.6	1.9
Total Chlorobenzenes	<233	<255	<234	<240	5.1

TABLE 55
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Dry Reference Concentrations for Chlorobenzenes

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
1,4-Dichlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
1,2-Dichlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
Total Dichlorobenzene	<118	<123	<118	<120	2.2
1,3,5-trichlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
1,2,4-trichlorobenzene	<39.5	64.2	<39.4	<47.7	29.9
1,2,3-trichlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
Total Trichlorobenzene	<118	<146	<118	<128	12.6
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<39.5	<41.0	<39.4	<40.0	2.2
1,2,3,4-tetrachlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
Total Tetrachlorobenzene	<79.0	<81.9	<78.8	<79.9	2.2
Pentachlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
Hexachlorobenzene	<39.5	<41.0	<39.4	<40.0	2.2
Total Chlorobenzenes	<395	<433	<394	<407	5.4

* 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 Test No. 1 ng/Rm^3*	Test No. 2 ng/Rm^3*	Test No. 3 ng/Rm^3*	Average ng/Rm^3*	Coefficient of Variation %
1,3-Dichlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
1,4-Dichlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
1,2-Dichlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
Total Dichlorobenzene	<97.6	<101	<95.6	<98.1	2.8
1,3,5-trichlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
1,2,4-trichlorobenzene	<32.5	52.8	<31.9	<39.1	30.4
1,2,3-trichlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
Total Trichlorobenzene	<97.6	<120	<95.6	<104	13.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<32.5	<33.7	<31.9	<32.7	2.8
1,2,3,4-tetrachlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
Total Tetrachlorobenzene	<65.1	<67.4	<63.8	<65.4	2.8
Pentachlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
Hexachlorobenzene	<32.5	<33.7	<31.9	<32.7	2.8
Total Chlorobenzenes	<325	<356	<319	<333	6.0

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
1,3-Dichlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
1,4-Dichlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
1,2-Dichlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
Total Dichlorobenzene	<100	<103	<100	<101	1.8
1,3,5-trichlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
1,2,4-trichlorobenzene	<33.4	54.0	<33.4	<40.2	29.5
1,2,3-trichlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
Total Trichlorobenzene	<100	<123	<100	<108	12.1
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<33.4	<34.4	<33.4	<33.7	1.8
1,2,3,4-tetrachlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
Total Tetrachlorobenzene	<66.8	<68.9	<66.8	<67.5	1.8
Pentachlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
Hexachlorobenzene	<33.4	<34.4	<33.4	<33.7	1.8
Total Chlorobenzenes	<334	<364	<334	<344	5.0

* 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 %
1,3-Dichlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
1,4-Dichlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
1,2-Dichlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
Total Dichlorobenzene	<1.88	<1.88	<1.90	<1.89	0.6
1,3,5-trichlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
1,2,4-trichlorobenzene	<0.63	0.98	<0.63	<0.75	27.1
1,2,3-trichlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
Total Trichlorobenzene	<1.88	<2.24	<1.90	<2.01	9.8
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.63	<0.63	<0.63	<0.63	0.6
1,2,3,4-tetrachlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
Total Tetrachlorobenzene	<1.26	<1.25	<1.27	<1.26	0.6
Pentachlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
Hexachlorobenzene	<0.63	<0.63	<0.63	<0.63	0.6
Total Chlorobenzenes	<6.28	<6.62	<6.34	<6.42	2.8

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
1,3-Dichlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
1,4-Dichlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
1,2-Dichlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
Total Dichlorobenzene	<70.8	<120	<98.1	<101	<1.89
1,3,5-trichlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
1,2,4-trichlorobenzene	<28.1	<47.7	<39.1	<40.2	<0.75
1,2,3-trichlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
Total Trichlorobenzene	<75.3	<128	<104	<108	<2.01
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<23.6	<40.0	<32.7	<33.7	<0.63
1,2,3,4-tetrachlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
Total Tetrachlorobenzene	<47.2	<79.9	<65.4	<67.5	<1.26
Pentachlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
Hexachlorobenzene	<23.6	<40.0	<32.7	<33.7	<0.63
Total Chlorobenzenes	<240	<407	<333	<344	<6.42

* 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 µg	Laboratory Blank Total µg
1,3-Dichlorobenzene	<0.30	<0.30
1,4-Dichlorobenzene	<0.30	<0.30
1,2-Dichlorobenzene	<0.30	<0.30
Total Dichlorobenzene	<0.90	<0.90
1,3,5-trichlorobenzene	<0.30	<0.30
1,2,4-trichlorobenzene	<0.30	<0.30
1,2,3-trichlorobenzene	<0.30	<0.30
Total Trichlorobenzene	<0.90	<0.90
1,2,3,5- & 1,2,4,5-tetrachlorobenzenes	<0.30	<0.30
1,2,3,4-tetrachlorobenzene	<0.30	<0.30
Total Tetrachlorobenzene	<0.60	<0.60
Pentachlorobenzene	<0.30	<0.30
Hexachlorobenzene	<0.30	<0.30
Total Chlorobenzenes	<3.00	<3.00

"<" 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 µg	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	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
3-monochlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
4-monochlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Monochlorophenols	<0.90	<69.8	<118	<97.6	<100	<1.88
2,6-dichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,4 & 2,5-dichlorophenol	2.44	189	321	265	272	5.11
3,5-dichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,3-dichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
3,4-dichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Dichlorophenols	<3.64	<282	<479	<395	<405	<7.62
2,4,6-trichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,3,6-trichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,3,5-trichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,4,5-trichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,3,4-trichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
3,4,5-trichlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Trichlorophenols	<1.80	<140	<237	<195	<200	<3.77
2,3,5,6-tetrachlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,3,4,6-tetrachlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2,3,4,5-tetrachlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Tetrachlorophenols	<0.90	<69.8	<118	<97.6	<100	<1.88
Pentachlorophenol	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total Chlorophenols	<7.54	<585	<993	<818	<840	<15.8

Dry Gas Volume Sampled (Rm³*) :	7.595
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

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

Specific Isomer	Total Collected µg	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	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
3-monochlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
4-monochlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Monochlorophenols	<0.90	<72.3	<123	<101	<103	<1.88
2,6-dichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,4 & 2,5-dichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
3,5-dichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,3-dichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
3,4-dichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Dichlorophenols	<1.50	<121	<205	<168	<172	<3.13
2,4,6-trichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,3,6-trichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,3,5-trichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,4,5-trichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,3,4-trichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
3,4,5-trichlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Trichlorophenols	<1.80	<145	<246	<202	<207	<3.76
2,3,5,6-tetrachlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,3,4,6-tetrachlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2,3,4,5-tetrachlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Tetrachlorophenols	<0.90	<72.3	<123	<101	<103	<1.88
Pentachlorophenol	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total Chlorophenols	<5.40	<434	<737	<607	<620	<11.3

Dry Gas Volume Sampled (Rm³*) :	7.323
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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 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 µg	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	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
3-monochlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
4-monochlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Monochlorophenols	<0.90	<70.2	<118	<95.6	<100	<1.90
2,6-dichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,4 & 2,5-dichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
3,5-dichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,3-dichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
3,4-dichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Dichlorophenols	<1.50	<117	<197	<159	<167	<3.17
2,4,6-trichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,3,6-trichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,3,5-trichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,4,5-trichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,3,4-trichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
3,4,5-trichlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Trichlorophenols	<1.80	<140	<236	<191	<200	<3.81
2,3,5,6-tetrachlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,3,4,6-tetrachlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2,3,4,5-tetrachlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Tetrachlorophenols	<0.90	<70.2	<118	<95.6	<100	<1.90
Pentachlorophenol	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total Chlorophenols	<5.40	<421	<709	<574	<601	<11.4

Dry Gas Volume Sampled (Rm³*) :	7.614
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 Test No. 1 ng/m³	Test No. 2 ng/m³	Test No. 3 ng/m³	Average ng/m³	Coefficient of Variation %
2-monochlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
3-monochlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
4-monochlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
Total Monochlorophenols	<69.8	<72.3	<70.2	<70.8	1.9
2,6-dichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,4 & 2,5-dichlorophenol	189	<24.1	<23.4	<78.9	121
3,5-dichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,3-dichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
3,4-dichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
Total Dichlorophenols	<282	<121	<117	<173	54.5
2,4,6-trichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,3,6-trichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,3,5-trichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,4,5-trichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,3,4-trichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
3,4,5-trichlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
Total Trichlorophenols	<140	<145	<140	<142	1.9
2,3,5,6-tetrachlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,3,4,6-tetrachlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
2,3,4,5-tetrachlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
Total Tetrachlorophenols	<69.8	<72.3	<70.2	<70.8	1.9
Pentachlorophenol	<23.3	<24.1	<23.4	<23.6	1.9
Total Chlorophenols	<585	<434	<421	<480	18.9

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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
3-monochlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
4-monochlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
Total Monochlorophenols	<118	<123	<118	<120	2.2
2,6-dichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,4 & 2,5-dichlorophenol	321	<41.0	<39.4	<134	121
3,5-dichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,3-dichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
3,4-dichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
Total Dichlorophenols	<479	<205	<197	<294	54.7
2,4,6-trichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,3,6-trichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,3,5-trichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,4,5-trichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,3,4-trichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
3,4,5-trichlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
Total Trichlorophenols	<237	<246	<236	<240	2.2
2,3,5,6-tetrachlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,3,4,6-tetrachlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
2,3,4,5-tetrachlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
Total Tetrachlorophenols	<118	<123	<118	<120	2.2
Pentachlorophenol	<39.5	<41.0	<39.4	<40.0	2.2
Total Chlorophenols	<993	<737	<709	<813	19.2

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
3-monochlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
4-monochlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
Total Monochlorophenols	<97.6	<101	<95.6	<98.1	2.8
2,6-dichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,4 & 2,5-dichlorophenol	265	<33.7	<31.9	<110	122
3,5-dichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,3-dichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
3,4-dichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
Total Dichlorophenols	<395	<168	<159	<241	55.4
2,4,6-trichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,3,6-trichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,3,5-trichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,4,5-trichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,3,4-trichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
3,4,5-trichlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
Total Trichlorophenols	<195	<202	<191	<196	2.8
2,3,5,6-tetrachlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,3,4,6-tetrachlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
2,3,4,5-tetrachlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
Total Tetrachlorophenols	<97.6	<101	<95.6	<98.1	2.8
Pentachlorophenol	<32.5	<33.7	<31.9	<32.7	2.8
Total Chlorophenols	<818	<607	<574	<666	19.9

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
2-monochlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
3-monochlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
4-monochlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
Total Monochlorophenols	<100	<103	<100	<101	1.8
2,6-dichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,4 & 2,5-dichlorophenol	272	<34.4	<33.4	<113	121
3,5-dichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,3-dichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
3,4-dichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
Total Dichlorophenols	<405	<172	<167	<248	54.9
2,4,6-trichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,3,6-trichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,3,5-trichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,4,5-trichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,3,4-trichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
3,4,5-trichlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
Total Trichlorophenols	<200	<207	<200	<202	1.8
2,3,5,6-tetrachlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,3,4,6-tetrachlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
2,3,4,5-tetrachlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
Total Tetrachlorophenols	<100	<103	<100	<101	1.8
Pentachlorophenol	<33.4	<34.4	<33.4	<33.7	1.8
Total Chlorophenols	<840	<620	<601	<687	19.3

* 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	<0.63	<0.63	<0.63	<0.63	0.6
3-monochlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
4-monochlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
Total Monochlorophenols	<1.88	<1.88	<1.90	<1.89	0.6
2,6-dichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,4 & 2,5-dichlorophenol	5.11	<0.63	<0.63	<2.12	122
3,5-dichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,3-dichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
3,4-dichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
Total Dichlorophenols	<7.62	<3.13	<3.17	<4.64	55.6
2,4,6-trichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,3,6-trichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,3,5-trichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,4,5-trichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,3,4-trichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
3,4,5-trichlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
Total Trichlorophenols	<3.77	<3.76	<3.81	<3.78	0.6
2,3,5,6-tetrachlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,3,4,6-tetrachlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
2,3,4,5-tetrachlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
Total Tetrachlorophenols	<1.88	<1.88	<1.90	<1.89	0.6
Pentachlorophenol	<0.63	<0.63	<0.63	<0.63	0.6
Total Chlorophenols	<15.8	<11.3	<11.4	<12.8	20.0

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	<23.6	<40.0	<32.7	<33.7	<0.63
3-monochlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
4-monochlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
Total Monochlorophenols	<70.8	<120	<98.1	<101	<1.89
2,6-dichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,4 & 2,5-dichlorophenol	<78.9	<134	<110	<113	<2.12
3,5-dichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,3-dichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
3,4-dichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
Total Dichlorophenols	<173	<294	<241	<248	<4.64
2,4,6-trichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,3,6-trichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,3,5-trichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,4,5-trichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,3,4-trichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
3,4,5-trichlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
Total Trichlorophenols	<142	<240	<196	<202	<3.78
2,3,5,6-tetrachlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,3,4,6-tetrachlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
2,3,4,5-tetrachlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
Total Tetrachlorophenols	<70.8	<120	<98.1	<101	<1.89
Pentachlorophenol	<23.6	<40.0	<32.7	<33.7	<0.63
Total Chlorophenols	<480	<813	<666	<687	<12.8

* 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 µg	Blank Train Total µg
2-monochlorophenol	<0.30	<0.30
3-monochlorophenol	<0.30	<0.30
4-monochlorophenol	<0.30	<0.30
Total Monochlorophenols	<0.90	<0.90
2,6-dichlorophenol	<0.30	<0.30
2,4 & 2,5-dichlorophenol	<0.30	<0.30
3,5-dichlorophenol	<0.30	<0.30
2,3-dichlorophenol	<0.30	<0.30
3,4-dichlorophenol	<0.30	<0.30
Total Dichlorophenols	<1.50	<1.50
2,4,6-trichlorophenol	<0.30	<0.30
2,3,6-trichlorophenol	<0.30	<0.30
2,3,5-trichlorophenol	<0.30	<0.30
2,4,5-trichlorophenol	<0.30	<0.30
2,3,4-trichlorophenol	<0.30	<0.30
3,4,5-trichlorophenol	<0.30	<0.30
Total Trichlorophenols	<1.80	<1.80
2,3,5,6-tetrachlorophenol	<0.30	<0.30
2,3,4,6-tetrachlorophenol	<0.30	<0.30
2,3,4,5-tetrachlorophenol	<0.30	<0.30
Total Tetrachlorophenols	<0.90	<0.90
Pentachlorophenol	<0.30	<0.30
Total Chlorophenols	<5.40	<5.40

"<" 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 µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Acenaphthylene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Anthracene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Benzo(a)anthracene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Benzo(b)fluoranthene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Benzo(k)fluoranthene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Benzo(a)fluorene	<1.2	<93.0	<158	<130	<134	<2.51
Benzo(b)fluorene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Benzo(g,h,i)perylene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
Benzo(a)pyrene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Benzo(e)pyrene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
Biphenyl	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
2-Chloronaphthalene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
Chrysene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Coronene	<1.2	<93.0	<158	<130	<134	<2.51
Dibenzo(a,c)anthracene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Dibenz(a,h)anthracene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Dibenzo(a,e)pyrene	<1.2	<93.0	<158	<130	<134	<2.51
9,10-Dimethylanthracene	<1.2	<93.0	<158	<130	<134	<2.51
7,12-Dimethylbenzo(a)anthracene	<1.2	<93.0	<158	<130	<134	<2.51
Fluoranthene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Fluorene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Indeno(1,2,3-cd)pyrene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
2-Methylanthracene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
3-Methylcholanthrene	<1.2	<93.0	<158	<130	<134	<2.51
1-Methylnaphthalene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
2-Methylnaphthalene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
1-Methylphenanthrene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
9-Methylphenanthrene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Naphthalene	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
Perylene	<1.2	<93.0	<158	<130	<134	<2.51
Phenanthrene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Picene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Pyrene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Tetralin	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
m-Terphenyl	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
o-Terphenyl	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
p-Terphenyl	<0.60	<46.5	<79.0	<65.1	<66.8	<1.26
Triphenylene	<0.30	<23.3	<39.5	<32.5	<33.4	<0.63
Total	<21.6	<1675	<2844	<2343	<2405	<45.2

Dry Gas Volume Sampled (Rm^3*) :	7.595
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

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 µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Acenaphthylene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Anthracene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Benzo(a)anthracene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Benzo(b)fluoranthene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Benzo(k)fluoranthene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Benzo(a)fluorene	<1.2	<96.4	<164	<135	<138	<2.51
Benzo(b)fluorene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Benzo(g,h,i)perylene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
Benzo(a)pyrene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Benzo(e)pyrene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
Biphenyl	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
2-Chloronaphthalene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
Chrysene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Coronene	<1.2	<96.4	<164	<135	<138	<2.51
Dibenzo(a,c)anthracene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Dibenz(a,h)anthracene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Dibenzo(a,e)pyrene	<1.2	<96.4	<164	<135	<138	<2.51
9,10-Dimethylanthracene	<1.2	<96.4	<164	<135	<138	<2.51
7,12-Dimethylbenzo(a)anthracene	<1.2	<96.4	<164	<135	<138	<2.51
Fluoranthene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Fluorene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Indeno(1,2,3-cd)pyrene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
2-Methylanthracene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
3-Methylcholanthrene	<1.2	<96.4	<164	<135	<138	<2.51
1-Methylnaphthalene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
2-Methylnaphthalene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
1-Methylphenanthrene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
9-Methylphenanthrene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Naphthalene	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
Perylene	<1.2	<96.4	<164	<135	<138	<2.51
Phenanthrene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Picene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Pyrene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Tetralin	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
m-Terphenyl	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
o-Terphenyl	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
p-Terphenyl	<0.60	<48.2	<81.9	<67.4	<68.9	<1.25
Triphenylene	<0.30	<24.1	<41.0	<33.7	<34.4	<0.63
Total	<21.6	<1736	<2950	<2426	<2480	<45.1

Dry Gas Volume Sampled (Rm³*) :	7.323
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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 73
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Emission Data
Test No. 3

Compound	Total Collected µg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate µg/s
Acenaphthene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Acenaphthylene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Anthracene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Benzo(a)anthracene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Benzo(b)fluoranthene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Benzo(k)fluoranthene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Benzo(a)fluorene	<1.2	<93.6	<158	<128	<134	<2.54
Benzo(b)fluorene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Benzo(g,h,i)perylene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
Benzo(a)pyrene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Benzo(e)pyrene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
Biphenyl	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
2-Chloronaphthalene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
Chrysene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Coronene	<1.2	<93.6	<158	<128	<134	<2.54
Dibenzo(a,c)anthracene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Dibenz(a,h)anthracene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Dibenzo(a,e)pyrene	<1.2	<93.6	<158	<128	<134	<2.54
9,10-Dimethylanthracene	<1.2	<93.6	<158	<128	<134	<2.54
7,12-Dimethylbenzo(a)anthracene	<1.2	<93.6	<158	<128	<134	<2.54
Fluoranthene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Fluorene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Indeno(1,2,3-cd)pyrene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
2-Methylanthracene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
3-Methylcholanthrene	<1.2	<93.6	<158	<128	<134	<2.54
1-Methylnaphthalene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
2-Methylnaphthalene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
1-Methylphenanthrene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
9-Methylphenanthrene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Naphthalene	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
Perylene	<1.2	<93.6	<158	<128	<134	<2.54
Phenanthrene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Picene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Pyrene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Tetralin	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
m-Terphenyl	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
o-Terphenyl	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
p-Terphenyl	<0.60	<46.8	<78.8	<63.8	<66.8	<1.27
Triphenylene	<0.30	<23.4	<39.4	<31.9	<33.4	<0.63
Total	<21.6	<1685	<2837	<2295	<2404	<45.7

Dry Gas Volume Sampled (Rm³*) :	7.614
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Acenaphthene	<23.3	<24.1	<23.4	<23.6	1.9
Acenaphthylene	<23.3	<24.1	<23.4	<23.6	1.9
Anthracene	<23.3	<24.1	<23.4	<23.6	1.9
Benzo(a)anthracene	<23.3	<24.1	<23.4	<23.6	1.9
Benzo(b)fluoranthene	<23.3	<24.1	<23.4	<23.6	1.9
Benzo(k)fluoranthene	<23.3	<24.1	<23.4	<23.6	1.9
Benzo(a)fluorene	<93.0	<96.4	<93.6	<94.4	1.9
Benzo(b)fluorene	<23.3	<24.1	<23.4	<23.6	1.9
Benzo(g,h,i)perylene	<46.5	<48.2	<46.8	<47.2	1.9
Benzo(a)pyrene	<23.3	<24.1	<23.4	<23.6	1.9
Benzo(e)pyrene	<46.5	<48.2	<46.8	<47.2	1.9
Biphenyl	<46.5	<48.2	<46.8	<47.2	1.9
2-Chloronaphthalene	<46.5	<48.2	<46.8	<47.2	1.9
Chrysene	<23.3	<24.1	<23.4	<23.6	1.9
Coronene	<93.0	<96.4	<93.6	<94.4	1.9
Dibenzo(a,c)anthracene	<23.3	<24.1	<23.4	<23.6	1.9
Dibenz(a,h)anthracene	<23.3	<24.1	<23.4	<23.6	1.9
Dibenzo(a,e)pyrene	<93.0	<96.4	<93.6	<94.4	1.9
9,10-Dimethylanthracene	<93.0	<96.4	<93.6	<94.4	1.9
7,12-Dimethylbenzo(a)anthracene	<93.0	<96.4	<93.6	<94.4	1.9
Fluoranthene	<23.3	<24.1	<23.4	<23.6	1.9
Fluorene	<23.3	<24.1	<23.4	<23.6	1.9
Indeno(1,2,3-cd)pyrene	<23.3	<24.1	<23.4	<23.6	1.9
2-Methylanthracene	<46.5	<48.2	<46.8	<47.2	1.9
3-Methylcholanthrene	<93.0	<96.4	<93.6	<94.4	1.9
1-Methylnaphthalene	<46.5	<48.2	<46.8	<47.2	1.9
2-Methylnaphthalene	<23.3	<24.1	<23.4	<23.6	1.9
1-Methylphenanthrene	<46.5	<48.2	<46.8	<47.2	1.9
9-Methylphenanthrene	<23.3	<24.1	<23.4	<23.6	1.9
Naphthalene	<46.5	<48.2	<46.8	<47.2	1.9
Perylene	<93.0	<96.4	<93.6	<94.4	1.9
Phenanthrene	<23.3	<24.1	<23.4	<23.6	1.9
Picene	<23.3	<24.1	<23.4	<23.6	1.9
Pyrene	<23.3	<24.1	<23.4	<23.6	1.9
Tetralin	<46.5	<48.2	<46.8	<47.2	1.9
m-Terphenyl	<46.5	<48.2	<46.8	<47.2	1.9
o-Terphenyl	<46.5	<48.2	<46.8	<47.2	1.9
p-Terphenyl	<46.5	<48.2	<46.8	<47.2	1.9
Triphenylene	<23.3	<24.1	<23.4	<23.6	1.9
Total	<1675	<1736	<1685	<1699	1.9

TABLE 75
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Polycyclic Aromatic Hydrocarbon Dry Reference Concentrations

Compound	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Acenaphthene	<39.5	<41.0	<39.4	<40.0	2.2
Acenaphthylene	<39.5	<41.0	<39.4	<40.0	2.2
Anthracene	<39.5	<41.0	<39.4	<40.0	2.2
Benzo(a)anthracene	<39.5	<41.0	<39.4	<40.0	2.2
Benzo(b)fluoranthene	<39.5	<41.0	<39.4	<40.0	2.2
Benzo(k)fluoranthene	<39.5	<41.0	<39.4	<40.0	2.2
Benzo(a)fluorene	<158	<164	<158	<160	2.2
Benzo(b)fluorene	<39.5	<41.0	<39.4	<40.0	2.2
Benzo(g,h,i)perylene	<79.0	<81.9	<78.8	<79.9	2.2
Benzo(a)pyrene	<39.5	<41.0	<39.4	<40.0	2.2
Benzo(e)pyrene	<79.0	<81.9	<78.8	<79.9	2.2
Biphenyl	<79.0	<81.9	<78.8	<79.9	2.2
2-Chloronaphthalene	<79.0	<81.9	<78.8	<79.9	2.2
Chrysene	<39.5	<41.0	<39.4	<40.0	2.2
Coronene	<158	<164	<158	<160	2.2
Dibenzo(a,c)anthracene	<39.5	<41.0	<39.4	<40.0	2.2
Dibenz(a,h)anthracene	<39.5	<41.0	<39.4	<40.0	2.2
Dibenzo(a,e)pyrene	<158	<164	<158	<160	2.2
9,10-Dimethylanthracene	<158	<164	<158	<160	2.2
7,12-Dimethylbenzo(a)anthracene	<158	<164	<158	<160	2.2
Fluoranthene	<39.5	<41.0	<39.4	<40.0	2.2
Fluorene	<39.5	<41.0	<39.4	<40.0	2.2
Indeno(1,2,3-cd)pyrene	<39.5	<41.0	<39.4	<40.0	2.2
2-Methylanthracene	<79.0	<81.9	<78.8	<79.9	2.2
3-Methylcholanthrene	<158	<164	<158	<160	2.2
1-Methylnaphthalene	<79.0	<81.9	<78.8	<79.9	2.2
2-Methylnaphthalene	<39.5	<41.0	<39.4	<40.0	2.2
1-Methylphenanthrene	<79.0	<81.9	<78.8	<79.9	2.2
9-Methylphenanthrene	<39.5	<41.0	<39.4	<40.0	2.2
Naphthalene	<79.0	<81.9	<78.8	<79.9	2.2
Perylene	<158	<164	<158	<160	2.2
Phenanthrene	<39.5	<41.0	<39.4	<40.0	2.2
Picene	<39.5	<41.0	<39.4	<40.0	2.2
Pyrene	<39.5	<41.0	<39.4	<40.0	2.2
Tetralin	<79.0	<81.9	<78.8	<79.9	2.2
m-Terphenyl	<79.0	<81.9	<78.8	<79.9	2.2
o-Terphenyl	<79.0	<81.9	<78.8	<79.9	2.2
p-Terphenyl	<79.0	<81.9	<78.8	<79.9	2.2
Triphenylene	<39.5	<41.0	<39.4	<40.0	2.2
Total	<2844	<2950	<2837	<2877	2.2

* 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	<32.5	<33.7	<31.9	<32.7	2.8
Acenaphthylene	<32.5	<33.7	<31.9	<32.7	2.8
Anthracene	<32.5	<33.7	<31.9	<32.7	2.8
Benzo(a)anthracene	<32.5	<33.7	<31.9	<32.7	2.8
Benzo(b)fluoranthene	<32.5	<33.7	<31.9	<32.7	2.8
Benzo(k)fluoranthene	<32.5	<33.7	<31.9	<32.7	2.8
Benzo(a)fluorene	<130	<135	<128	<131	2.8
Benzo(b)fluorene	<32.5	<33.7	<31.9	<32.7	2.8
Benzo(g,h,i)perylene	<65.1	<67.4	<63.8	<65.4	2.8
Benzo(a)pyrene	<32.5	<33.7	<31.9	<32.7	2.8
Benzo(e)pyrene	<65.1	<67.4	<63.8	<65.4	2.8
Biphenyl	<65.1	<67.4	<63.8	<65.4	2.8
2-Chloronaphthalene	<65.1	<67.4	<63.8	<65.4	2.8
Chrysene	<32.5	<33.7	<31.9	<32.7	2.8
Coronene	<130	<135	<128	<131	2.8
Dibenzo(a,c)anthracene	<32.5	<33.7	<31.9	<32.7	2.8
Dibenz(a,h)anthracene	<32.5	<33.7	<31.9	<32.7	2.8
Dibenzo(a,e)pyrene	<130	<135	<128	<131	2.8
9,10-Dimethylanthracene	<130	<135	<128	<131	2.8
7,12-Dimethylbenzo(a)anthracene	<130	<135	<128	<131	2.8
Fluoranthene	<32.5	<33.7	<31.9	<32.7	2.8
Fluorene	<32.5	<33.7	<31.9	<32.7	2.8
Indeno(1,2,3-cd)pyrene	<32.5	<33.7	<31.9	<32.7	2.8
2-Methylanthracene	<65.1	<67.4	<63.8	<65.4	2.8
3-Methylcholanthrene	<130	<135	<128	<131	2.8
1-Methylnaphthalene	<65.1	<67.4	<63.8	<65.4	2.8
2-Methylnaphthalene	<32.5	<33.7	<31.9	<32.7	2.8
1-Methylphenanthrene	<65.1	<67.4	<63.8	<65.4	2.8
9-Methylphenanthrene	<32.5	<33.7	<31.9	<32.7	2.8
Naphthalene	<65.1	<67.4	<63.8	<65.4	2.8
Perylene	<130	<135	<128	<131	2.8
Phenanthrene	<32.5	<33.7	<31.9	<32.7	2.8
Picene	<32.5	<33.7	<31.9	<32.7	2.8
Pyrene	<32.5	<33.7	<31.9	<32.7	2.8
Tetralin	<65.1	<67.4	<63.8	<65.4	2.8
m-Terphenyl	<65.1	<67.4	<63.8	<65.4	2.8
o-Terphenyl	<65.1	<67.4	<63.8	<65.4	2.8
p-Terphenyl	<65.1	<67.4	<63.8	<65.4	2.8
Triphenylene	<32.5	<33.7	<31.9	<32.7	2.8
Total	<2343	<2426	<2295	<2355	2.8

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Acenaphthene	<33.4	<34.4	<33.4	<33.7	1.8
Acenaphthylene	<33.4	<34.4	<33.4	<33.7	1.8
Anthracene	<33.4	<34.4	<33.4	<33.7	1.8
Benzo(a)anthracene	<33.4	<34.4	<33.4	<33.7	1.8
Benzo(b)fluoranthene	<33.4	<34.4	<33.4	<33.7	1.8
Benzo(k)fluoranthene	<33.4	<34.4	<33.4	<33.7	1.8
Benzo(a)fluorene	<134	<138	<134	<135	1.8
Benzo(b)fluorene	<33.4	<34.4	<33.4	<33.7	1.8
Benzo(g,h,i)perylene	<66.8	<68.9	<66.8	<67.5	1.8
Benzo(a)pyrene	<33.4	<34.4	<33.4	<33.7	1.8
Benzo(e)pyrene	<66.8	<68.9	<66.8	<67.5	1.8
Biphenyl	<66.8	<68.9	<66.8	<67.5	1.8
2-Chloronaphthalene	<66.8	<68.9	<66.8	<67.5	1.8
Chrysene	<33.4	<34.4	<33.4	<33.7	1.8
Coronene	<134	<138	<134	<135	1.8
Dibenzo(a,c)anthracene	<33.4	<34.4	<33.4	<33.7	1.8
Dibenz(a,h)anthracene	<33.4	<34.4	<33.4	<33.7	1.8
Dibenzo(a,e)pyrene	<134	<138	<134	<135	1.8
9,10-Dimethylanthracene	<134	<138	<134	<135	1.8
7,12-Dimethylbenzo(a)anthracene	<134	<138	<134	<135	1.8
Fluoranthene	<33.4	<34.4	<33.4	<33.7	1.8
Fluorene	<33.4	<34.4	<33.4	<33.7	1.8
Indeno(1,2,3-cd)pyrene	<33.4	<34.4	<33.4	<33.7	1.8
2-Methylanthracene	<66.8	<68.9	<66.8	<67.5	1.8
3-Methylcholanthrene	<134	<138	<134	<135	1.8
1-Methylnaphthalene	<66.8	<68.9	<66.8	<67.5	1.8
2-Methylnaphthalene	<33.4	<34.4	<33.4	<33.7	1.8
1-Methylphenanthrene	<66.8	<68.9	<66.8	<67.5	1.8
9-Methylphenanthrene	<33.4	<34.4	<33.4	<33.7	1.8
Naphthalene	<66.8	<68.9	<66.8	<67.5	1.8
Perylene	<134	<138	<134	<135	1.8
Phenanthrene	<33.4	<34.4	<33.4	<33.7	1.8
Picene	<33.4	<34.4	<33.4	<33.7	1.8
Pyrene	<33.4	<34.4	<33.4	<33.7	1.8
Tetralin	<66.8	<68.9	<66.8	<67.5	1.8
m-Terphenyl	<66.8	<68.9	<66.8	<67.5	1.8
o-Terphenyl	<66.8	<68.9	<66.8	<67.5	1.8
p-Terphenyl	<66.8	<68.9	<66.8	<67.5	1.8
Triphenylene	<33.4	<34.4	<33.4	<33.7	1.8
Total	<2405	<2480	<2404	<2430	1.8

* 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 Test No. 1 µg/s	Test No. 2 µg/s	Test No. 3 µg/s	Average µg/s	Coefficient of Variation %
Acenaphthene	<0.63	<0.63	<0.63	<0.63	0.6
Acenaphthylene	<0.63	<0.63	<0.63	<0.63	0.6
Anthracene	<0.63	<0.63	<0.63	<0.63	0.6
Benzo(a)anthracene	<0.63	<0.63	<0.63	<0.63	0.6
Benzo(b)fluoranthene	<0.63	<0.63	<0.63	<0.63	0.6
Benzo(k)fluoranthene	<0.63	<0.63	<0.63	<0.63	0.6
Benzo(a)fluorene	<2.51	<2.51	<2.54	<2.52	0.6
Benzo(b)fluorene	<0.63	<0.63	<0.63	<0.63	0.6
Benzo(g,h,i)perylene	<1.26	<1.25	<1.27	<1.26	0.6
Benzo(a)pyrene	<0.63	<0.63	<0.63	<0.63	0.6
Benzo(e)pyrene	<1.26	<1.25	<1.27	<1.26	0.6
Biphenyl	<1.26	<1.25	<1.27	<1.26	0.6
2-Chloronaphthalene	<1.26	<1.25	<1.27	<1.26	0.6
Chrysene	<0.63	<0.63	<0.63	<0.63	0.6
Coronene	<2.51	<2.51	<2.54	<2.52	0.6
Dibenzo(a,c)anthracene	<0.63	<0.63	<0.63	<0.63	0.6
Dibenz(a,h)anthracene	<0.63	<0.63	<0.63	<0.63	0.6
Dibenzo(a,e)pyrene	<2.51	<2.51	<2.54	<2.52	0.6
9,10-Dimethylanthracene	<2.51	<2.51	<2.54	<2.52	0.6
7,12-Dimethylbenzo(a)anthracene	<2.51	<2.51	<2.54	<2.52	0.6
Fluoranthene	<0.63	<0.63	<0.63	<0.63	0.6
Fluorene	<0.63	<0.63	<0.63	<0.63	0.6
Indeno(1,2,3-cd)pyrene	<0.63	<0.63	<0.63	<0.63	0.6
2-Methylanthracene	<1.26	<1.25	<1.27	<1.26	0.6
3-Methylcholanthrene	<2.51	<2.51	<2.54	<2.52	0.6
1-Methylnaphthalene	<1.26	<1.25	<1.27	<1.26	0.6
2-Methylnaphthalene	<0.63	<0.63	<0.63	<0.63	0.6
1-Methylphenanthrene	<1.26	<1.25	<1.27	<1.26	0.6
9-Methylphenanthrene	<0.63	<0.63	<0.63	<0.63	0.6
Naphthalene	<1.26	<1.25	<1.27	<1.26	0.6
Perylene	<2.51	<2.51	<2.54	<2.52	0.6
Phenanthrene	<0.63	<0.63	<0.63	<0.63	0.6
Picene	<0.63	<0.63	<0.63	<0.63	0.6
Pyrene	<0.63	<0.63	<0.63	<0.63	0.6
Tetralin	<1.26	<1.25	<1.27	<1.26	0.6
m-Terphenyl	<1.26	<1.25	<1.27	<1.26	0.6
o-Terphenyl	<1.26	<1.25	<1.27	<1.26	0.6
p-Terphenyl	<1.26	<1.25	<1.27	<1.26	0.6
Triphenylene	<0.63	<0.63	<0.63	<0.63	0.6
Total	<45.2	<45.1	<45.7	<45.3	0.6

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	<23.6	<40.0	<32.7	<33.7	<0.63
Acenaphthylene	<23.6	<40.0	<32.7	<33.7	<0.63
Anthracene	<23.6	<40.0	<32.7	<33.7	<0.63
Benzo(a)anthracene	<23.6	<40.0	<32.7	<33.7	<0.63
Benzo(b)fluoranthene	<23.6	<40.0	<32.7	<33.7	<0.63
Benzo(k)fluoranthene	<23.6	<40.0	<32.7	<33.7	<0.63
Benzo(a)fluorene	<94.4	<160	<131	<135	<2.52
Benzo(b)fluorene	<23.6	<40.0	<32.7	<33.7	<0.63
Benzo(g,h,i)perylene	<47.2	<79.9	<65.4	<67.5	<1.26
Benzo(a)pyrene	<23.6	<40.0	<32.7	<33.7	<0.63
Benzo(e)pyrene	<47.2	<79.9	<65.4	<67.5	<1.26
Biphenyl	<47.2	<79.9	<65.4	<67.5	<1.26
2-Chloronaphthalene	<47.2	<79.9	<65.4	<67.5	<1.26
Chrysene	<23.6	<40.0	<32.7	<33.7	<0.63
Coronene	<94.4	<160	<131	<135	<2.52
Dibenzo(a,c)anthracene	<23.6	<40.0	<32.7	<33.7	<0.63
Dibenz(a,h)anthracene	<23.6	<40.0	<32.7	<33.7	<0.63
Dibenzo(a,e)pyrene	<94.4	<160	<131	<135	<2.52
9,10-Dimethylanthracene	<94.4	<160	<131	<135	<2.52
7,12-Dimethylbenzo(a)anthracene	<94.4	<160	<131	<135	<2.52
Fluoranthene	<23.6	<40.0	<32.7	<33.7	<0.63
Fluorene	<23.6	<40.0	<32.7	<33.7	<0.63
Indeno(1,2,3-cd)pyrene	<23.6	<40.0	<32.7	<33.7	<0.63
2-Methylanthracene	<47.2	<79.9	<65.4	<67.5	<1.26
3-Methylcholanthrene	<94.4	<160	<131	<135	<2.52
1-Methylnaphthalene	<47.2	<79.9	<65.4	<67.5	<1.26
2-Methylnaphthalene	<23.6	<40.0	<32.7	<33.7	<0.63
1-Methylphenanthrene	<47.2	<79.9	<65.4	<67.5	<1.26
9-Methylphenanthrene	<23.6	<40.0	<32.7	<33.7	<0.63
Naphthalene	<47.2	<79.9	<65.4	<67.5	<1.26
Perylene	<94.4	<160	<131	<135	<2.52
Phenanthrene	<23.6	<40.0	<32.7	<33.7	<0.63
Picene	<23.6	<40.0	<32.7	<33.7	<0.63
Pyrene	<23.6	<40.0	<32.7	<33.7	<0.63
Tetralin	<47.2	<79.9	<65.4	<67.5	<1.26
m-Terphenyl	<47.2	<79.9	<65.4	<67.5	<1.26
o-Terphenyl	<47.2	<79.9	<65.4	<67.5	<1.26
p-Terphenyl	<47.2	<79.9	<65.4	<67.5	<1.26
Triphenylene	<23.6	<40.0	<32.7	<33.7	<0.63
Total	<1699	<2877	<2355	<2430	<45.3

* At 25°C and 1 atmosphere

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

TABLE 80
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Blank Polycyclic Aromatic Hydrocarbon Analyses

Compound	Blank Train µg	Laboratory Blank µg
Acenaphthene	<0.30	<0.30
Acenaphthylene	<0.30	<0.30
Anthracene	<0.30	<0.30
Benzo(a)anthracene	<0.30	<0.30
Benzo(b)fluoranthene	<0.30	<0.30
Benzo(k)fluoranthene	<0.30	<0.30
Benzo(a)fluorene	<1.2	<1.2
Benzo(b)fluorene	<0.30	<0.30
Benzo(g,h,i)perylene	<0.60	<0.60
Benzo(a)pyrene	<0.30	<0.30
Benzo(e)pyrene	<0.60	<0.60
Biphenyl	<0.60	<0.60
2-Chloronaphthalene	<0.60	<0.60
Chrysene	<0.30	<0.30
Coronene	<1.2	<1.2
Dibenzo(a,c)anthracene	<0.30	<0.30
Dibenz(a,h)anthracene	<0.30	<0.30
Dibenzo(a,e)pyrene	<1.2	<1.2
9,10-Dimethylanthracene	<1.2	<1.2
7,12-Dimethylbenzo(a)anthracene	<1.2	<1.2
Fluoranthene	<0.30	<0.30
Fluorene	<0.30	<0.30
Indeno(1,2,3-cd)pyrene	<0.30	<0.30
2-Methylanthracene	<0.60	<0.60
3-Methylcholanthrene	<1.2	<1.2
1-Methylnaphthalene	<0.60	<0.60
2-Methylnaphthalene	<0.30	<0.30
1-Methylphenanthrene	<0.60	<0.60
9-Methylphenanthrene	<0.30	<0.30
Naphthalene	<0.60	<0.60
Perylene	<1.2	<1.2
Phenanthrene	<0.30	<0.30
Picene	<0.30	<0.30
Pyrene	<0.30	<0.30
Tetralin	<0.60	<0.60
m-Terphenyl	<0.60	<0.60
o-Terphenyl	<0.60	<0.60
p-Terphenyl	<0.60	<0.60
Triphenylene	<0.30	<0.30
Total	<21.6	<21.6

"<" 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 Rm³*	Actual µg/m³	Acetaldehyde Concentration Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acetaldehyde Emission Rate mg/s
1	<2	0.0287	<41.1	<69.7	<57.4	<59.0	<1.11
2	<2	0.0296	<39.8	<67.7	<55.7	<56.9	<1.04
3	<2	0.0266	<44.6	<75.2	<60.8	<63.7	<1.21
Average			<41.8	<70.8	<58.0	<59.8	<1.12
Blank	<2						

Formaldehyde

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Actual µg/m³	Formaldehyde Concentration Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Formaldehyde Emission Rate mg/s
1	2.1	0.0287	43.1	73.2	60.3	61.9	1.16
2	2.5	0.0296	49.8	84.6	69.6	71.1	1.29
3	2.3	0.0266	51.3	86.4	69.9	73.2	1.39
Average			48.1	81.4	66.6	68.8	1.28
Blank	2.3						

Acrolein

Test No.	Total Collected µg	Dry Volume Sampled Rm³*	Actual µg/m³	Acrolein Concentration Dry Reference µg/Rm³*	Dry Adjusted µg/Rm³**	Wet Reference µg/Rm³*	Acrolein Emission Rate mg/s
1	<2	0.0287	<41.1	<69.7	<57.4	<59.0	<1.11
2	<2	0.0296	<39.8	<67.7	<55.7	<56.9	<1.04
3	<2	0.0266	<44.6	<75.2	<60.8	<63.7	<1.21
Average			<41.8	<70.8	<58.0	<59.8	<1.12
Blank	<2						

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 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 Run No. 1 Tube 13A/13B	Run No. 2 Tube 14A/14B	Run No. 3 Tube 15A/15B	Average	Coefficient of Variation	Total Collected
	µg	µg	µg	µg	%	µg
Acetone	0.071	0.071	0.049	0.064	20.0	0.19
Benzene	0.028	0.0229	0.0245	0.025	10.4	0.075
Bromodichloromethane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Bromoform	<0.014	<0.014	<0.014	<0.014	-	<0.042
Bromomethane	<0.015	<0.015	<0.015	<0.015	-	<0.045
1,3-Butadiene	<0.025	<0.025	<0.025	<0.025	-	<0.075
2-Butanone	<0.036	<0.036	<0.036	<0.036	-	<0.11
Carbon Tetrachloride	<0.016	<0.016	<0.016	<0.016	-	<0.048
Chlorobenzene	<0.011	<0.011	<0.011	<0.011	-	<0.033
Chloroform	0.017	0.017	0.016	0.017	3.5	0.050
Cumene (Isopropylbenzene)	<0.250	<0.250	<0.250	<0.250	-	<0.75
Dibromochloromethane	<0.0090	<0.0090	<0.0090	<0.0090	-	<0.027
Dichlorodifluoromethane	<0.020	<0.020	<0.020	<0.020	-	<0.060
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070	<0.0070	-	<0.021
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	-	<0.030
1,1-Dichloroethene	<0.011	0.011	<0.011	<0.011	-	<0.033
1,2-Dichloropropane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Ethylbenzene	<0.014	<0.014	<0.014	<0.014	-	<0.042
Ethylene Dibromide	<0.010	<0.010	<0.010	<0.010	-	<0.030
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Methylene Chloride	<0.019	<0.019	0.019	<0.019	-	<0.057
Styrene	<0.012	<0.012	<0.012	<0.012	-	<0.036
Tetrachloroethene	<0.018	<0.018	<0.018	<0.018	-	<0.054
Toluene	0.398	0.221	0.197	0.27	40.4	0.82
1,1,1-Trichloroethane	<0.014	<0.014	<0.014	<0.014	-	<0.042
Trichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,1,2-Trichloroethane	<0.016	<0.016	<0.016	<0.016	-	<0.048
Trichlorotrifluoroethane	<0.025	<0.025	<0.025	<0.025	-	<0.075
Trichlorofluoromethane	<0.010	<0.010	<0.010	<0.010	-	<0.030
M&P-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
O-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
Vinyl Chloride	<0.013	<0.013	<0.013	<0.013	-	<0.039
Total	<1.18	<0.99	<0.95	<1.04	11.6	<3.12

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0196
Run No. 2	0.0199
Run No. 3	0.0184

* 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 Run No. 1 Tube 17A/17B	Run No. 2 Tube 18A/18B	Run No. 3 Tube 19A/19B	Average	Coefficient of Variation	Total Collected
	µg	µg	µg	µg	%	µg
Acetone	<0.045	0.072	0.058	<0.058	23.1	<0.18
Benzene	0.0253	0.0294	0.029	0.028	8.1	0.084
Bromodichloromethane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Bromoform	<0.014	<0.014	<0.014	<0.014	-	<0.042
Bromomethane	<0.015	<0.015	0.017	<0.016	7.4	<0.047
1,3-Butadiene	<0.025	<0.025	<0.025	<0.025	-	<0.075
2-Butanone	<0.036	<0.036	<0.036	<0.036	-	<0.11
Carbon Tetrachloride	<0.016	<0.016	<0.016	<0.016	-	<0.048
Chlorobenzene	<0.011	<0.011	<0.011	<0.011	-	<0.033
Chloroform	0.018	0.019	0.017	0.018	5.6	0.054
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Dibromochloromethane	<0.0090	<0.0090	<0.0090	<0.0090	-	<0.027
Dichlorodifluoromethane	<0.020	0.057	0.047	<0.041	46.3	<0.12
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070	<0.0070	-	<0.021
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	-	<0.030
1,1-Dichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,2-Dichloropropane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Ethylbenzene	<0.014	<0.014	<0.014	<0.014	-	<0.042
Ethylene Dibromide	<0.010	<0.010	<0.010	<0.010	-	<0.030
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Methylene Chloride	<0.019	<0.019	<0.019	<0.019	-	<0.057
Styrene	<0.012	<0.012	<0.012	<0.012	-	<0.036
Tetrachloroethene	0.024	0.02	<0.018	<0.021	14.8	<0.062
Toluene	0.243	0.187	0.181	0.20	16.8	0.61
1,1,1-Trichloroethane	<0.014	<0.014	<0.014	<0.014	-	<0.042
Trichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,1,2-Trichloroethane	<0.016	<0.016	<0.016	<0.016	-	<0.048
Trichlorotrifluoroethane	<0.025	<0.025	<0.025	<0.025	-	<0.075
Trichlorofluoromethane	0.011	0.068	0.033	0.037	77.0	0.11
M&P-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
O-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
Vinyl Chloride	<0.013	<0.013	<0.013	<0.013	-	<0.039
Total	<0.78	<0.84	<0.78	<0.80	4.8	<2.39

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0199
Run No. 2	0.0202
Run No. 3	0.0201

* 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. 1 Tube 21A/21B	Run No. 2 Tube 22A/22B	Run No. 3 Tube 23A/23B	Average	of Variation	Collected
	µg	µg	µg	µg	%	µg
Acetone	0.063	0.047	<0.045	<0.052	19.1	<0.16
Benzene	0.0239	0.0269	0.0285	0.026	8.8	0.079
Bromodichloromethane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Bromoform	<0.014	<0.014	<0.014	<0.014	-	<0.042
Bromomethane	<0.015	<0.015	<0.015	<0.015	-	<0.045
1,3-Butadiene	<0.025	<0.025	<0.025	<0.025	-	<0.075
2-Butanone	<0.036	<0.036	<0.036	<0.036	-	<0.11
Carbon Tetrachloride	<0.016	<0.016	<0.016	<0.016	-	<0.048
Chlorobenzene	<0.011	<0.011	<0.011	<0.011	-	<0.033
Chloroform	0.016	0.017	0.016	0.016	3.5	0.049
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Dibromochloromethane	<0.0090	<0.0090	<0.0090	<0.0090	-	<0.027
Dichlorodifluoromethane	<0.020	<0.020	<0.020	<0.020	-	<0.060
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070	<0.0070	-	<0.021
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010	<0.010	-	<0.030
1,1-Dichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,2-Dichloropropane	<0.011	<0.011	<0.011	<0.011	-	<0.033
Ethylbenzene	<0.014	<0.014	<0.014	<0.014	-	<0.042
Ethylene Dibromide	<0.010	<0.010	<0.010	<0.010	-	<0.030
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025	<0.025	-	<0.075
Methylene Chloride	0.034	0.029	0.046	0.036	24.0	0.11
Styrene	<0.012	<0.012	<0.012	<0.012	-	<0.036
Tetrachloroethene	<0.018	<0.018	<0.018	<0.018	-	<0.054
Toluene	0.18	0.131	0.114	0.14	24.2	0.43
1,1,1-Trichloroethane	<0.014	<0.014	<0.014	<0.014	-	<0.042
Trichloroethene	<0.011	<0.011	<0.011	<0.011	-	<0.033
1,1,2-Trichloroethane	<0.016	<0.016	<0.016	<0.016	-	<0.048
Trichlorotrifluoroethane	<0.025	<0.025	<0.025	<0.025	-	<0.075
Trichlorofluoromethane	<0.010	<0.010	<0.010	<0.010	-	<0.030
M&P-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
O-Xylene	<0.015	<0.015	<0.015	<0.015	-	<0.045
Vinyl Chloride	<0.013	<0.013	<0.013	<0.013	-	<0.039
Total	<0.74	<0.67	<0.67	<0.69	5.57	<2.07

Dry Gas Volume Sampled (Rm^3*) :

Run No. 1	0.0191
Run No. 2	0.0274
Run No. 3	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	0.19	1.94	3.30	2.72	2.79	0.052
Benzene	0.075	0.77	1.30	1.07	1.10	0.021
Bromodichloromethane	<0.033	<0.34	<0.57	<0.47	<0.48	<0.0091
Bromoform	<0.042	<0.43	<0.73	<0.60	<0.61	<0.012
Bromomethane	<0.045	<0.46	<0.78	<0.64	<0.66	<0.012
1,3-Butadiene	<0.075	<0.76	<1.30	<1.07	<1.10	<0.021
2-Butanone	<0.11	<1.10	<1.87	<1.54	<1.58	<0.030
Carbon Tetrachloride	<0.048	<0.49	<0.83	<0.68	<0.70	<0.013
Chlorobenzene	<0.033	<0.34	<0.57	<0.47	<0.48	<0.0091
Chloroform	0.050	0.51	0.86	0.71	0.73	0.014
Cumene (Isopropylbenzene)	<0.75	<7.63	<13.0	<10.7	<11.0	<0.21
Dibromochloromethane	<0.027	<0.27	<0.47	<0.38	<0.39	<0.0074
Dichlorodifluoromethane	<0.060	<0.61	<1.04	<0.85	<0.88	<0.016
1,2-Dichloroethane	<0.021	<0.21	<0.36	<0.30	<0.31	<0.0058
trans,1,2-Dichloroethene	<0.030	<0.31	<0.52	<0.43	<0.44	<0.0082
1,1-Dichloroethene	<0.033	<0.34	<0.57	<0.47	<0.48	<0.0091
1,2-Dichloropropane	<0.033	<0.34	<0.57	<0.47	<0.48	<0.0091
Ethylbenzene	<0.042	<0.43	<0.73	<0.60	<0.61	<0.012
Ethylene Dibromide	<0.030	<0.31	<0.52	<0.43	<0.44	<0.0082
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.76	<1.30	<1.07	<1.10	<0.021
Methylene Chloride	<0.057	<0.58	<0.98	<0.81	<0.83	<0.016
Styrene	<0.036	<0.37	<0.62	<0.51	<0.53	<0.0099
Tetrachloroethene	<0.054	<0.55	<0.93	<0.77	<0.79	<0.015
Toluene	0.82	8.30	14.1	11.6	11.9	0.22
1,1,1-Trichloroethane	<0.042	<0.43	<0.73	<0.60	<0.61	<0.012
Trichloroethene	<0.033	<0.34	<0.57	<0.47	<0.48	<0.0091
1,1,2-Trichloroethane	<0.048	<0.49	<0.83	<0.68	<0.70	<0.013
Trichlorotrifluoroethane	<0.075	<0.76	<1.30	<1.07	<1.10	<0.021
Trichlorofluoromethane	<0.030	<0.31	<0.52	<0.43	<0.44	<0.0082
M&P-Xylene	<0.045	<0.46	<0.78	<0.64	<0.66	<0.012
O-Xylene	<0.045	<0.46	<0.78	<0.64	<0.66	<0.012
Vinyl Chloride	<0.039	<0.40	<0.67	<0.56	<0.57	<0.011
Total	<3.12	<31.8	<53.9	<44.4	<45.6	<0.86

Dry Gas Volume Sampled (Rm^3*) :	0.0579
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

TABLE 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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.18	<1.71	<2.91	<2.39	<2.45	<0.045
Benzene	0.084	0.82	1.39	1.14	1.17	0.021
Bromodichloromethane	<0.033	<0.32	<0.55	<0.45	<0.46	<0.0084
Bromoform	<0.042	<0.41	<0.70	<0.57	<0.59	<0.011
Bromomethane	<0.047	<0.46	<0.78	<0.64	<0.66	<0.012
1,3-Butadiene	<0.075	<0.73	<1.25	<1.03	<1.05	<0.019
2-Butanone	<0.11	<1.06	<1.80	<1.48	<1.51	<0.027
Carbon Tetrachloride	<0.048	<0.47	<0.80	<0.66	<0.67	<0.012
Chlorobenzene	<0.033	<0.32	<0.55	<0.45	<0.46	<0.0084
Chloroform	0.054	0.53	0.90	0.74	0.75	0.014
Cumene (Isopropylbenzene)	<0.075	<0.73	<1.25	<1.03	<1.05	<0.019
Dibromochloromethane	<0.027	<0.26	<0.45	<0.37	<0.38	<0.0069
Dichlorodifluoromethane	<0.12	<1.21	<2.06	<1.70	<1.73	<0.032
1,2-Dichloroethane	<0.021	<0.21	<0.35	<0.29	<0.29	<0.0053
trans,1,2-Dichloroethene	<0.030	<0.29	<0.50	<0.41	<0.42	<0.0076
1,1-Dichloroethene	<0.033	<0.32	<0.55	<0.45	<0.46	<0.0084
1,2-Dichloropropane	<0.033	<0.32	<0.55	<0.45	<0.46	<0.0084
Ethylbenzene	<0.042	<0.41	<0.70	<0.57	<0.59	<0.011
Ethylene Dibromide	<0.030	<0.29	<0.50	<0.41	<0.42	<0.0076
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.73	<1.25	<1.03	<1.05	<0.019
Methylene Chloride	<0.057	<0.56	<0.95	<0.78	<0.80	<0.014
Styrene	<0.036	<0.35	<0.60	<0.49	<0.50	<0.0092
Tetrachloroethene	<0.062	<0.61	<1.03	<0.85	<0.87	<0.016
Toluene	0.61	5.98	10.2	8.36	8.54	0.16
1,1,1-Trichloroethane	<0.042	<0.41	<0.70	<0.57	<0.59	<0.011
Trichloroethene	<0.033	<0.32	<0.55	<0.45	<0.46	<0.0084
1,1,2-Trichloroethane	<0.048	<0.47	<0.80	<0.66	<0.67	<0.012
Trichlorotrifluoroethane	<0.075	<0.73	<1.25	<1.03	<1.05	<0.019
Trichlorofluoromethane	0.11	1.10	1.86	1.53	1.57	0.028
M&P-Xylene	<0.045	<0.44	<0.75	<0.62	<0.63	<0.011
O-Xylene	<0.045	<0.44	<0.75	<0.62	<0.63	<0.011
Vinyl Chloride	<0.039	<0.38	<0.65	<0.53	<0.55	<0.0099
Total	<2.39	<23.4	<39.8	<32.7	<33.5	<0.61

Dry Gas Volume Sampled (Rm³*) :	0.0601
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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

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/m³	Dry Reference Concentration µg/Rm³*	Dry Adjusted Concentration µg/Rm³**	Wet Reference Concentration µg/Rm³*	Emission Rate mg/s
Acetone	<0.16	<1.39	<2.35	<1.90	<1.99	<0.038
Benzene	0.079	0.71	1.20	0.97	1.02	0.019
Bromodichloromethane	<0.033	<0.30	<0.50	<0.40	<0.42	<0.0080
Bromoform	<0.042	<0.38	<0.64	<0.51	<0.54	<0.010
Bromomethane	<0.045	<0.40	<0.68	<0.55	<0.58	<0.011
1,3-Butadiene	<0.075	<0.67	<1.14	<0.92	<0.96	<0.018
2-Butanone	<0.11	<0.97	<1.64	<1.32	<1.39	<0.026
Carbon Tetrachloride	<0.048	<0.43	<0.73	<0.59	<0.62	<0.012
Chlorobenzene	<0.033	<0.30	<0.50	<0.40	<0.42	<0.0080
Chloroform	0.049	0.44	0.74	0.60	0.63	0.012
Cumene (Isopropylbenzene)	<0.075	<0.67	<1.14	<0.92	<0.96	<0.018
Dibromochloromethane	<0.027	<0.24	<0.41	<0.33	<0.35	<0.0066
Dichlorodifluoromethane	<0.060	<0.54	<0.91	<0.74	<0.77	<0.015
1,2-Dichloroethane	<0.021	<0.19	<0.32	<0.26	<0.27	<0.0051
trans,1,2-Dichloroethene	<0.030	<0.27	<0.45	<0.37	<0.39	<0.0073
1,1-Dichloroethene	<0.033	<0.30	<0.50	<0.40	<0.42	<0.0080
1,2-Dichloropropane	<0.033	<0.30	<0.50	<0.40	<0.42	<0.0080
Ethylbenzene	<0.042	<0.38	<0.64	<0.51	<0.54	<0.010
Ethylene Dibromide	<0.030	<0.27	<0.45	<0.37	<0.39	<0.0073
Mesitylene (1,3,5-Trimethylbenzene)	<0.075	<0.67	<1.14	<0.92	<0.96	<0.018
Methylene Chloride	0.11	0.98	1.65	1.34	1.40	0.027
Styrene	<0.036	<0.32	<0.55	<0.44	<0.46	<0.0088
Tetrachloroethene	<0.054	<0.49	<0.82	<0.66	<0.69	<0.013
Toluene	0.43	3.82	6.44	5.21	5.45	0.10
1,1,1-Trichloroethane	<0.042	<0.38	<0.64	<0.51	<0.54	<0.010
Trichloroethene	<0.033	<0.30	<0.50	<0.40	<0.42	<0.0080
1,1,2-Trichloroethane	<0.048	<0.43	<0.73	<0.59	<0.62	<0.012
Trichlorotrifluoroethane	<0.075	<0.67	<1.14	<0.92	<0.96	<0.018
Trichlorofluoromethane	<0.030	<0.27	<0.45	<0.37	<0.39	<0.0073
M&P-Xylene	<0.045	<0.40	<0.68	<0.55	<0.58	<0.011
O-Xylene	<0.045	<0.40	<0.68	<0.55	<0.58	<0.011
Vinyl Chloride	<0.039	<0.35	<0.59	<0.48	<0.50	<0.0095
Total	<2.07	<18.7	<31.4	<25.4	<26.6	<0.51

Dry Gas Volume Sampled (Rm³*) :	0.0660
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* 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	1.94	<1.71	<1.39	<1.68
Benzene	0.77	0.82	0.71	0.77
Bromodichloromethane	<0.34	<0.32	<0.30	<0.32
Bromoform	<0.43	<0.41	<0.38	<0.41
Bromomethane	<0.46	<0.46	<0.40	<0.44
1,3-Butadiene	<0.76	<0.73	<0.67	<0.72
2-Butanone	<1.10	<1.06	<0.97	<1.04
Carbon Tetrachloride	<0.49	<0.47	<0.43	<0.46
Chlorobenzene	<0.34	<0.32	<0.30	<0.32
Chloroform	0.51	0.53	0.44	0.49
Cumene (Isopropylbenzene)	<7.63	<0.73	<0.67	<3.01
Dibromochloromethane	<0.27	<0.26	<0.24	<0.26
Dichlorodifluoromethane	<0.61	<1.21	<0.54	<0.79
1,2-Dichloroethane	<0.21	<0.21	<0.19	<0.20
trans,1,2-Dichloroethene	<0.31	<0.29	<0.27	<0.29
1,1-Dichloroethene	<0.34	<0.32	<0.30	<0.32
1,2-Dichloropropane	<0.34	<0.32	<0.30	<0.32
Ethylbenzene	<0.43	<0.41	<0.38	<0.41
Ethylene Dibromide	<0.31	<0.29	<0.27	<0.29
Mesitylene (1,3,5-Trimethylbenzene)	<0.76	<0.73	<0.67	<0.72
Methylene Chloride	<0.58	<0.56	0.98	<0.71
Styrene	<0.37	<0.35	<0.32	<0.35
Tetrachloroethene	<0.55	<0.61	<0.49	<0.55
Toluene	8.30	5.98	3.82	6.03
1,1,1-Trichloroethane	<0.43	<0.41	<0.38	<0.41
Trichloroethene	<0.34	<0.32	<0.30	<0.32
1,1,2-Trichloroethane	<0.49	<0.47	<0.43	<0.46
Trichlorotrifluoroethane	<0.76	<0.73	<0.67	<0.72
Trichlorofluoromethane	<0.31	1.10	<0.27	<0.56
M&P-Xylene	<0.46	<0.44	<0.40	<0.43
O-Xylene	<0.46	<0.44	<0.40	<0.43
Vinyl Chloride	<0.40	<0.38	<0.35	<0.38
Total	<31.8	<23.4	<18.7	<24.6

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	3.30	<2.91	<2.35	<2.85
Benzene	1.30	1.39	1.20	1.30
Bromodichloromethane	<0.57	<0.55	<0.50	<0.54
Bromoform	<0.73	<0.70	<0.64	<0.69
Bromomethane	<0.78	<0.78	<0.68	<0.75
1,3-Butadiene	<1.30	<1.25	<1.14	<1.23
2-Butanone	<1.87	<1.80	<1.64	<1.77
Carbon Tetrachloride	<0.83	<0.80	<0.73	<0.78
Chlorobenzene	<0.57	<0.55	<0.50	<0.54
Chloroform	0.86	0.90	0.74	0.83
Cumene (Isopropylbenzene)	<13.0	<1.25	<1.14	<5.11
Dibromochloromethane	<0.47	<0.45	<0.41	<0.44
Dichlorodifluoromethane	<1.04	<2.06	<0.91	<1.34
1,2-Dichloroethane	<0.36	<0.35	<0.32	<0.34
trans,1,2-Dichloroethene	<0.52	<0.50	<0.45	<0.49
1,1-Dichloroethene	<0.57	<0.55	<0.50	<0.54
1,2-Dichloropropane	<0.57	<0.55	<0.50	<0.54
Ethylbenzene	<0.73	<0.70	<0.64	<0.69
Ethylene Dibromide	<0.52	<0.50	<0.45	<0.49
Mesitylene (1,3,5-Trimethylbenzene)	<1.30	<1.25	<1.14	<1.23
Methylene Chloride	<0.98	<0.95	1.65	<1.19
Styrene	<0.62	<0.60	<0.55	<0.59
Tetrachloroethene	<0.93	<1.03	<0.82	<0.93
Toluene	14.1	10.2	6.44	10.2
1,1,1-Trichloroethane	<0.73	<0.70	<0.64	<0.69
Trichloroethene	<0.57	<0.55	<0.50	<0.54
1,1,2-Trichloroethane	<0.83	<0.80	<0.73	<0.78
Trichlorotrifluoroethane	<1.30	<1.25	<1.14	<1.23
Trichlorofluoromethane	<0.52	1.86	<0.45	<0.94
M&P-Xylene	<0.78	<0.75	<0.68	<0.74
O-Xylene	<0.78	<0.75	<0.68	<0.74
Vinyl Chloride	<0.67	<0.65	<0.59	<0.64
Total	<53.9	<39.8	<31.4	<41.7

* 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 µg/Rm³*	Test No. 2 µg/Rm³*	Test No. 3 µg/Rm³*	Average µg/Rm³*
Acetone	2.72	<2.39	<1.90	<2.34
Benzene	1.07	1.14	0.97	1.06
Bromodichloromethane	<0.47	<0.45	<0.40	<0.44
Bromoform	<0.60	<0.57	<0.51	<0.56
Bromomethane	<0.64	<0.64	<0.55	<0.61
1,3-Butadiene	<1.07	<1.03	<0.92	<1.00
2-Butanone	<1.54	<1.48	<1.32	<1.45
Carbon Tetrachloride	<0.68	<0.66	<0.59	<0.64
Chlorobenzene	<0.47	<0.45	<0.40	<0.44
Chloroform	0.71	0.74	0.60	0.68
Cumene (Isopropylbenzene)	<10.7	<1.03	<0.92	<4.21
Dibromochloromethane	<0.38	<0.37	<0.33	<0.36
Dichlorodifluoromethane	<0.85	<1.70	<0.74	<1.10
1,2-Dichloroethane	<0.30	<0.29	<0.26	<0.28
trans,1,2-Dichloroethene	<0.43	<0.41	<0.37	<0.40
1,1-Dichloroethene	<0.47	<0.45	<0.40	<0.44
1,2-Dichloropropane	<0.47	<0.45	<0.40	<0.44
Ethylbenzene	<0.60	<0.57	<0.51	<0.56
Ethylene Dibromide	<0.43	<0.41	<0.37	<0.40
Mesitylene (1,3,5-Trimethylbenzene)	<1.07	<1.03	<0.92	<1.00
Methylene Chloride	<0.81	<0.78	1.34	<0.98
Styrene	<0.51	<0.49	<0.44	<0.48
Tetrachloroethene	<0.77	<0.85	<0.66	<0.76
Toluene	11.6	8.36	5.21	8.39
1,1,1-Trichloroethane	<0.60	<0.57	<0.51	<0.56
Trichloroethene	<0.47	<0.45	<0.40	<0.44
1,1,2-Trichloroethane	<0.68	<0.66	<0.59	<0.64
Trichlorotrifluoroethane	<1.07	<1.03	<0.92	<1.00
Trichlorofluoromethane	<0.43	1.53	<0.37	<0.78
M&P-Xylene	<0.64	<0.62	<0.55	<0.60
O-Xylene	<0.64	<0.62	<0.55	<0.60
Vinyl Chloride	<0.56	<0.53	<0.48	<0.52
Total	<44.4	<32.7	<25.4	<34.2

* 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 $\mu g/Rm^3$*	Test No. 2 $\mu g/Rm^3$*	Test No. 3 $\mu g/Rm^3$*	Average $\mu g/Rm^3$*
Acetone	2.79	<2.45	<1.99	<2.41
Benzene	1.10	1.17	1.02	1.10
Bromodichloromethane	<0.48	<0.46	<0.42	<0.46
Bromoform	<0.61	<0.59	<0.54	<0.58
Bromomethane	<0.66	<0.66	<0.58	<0.63
1,3-Butadiene	<1.10	<1.05	<0.96	<1.04
2-Butanone	<1.58	<1.51	<1.39	<1.49
Carbon Tetrachloride	<0.70	<0.67	<0.62	<0.66
Chlorobenzene	<0.48	<0.46	<0.42	<0.46
Chloroform	0.73	0.75	0.63	0.70
Cumene (Isopropylbenzene)	<11.0	<1.05	<0.96	<4.32
Dibromochloromethane	<0.39	<0.38	<0.35	<0.37
Dichlorodifluoromethane	<0.88	<1.73	<0.77	<1.13
1,2-Dichloroethane	<0.31	<0.29	<0.27	<0.29
trans,1,2-Dichloroethene	<0.44	<0.42	<0.39	<0.41
1,1-Dichloroethene	<0.48	<0.46	<0.42	<0.46
1,2-Dichloropropane	<0.48	<0.46	<0.42	<0.46
Ethylbenzene	<0.61	<0.59	<0.54	<0.58
Ethylene Dibromide	<0.44	<0.42	<0.39	<0.41
Mesitylene (1,3,5-Trimethylbenzene)	<1.10	<1.05	<0.96	<1.04
Methylene Chloride	<0.83	<0.80	1.40	<1.01
Styrene	<0.53	<0.50	<0.46	<0.50
Tetrachloroethene	<0.79	<0.87	<0.69	<0.78
Toluene	11.9	8.54	5.45	8.64
1,1,1-Trichloroethane	<0.61	<0.59	<0.54	<0.58
Trichloroethene	<0.48	<0.46	<0.42	<0.46
1,1,2-Trichloroethane	<0.70	<0.67	<0.62	<0.66
Trichlorotrifluoroethane	<1.10	<1.05	<0.96	<1.04
Trichlorofluoromethane	<0.44	1.57	<0.39	<0.80
M&P-Xylene	<0.66	<0.63	<0.58	<0.62
O-Xylene	<0.66	<0.63	<0.58	<0.62
Vinyl Chloride	<0.57	<0.55	<0.50	<0.54
Total	<45.6	<33.5	<26.6	<35.2

* 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	0.052	<0.045	<0.038	<0.045
Benzene	0.021	0.021	0.019	0.020
Bromodichloromethane	<0.0091	<0.0084	<0.0080	<0.0085
Bromoform	<0.012	<0.011	<0.010	<0.011
Bromomethane	<0.012	<0.012	<0.011	<0.012
1,3-Butadiene	<0.021	<0.019	<0.018	<0.019
2-Butanone	<0.030	<0.027	<0.026	<0.028
Carbon Tetrachloride	<0.013	<0.012	<0.012	<0.012
Chlorobenzene	<0.0091	<0.0084	<0.0080	<0.0085
Chloroform	0.014	0.014	0.012	0.013
Cumene (Isopropylbenzene)	<0.21	<0.019	<0.018	<0.081
Dibromochloromethane	<0.0074	<0.0069	<0.0066	<0.0070
Dichlorodifluoromethane	<0.016	<0.032	<0.015	<0.021
1,2-Dichloroethane	<0.0058	<0.0053	<0.0051	<0.0054
trans,1,2-Dichloroethene	<0.0082	<0.0076	<0.0073	<0.0077
1,1-Dichloroethene	<0.0091	<0.0084	<0.0080	<0.0085
1,2-Dichloropropane	<0.0091	<0.0084	<0.0080	<0.0085
Ethylbenzene	<0.012	<0.011	<0.010	<0.011
Ethylene Dibromide	<0.0082	<0.0076	<0.0073	<0.0077
Mesitylene (1,3,5-Trimethylbenzene)	<0.021	<0.019	<0.018	<0.019
Methylene Chloride	<0.016	<0.014	0.027	<0.019
Styrene	<0.0099	<0.0092	<0.0088	<0.0093
Tetrachloroethene	<0.015	<0.016	<0.013	<0.015
Toluene	0.22	0.16	0.10	0.16
1,1,1-Trichloroethane	<0.012	<0.011	<0.010	<0.011
Trichloroethene	<0.0091	<0.0084	<0.0080	<0.0085
1,1,2-Trichloroethane	<0.013	<0.012	<0.012	<0.012
Trichlorotrifluoroethane	<0.021	<0.019	<0.018	<0.019
Trichlorofluoromethane	<0.0082	0.028	<0.0073	<0.0147
M&P-Xylene	<0.012	<0.011	<0.011	<0.012
O-Xylene	<0.012	<0.011	<0.011	<0.012
Vinyl Chloride	<0.011	<0.0099	<0.0095	<0.010
Total	<0.86	<0.61	<0.51	<0.66

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	<1.68	<2.85	<2.34	<2.41	<0.045
Benzene	0.77	1.30	1.06	1.10	0.020
Bromodichloromethane	<0.32	<0.54	<0.44	<0.46	<0.0085
Bromoform	<0.41	<0.69	<0.56	<0.58	<0.011
Bromomethane	<0.44	<0.75	<0.61	<0.63	<0.012
1,3-Butadiene	<0.72	<1.23	<1.00	<1.04	<0.019
2-Butanone	<1.04	<1.77	<1.45	<1.49	<0.028
Carbon Tetrachloride	<0.46	<0.78	<0.64	<0.66	<0.012
Chlorobenzene	<0.32	<0.54	<0.44	<0.46	<0.0085
Chloroform	0.49	0.83	0.68	0.70	0.013
Cumene (Isopropylbenzene)	<3.01	<5.11	<4.21	<4.32	<0.081
Dibromochloromethane	<0.26	<0.44	<0.36	<0.37	<0.0070
Dichlorodifluoromethane	<0.79	<1.34	<1.10	<1.13	<0.021
1,2-Dichloroethane	<0.20	<0.34	<0.28	<0.29	<0.0054
trans,1,2-Dichloroethene	<0.29	<0.49	<0.40	<0.41	<0.0077
1,1-Dichloroethene	<0.32	<0.54	<0.44	<0.46	<0.0085
1,2-Dichloropropane	<0.32	<0.54	<0.44	<0.46	<0.0085
Ethylbenzene	<0.41	<0.69	<0.56	<0.58	<0.011
Ethylene Dibromide	<0.29	<0.49	<0.40	<0.41	<0.0077
Mesitylene (1,3,5-Trimethylbenzene)	<0.72	<1.23	<1.00	<1.04	<0.019
Methylene Chloride	<0.71	<1.19	<0.98	<1.01	<0.019
Styrene	<0.35	<0.59	<0.48	<0.50	<0.0093
Tetrachloroethene	<0.55	<0.93	<0.76	<0.78	<0.015
Toluene	6.03	10.2	8.39	8.64	0.16
1,1,1-Trichloroethane	<0.41	<0.69	<0.56	<0.58	<0.011
Trichloroethene	<0.32	<0.54	<0.44	<0.46	<0.0085
1,1,2-Trichloroethane	<0.46	<0.78	<0.64	<0.66	<0.012
Trichlorotrifluoroethane	<0.72	<1.23	<1.00	<1.04	<0.019
Trichlorofluoromethane	<0.56	<0.94	<0.78	<0.80	<0.0147
M&P-Xylene	<0.43	<0.74	<0.60	<0.62	<0.012
O-Xylene	<0.43	<0.74	<0.60	<0.62	<0.012
Vinyl Chloride	<0.38	<0.64	<0.52	<0.54	<0.010
Total	<24.6	<41.7	<34.2	<35.2	<0.66

* 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 30A/30B µg	Field Blank Tube 29A/29B µg	Method Blank µg
Acetone	<0.045	<0.045	<0.045
Benzene	<0.0090	<0.0090	<0.0090
Bromodichloromethane	<0.011	<0.011	<0.011
Bromoform	<0.014	<0.014	<0.014
Bromomethane	<0.015	<0.015	<0.015
1,3-Butadiene	<0.025	<0.025	<0.025
2-Butanone	<0.036	<0.036	<0.036
Carbon Tetrachloride	<0.016	<0.016	<0.016
Chlorobenzene	<0.011	<0.011	<0.011
Chloroform	<0.011	<0.011	<0.011
Cumene (Isopropylbenzene)	<0.025	<0.025	<0.025
Dibromochloromethane	<0.0090	<0.0090	<0.0090
Dichlorodifluoromethane	<0.020	<0.020	<0.020
1,2-Dichloroethane	<0.0070	<0.0070	<0.0070
trans,1,2-Dichloroethene	<0.010	<0.010	<0.010
1,1-Dichloroethene	<0.011	<0.011	<0.011
1,2-Dichloropropane	<0.011	<0.011	<0.011
Ethylbenzene	<0.014	<0.014	<0.014
Ethylene Dibromide	<0.010	<0.010	<0.010
Mesitylene (1,3,5-Trimethylbenzene)	<0.025	<0.025	<0.025
Methylene Chloride	<0.019	<0.019	<0.019
Styrene	<0.012	<0.012	<0.012
Tetrachloroethene	<0.018	<0.018	<0.018
Toluene	<0.014	<0.014	<0.014
1,1,1-Trichloroethane	<0.014	<0.014	<0.014
Trichloroethene	<0.011	<0.011	<0.011
1,1,2-Trichloroethane	<0.016	<0.016	<0.016
Trichlorotrifluoroethane	<0.025	<0.025	<0.025
Trichlorofluoromethane	<0.010	<0.010	<0.010
M&P-Xylene	<0.015	<0.015	<0.015
O-Xylene	<0.015	<0.015	<0.015
Vinyl Chloride	<0.013	<0.013	<0.013
Total	<0.52	<0.52	<0.52

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 Start	Sampling Period Finish	Sampling Time* min
1	October 27, 2016	8:21	14:29	288
2	October 28, 2016	8:13	14:11	288
3	October 31, 2016	10:13	16:14	288

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 25, 2016	8:00	9:00	60
2	October 25, 2016	9:10	10:10	60
3	October 25, 2016	10:20	11:20	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	0.840	1.019	6.61	6.142	96.5
2	0.840	1.019	6.01	5.327	100.6
3	0.840	1.019	6.01	5.400	99.7

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	167	14.8	18.9	-0.50	99.5	10.1	8.51
2	168	15.3	19.0	-0.50	100.3	10.4	8.32
3	169	14.7	19.4	-0.65	100.3	10.2	8.59
Average	168	14.9	19.1	-0.55	100.0	10.3	8.47

* 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	19.8	18.6
2	28.1	15.9	20.3	18.8
3	28.6	16.3	20.3	19.1
Average	28.2	16.0	20.1	18.8

* 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)	0.4	6.7	14.6
2	Total Hydrocarbons (ppm dry)	0	3.5	11.0
3	Total Hydrocarbons (ppm dry)	0	3.5	10.5
Average	Total Hydrocarbons (ppm dry)		4.6	

Total Hydrocarbons as 10-Minute Rolling Average Data

Test No.	Parameter	Minimum	Average	Maximum
1	Total Hydrocarbons (ppm dry)	4.0	6.9	8.9
2	Total Hydrocarbons (ppm dry)	1.9	3.4	5.6
3	Total Hydrocarbons (ppm dry)	1.9	3.5	5.1
Average	Total Hydrocarbons (ppm dry)		4.6	

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 pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	13800	1.27	2.25	1.79	1.91	35.6
Pentachlorodibenzo-p-dioxins	8270	0.76	1.35	1.08	1.15	21.3
Hexachlorodibenzo-p-dioxins	5820	0.54	0.95	0.76	0.81	15.0
Heptachlorodibenzo-p-dioxins	4010	0.37	0.65	0.52	0.56	10.3
Octachlorodibenzo-p-dioxin	5990	0.55	0.98	0.78	0.83	15.4
Total	37890	3.49	6.17	4.93	5.25	97.7

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	192000	17.7	31.3	25.0	26.6	495
Pentachlorodibenzofurans	111000	10.2	18.1	14.4	15.4	286
Hexachlorodibenzofurans	30900	2.85	5.03	4.02	4.28	79.7
Heptachlorodibenzofurans	11300	1.04	1.84	1.47	1.57	29.1
Octachlorodibenzofuran	1480	0.14	0.24	0.19	0.21	3.82
Total	346680	32.0	56.4	45.1	48.1	894

Dry Gas Volume Sampled (Rm^3*) :	6.142
Actual Flowrate (m^3/s) :	28.0
Dry Reference Flowrate (Rm^3/s*) :	15.8
Dry Adjusted Flowrate (Rm^3/s**) :	19.8
Wet Reference Flowrate (Rm^3/s*) :	18.6

* 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 pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	8360	0.89	1.57	1.24	1.33	25.0
Pentachlorodibenzo-p-dioxins	6300	0.67	1.18	0.93	1.00	18.9
Hexachlorodibenzo-p-dioxins	5680	0.60	1.07	0.84	0.90	17.0
Heptachlorodibenzo-p-dioxins	3220	0.34	0.60	0.48	0.51	9.64
Octachlorodibenzo-p-dioxin	4170	0.44	0.78	0.62	0.66	12.5
Total	27730	2.95	5.21	4.10	4.41	83.0

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	156000	16.6	29.3	23.1	24.8	467
Pentachlorodibenzofurans	82300	8.75	15.4	12.2	13.1	246
Hexachlorodibenzofurans	22700	2.41	4.26	3.35	3.61	67.9
Heptachlorodibenzofurans	7730	0.82	1.45	1.14	1.23	23.1
Octachlorodibenzofuran	899	0.096	0.17	0.13	0.14	2.69
Total	269629	28.7	50.6	39.8	42.9	807

Dry Gas Volume Sampled (Rm^3*) :	5.327
Actual Flowrate (m^3/s) :	28.1
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	20.3
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere

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

TABLE 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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	12700	1.34	2.35	1.89	2.00	38.3
Pentachlorodibenzo-p-dioxins	7770	0.82	1.44	1.16	1.23	23.4
Hexachlorodibenzo-p-dioxins	6460	0.68	1.20	0.96	1.02	19.5
Heptachlorodibenzo-p-dioxins	3080	0.32	0.57	0.46	0.49	9.29
Octachlorodibenzo-p-dioxin	3820	0.40	0.71	0.57	0.60	11.5
Total	33830	3.56	6.26	5.04	5.34	102

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	174000	18.3	32.2	25.9	27.5	525
Pentachlorodibenzofurans	97100	10.2	18.0	14.5	15.3	293
Hexachlorodibenzofurans	27600	2.91	5.11	4.11	4.35	83.3
Heptachlorodibenzofurans	8580	0.90	1.59	1.28	1.35	25.9
Octachlorodibenzofuran	871	0.092	0.16	0.13	0.14	2.63
Total	308151	32.5	57.1	45.9	48.6	930

Dry Gas Volume Sampled (Rm³*) :	5.400
Actual Flowrate (m³/s) :	28.6
Dry Reference Flowrate (Rm³/s*) :	16.3
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	19.1

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

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 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	1.27	0.89	1.34	1.17	20.8
Pentachlorodibenzo-p-dioxins	0.76	0.67	0.82	0.75	10.0
Hexachlorodibenzo-p-dioxins	0.54	0.60	0.68	0.61	11.9
Heptachlorodibenzo-p-dioxins	0.37	0.34	0.32	0.35	6.6
Octachlorodibenzo-p-dioxin	0.55	0.44	0.40	0.47	16.6
Total	3.49	2.95	3.56	3.34	10.1

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	17.7	16.6	18.3	17.5	5.0
Pentachlorodibenzofurans	10.2	8.75	10.2	9.74	8.8
Hexachlorodibenzofurans	2.85	2.41	2.91	2.72	9.9
Heptachlorodibenzofurans	1.04	0.82	0.90	0.92	12.1
Octachlorodibenzofuran	0.14	0.096	0.092	0.11	23.0
Total	32.0	28.7	32.5	31.0	6.6

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 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	2.25	1.57	2.35	2.06	20.7
Pentachlorodibenzo-p-dioxins	1.35	1.18	1.44	1.32	9.8
Hexachlorodibenzo-p-dioxins	0.95	1.07	1.20	1.07	11.6
Heptachlorodibenzo-p-dioxins	0.65	0.60	0.57	0.61	6.8
Octachlorodibenzo-p-dioxin	0.98	0.78	0.71	0.82	16.8
Total	6.17	5.21	6.26	5.88	10.0

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	31.3	29.3	32.2	30.9	4.8
Pentachlorodibenzofurans	18.1	15.4	18.0	17.2	8.7
Hexachlorodibenzofurans	5.03	4.26	5.11	4.80	9.8
Heptachlorodibenzofurans	1.84	1.45	1.59	1.63	12.1
Octachlorodibenzofuran	0.24	0.17	0.16	0.19	23.1
Total	56.4	50.6	57.1	54.7	6.5

* 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	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
	Dry Adjusted Concentration				
Tetrachlorodibenzo-p-dioxins	1.79	1.24	1.89	1.64	21.6
Pentachlorodibenzo-p-dioxins	1.08	0.93	1.16	1.05	10.9
Hexachlorodibenzo-p-dioxins	0.76	0.84	0.96	0.85	12.1
Heptachlorodibenzo-p-dioxins	0.52	0.48	0.46	0.49	6.7
Octachlorodibenzo-p-dioxin	0.78	0.62	0.57	0.65	16.8
Total	4.93	4.10	5.04	4.69	11.0

Furans

Congener Group	Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
	Dry Adjusted Concentration				
Tetrachlorodibenzofurans	25.0	23.1	25.9	24.6	5.9
Pentachlorodibenzofurans	14.4	12.2	14.5	13.7	9.6
Hexachlorodibenzofurans	4.02	3.35	4.11	3.83	10.8
Heptachlorodibenzofurans	1.47	1.14	1.28	1.30	12.7
Octachlorodibenzofuran	0.19	0.13	0.13	0.15	23.3
Total	45.1	39.8	45.9	43.6	7.5

* 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	1.91	1.33	2.00	1.75	20.9
Pentachlorodibenzo-p-dioxins	1.15	1.00	1.23	1.12	10.1
Hexachlorodibenzo-p-dioxins	0.81	0.90	1.02	0.91	11.7
Heptachlorodibenzo-p-dioxins	0.56	0.51	0.49	0.52	6.8
Octachlorodibenzo-p-dioxin	0.83	0.66	0.60	0.70	16.9
Total	5.25	4.41	5.34	5.00	10.3

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	26.6	24.8	27.5	26.3	5.2
Pentachlorodibenzofurans	15.4	13.1	15.3	14.6	9.0
Hexachlorodibenzofurans	4.28	3.61	4.35	4.08	10.1
Heptachlorodibenzofurans	1.57	1.23	1.35	1.38	12.3
Octachlorodibenzofuran	0.21	0.14	0.14	0.16	23.3
Total	48.1	42.9	48.6	46.5	6.8

* 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	35.6	25.0	38.3	33.0	21.3
Pentachlorodibenzo-p-dioxins	21.3	18.9	23.4	21.2	10.8
Hexachlorodibenzo-p-dioxins	15.0	17.0	19.5	17.2	13.1
Heptachlorodibenzo-p-dioxins	10.3	9.64	9.29	9.76	5.5
Octachlorodibenzo-p-dioxin	15.4	12.5	11.5	13.1	15.6
Total	97.7	83.0	102	94.2	10.6

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	495	467	525	496	5.9
Pentachlorodibenzofurans	286	246	293	275	9.2
Hexachlorodibenzofurans	79.7	67.9	83.3	77.0	10.4
Heptachlorodibenzofurans	29.1	23.1	25.9	26.1	11.6
Octachlorodibenzofuran	3.82	2.69	2.63	3.04	22.0
Total	894	807	930	877	7.2

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 ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1.17	2.06	1.64	1.75	33.0
Pentachlorodibenzo-p-dioxins	0.75	1.32	1.05	1.12	21.2
Hexachlorodibenzo-p-dioxins	0.61	1.07	0.85	0.91	17.2
Heptachlorodibenzo-p-dioxins	0.35	0.61	0.49	0.52	9.76
Octachlorodibenzo-p-dioxin	0.47	0.82	0.65	0.70	13.1
Total	3.34	5.88	4.69	5.00	94.2

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	17.5	30.9	24.6	26.3	496
Pentachlorodibenzofurans	9.74	17.2	13.7	14.6	275
Hexachlorodibenzofurans	2.72	4.80	3.83	4.08	77.0
Heptachlorodibenzofurans	0.92	1.63	1.30	1.38	26.1
Octachlorodibenzofuran	0.11	0.19	0.15	0.16	3.04
Total	31.0	54.7	43.6	46.5	877

* 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 pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<14	<11
Pentachlorodibenzo-p-dioxins	<13	<6.8
Hexachlorodibenzo-p-dioxins	<24	<21
Heptachlorodibenzo-p-dioxins	<5.2	<3.9
Octachlorodibenzo-p-dioxin	16.8	11.3
Total	<73.0	<54.0

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	<5.0	<6.4
Pentachlorodibenzofurans	<5.4	<6.7
Hexachlorodibenzofurans	<4.6	<4.7
Heptachlorodibenzofurans	<5.9	4.9
Octachlorodibenzofuran	<6.0	<2.7
Total	<26.9	<25.4

"<" 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 pg	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	1180	109	192	153	164	3.04
12378-pentachlorodibenzo-p-dioxin	1190	110	194	155	165	3.07
123478-hexachlorodibenzo-p-dioxin	399	36.8	65.0	51.9	55.3	1.03
123678-hexachlorodibenzo-p-dioxin	492	45.4	80.1	64.0	68.2	1.27
123789-hexachlorodibenzo-p-dioxin	866	79.9	141	113	120	2.23
1234678-heptachlorodibenzo-p-dioxin	1990	184	324	259	276	5.13
Octachlorodibenzo-p-dioxin	5990	553	975	779	831	15.4
2378-tetrachlorodibenzofuran	7190	663	1171	935	997	18.5
12378-pentachlorodibenzofuran	8410	776	1369	1094	1166	21.7
23478-pentachlorodibenzofuran	6550	604	1066	852	908	16.9
123478-hexachlorodibenzofuran	6040	557	983	786	837	15.6
123678-hexachlorodibenzofuran	4150	383	676	540	575	10.7
234678-hexachlorodibenzofuran	2000	184	326	260	277	5.16
123789-hexachlorodibenzofuran	231	21.3	37.6	30.0	32.0	0.60
1234678-heptachlorodibenzofuran	8030	741	1307	1044	1113	20.7
1234789-heptachlorodibenzofuran	634	58.5	103	82.5	87.9	1.64
Octachlorodibenzofuran	1480	137	241	192	205	3.82
PCB 81	210	19.4	34.2	27.3	29.1	0.54
PCB 77	1300	120	212	169	180	3.35
PCB 123	230	21.2	37.4	29.9	31.9	0.59
PCB 118	4500	415	733	585	624	11.6
PCB 114	200	18.4	32.6	26.0	27.7	0.52
PCB 105	1600	148	261	208	222	4.13
PCB 126	530	48.9	86.3	68.9	73.5	1.37
PCB 167	290	26.7	47.2	37.7	40.2	0.75
PCB 156 + PCB 157	<530	<48.9	<86.3	<68.9	<73.5	<1.37
PCB 169	170	15.7	27.7	22.1	23.6	0.44
PCB 189	<190	<17.5	<30.9	<24.7	<26.3	<0.49
Total Dioxins & Furans Only	56822	5241	9251	7390	7879	147
Total PCBs Only	<9750	<899	<1587	<1268	<1352	<25.1
Total Dioxins & Furans and PCBs	<66572	<6140	<10839	<8658	<9230	<172

Dry Gas Volume Sampled (Rm³*) :	6.142
Actual Flowrate (m³/s) :	28.0
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	19.8
Wet Reference Flowrate (Rm³/s*) :	18.6

* 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 pg	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	594	63.2	112	87.8	94.4	1.78
12378-pentachlorodibenzo-p-dioxin	877	93.3	165	130	139	2.62
123478-hexachlorodibenzo-p-dioxin	376	40.0	70.6	55.6	59.8	1.13
123678-hexachlorodibenzo-p-dioxin	547	58.2	103	80.8	87.0	1.64
123789-hexachlorodibenzo-p-dioxin	852	90.6	160	126	135	2.55
1234678-heptachlorodibenzo-p-dioxin	1660	177	312	245	264	4.97
Octachlorodibenzo-p-dioxin	4170	444	783	616	663	12.5
2378-tetrachlorodibenzofuran	4960	528	931	733	789	14.8
12378-pentachlorodibenzofuran	6050	644	1136	894	962	18.1
23478-pentachlorodibenzofuran	4880	519	916	721	776	14.6
123478-hexachlorodibenzofuran	4440	472	833	656	706	13.3
123678-hexachlorodibenzofuran	3190	339	599	471	507	9.55
234678-hexachlorodibenzofuran	1330	141	250	197	211	3.98
123789-hexachlorodibenzofuran	177	18.8	33.2	26.2	28.1	0.53
1234678-heptachlorodibenzofuran	5480	583	1029	810	871	16.4
1234789-heptachlorodibenzofuran	478	50.8	89.7	70.6	76.0	1.43
Octachlorodibenzofuran	899	95.6	169	133	143	2.69
PCB 81	<170	<18.1	<31.9	<25.1	<27.0	<0.51
PCB 77	820	87.2	154	121	130	2.45
PCB 123	210	22.3	39.4	31.0	33.4	0.63
PCB 118	2200	234	413	325	350	6.58
PCB 114	130	13.8	24.4	19.2	20.7	0.39
PCB 105	820	87.2	154	121	130	2.45
PCB 126	<450	<47.9	<84.5	<66.5	<71.5	<1.35
PCB 167	190	20.2	35.7	28.1	30.2	0.57
PCB 156 + PCB 157	370	39.4	69.5	54.7	58.8	1.11
PCB 169	<130	<13.8	<24.4	<19.2	<20.7	<0.39
PCB 189	<150	<16.0	<28.2	<22.2	<23.8	<0.45
Total Dioxins & Furans Only	40960	4357	7689	6053	6512	123
Total PCBs Only	<5640	<600	<1059	<833	<897	<16.9
Total Dioxins & Furans and PCBs	<46600	<4957	<8748	<6886	<7409	<139

Dry Gas Volume Sampled (Rm³*) :	5.327
Actual Flowrate (m³/s) :	28.1
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	20.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere

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

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

TABLE 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 pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	1090	115	202	162	172	3.29
12378-pentachlorodibenzo-p-dioxin	1120	118	207	167	177	3.38
123478-hexachlorodibenzo-p-dioxin	436	45.9	80.7	64.9	68.8	1.32
123678-hexachlorodibenzo-p-dioxin	629	66.3	116	93.7	99.2	1.90
123789-hexachlorodibenzo-p-dioxin	960	101	178	143	151	2.90
1234678-heptachlorodibenzo-p-dioxin	1520	160	281	226	240	4.59
Octachlorodibenzo-p-dioxin	3820	403	707	569	603	11.5
2378-tetrachlorodibenzofuran	5880	620	1089	876	928	17.7
12378-pentachlorodibenzofuran	7330	772	1357	1091	1156	22.1
23478-pentachlorodibenzofuran	6140	647	1137	914	969	18.5
123478-hexachlorodibenzofuran	5370	566	994	800	847	16.2
123678-hexachlorodibenzofuran	3810	401	706	567	601	11.5
234678-hexachlorodibenzofuran	1550	163	287	231	245	4.68
123789-hexachlorodibenzofuran	192	20.2	35.6	28.6	30.3	0.58
1234678-heptachlorodibenzofuran	6310	665	1169	940	996	19.0
1234789-heptachlorodibenzofuran	464	48.9	85.9	69.1	73.2	1.40
Octachlorodibenzofuran	871	91.8	161	130	137	2.63
PCB 81	190	20.0	35.2	28.3	30.0	0.57
PCB 77	1000	105	185	149	158	3.02
PCB 123	190	20.0	35.2	28.3	30.0	0.57
PCB 118	4500	474	833	670	710	13.6
PCB 114	170	17.9	31.5	25.3	26.8	0.51
PCB 105	1500	158	278	223	237	4.53
PCB 126	480	50.6	88.9	71.5	75.7	1.45
PCB 167	<210	<22.1	<38.9	<31.3	<33.1	<0.63
PCB 156 + PCB 157	460	48.5	85.2	68.5	72.6	1.39
PCB 169	<150	<15.8	<27.8	<22.3	<23.7	<0.45
PCB 189	170	17.9	31.5	25.3	26.8	0.51
Total Dioxins & Furans Only	47492	5004	8795	7071	7493	143
Total PCBs Only	<9020	<950	<1670	<1343	<1423	<27.2
Total Dioxins & Furans and PCBs	<56512	<5955	<10465	<8415	<8916	<170

Dry Gas Volume Sampled (Rm^3*) :	5.400
Actual Flowrate (m^3/s) :	28.6
Dry Reference Flowrate (Rm^3/s*) :	16.3
Dry Adjusted Flowrate (Rm^3/s**) :	20.3
Wet Reference Flowrate (Rm^3/s*) :	19.1

* 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 19
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	109	63.2	115	95.6	29.5
12378-pentachlorodibenzo-p-dioxin	110	93.3	118	107	11.8
123478-hexachlorodibenzo-p-dioxin	36.8	40.0	45.9	40.9	11.3
123678-hexachlorodibenzo-p-dioxin	45.4	58.2	66.3	56.6	18.6
123789-hexachlorodibenzo-p-dioxin	79.9	90.6	101	90.6	11.7
1234678-heptachlorodibenzo-p-dioxin	184	177	160	173	6.9
Octachlorodibenzo-p-dioxin	553	444	403	466	16.6
2378-tetrachlorodibenzofuran	663	528	620	603	11.5
12378-pentachlorodibenzofuran	776	644	772	731	10.3
23478-pentachlorodibenzofuran	604	519	647	590	11.0
123478-hexachlorodibenzofuran	557	472	566	532	9.7
123678-hexachlorodibenzofuran	383	339	401	375	8.5
234678-hexachlorodibenzofuran	184	141	163	163	13.2
123789-hexachlorodibenzofuran	21.3	18.8	20.2	20.1	6.2
1234678-heptachlorodibenzofuran	741	583	665	663	11.9
1234789-heptachlorodibenzofuran	58.5	50.8	48.9	52.7	9.6
Octachlorodibenzofuran	137	95.6	91.8	108	23.0
PCB 81	19.4	<18.1	20.0	<19.2	5.1
PCB 77	120	87.2	105	104	15.7
PCB 123	21.2	22.3	20.0	21.2	5.5
PCB 118	415	234	474	374	33.4
PCB 114	18.4	13.8	17.9	16.7	15.1
PCB 105	148	87.2	158	131	29.2
PCB 126	48.9	<47.9	50.6	<49.1	2.8
PCB 167	26.7	20.2	<22.1	<23.0	14.6
PCB 156 + PCB 157	<48.9	39.4	48.5	<45.6	11.8
PCB 169	15.7	<13.8	<15.8	<15.1	7.3
PCB 189	<17.5	<16.0	17.9	<17.1	6.0
Total Dioxins & Furans Only	5241	4357	5004	4867	9.4
Total PCBs Only	<899	<600	<950	<817	23.2
Total Dioxins & Furans and PCBs	<6140	<4957	<5955	<5684	11.2

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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	192	112	202	168	29.4
12378-pentachlorodibenzo-p-dioxin	194	165	207	189	11.6
123478-hexachlorodibenzo-p-dioxin	65.0	70.6	80.7	72.1	11.1
123678-hexachlorodibenzo-p-dioxin	80.1	103	116	99.8	18.4
123789-hexachlorodibenzo-p-dioxin	141	160	178	160	11.5
1234678-heptachlorodibenzo-p-dioxin	324	312	281	306	7.2
Octachlorodibenzo-p-dioxin	975	783	707	822	16.8
2378-tetrachlorodibenzofuran	1171	931	1089	1064	11.4
12378-pentachlorodibenzofuran	1369	1136	1357	1287	10.2
23478-pentachlorodibenzofuran	1066	916	1137	1040	10.9
123478-hexachlorodibenzofuran	983	833	994	937	9.6
123678-hexachlorodibenzofuran	676	599	706	660	8.3
234678-hexachlorodibenzofuran	326	250	287	287	13.2
123789-hexachlorodibenzofuran	37.6	33.2	35.6	35.5	6.2
1234678-heptachlorodibenzofuran	1307	1029	1169	1168	11.9
1234789-heptachlorodibenzofuran	103	89.7	85.9	93.0	9.8
Octachlorodibenzofuran	241	169	161	190	23.1
PCB 81	34.2	<31.9	35.2	<33.8	5.0
PCB 77	212	154	185	184	15.7
PCB 123	37.4	39.4	35.2	37.4	5.7
PCB 118	733	413	833	660	33.3
PCB 114	32.6	24.4	31.5	29.5	15.0
PCB 105	261	154	278	231	29.1
PCB 126	86.3	<84.5	88.9	<86.6	2.6
PCB 167	47.2	35.7	<38.9	<40.6	14.7
PCB 156 + PCB 157	<86.3	69.5	85.2	<80.3	11.7
PCB 169	27.7	<24.4	<27.8	<26.6	7.2
PCB 189	<30.9	<28.2	31.5	<30.2	5.9
Total Dioxins & Furans Only	9251	7689	8795	8578	9.4
Total PCBs Only	<1587	<1059	<1670	<1439	23.1
Total Dioxins & Furans and PCBs	<10839	<8748	<10465	<10017	11.1

* 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 Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	153	87.8	162	135	30.3
12378-pentachlorodibenzo-p-dioxin	155	130	167	150	12.6
123478-hexachlorodibenzo-p-dioxin	51.9	55.6	64.9	57.5	11.7
123678-hexachlorodibenzo-p-dioxin	64.0	80.8	93.7	79.5	18.7
123789-hexachlorodibenzo-p-dioxin	113	126	143	127	12.0
1234678-heptachlorodibenzo-p-dioxin	259	245	226	243	6.7
Octachlorodibenzo-p-dioxin	779	616	569	655	16.8
2378-tetrachlorodibenzofuran	935	733	876	848	12.3
12378-pentachlorodibenzofuran	1094	894	1091	1026	11.2
23478-pentachlorodibenzofuran	852	721	914	829	11.9
123478-hexachlorodibenzofuran	786	656	800	747	10.6
123678-hexachlorodibenzofuran	540	471	567	526	9.4
234678-hexachlorodibenzofuran	260	197	231	229	13.9
123789-hexachlorodibenzofuran	30.0	26.2	28.6	28.3	6.9
1234678-heptachlorodibenzofuran	1044	810	940	931	12.6
1234789-heptachlorodibenzofuran	82.5	70.6	69.1	74.1	9.9
Octachlorodibenzofuran	192	133	130	152	23.3
PCB 81	27.3	<25.1	28.3	<26.9	6.0
PCB 77	169	121	149	146	16.4
PCB 123	29.9	31.0	28.3	29.7	4.6
PCB 118	585	325	670	527	34.1
PCB 114	26.0	19.2	25.3	23.5	15.9
PCB 105	208	121	223	184	29.9
PCB 126	68.9	<66.5	71.5	<69.0	3.6
PCB 167	37.7	28.1	<31.3	<32.4	15.2
PCB 156 + PCB 157	<68.9	54.7	68.5	<64.0	12.7
PCB 169	22.1	<19.2	<22.3	<21.2	8.2
PCB 189	<24.7	<22.2	25.3	<24.1	6.9
Total Dioxins & Furans Only	7390	6053	7071	6838	10.2
Total PCBs Only	<1268	<833	<1343	<1148	24.0
Total Dioxins & Furans and PCBs	<8658	<6886	<8415	<7986	12.0

* 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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	164	94.4	172	143	29.7
12378-pentachlorodibenzo-p-dioxin	165	139	177	160	11.9
123478-hexachlorodibenzo-p-dioxin	55.3	59.8	68.8	61.3	11.2
123678-hexachlorodibenzo-p-dioxin	68.2	87.0	99.2	84.8	18.4
123789-hexachlorodibenzo-p-dioxin	120	135	151	136	11.6
1234678-heptachlorodibenzo-p-dioxin	276	264	240	260	7.1
Octachlorodibenzo-p-dioxin	831	663	603	699	16.9
2378-tetrachlorodibenzofuran	997	789	928	904	11.7
12378-pentachlorodibenzofuran	1166	962	1156	1095	10.5
23478-pentachlorodibenzofuran	908	776	969	884	11.2
123478-hexachlorodibenzofuran	837	706	847	797	9.9
123678-hexachlorodibenzofuran	575	507	601	561	8.6
234678-hexachlorodibenzofuran	277	211	245	244	13.5
123789-hexachlorodibenzofuran	32.0	28.1	30.3	30.2	6.5
1234678-heptachlorodibenzofuran	1113	871	996	993	12.2
1234789-heptachlorodibenzofuran	87.9	76.0	73.2	79.0	9.9
Octachlorodibenzofuran	205	143	137	162	23.3
PCB 81	29.1	<27.0	30.0	<28.7	5.3
PCB 77	180	130	158	156	16.0
PCB 123	31.9	33.4	30.0	31.8	5.4
PCB 118	624	350	710	561	33.5
PCB 114	27.7	20.7	26.8	25.1	15.3
PCB 105	222	130	237	196	29.3
PCB 126	73.5	<71.5	75.7	<73.6	2.8
PCB 167	40.2	30.2	<33.1	<34.5	14.9
PCB 156 + PCB 157	<73.5	58.8	72.6	<68.3	12.0
PCB 169	23.6	<20.7	<23.7	<22.6	7.5
PCB 189	<26.3	<23.8	26.8	<25.7	6.2
Total Dioxins & Furans Only	7879	6512	7493	7295	9.7
Total PCBs Only	<1352	<897	<1423	<1224	23.3
Total Dioxins & Furans and PCBs	<9230	<7409	<8916	<8519	11.4

* At 25°C and 1 atmosphere

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

TABLE 23
Covanta - Durham York Energy Centre
Boiler No. 1 Quench Inlet
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	3.04	1.78	3.29	2.70	30.0
12378-pentachlorodibenzo-p-dioxin	3.07	2.62	3.38	3.02	12.5
123478-hexachlorodibenzo-p-dioxin	1.03	1.13	1.32	1.16	12.6
123678-hexachlorodibenzo-p-dioxin	1.27	1.64	1.90	1.60	19.7
123789-hexachlorodibenzo-p-dioxin	2.23	2.55	2.90	2.56	12.9
1234678-heptachlorodibenzo-p-dioxin	5.13	4.97	4.59	4.89	5.7
Octachlorodibenzo-p-dioxin	15.4	12.5	11.5	13.1	15.6
2378-tetrachlorodibenzofuran	18.5	14.8	17.7	17.0	11.4
12378-pentachlorodibenzofuran	21.7	18.1	22.1	20.6	10.7
23478-pentachlorodibenzofuran	16.9	14.6	18.5	16.7	11.8
123478-hexachlorodibenzofuran	15.6	13.3	16.2	15.0	10.2
123678-hexachlorodibenzofuran	10.7	9.55	11.5	10.6	9.3
234678-hexachlorodibenzofuran	5.16	3.98	4.68	4.60	12.9
123789-hexachlorodibenzofuran	0.60	0.53	0.58	0.57	6.1
1234678-heptachlorodibenzofuran	20.7	16.4	19.0	18.7	11.6
1234789-heptachlorodibenzofuran	1.64	1.43	1.40	1.49	8.6
Octachlorodibenzofuran	3.82	2.69	2.63	3.04	22.0
PCB 81	0.54	<0.51	0.57	<0.54	6.0
PCB 77	3.35	2.45	3.02	2.94	15.4
PCB 123	0.59	0.63	0.57	0.60	4.7
PCB 118	11.6	6.58	13.6	10.6	34.1
PCB 114	0.52	0.39	0.51	0.47	15.3
PCB 105	4.13	2.45	4.53	3.70	29.7
PCB 126	1.37	<1.35	1.45	<1.39	3.9
PCB 167	0.75	0.57	<0.63	<0.65	14.0
PCB 156 + PCB 157	<1.37	1.11	1.39	<1.29	12.1
PCB 169	0.44	<0.39	<0.45	<0.43	7.8
PCB 189	<0.49	<0.45	0.51	<0.48	6.7
Total Dioxins & Furans Only	147	123	143	137	9.5
Total PCBs Only	<25.1	<16.9	<27.2	<23.1	23.7
Total Dioxins & Furans and PCBs	<172	<139	<170	<161	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 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	95.6	168	135	143	2.70
12378-pentachlorodibenzo-p-dioxin	107	189	150	160	3.02
123478-hexachlorodibenzo-p-dioxin	40.9	72.1	57.5	61.3	1.16
123678-hexachlorodibenzo-p-dioxin	56.6	99.8	79.5	84.8	1.60
123789-hexachlorodibenzo-p-dioxin	90.6	160	127	136	2.56
1234678-heptachlorodibenzo-p-dioxin	173	306	243	260	4.89
Octachlorodibenzo-p-dioxin	466	822	655	699	13.1
2378-tetrachlorodibenzofuran	603	1064	848	904	17.0
12378-pentachlorodibenzofuran	731	1287	1026	1095	20.6
23478-pentachlorodibenzofuran	590	1040	829	884	16.7
123478-hexachlorodibenzofuran	532	937	747	797	15.0
123678-hexachlorodibenzofuran	375	660	526	561	10.6
234678-hexachlorodibenzofuran	163	287	229	244	4.60
123789-hexachlorodibenzofuran	20.1	35.5	28.3	30.2	0.57
1234678-heptachlorodibenzofuran	663	1168	931	993	18.7
1234789-heptachlorodibenzofuran	52.7	93.0	74.1	79.0	1.49
Octachlorodibenzofuran	108	190	152	162	3.04
PCB 81	<19.2	<33.8	<26.9	<28.7	<0.54
PCB 77	104	184	146	156	2.94
PCB 123	21.2	37.4	29.7	31.8	0.60
PCB 118	374	660	527	561	10.6
PCB 114	16.7	29.5	23.5	25.1	0.47
PCB 105	131	231	184	196	3.70
PCB 126	<49.1	<86.6	<69.0	<73.6	<1.39
PCB 167	<23.0	<40.6	<32.4	<34.5	<0.65
PCB 156 + PCB 157	<45.6	<80.3	<64.0	<68.3	<1.29
PCB 169	<15.1	<26.6	<21.2	<22.6	<0.43
PCB 189	<17.1	<30.2	<24.1	<25.7	<0.48
Total Dioxins & Furans Only	4867	8578	6838	7295	137
Total PCBs Only	<817	<1439	<1148	<1224	<23.1
Total Dioxins & Furans and PCBs	<5684	<10017	<7986	<8519	<161

* 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 pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<5.5	<5.2
12378-pentachlorodibenzo-p-dioxin	<5.5	<5.3
123478-hexachlorodibenzo-p-dioxin	<4.7	<4.7
123678-hexachlorodibenzo-p-dioxin	<4.8	<4.7
123789-hexachlorodibenzo-p-dioxin	<4.4	<4.3
1234678-heptachlorodibenzo-p-dioxin	<5.2	<3.9
Octachlorodibenzo-p-dioxin	16.8	11.3
2378-tetrachlorodibenzofuran	<5.0	<2.7
12378-pentachlorodibenzofuran	<5.4	<6.7
23478-pentachlorodibenzofuran	<5.4	<6.7
123478-hexachlorodibenzofuran	<4.5	<4.6
123678-hexachlorodibenzofuran	<4.3	<4.4
234678-hexachlorodibenzofuran	<4.7	<4.9
123789-hexachlorodibenzofuran	<5.0	<5.1
1234678-heptachlorodibenzofuran	<5.5	4.9
1234789-heptachlorodibenzofuran	<6.5	<4.5
Octachlorodibenzofuran	<6.0	<5.9
PCB 81	<72	<41
PCB 77	<70	<40
PCB 123	<40	<25
PCB 118	<36	<22
PCB 114	<36	<22
PCB 105	<36	<22
PCB 126	<37	<23
PCB 167	<13	<12
PCB 156 + PCB 157	<12	<11
PCB 169	<13	<12
PCB 189	<27	<22
Total Dioxins & Furans Only	<99.2	<89.8
Total PCBs Only	<392	<252
Total Dioxins & Furans and PCBs	<491	<342

"<" 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	109	63.2	115	95.6
12378-pentachlorodibenzo-p-dioxin	1.000	110	93.3	118	107
123478-hexachlorodibenzo-p-dioxin	0.100	3.68	4.00	4.59	4.09
123678-hexachlorodibenzo-p-dioxin	0.100	4.54	5.82	6.63	5.66
123789-hexachlorodibenzo-p-dioxin	0.100	7.99	9.06	10.1	9.06
1234678-heptachlorodibenzo-p-dioxin	0.010	1.84	1.77	1.60	1.73
Octachlorodibenzo-p-dioxin	0.0003	0.17	0.13	0.12	0.14
2378-tetrachlorodibenzofuran	0.100	66.3	52.8	62.0	60.3
12378-pentachlorodibenzofuran	0.030	23.3	19.3	23.2	21.9
23478-pentachlorodibenzofuran	0.300	181	156	194	177
123478-hexachlorodibenzofuran	0.100	55.7	47.2	56.6	53.2
123678-hexachlorodibenzofuran	0.100	38.3	33.9	40.1	37.5
234678-hexachlorodibenzofuran	0.100	18.4	14.1	16.3	16.3
123789-hexachlorodibenzofuran	0.100	2.13	1.88	2.02	2.01
1234678-heptachlorodibenzofuran	0.010	7.41	5.83	6.65	6.63
1234789-heptachlorodibenzofuran	0.010	0.58	0.51	0.49	0.53
Octachlorodibenzofuran	0.0003	0.041	0.029	0.028	0.032
PCB 81	0.0003	0.0058	<0.0054	0.0060	<0.0057
PCB 77	0.0001	0.012	0.0087	0.011	0.010
PCB 123	0.00003	0.00064	0.00067	0.00060	0.00064
PCB 118	0.00003	0.012	0.0070	0.014	0.011
PCB 114	0.00003	0.00055	0.00041	0.00054	0.00050
PCB 105	0.00003	0.0044	0.0026	0.0047	0.0039
PCB 126	0.100	4.89	<4.79	5.06	<4.91
PCB 167	0.00003	0.00080	0.00061	<0.00066	<0.00069
PCB 156 + PCB 157	0.00003	<0.0015	0.0012	0.0015	<0.0014
PCB 169	0.030	0.47	<0.41	<0.47	<0.45
PCB 189	0.00003	<0.00053	<0.00048	0.00054	<0.00051
Total Dioxins & Furans Only		630	509	657	599
Total PCBs Only		<5.40	<5.23	<5.57	<5.40
Total Dioxins & Furans and PCBs		<636	<514	<663	<604

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	192	112	202	168
12378-pentachlorodibenzo-p-dioxin	1.000	194	165	207	189
123478-hexachlorodibenzo-p-dioxin	0.100	6.50	7.06	8.07	7.21
123678-hexachlorodibenzo-p-dioxin	0.100	8.01	10.3	11.6	9.98
123789-hexachlorodibenzo-p-dioxin	0.100	14.1	16.0	17.8	16.0
1234678-heptachlorodibenzo-p-dioxin	0.010	3.24	3.12	2.81	3.06
Octachlorodibenzo-p-dioxin	0.0003	0.29	0.23	0.21	0.25
2378-tetrachlorodibenzofuran	0.100	117	93.1	109	106
12378-pentachlorodibenzofuran	0.030	41.1	34.1	40.7	38.6
23478-pentachlorodibenzofuran	0.300	320	275	341	312
123478-hexachlorodibenzofuran	0.100	98.3	83.3	99.4	93.7
123678-hexachlorodibenzofuran	0.100	67.6	59.9	70.6	66.0
234678-hexachlorodibenzofuran	0.100	32.6	25.0	28.7	28.7
123789-hexachlorodibenzofuran	0.100	3.76	3.32	3.56	3.55
1234678-heptachlorodibenzofuran	0.010	13.1	10.3	11.7	11.7
1234789-heptachlorodibenzofuran	0.010	1.03	0.90	0.86	0.93
Octachlorodibenzofuran	0.0003	0.072	0.051	0.048	0.057
PCB 81	0.0003	0.010	<0.0096	0.011	<0.010
PCB 77	0.0001	0.021	0.015	0.019	0.018
PCB 123	0.00003	0.0011	0.0012	0.0011	0.0011
PCB 118	0.00003	0.022	0.012	0.025	0.020
PCB 114	0.00003	0.00098	0.00073	0.00094	0.00088
PCB 105	0.00003	0.0078	0.0046	0.0083	0.0069
PCB 126	0.100	8.63	<8.45	8.89	<8.66
PCB 167	0.00003	0.0014	0.0011	<0.0012	<0.0012
PCB 156 + PCB 157	0.00003	<0.0026	0.0021	0.0026	<0.0024
PCB 169	0.030	0.83	<0.73	<0.83	<0.80
PCB 189	0.00003	<0.00093	<0.00084	0.00094	<0.00091
Total Dioxins & Furans Only		1112	898	1155	1055
Total PCBs Only		<9.53	<9.23	<9.79	<9.52
Total Dioxins & Furans and PCBs		<1122	<907	<1165	<1065

* 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	153	87.8	162	135
12378-pentachlorodibenzo-p-dioxin	1.000	155	130	167	150
123478-hexachlorodibenzo-p-dioxin	0.100	5.19	5.56	6.49	5.75
123678-hexachlorodibenzo-p-dioxin	0.100	6.40	8.08	9.37	7.95
123789-hexachlorodibenzo-p-dioxin	0.100	11.3	12.6	14.3	12.7
1234678-heptachlorodibenzo-p-dioxin	0.010	2.59	2.45	2.26	2.43
Octachlorodibenzo-p-dioxin	0.0003	0.23	0.18	0.17	0.20
2378-tetrachlorodibenzofuran	0.100	93.5	73.3	87.6	84.8
12378-pentachlorodibenzofuran	0.030	32.8	26.8	32.7	30.8
23478-pentachlorodibenzofuran	0.300	256	216	274	249
123478-hexachlorodibenzofuran	0.100	78.6	65.6	80.0	74.7
123678-hexachlorodibenzofuran	0.100	54.0	47.1	56.7	52.6
234678-hexachlorodibenzofuran	0.100	26.0	19.7	23.1	22.9
123789-hexachlorodibenzofuran	0.100	3.00	2.62	2.86	2.83
1234678-heptachlorodibenzofuran	0.010	10.4	8.10	9.40	9.31
1234789-heptachlorodibenzofuran	0.010	0.82	0.71	0.69	0.74
Octachlorodibenzofuran	0.0003	0.058	0.040	0.039	0.046
PCB 81	0.0003	0.0082	<0.0075	0.0085	<0.0081
PCB 77	0.0001	0.017	0.012	0.015	0.015
PCB 123	0.00003	0.00090	0.00093	0.00085	0.00089
PCB 118	0.00003	0.018	0.0098	0.020	0.016
PCB 114	0.00003	0.00078	0.00058	0.00076	0.00071
PCB 105	0.00003	0.0062	0.0036	0.0067	0.0055
PCB 126	0.100	6.89	<6.65	7.15	<6.90
PCB 167	0.00003	0.0011	0.00084	<0.00094	<0.00097
PCB 156 + PCB 157	0.00003	<0.0021	0.0016	0.0021	<0.0019
PCB 169	0.030	0.66	<0.58	<0.67	<0.64
PCB 189	0.00003	<0.00074	<0.00066	0.00076	<0.00072
Total Dioxins & Furans Only		889	707	929	841
Total PCBs Only		<7.61	<7.26	<7.87	<7.58
Total Dioxins & Furans and PCBs		<896	<714	<937	<849

* 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	153	87.8	162	135
12378-pentachlorodibenzo-p-dioxin	1.000	155	130	167	150
123478-hexachlorodibenzo-p-dioxin	0.100	5.19	5.56	6.49	5.75
123678-hexachlorodibenzo-p-dioxin	0.100	6.40	8.08	9.37	7.95
123789-hexachlorodibenzo-p-dioxin	0.100	11.3	12.6	14.3	12.7
1234678-heptachlorodibenzo-p-dioxin	0.010	2.59	2.45	2.26	2.43
Octachlorodibenzo-p-dioxin	0.0003	0.23	0.18	0.17	0.20
2378-tetrachlorodibenzofuran	0.100	93.5	73.3	87.6	84.8
12378-pentachlorodibenzofuran	0.030	32.8	26.8	32.7	30.8
23478-pentachlorodibenzofuran	0.300	256	216	274	249
123478-hexachlorodibenzofuran	0.100	78.6	65.6	80.0	74.7
123678-hexachlorodibenzofuran	0.100	54.0	47.1	56.7	52.6
234678-hexachlorodibenzofuran	0.100	26.0	19.7	23.1	22.9
123789-hexachlorodibenzofuran	0.100	3.00	2.62	2.86	2.83
1234678-heptachlorodibenzofuran	0.010	10.4	8.10	9.40	9.31
1234789-heptachlorodibenzofuran	0.010	0.82	0.71	0.69	0.74
Octachlorodibenzofuran	0.0003	0.058	0.040	0.039	0.046
PCB 81	0.0003	0.0082	0.0038	0.0085	0.0068
PCB 77	0.0001	0.017	0.012	0.015	0.015
PCB 123	0.00003	0.00090	0.00093	0.00085	0.00089
PCB 118	0.00003	0.018	0.0098	0.020	0.016
PCB 114	0.00003	0.00078	0.00058	0.00076	0.00071
PCB 105	0.00003	0.0062	0.0036	0.0067	0.0055
PCB 126	0.100	6.89	3.32	7.15	5.79
PCB 167	0.00003	0.0011	0.00084	0.00047	0.00081
PCB 156 + PCB 157	0.00003	0.0010	0.0016	0.0021	0.0016
PCB 169	0.030	0.66	0.29	0.34	0.43
PCB 189	0.00003	0.00037	0.00033	0.00076	0.00049
Total Dioxins & Furans Only		889	707	929	841
Total PCBs Only		7.61	3.65	7.54	6.26
Total Dioxins & Furans and PCBs		896	710	937	848

* 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	153	87.8	162	135
12378-pentachlorodibenzo-p-dioxin	0.500	77.4	64.8	83.4	75.2
123478-hexachlorodibenzo-p-dioxin	0.100	5.19	5.56	6.49	5.75
123678-hexachlorodibenzo-p-dioxin	0.100	6.40	8.08	9.37	7.95
123789-hexachlorodibenzo-p-dioxin	0.100	11.3	12.6	14.3	12.7
1234678-heptachlorodibenzo-p-dioxin	0.010	2.59	2.45	2.26	2.43
Octachlorodibenzo-p-dioxin	0.001	0.78	0.62	0.57	0.65
2378-tetrachlorodibenzofuran	0.100	93.5	73.3	87.6	84.8
12378-pentachlorodibenzofuran	0.050	54.7	44.7	54.6	51.3
23478-pentachlorodibenzofuran	0.500	426	361	457	415
123478-hexachlorodibenzofuran	0.100	78.6	65.6	80.0	74.7
123678-hexachlorodibenzofuran	0.100	54.0	47.1	56.7	52.6
234678-hexachlorodibenzofuran	0.100	26.0	19.7	23.1	22.9
123789-hexachlorodibenzofuran	0.100	3.00	2.62	2.86	2.83
1234678-heptachlorodibenzofuran	0.010	10.4	8.10	9.40	9.31
1234789-heptachlorodibenzofuran	0.010	0.82	0.71	0.69	0.74
Octachlorodibenzofuran	0.001	0.19	0.13	0.13	0.15
Total Dioxins & Furans		1004	804	1051	953

* 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 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	164	94.4	172	143
12378-pentachlorodibenzo-p-dioxin	1.000	165	139	177	160
123478-hexachlorodibenzo-p-dioxin	0.100	5.53	5.98	6.88	6.13
123678-hexachlorodibenzo-p-dioxin	0.100	6.82	8.70	9.92	8.48
123789-hexachlorodibenzo-p-dioxin	0.100	12.0	13.5	15.1	13.6
1234678-heptachlorodibenzo-p-dioxin	0.010	2.76	2.64	2.40	2.60
Octachlorodibenzo-p-dioxin	0.0003	0.25	0.20	0.18	0.21
2378-tetrachlorodibenzofuran	0.100	99.7	78.9	92.8	90.4
12378-pentachlorodibenzofuran	0.030	35.0	28.9	34.7	32.8
23478-pentachlorodibenzofuran	0.300	272	233	291	265
123478-hexachlorodibenzofuran	0.100	83.7	70.6	84.7	79.7
123678-hexachlorodibenzofuran	0.100	57.5	50.7	60.1	56.1
234678-hexachlorodibenzofuran	0.100	27.7	21.1	24.5	24.4
123789-hexachlorodibenzofuran	0.100	3.20	2.81	3.03	3.02
1234678-heptachlorodibenzofuran	0.010	11.1	8.71	9.96	9.93
1234789-heptachlorodibenzofuran	0.010	0.88	0.76	0.73	0.79
Octachlorodibenzofuran	0.0003	0.062	0.043	0.041	0.049
PCB 81	0.0003	0.0087	<0.0081	0.0090	<0.0086
PCB 77	0.0001	0.018	0.013	0.016	0.016
PCB 123	0.00003	0.00096	0.0010	0.00090	0.00095
PCB 118	0.00003	0.019	0.010	0.021	0.017
PCB 114	0.00003	0.00083	0.00062	0.00080	0.00075
PCB 105	0.00003	0.0067	0.0039	0.0071	0.0059
PCB 126	0.100	7.35	<7.15	7.57	<7.36
PCB 167	0.00003	0.0012	0.00091	<0.00099	<0.0010
PCB 156 + PCB 157	0.00003	<0.0022	0.0018	0.0022	<0.0020
PCB 169	0.030	0.71	<0.62	<0.71	<0.68
PCB 189	0.00003	<0.00079	<0.00072	0.00080	<0.00077
Total Dioxins & Furans Only		947	760	984	897
Total PCBs Only		<8.11	<7.82	<8.34	<8.09
Total Dioxins & Furans and PCBs		<956	<768	<993	<905

* 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	3.04	1.78	3.29	2.70
12378-pentachlorodibenzo-p-dioxin	1.000	3.07	2.62	3.38	3.02
123478-hexachlorodibenzo-p-dioxin	0.100	0.10	0.11	0.13	0.12
123678-hexachlorodibenzo-p-dioxin	0.100	0.13	0.16	0.19	0.16
123789-hexachlorodibenzo-p-dioxin	0.100	0.22	0.25	0.29	0.26
1234678-heptachlorodibenzo-p-dioxin	0.010	0.051	0.050	0.046	0.049
Octachlorodibenzo-p-dioxin	0.0003	0.0046	0.0037	0.0035	0.0039
2378-tetrachlorodibenzofuran	0.100	1.85	1.48	1.77	1.70
12378-pentachlorodibenzofuran	0.030	0.65	0.54	0.66	0.62
23478-pentachlorodibenzofuran	0.300	5.07	4.38	5.56	5.00
123478-hexachlorodibenzofuran	0.100	1.56	1.33	1.62	1.50
123678-hexachlorodibenzofuran	0.100	1.07	0.95	1.15	1.06
234678-hexachlorodibenzofuran	0.100	0.52	0.40	0.47	0.46
123789-hexachlorodibenzofuran	0.100	0.060	0.053	0.058	0.057
1234678-heptachlorodibenzofuran	0.010	0.21	0.16	0.19	0.19
1234789-heptachlorodibenzofuran	0.010	0.016	0.014	0.014	0.015
Octachlorodibenzofuran	0.0003	0.0011	0.00081	0.00079	0.00091
PCB 81	0.0003	0.00016	<0.00015	0.00017	<0.00016
PCB 77	0.0001	0.00034	0.00025	0.00030	0.00029
PCB 123	0.00003	0.000018	0.000019	0.000017	0.000018
PCB 118	0.00003	0.00035	0.00020	0.00041	0.00032
PCB 114	0.00003	0.000015	0.000012	0.000015	0.000014
PCB 105	0.00003	0.00012	0.000074	0.00014	0.00011
PCB 126	0.100	0.14	<0.13	0.14	<0.14
PCB 167	0.00003	0.000022	0.000017	<0.000019	<0.000019
PCB 156 + PCB 157	0.00003	<0.000041	0.000033	0.000042	<0.000039
PCB 169	0.030	0.013	<0.012	<0.014	<0.013
PCB 189	0.00003	<0.000015	<0.000013	0.000015	<0.000015
Total Dioxins & Furans Only		17.6	14.3	18.8	16.9
Total PCBs Only		<0.15	<0.15	<0.16	<0.15
Total Dioxins & Furans and PCBs		<17.8	<14.5	<19.0	<17.1

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 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	95.6	168	135	143	2.70
12378-pentachlorodibenzo-p-dioxin	107	189	150	160	3.02
123478-hexachlorodibenzo-p-dioxin	4.09	7.21	5.75	6.13	0.12
123678-hexachlorodibenzo-p-dioxin	5.66	9.98	7.95	8.48	0.16
123789-hexachlorodibenzo-p-dioxin	9.06	16.0	12.7	13.6	0.26
1234678-heptachlorodibenzo-p-dioxin	1.73	3.06	2.43	2.60	0.049
Octachlorodibenzo-p-dioxin	0.14	0.25	0.20	0.21	0.0039
2378-tetrachlorodibenzofuran	60.3	106	84.8	90.4	1.70
12378-pentachlorodibenzofuran	21.9	38.6	30.8	32.8	0.62
23478-pentachlorodibenzofuran	177	312	249	265	5.00
123478-hexachlorodibenzofuran	53.2	93.7	74.7	79.7	1.50
123678-hexachlorodibenzofuran	37.5	66.0	52.6	56.1	1.06
234678-hexachlorodibenzofuran	16.3	28.7	22.9	24.4	0.46
123789-hexachlorodibenzofuran	2.01	3.55	2.83	3.02	0.057
1234678-heptachlorodibenzofuran	6.63	11.7	9.31	9.93	0.19
1234789-heptachlorodibenzofuran	0.53	0.93	0.74	0.79	0.015
Octachlorodibenzofuran	0.032	0.057	0.046	0.049	0.00091
PCB 81	<0.0057	<0.010	<0.0081	<0.0086	<0.00016
PCB 77	0.010	0.018	0.015	0.016	0.00029
PCB 123	0.00064	0.0011	0.00089	0.00095	0.000018
PCB 118	0.011	0.020	0.016	0.017	0.00032
PCB 114	0.00050	0.00088	0.00071	0.00075	0.000014
PCB 105	0.0039	0.0069	0.0055	0.0059	0.00011
PCB 126	<4.91	<8.66	<6.90	<7.36	<0.14
PCB 167	<0.00069	<0.0012	<0.00097	<0.0010	<0.000019
PCB 156 + PCB 157	<0.0014	<0.0024	<0.0019	<0.0020	<0.000039
PCB 169	<0.45	<0.80	<0.64	<0.68	<0.013
PCB 189	<0.00051	<0.00091	<0.00072	<0.00077	<0.000015
Total Dioxins & Furans Only	599	1055	841	897	16.9
Total PCBs Only	<5.40	<9.52	<7.58	<8.09	<0.15
Total Dioxins & Furans and PCBs	<604	<1065	<849	<905	<17.1

* 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	95.6	168	135	143	2.70
12378-pentachlorodibenzo-p-dioxin	107	189	150	160	3.02
123478-hexachlorodibenzo-p-dioxin	4.09	7.21	5.75	6.13	0.12
123678-hexachlorodibenzo-p-dioxin	5.66	9.98	7.95	8.48	0.16
123789-hexachlorodibenzo-p-dioxin	9.06	16.0	12.7	13.6	0.26
1234678-heptachlorodibenzo-p-dioxin	1.73	3.06	2.43	2.60	0.049
Octachlorodibenzo-p-dioxin	0.14	0.25	0.20	0.21	0.0039
2378-tetrachlorodibenzofuran	60.3	106	84.8	90.4	1.70
12378-pentachlorodibenzofuran	21.9	38.6	30.8	32.8	0.62
23478-pentachlorodibenzofuran	177	312	249	265	5.00
123478-hexachlorodibenzofuran	53.2	93.7	74.7	79.7	1.50
123678-hexachlorodibenzofuran	37.5	66.0	52.6	56.1	1.06
234678-hexachlorodibenzofuran	16.3	28.7	22.9	24.4	0.46
123789-hexachlorodibenzofuran	2.01	3.55	2.83	3.02	0.057
1234678-heptachlorodibenzofuran	6.63	11.7	9.31	9.93	0.19
1234789-heptachlorodibenzofuran	0.53	0.93	0.74	0.79	0.015
Octachlorodibenzofuran	0.032	0.057	0.046	0.049	0.00091
PCB 81	0.0048	0.0085	0.0068	0.0073	0.00014
PCB 77	0.010	0.018	0.015	0.016	0.00029
PCB 123	0.00064	0.0011	0.00089	0.00095	0.000018
PCB 118	0.011	0.020	0.016	0.017	0.00032
PCB 114	0.00050	0.00088	0.00071	0.00075	0.000014
PCB 105	0.0039	0.0069	0.0055	0.0059	0.00011
PCB 126	4.11	7.25	5.79	6.17	0.12
PCB 167	0.00058	0.0010	0.00081	0.00087	0.000016
PCB 156 + PCB 157	0.0011	0.0020	0.0016	0.0017	0.000032
PCB 169	0.30	0.54	0.43	0.46	0.0086
PCB 189	0.00035	0.00061	0.00049	0.00052	0.0000098
Total Dioxins & Furans Only	599	1055	841	897	16.9
Total PCBs Only	4.45	7.84	6.26	6.67	0.13
Total Dioxins & Furans and PCBs	603	1063	848	904	17.0

* 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 Start	Sampling Period Finish	Sampling Time* min
1	November 1, 2016	9:35	15:29	288
2	November 2, 2016	8:09	14:29	288
3	November 3, 2016	8:10	14:00	288

Total Hydrocarbons Trains

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time* min
1	October 25, 2016	12:40	13:40	60
2	October 25, 2016	13:52	14:52	60
3	October 25, 2016	15:15	16:15	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	0.840	0.978	6.53	5.662	97.4
2	0.846	0.978	6.15	5.297	98.9
3	0.846	0.978	6.15	5.286	98.9

* 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. °C	Moisture by Volume %	Gas Velocity m/s	Static Pressure kPa	Absolute Pressure kPa	Carbon Dioxide by Volume % *	Oxygen by Volume % *
1	171	15.5	18.1	-0.62	99.2	10.2	8.05
2	169	15.1	18.5	-0.62	99.8	10.2	8.08
3	168	14.8	18.5	-0.62	99.4	10.4	7.89
Average	169	15.1	18.4	-0.62	99.5	10.3	8.01

* 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	26.7	14.8	19.3	17.6
2	27.3	15.4	20.0	18.2
3	27.3	15.4	20.2	18.1
Average	27.1	15.2	19.8	17.9

* 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)	0.7	4.3	6.8
2	Total Hydrocarbons (ppm dry)	2.8	4.7	7.4
3	Total Hydrocarbons (ppm dry)	1.3	3.0	5.0
Average	Total Hydrocarbons (ppm dry)		4.0	

Total Hydrocarbons as 10-Minute Rolling Average Data

Test No.	Parameter	Minimum	Average	Maximum
1	Total Hydrocarbons (ppm dry)	1.6	4.2	5.8
2	Total Hydrocarbons (ppm dry)	3.1	4.7	6.2
3	Total Hydrocarbons (ppm dry)	2.2	3.1	4.3
Average	Total Hydrocarbons (ppm dry)		4.0	

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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	7230	0.71	1.28	0.98	1.07	18.9
Pentachlorodibenzo-p-dioxins	7240	0.71	1.28	0.98	1.08	18.9
Hexachlorodibenzo-p-dioxins	5820	0.57	1.03	0.79	0.86	15.2
Heptachlorodibenzo-p-dioxins	4660	0.46	0.82	0.63	0.69	12.2
Octachlorodibenzo-p-dioxin	6070	0.59	1.07	0.82	0.90	15.9
Total	31020	3.04	5.48	4.20	4.61	81.1

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	158000	15.5	27.9	21.4	23.5	413
Pentachlorodibenzofurans	70700	6.92	12.5	9.58	10.5	185
Hexachlorodibenzofurans	26800	2.62	4.73	3.63	3.98	70.1
Heptachlorodibenzofurans	11100	1.09	1.96	1.50	1.65	29.0
Octachlorodibenzofuran	1210	0.12	0.21	0.16	0.18	3.16
Total	267810	26.2	47.3	36.3	39.8	700

Dry Gas Volume Sampled (Rm³*) :	5.662
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.6

* 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 pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	8130	0.87	1.53	1.18	1.30	23.6
Pentachlorodibenzo-p-dioxins	6970	0.74	1.32	1.01	1.11	20.3
Hexachlorodibenzo-p-dioxins	6510	0.69	1.23	0.95	1.04	18.9
Heptachlorodibenzo-p-dioxins	4330	0.46	0.82	0.63	0.69	12.6
Octachlorodibenzo-p-dioxin	6630	0.71	1.25	0.96	1.06	19.3
Total	32570	3.47	6.15	4.73	5.20	94.7

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	197000	21.0	37.2	28.6	31.5	573
Pentachlorodibenzofurans	88300	9.40	16.7	12.8	14.1	257
Hexachlorodibenzofurans	30600	3.26	5.78	4.45	4.89	89.0
Heptachlorodibenzofurans	12300	1.31	2.32	1.79	1.96	35.8
Octachlorodibenzofuran	1510	0.16	0.29	0.22	0.24	4.39
Total	329710	35.1	62.2	47.9	52.7	959

Dry Gas Volume Sampled (Rm³*) :	5.297
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	20.0
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

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 pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	6340	0.68	1.20	0.91	1.02	18.5
Pentachlorodibenzo-p-dioxins	6730	0.72	1.27	0.97	1.08	19.6
Hexachlorodibenzo-p-dioxins	6460	0.69	1.22	0.93	1.04	18.8
Heptachlorodibenzo-p-dioxins	5120	0.55	0.97	0.74	0.82	14.9
Octachlorodibenzo-p-dioxin	7170	0.77	1.36	1.03	1.15	20.9
Total	31820	3.40	6.02	4.59	5.12	92.7

Furans

Congener Group	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	171000	18.2	32.3	24.7	27.5	498
Pentachlorodibenzofurans	81600	8.71	15.4	11.8	13.1	238
Hexachlorodibenzofurans	38100	4.07	7.21	5.49	6.13	111
Heptachlorodibenzofurans	16000	1.71	3.03	2.31	2.58	46.6
Octachlorodibenzofuran	1990	0.21	0.38	0.29	0.32	5.80
Total	308690	32.9	58.4	44.5	49.7	899

Dry Gas Volume Sampled (Rm^3*) :	5.286
Actual Flowrate (m^3/s) :	27.3
Dry Reference Flowrate (Rm^3/s*) :	15.4
Dry Adjusted Flowrate (Rm^3/s**) :	20.2
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 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	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.71	0.87	0.68	0.75	13.5
Pentachlorodibenzo-p-dioxins	0.71	0.74	0.72	0.72	2.4
Hexachlorodibenzo-p-dioxins	0.57	0.69	0.69	0.65	10.8
Heptachlorodibenzo-p-dioxins	0.46	0.46	0.55	0.49	10.4
Octachlorodibenzo-p-dioxin	0.59	0.71	0.77	0.69	12.6
Total	3.04	3.47	3.40	3.30	7.0

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	15.5	21.0	18.2	18.2	15.1
Pentachlorodibenzofurans	6.92	9.40	8.71	8.34	15.3
Hexachlorodibenzofurans	2.62	3.26	4.07	3.32	21.8
Heptachlorodibenzofurans	1.09	1.31	1.71	1.37	23.0
Octachlorodibenzofuran	0.12	0.16	0.21	0.16	28.7
Total	26.2	35.1	32.9	31.4	14.8

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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.28	1.53	1.20	1.34	13.1
Pentachlorodibenzo-p-dioxins	1.28	1.32	1.27	1.29	1.8
Hexachlorodibenzo-p-dioxins	1.03	1.23	1.22	1.16	9.8
Heptachlorodibenzo-p-dioxins	0.82	0.82	0.97	0.87	9.9
Octachlorodibenzo-p-dioxin	1.07	1.25	1.36	1.23	11.7
Total	5.48	6.15	6.02	5.88	6.0

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	27.9	37.2	32.3	32.5	14.3
Pentachlorodibenzofurans	12.5	16.7	15.4	14.9	14.5
Hexachlorodibenzofurans	4.73	5.78	7.21	5.91	21.0
Heptachlorodibenzofurans	1.96	2.32	3.03	2.44	22.3
Octachlorodibenzofuran	0.21	0.29	0.38	0.29	28.0
Total	47.3	62.2	58.4	56.0	13.9

* 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	0.98	1.18	0.91	1.03	13.6
Pentachlorodibenzo-p-dioxins	0.98	1.01	0.97	0.99	2.3
Hexachlorodibenzo-p-dioxins	0.79	0.95	0.93	0.89	9.8
Heptachlorodibenzo-p-dioxins	0.63	0.63	0.74	0.67	9.4
Octachlorodibenzo-p-dioxin	0.82	0.96	1.03	0.94	11.5
Total	4.20	4.73	4.59	4.51	6.1

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	21.4	28.6	24.7	24.9	14.6
Pentachlorodibenzofurans	9.58	12.8	11.8	11.4	14.6
Hexachlorodibenzofurans	3.63	4.45	5.49	4.52	20.7
Heptachlorodibenzofurans	1.50	1.79	2.31	1.87	21.9
Octachlorodibenzofuran	0.16	0.22	0.29	0.22	27.6
Total	36.3	47.9	44.5	42.9	14.0

* 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 Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.07	1.30	1.02	1.13	13.1
Pentachlorodibenzo-p-dioxins	1.08	1.11	1.08	1.09	1.8
Hexachlorodibenzo-p-dioxins	0.86	1.04	1.04	0.98	10.3
Heptachlorodibenzo-p-dioxins	0.69	0.69	0.82	0.74	10.4
Octachlorodibenzo-p-dioxin	0.90	1.06	1.15	1.04	12.3
Total	4.61	5.20	5.12	4.98	6.5

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	23.5	31.5	27.5	27.5	14.6
Pentachlorodibenzofurans	10.5	14.1	13.1	12.6	14.8
Hexachlorodibenzofurans	3.98	4.89	6.13	5.00	21.6
Heptachlorodibenzofurans	1.65	1.96	2.58	2.06	22.8
Octachlorodibenzofuran	0.18	0.24	0.32	0.25	28.5
Total	39.8	52.7	49.7	47.4	14.2

* 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	18.9	23.6	18.5	20.3	14.1
Pentachlorodibenzo-p-dioxins	18.9	20.3	19.6	19.6	3.4
Hexachlorodibenzo-p-dioxins	15.2	18.9	18.8	17.7	12.0
Heptachlorodibenzo-p-dioxins	12.2	12.6	14.9	13.2	11.2
Octachlorodibenzo-p-dioxin	15.9	19.3	20.9	18.7	13.7
Total	81.1	94.7	92.7	89.5	8.2

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	413	573	498	495	16.2
Pentachlorodibenzofurans	185	257	238	226	16.5
Hexachlorodibenzofurans	70.1	89.0	111	90.0	22.8
Heptachlorodibenzofurans	29.0	35.8	46.6	37.1	23.9
Octachlorodibenzofuran	3.16	4.39	5.80	4.45	29.6
Total	700	959	899	853	15.9

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 ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.75	1.34	1.03	1.13	20.3
Pentachlorodibenzo-p-dioxins	0.72	1.29	0.99	1.09	19.6
Hexachlorodibenzo-p-dioxins	0.65	1.16	0.89	0.98	17.7
Heptachlorodibenzo-p-dioxins	0.49	0.87	0.67	0.74	13.2
Octachlorodibenzo-p-dioxin	0.69	1.23	0.94	1.04	18.7
Total	3.30	5.88	4.51	4.98	89.5

Furans

Congener Group	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	18.2	32.5	24.9	27.5	495
Pentachlorodibenzofurans	8.34	14.9	11.4	12.6	226
Hexachlorodibenzofurans	3.32	5.91	4.52	5.00	90.0
Heptachlorodibenzofurans	1.37	2.44	1.87	2.06	37.1
Octachlorodibenzofuran	0.16	0.29	0.22	0.25	4.45
Total	31.4	56.0	42.9	47.4	853

* 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	<16	<18
Pentachlorodibenzo-p-dioxins	<15	<14
Hexachlorodibenzo-p-dioxins	<45	<36
Heptachlorodibenzo-p-dioxins	<7.2	<7.0
Octachlorodibenzo-p-dioxin	27.5	36.2
Total	<111	<111

Furans

Congener Group	Blank Train pg	Laboratory Blank pg
Tetrachlorodibenzofurans	34.8	<6.9
Pentachlorodibenzofurans	<6.7	<5.9
Hexachlorodibenzofurans	<6.9	44.0
Heptachlorodibenzofurans	19.2	26.3
Octachlorodibenzofuran	<7.6	19.4
Total	<75.2	<103

"<" 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 pg	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	546	53.5	96.4	73.9	81.1	1.43
12378-pentachlorodibenzo-p-dioxin	864	84.6	153	117	128	2.26
123478-hexachlorodibenzo-p-dioxin	359	35.1	63.4	48.6	53.3	0.94
123678-hexachlorodibenzo-p-dioxin	564	55.2	99.6	76.4	83.8	1.47
123789-hexachlorodibenzo-p-dioxin	771	75.5	136	104	115	2.02
1234678-heptachlorodibenzo-p-dioxin	2240	219	396	303	333	5.86
Octachlorodibenzo-p-dioxin	6070	594	1072	822	902	15.9
2378-tetrachlorodibenzofuran	7010	686	1238	949	1041	18.3
12378-pentachlorodibenzofuran	5180	507	915	702	769	13.5
23478-pentachlorodibenzofuran	3890	381	687	527	578	10.2
123478-hexachlorodibenzofuran	5230	512	924	708	777	13.7
123678-hexachlorodibenzofuran	3510	344	620	475	521	9.17
234678-hexachlorodibenzofuran	1720	168	304	233	255	4.50
123789-hexachlorodibenzofuran	150	14.7	26.5	20.3	22.3	0.39
1234678-heptachlorodibenzofuran	7900	773	1395	1070	1173	20.6
1234789-heptachlorodibenzofuran	528	51.7	93.3	71.5	78.4	1.38
Octachlorodibenzofuran	1210	118	214	164	180	3.16
PCB 81	260	25.5	45.9	35.2	38.6	0.68
PCB 77	1100	108	194	149	163	2.88
PCB 123	200	19.6	35.3	27.1	29.7	0.52
PCB 118	1200	117	212	163	178	3.14
PCB 114	100	9.79	17.7	13.5	14.9	0.26
PCB 105	520	50.9	91.8	70.4	77.2	1.36
PCB 126	560	54.8	98.9	75.8	83.2	1.46
PCB 167	240	23.5	42.4	32.5	35.6	0.63
PCB 156 + PCB 157	400	39.2	70.6	54.2	59.4	1.05
PCB 169	<160	<15.7	<28.3	<21.7	<23.8	<0.42
PCB 189	<160	<15.7	<28.3	<21.7	<23.8	<0.42
Total Dioxins & Furans Only	47742	4674	8432	6466	7091	125
Total PCBs Only	<4900	<480	<865	<664	<728	<12.8
Total Dioxins & Furans and PCBs	<52642	<5154	<9297	<7130	<7818	<138

Dry Gas Volume Sampled (Rm³*) :	5.662
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	14.8
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	17.6

* 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 pg	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	697	74.2	132	101	111	2.03
12378-pentachlorodibenzo-p-dioxin	947	101	179	138	151	2.75
123478-hexachlorodibenzo-p-dioxin	381	40.6	71.9	55.4	60.9	1.11
123678-hexachlorodibenzo-p-dioxin	575	61.2	109	83.6	91.9	1.67
123789-hexachlorodibenzo-p-dioxin	867	92.3	164	126	138	2.52
1234678-heptachlorodibenzo-p-dioxin	2070	220	391	301	331	6.02
Octachlorodibenzo-p-dioxin	6630	706	1252	964	1059	19.3
2378-tetrachlorodibenzofuran	7540	803	1423	1096	1204	21.9
12378-pentachlorodibenzofuran	5050	538	953	734	807	14.7
23478-pentachlorodibenzofuran	4860	518	918	706	776	14.1
123478-hexachlorodibenzofuran	5730	610	1082	833	915	16.7
123678-hexachlorodibenzofuran	4180	445	789	608	668	12.2
234678-hexachlorodibenzofuran	1760	187	332	256	281	5.12
123789-hexachlorodibenzofuran	162	17.3	30.6	23.5	25.9	0.47
1234678-heptachlorodibenzofuran	8650	921	1633	1257	1382	25.1
1234789-heptachlorodibenzofuran	614	65.4	116	89.3	98.1	1.79
Octachlorodibenzofuran	1510	161	285	220	241	4.39
PCB 81	250	26.6	47.2	36.3	39.9	0.73
PCB 77	1000	106	189	145	160	2.91
PCB 123	220	23.4	41.5	32.0	35.1	0.64
PCB 118	1500	160	283	218	240	4.36
PCB 114	<90	<9.58	<17.0	<13.1	<14.4	<0.26
PCB 105	630	67.1	119	91.6	101	1.83
PCB 126	570	60.7	108	82.9	91.1	1.66
PCB 167	230	24.5	43.4	33.4	36.7	0.67
PCB 156 + PCB 157	430	45.8	81.2	62.5	68.7	1.25
PCB 169	150	16.0	28.3	21.8	24.0	0.44
PCB 189	200	21.3	37.8	29.1	31.9	0.58
Total Dioxins & Furans Only	52223	5561	9859	7591	8342	152
Total PCBs Only	<5270	<561	<995	<766	<842	<15.3
Total Dioxins & Furans and PCBs	<57493	<6123	<10854	<8357	<9184	<167

Dry Gas Volume Sampled (Rm³*) :	5.297
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	20.0
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 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 pg	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	621	66.3	117	89.6	100	1.81
12378-pentachlorodibenzo-p-dioxin	991	106	187	143	160	2.89
123478-hexachlorodibenzo-p-dioxin	369	39.4	69.8	53.2	59.4	1.08
123678-hexachlorodibenzo-p-dioxin	628	67.0	119	90.6	101	1.83
123789-hexachlorodibenzo-p-dioxin	825	88.0	156	119	133	2.40
1234678-heptachlorodibenzo-p-dioxin	2490	266	471	359	401	7.25
Octachlorodibenzo-p-dioxin	7170	765	1356	1034	1154	20.9
2378-tetrachlorodibenzofuran	6720	717	1271	969	1082	19.6
12378-pentachlorodibenzofuran	5080	542	961	733	818	14.8
23478-pentachlorodibenzofuran	4310	460	815	622	694	12.6
123478-hexachlorodibenzofuran	7540	805	1426	1087	1214	22.0
123678-hexachlorodibenzofuran	4740	506	897	684	763	13.8
234678-hexachlorodibenzofuran	2760	295	522	398	444	8.04
123789-hexachlorodibenzofuran	163	17.4	30.8	23.5	26.2	0.47
1234678-heptachlorodibenzofuran	11600	1238	2194	1673	1867	33.8
1234789-heptachlorodibenzofuran	731	78.0	138	105	118	2.13
Octachlorodibenzofuran	1990	212	376	287	320	5.80
PCB 81	240	25.6	45.4	34.6	38.6	0.70
PCB 77	1000	107	189	144	161	2.91
PCB 123	160	17.1	30.3	23.1	25.8	0.47
PCB 118	2000	213	378	288	322	5.83
PCB 114	<120	<12.8	<22.7	<17.3	<19.3	<0.35
PCB 105	870	92.8	165	125	140	2.53
PCB 126	<550	<58.7	<104	<79.3	<88.5	<1.60
PCB 167	270	28.8	51.1	38.9	43.5	0.79
PCB 156 + PCB 157	520	55.5	98.4	75.0	83.7	1.51
PCB 169	<150	<16.0	<28.4	<21.6	<24.1	<0.44
PCB 189	250	26.7	47.3	36.1	40.2	0.73
Total Dioxins & Furans Only	58728	6267	11110	8470	9453	171
Total PCBs Only	<6130	<654	<1160	<884	<987	<17.9
Total Dioxins & Furans and PCBs	<64858	<6921	<12270	<9354	<10439	<189

Dry Gas Volume Sampled (Rm³*) :	5.286
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	15.4
Dry Adjusted Flowrate (Rm³/s**) :	20.2
Wet Reference Flowrate (Rm³/s*) :	18.1

* 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 19
Covanta - Durham York Energy Centre
Boiler No. 2 Quench Inlet
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1 pg/m³	Test No. 2 pg/m³	Test No. 3 pg/m³	Average pg/m³	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	53.5	74.2	66.3	64.7	16.2
12378-pentachlorodibenzo-p-dioxin	84.6	101	106	97.1	11.4
123478-hexachlorodibenzo-p-dioxin	35.1	40.6	39.4	38.4	7.4
123678-hexachlorodibenzo-p-dioxin	55.2	61.2	67.0	61.2	9.7
123789-hexachlorodibenzo-p-dioxin	75.5	92.3	88.0	85.3	10.3
1234678-heptachlorodibenzo-p-dioxin	219	220	266	235	11.3
Octachlorodibenzo-p-dioxin	594	706	765	688	12.6
2378-tetrachlorodibenzofuran	686	803	717	735	8.2
12378-pentachlorodibenzofuran	507	538	542	529	3.6
23478-pentachlorodibenzofuran	381	518	460	453	15.2
123478-hexachlorodibenzofuran	512	610	805	642	23.2
123678-hexachlorodibenzofuran	344	445	506	432	19.0
234678-hexachlorodibenzofuran	168	187	295	217	31.4
123789-hexachlorodibenzofuran	14.7	17.3	17.4	16.4	9.3
1234678-heptachlorodibenzofuran	773	921	1238	977	24.3
1234789-heptachlorodibenzofuran	51.7	65.4	78.0	65.0	20.2
Octachlorodibenzofuran	118	161	212	164	28.7
PCB 81	25.5	26.6	25.6	25.9	2.5
PCB 77	108	106	107	107	0.6
PCB 123	19.6	23.4	17.1	20.0	16.0
PCB 118	117	160	213	164	29.4
PCB 114	9.79	<9.58	<12.8	<10.7	16.8
PCB 105	50.9	67.1	92.8	70.3	30.1
PCB 126	54.8	60.7	<58.7	<58.1	5.1
PCB 167	23.5	24.5	28.8	25.6	11.0
PCB 156 + PCB 157	39.2	45.8	55.5	46.8	17.5
PCB 169	<15.7	16.0	<16.0	<15.9	1.2
PCB 189	<15.7	21.3	26.7	<21.2	26.0
Total Dioxins & Furans Only	4674	5561	6267	5501	14.5
Total PCBs Only	<480	<561	<654	<565	15.4
Total Dioxins & Furans and PCBs	<5154	<6123	<6921	<6066	14.6

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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	96.4	132	117	115	15.4
12378-pentachlorodibenzo-p-dioxin	153	179	187	173	10.5
123478-hexachlorodibenzo-p-dioxin	63.4	71.9	69.8	68.4	6.5
123678-hexachlorodibenzo-p-dioxin	99.6	109	119	109	8.8
123789-hexachlorodibenzo-p-dioxin	136	164	156	152	9.3
1234678-heptachlorodibenzo-p-dioxin	396	391	471	419	10.7
Octachlorodibenzo-p-dioxin	1072	1252	1356	1227	11.7
2378-tetrachlorodibenzofuran	1238	1423	1271	1311	7.5
12378-pentachlorodibenzofuran	915	953	961	943	2.6
23478-pentachlorodibenzofuran	687	918	815	807	14.3
123478-hexachlorodibenzofuran	924	1082	1426	1144	22.5
123678-hexachlorodibenzofuran	620	789	897	769	18.2
234678-hexachlorodibenzofuran	304	332	522	386	30.7
123789-hexachlorodibenzofuran	26.5	30.6	30.8	29.3	8.3
1234678-heptachlorodibenzofuran	1395	1633	2194	1741	23.6
1234789-heptachlorodibenzofuran	93.3	116	138	116	19.4
Octachlorodibenzofuran	214	285	376	292	28.0
PCB 81	45.9	47.2	45.4	46.2	2.0
PCB 77	194	189	189	191	1.6
PCB 123	35.3	41.5	30.3	35.7	15.8
PCB 118	212	283	378	291	28.7
PCB 114	17.7	<17.0	<22.7	<19.1	16.3
PCB 105	91.8	119	165	125	29.4
PCB 126	98.9	108	<104	<104	4.2
PCB 167	42.4	43.4	51.1	45.6	10.4
PCB 156 + PCB 157	70.6	81.2	98.4	83.4	16.8
PCB 169	<28.3	28.3	<28.4	<28.3	0.2
PCB 189	<28.3	37.8	47.3	<37.8	25.2
Total Dioxins & Furans Only	8432	9859	11110	9800	13.7
Total PCBs Only	<865	<995	<1160	<1007	14.7
Total Dioxins & Furans and PCBs	<9297	<10854	<12270	<10807	13.8

* 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 Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	73.9	101	89.6	88.3	15.6
12378-pentachlorodibenzo-p-dioxin	117	138	143	133	10.3
123478-hexachlorodibenzo-p-dioxin	48.6	55.4	53.2	52.4	6.6
123678-hexachlorodibenzo-p-dioxin	76.4	83.6	90.6	83.5	8.5
123789-hexachlorodibenzo-p-dioxin	104	126	119	116	9.5
1234678-heptachlorodibenzo-p-dioxin	303	301	359	321	10.3
Octachlorodibenzo-p-dioxin	822	964	1034	940	11.5
2378-tetrachlorodibenzofuran	949	1096	969	1005	7.9
12378-pentachlorodibenzofuran	702	734	733	723	2.5
23478-pentachlorodibenzofuran	527	706	622	618	14.5
123478-hexachlorodibenzofuran	708	833	1087	876	22.1
123678-hexachlorodibenzofuran	475	608	684	589	17.9
234678-hexachlorodibenzofuran	233	256	398	296	30.3
123789-hexachlorodibenzofuran	20.3	23.5	23.5	22.5	8.3
1234678-heptachlorodibenzofuran	1070	1257	1673	1333	23.1
1234789-heptachlorodibenzofuran	71.5	89.3	105	88.7	19.1
Octachlorodibenzofuran	164	220	287	223	27.6
PCB 81	35.2	36.3	34.6	35.4	2.5
PCB 77	149	145	144	146	1.7
PCB 123	27.1	32.0	23.1	27.4	16.3
PCB 118	163	218	288	223	28.3
PCB 114	13.5	<13.1	<17.3	<14.6	15.8
PCB 105	70.4	91.6	125	95.8	29.0
PCB 126	75.8	82.9	<79.3	<79.3	4.4
PCB 167	32.5	33.4	38.9	35.0	10.0
PCB 156 + PCB 157	54.2	62.5	75.0	63.9	16.4
PCB 169	<21.7	21.8	<21.6	<21.7	0.4
PCB 189	<21.7	29.1	36.1	<28.9	24.9
Total Dioxins & Furans Only	6466	7591	8470	7509	13.4
Total PCBs Only	<664	<766	<884	<771	14.3
Total Dioxins & Furans and PCBs	<7130	<8357	<9354	<8280	13.5

* 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	81.1	111	100	97.5	15.7
12378-pentachlorodibenzo-p-dioxin	128	151	160	146	11.0
123478-hexachlorodibenzo-p-dioxin	53.3	60.9	59.4	57.9	6.9
123678-hexachlorodibenzo-p-dioxin	83.8	91.9	101	92.2	9.4
123789-hexachlorodibenzo-p-dioxin	115	138	133	129	9.7
1234678-heptachlorodibenzo-p-dioxin	333	331	401	355	11.3
Octachlorodibenzo-p-dioxin	902	1059	1154	1038	12.3
2378-tetrachlorodibenzofuran	1041	1204	1082	1109	7.7
12378-pentachlorodibenzofuran	769	807	818	798	3.2
23478-pentachlorodibenzofuran	578	776	694	683	14.6
123478-hexachlorodibenzofuran	777	915	1214	969	23.0
123678-hexachlorodibenzofuran	521	668	763	651	18.7
234678-hexachlorodibenzofuran	255	281	444	327	31.3
123789-hexachlorodibenzofuran	22.3	25.9	26.2	24.8	8.8
1234678-heptachlorodibenzofuran	1173	1382	1867	1474	24.2
1234789-heptachlorodibenzofuran	78.4	98.1	118	98.1	20.0
Octachlorodibenzofuran	180	241	320	247	28.5
PCB 81	38.6	39.9	38.6	39.1	1.9
PCB 77	163	160	161	161	1.1
PCB 123	29.7	35.1	25.8	30.2	15.6
PCB 118	178	240	322	247	29.2
PCB 114	14.9	<14.4	<19.3	<16.2	16.8
PCB 105	77.2	101	140	106	30.0
PCB 126	83.2	91.1	<88.5	<87.6	4.6
PCB 167	35.6	36.7	43.5	38.6	11.0
PCB 156 + PCB 157	59.4	68.7	83.7	70.6	17.4
PCB 169	<23.8	24.0	<24.1	<24.0	0.8
PCB 189	<23.8	31.9	40.2	<32.0	25.8
Total Dioxins & Furans Only	7091	8342	9453	8295	14.2
Total PCBs Only	<728	<842	<987	<852	15.2
Total Dioxins & Furans and PCBs	<7818	<9184	<10439	<9147	14.3

* 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 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	1.43	2.03	1.81	1.75	17.3
12378-pentachlorodibenzo-p-dioxin	2.26	2.75	2.89	2.63	12.6
123478-hexachlorodibenzo-p-dioxin	0.94	1.11	1.08	1.04	8.6
123678-hexachlorodibenzo-p-dioxin	1.47	1.67	1.83	1.66	10.7
123789-hexachlorodibenzo-p-dioxin	2.02	2.52	2.40	2.31	11.4
1234678-heptachlorodibenzo-p-dioxin	5.86	6.02	7.25	6.38	12.0
Octachlorodibenzo-p-dioxin	15.9	19.3	20.9	18.7	13.7
2378-tetrachlorodibenzofuran	18.3	21.9	19.6	19.9	9.2
12378-pentachlorodibenzofuran	13.5	14.7	14.8	14.3	4.9
23478-pentachlorodibenzofuran	10.2	14.1	12.6	12.3	16.2
123478-hexachlorodibenzofuran	13.7	16.7	22.0	17.4	24.1
123678-hexachlorodibenzofuran	9.17	12.2	13.8	11.7	20.1
234678-hexachlorodibenzofuran	4.50	5.12	8.04	5.88	32.2
123789-hexachlorodibenzofuran	0.39	0.47	0.47	0.45	10.5
1234678-heptachlorodibenzofuran	20.6	25.1	33.8	26.5	25.2
1234789-heptachlorodibenzofuran	1.38	1.79	2.13	1.76	21.3
Octachlorodibenzofuran	3.16	4.39	5.80	4.45	29.6
PCB 81	0.68	0.73	0.70	0.70	3.4
PCB 77	2.88	2.91	2.91	2.90	0.7
PCB 123	0.52	0.64	0.47	0.54	16.3
PCB 118	3.14	4.36	5.83	4.44	30.3
PCB 114	0.26	<0.26	<0.35	<0.29	17.5
PCB 105	1.36	1.83	2.53	1.91	31.0
PCB 126	1.46	1.66	<1.60	<1.57	6.3
PCB 167	0.63	0.67	0.79	0.69	11.9
PCB 156 + PCB 157	1.05	1.25	1.51	1.27	18.5
PCB 169	<0.42	0.44	<0.44	<0.43	2.5
PCB 189	<0.42	0.58	0.73	<0.58	26.9
Total Dioxins & Furans Only	125	152	171	149	15.6
Total PCBs Only	<12.8	<15.3	<17.9	<15.3	16.5
Total Dioxins & Furans and PCBs	<138	<167	<189	<165	15.7

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	64.7	115	88.3	97.5	1.75
12378-pentachlorodibenzo-p-dioxin	97.1	173	133	146	2.63
123478-hexachlorodibenzo-p-dioxin	38.4	68.4	52.4	57.9	1.04
123678-hexachlorodibenzo-p-dioxin	61.2	109	83.5	92.2	1.66
123789-hexachlorodibenzo-p-dioxin	85.3	152	116	129	2.31
1234678-heptachlorodibenzo-p-dioxin	235	419	321	355	6.38
Octachlorodibenzo-p-dioxin	688	1227	940	1038	18.7
2378-tetrachlorodibenzofuran	735	1311	1005	1109	19.9
12378-pentachlorodibenzofuran	529	943	723	798	14.3
23478-pentachlorodibenzofuran	453	807	618	683	12.3
123478-hexachlorodibenzofuran	642	1144	876	969	17.4
123678-hexachlorodibenzofuran	432	769	589	651	11.7
234678-hexachlorodibenzofuran	217	386	296	327	5.88
123789-hexachlorodibenzofuran	16.4	29.3	22.5	24.8	0.45
1234678-heptachlorodibenzofuran	977	1741	1333	1474	26.5
1234789-heptachlorodibenzofuran	65.0	116	88.7	98.1	1.76
Octachlorodibenzofuran	164	292	223	247	4.45
PCB 81	25.9	46.2	35.4	39.1	0.70
PCB 77	107	191	146	161	2.90
PCB 123	20.0	35.7	27.4	30.2	0.54
PCB 118	164	291	223	247	4.44
PCB 114	<10.7	<19.1	<14.6	<16.2	<0.29
PCB 105	70.3	125	95.8	106	1.91
PCB 126	<58.1	<104	<79.3	<87.6	<1.57
PCB 167	25.6	45.6	35.0	38.6	0.69
PCB 156 + PCB 157	46.8	83.4	63.9	70.6	1.27
PCB 169	<15.9	<28.3	<21.7	<24.0	<0.43
PCB 189	<21.2	<37.8	<28.9	<32.0	<0.58
Total Dioxins & Furans Only	5501	9800	7509	8295	149
Total PCBs Only	<565	<1007	<771	<852	<15.3
Total Dioxins & Furans and PCBs	<6066	<10807	<8280	<9147	<165

* 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 pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<7.5	<6.0
12378-pentachlorodibenzo-p-dioxin	<6.3	<8.5
123478-hexachlorodibenzo-p-dioxin	<7.5	<6.2
123678-hexachlorodibenzo-p-dioxin	<7.6	<6.3
123789-hexachlorodibenzo-p-dioxin	<6.9	<5.7
1234678-heptachlorodibenzo-p-dioxin	<7.2	<7.0
Octachlorodibenzo-p-dioxin	27.5	36.2
2378-tetrachlorodibenzofuran	<7.8	<3.2
12378-pentachlorodibenzofuran	<6.7	<5.9
23478-pentachlorodibenzofuran	<6.7	<5.9
123478-hexachlorodibenzofuran	<6.7	11.3
123678-hexachlorodibenzofuran	<6.4	8.1
234678-hexachlorodibenzofuran	<7.1	11.2
123789-hexachlorodibenzofuran	<7.4	13.3
1234678-heptachlorodibenzofuran	19.2	26.3
1234789-heptachlorodibenzofuran	<8.0	<8.2
Octachlorodibenzofuran	<7.6	19.4
PCB 81	<140	<64
PCB 77	<140	<62
PCB 123	<98	<37
PCB 118	<130	<34
PCB 114	<88	<33
PCB 105	<89	<34
PCB 126	<91	<34
PCB 167	<32	<30
PCB 156 + PCB 157	<29	<28
PCB 169	<32	<31
PCB 189	<28	<40
Total Dioxins & Furans Only	<154	<189
Total PCBs Only	<897	<427
Total Dioxins & Furans and PCBs	<1051	<616

"<" 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	53.5	74.2	66.3	64.7
12378-pentachlorodibenzo-p-dioxin	1.000	84.6	101	106	97.1
123478-hexachlorodibenzo-p-dioxin	0.100	3.51	4.06	3.94	3.84
123678-hexachlorodibenzo-p-dioxin	0.100	5.52	6.12	6.70	6.12
123789-hexachlorodibenzo-p-dioxin	0.100	7.55	9.23	8.80	8.53
1234678-heptachlorodibenzo-p-dioxin	0.010	2.19	2.20	2.66	2.35
Octachlorodibenzo-p-dioxin	0.0003	0.18	0.21	0.23	0.21
2378-tetrachlorodibenzofuran	0.100	68.6	80.3	71.7	73.5
12378-pentachlorodibenzofuran	0.030	15.2	16.1	16.3	15.9
23478-pentachlorodibenzofuran	0.300	114	155	138	136
123478-hexachlorodibenzofuran	0.100	51.2	61.0	80.5	64.2
123678-hexachlorodibenzofuran	0.100	34.4	44.5	50.6	43.2
234678-hexachlorodibenzofuran	0.100	16.8	18.7	29.5	21.7
123789-hexachlorodibenzofuran	0.100	1.47	1.73	1.74	1.64
1234678-heptachlorodibenzofuran	0.010	7.73	9.21	12.4	9.77
1234789-heptachlorodibenzofuran	0.010	0.52	0.65	0.78	0.65
Octachlorodibenzofuran	0.0003	0.036	0.048	0.064	0.049
PCB 81	0.0003	0.0076	0.0080	0.0077	0.0078
PCB 77	0.0001	0.011	0.011	0.011	0.011
PCB 123	0.00003	0.00059	0.00070	0.00051	0.00060
PCB 118	0.00003	0.0035	0.0048	0.0064	0.0049
PCB 114	0.00003	0.00029	<0.00029	<0.00038	<0.00032
PCB 105	0.00003	0.0015	0.0020	0.0028	0.0021
PCB 126	0.100	5.48	6.07	<5.87	<5.81
PCB 167	0.00003	0.00070	0.00073	0.00086	0.00077
PCB 156 + PCB 157	0.00003	0.0012	0.0014	0.0017	0.0014
PCB 169	0.030	<0.47	0.48	<0.48	<0.48
PCB 189	0.00003	<0.00047	0.00064	0.00080	<0.00064
Total Dioxins & Furans Only		467	585	596	549
Total PCBs Only		<5.98	<6.58	<6.38	<6.31
Total Dioxins & Furans and PCBs		<473	<591	<602	<555

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	96.4	132	117	115
12378-pentachlorodibenzo-p-dioxin	1.000	153	179	187	173
123478-hexachlorodibenzo-p-dioxin	0.100	6.34	7.19	6.98	6.84
123678-hexachlorodibenzo-p-dioxin	0.100	9.96	10.9	11.9	10.9
123789-hexachlorodibenzo-p-dioxin	0.100	13.6	16.4	15.6	15.2
1234678-heptachlorodibenzo-p-dioxin	0.010	3.96	3.91	4.71	4.19
Octachlorodibenzo-p-dioxin	0.0003	0.32	0.38	0.41	0.37
2378-tetrachlorodibenzofuran	0.100	124	142	127	131
12378-pentachlorodibenzofuran	0.030	27.4	28.6	28.8	28.3
23478-pentachlorodibenzofuran	0.300	206	275	245	242
123478-hexachlorodibenzofuran	0.100	92.4	108	143	114
123678-hexachlorodibenzofuran	0.100	62.0	78.9	89.7	76.9
234678-hexachlorodibenzofuran	0.100	30.4	33.2	52.2	38.6
123789-hexachlorodibenzofuran	0.100	2.65	3.06	3.08	2.93
1234678-heptachlorodibenzofuran	0.010	14.0	16.3	21.9	17.4
1234789-heptachlorodibenzofuran	0.010	0.93	1.16	1.38	1.16
Octachlorodibenzofuran	0.0003	0.064	0.086	0.11	0.088
PCB 81	0.0003	0.014	0.014	0.014	0.014
PCB 77	0.0001	0.019	0.019	0.019	0.019
PCB 123	0.00003	0.0011	0.0012	0.00091	0.0011
PCB 118	0.00003	0.0064	0.0085	0.011	0.0087
PCB 114	0.00003	0.00053	<0.00051	<0.00068	<0.00057
PCB 105	0.00003	0.0028	0.0036	0.0049	0.0038
PCB 126	0.100	9.89	10.8	<10.4	<10.4
PCB 167	0.00003	0.0013	0.0013	0.0015	0.0014
PCB 156 + PCB 157	0.00003	0.0021	0.0024	0.0030	0.0025
PCB 169	0.030	<0.85	0.85	<0.85	<0.85
PCB 189	0.00003	<0.00085	0.0011	0.0014	<0.0011
Total Dioxins & Furans Only		843	1036	1056	978
Total PCBs Only		<10.8	<11.7	<11.3	<11.3
Total Dioxins & Furans and PCBs		<854	<1048	<1067	<990

* 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	73.9	101	89.6	88.3
12378-pentachlorodibenzo-p-dioxin	1.000	117	138	143	133
123478-hexachlorodibenzo-p-dioxin	0.100	4.86	5.54	5.32	5.24
123678-hexachlorodibenzo-p-dioxin	0.100	7.64	8.36	9.06	8.35
123789-hexachlorodibenzo-p-dioxin	0.100	10.4	12.6	11.9	11.6
1234678-heptachlorodibenzo-p-dioxin	0.010	3.03	3.01	3.59	3.21
Octachlorodibenzo-p-dioxin	0.0003	0.25	0.29	0.31	0.28
2378-tetrachlorodibenzofuran	0.100	94.9	110	96.9	100
12378-pentachlorodibenzofuran	0.030	21.0	22.0	22.0	21.7
23478-pentachlorodibenzofuran	0.300	158	212	186	185
123478-hexachlorodibenzofuran	0.100	70.8	83.3	109	87.6
123678-hexachlorodibenzofuran	0.100	47.5	60.8	68.4	58.9
234678-hexachlorodibenzofuran	0.100	23.3	25.6	39.8	29.6
123789-hexachlorodibenzofuran	0.100	2.03	2.35	2.35	2.25
1234678-heptachlorodibenzofuran	0.010	10.7	12.6	16.7	13.3
1234789-heptachlorodibenzofuran	0.010	0.72	0.89	1.05	0.89
Octachlorodibenzofuran	0.0003	0.049	0.066	0.086	0.067
PCB 81	0.0003	0.011	0.011	0.010	0.011
PCB 77	0.0001	0.015	0.015	0.014	0.015
PCB 123	0.00003	0.00081	0.00096	0.00069	0.00082
PCB 118	0.00003	0.0049	0.0065	0.0087	0.0067
PCB 114	0.00003	0.00041	<0.00039	<0.00052	<0.00044
PCB 105	0.00003	0.0021	0.0027	0.0038	0.0029
PCB 126	0.100	7.58	8.29	<7.93	<7.93
PCB 167	0.00003	0.00098	0.0010	0.0012	0.0010
PCB 156 + PCB 157	0.00003	0.0016	0.0019	0.0022	0.0019
PCB 169	0.030	<0.65	0.65	<0.65	<0.65
PCB 189	0.00003	<0.00065	0.00087	0.0011	<0.00087
Total Dioxins & Furans Only		646	798	805	750
Total PCBs Only		<8.27	<8.98	<8.62	<8.63
Total Dioxins & Furans and PCBs		<655	<807	<814	<758

* 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	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	73.9	101	89.6	88.3
12378-pentachlorodibenzo-p-dioxin	1.000	117	138	143	133
123478-hexachlorodibenzo-p-dioxin	0.100	4.86	5.54	5.32	5.24
123678-hexachlorodibenzo-p-dioxin	0.100	7.64	8.36	9.06	8.35
123789-hexachlorodibenzo-p-dioxin	0.100	10.4	12.6	11.9	11.6
1234678-heptachlorodibenzo-p-dioxin	0.010	3.03	3.01	3.59	3.21
Octachlorodibenzo-p-dioxin	0.0003	0.25	0.29	0.31	0.28
2378-tetrachlorodibenzofuran	0.100	94.9	110	96.9	100
12378-pentachlorodibenzofuran	0.030	21.0	22.0	22.0	21.7
23478-pentachlorodibenzofuran	0.300	158	212	186	185
123478-hexachlorodibenzofuran	0.100	70.8	83.3	109	87.6
123678-hexachlorodibenzofuran	0.100	47.5	60.8	68.4	58.9
234678-hexachlorodibenzofuran	0.100	23.3	25.6	39.8	29.6
123789-hexachlorodibenzofuran	0.100	2.03	2.35	2.35	2.25
1234678-heptachlorodibenzofuran	0.010	10.7	12.6	16.7	13.3
1234789-heptachlorodibenzofuran	0.010	0.72	0.89	1.05	0.89
Octachlorodibenzofuran	0.0003	0.049	0.066	0.086	0.067
PCB 81	0.0003	0.011	0.011	0.010	0.011
PCB 77	0.0001	0.015	0.015	0.014	0.015
PCB 123	0.00003	0.00081	0.00096	0.00069	0.00082
PCB 118	0.00003	0.0049	0.0065	0.0087	0.0067
PCB 114	0.00003	0.00041	0.00020	0.00026	0.00029
PCB 105	0.00003	0.0021	0.0027	0.0038	0.0029
PCB 126	0.100	7.58	8.29	3.97	6.61
PCB 167	0.00003	0.00098	0.0010	0.0012	0.0010
PCB 156 + PCB 157	0.00003	0.0016	0.0019	0.0022	0.0019
PCB 169	0.030	0.33	0.65	0.32	0.43
PCB 189	0.00003	0.00033	0.00087	0.0011	0.00076
Total Dioxins & Furans Only		646	798	805	750
Total PCBs Only		7.95	8.98	4.33	7.09
Total Dioxins & Furans and PCBs		654	807	810	757

* 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	1.00	73.9	101	89.6	88.3
12378-pentachlorodibenzo-p-dioxin	0.50	58.5	68.8	71.5	66.3
123478-hexachlorodibenzo-p-dioxin	0.10	4.86	5.54	5.32	5.24
123678-hexachlorodibenzo-p-dioxin	0.10	7.64	8.36	9.06	8.35
123789-hexachlorodibenzo-p-dioxin	0.10	10.4	12.6	11.9	11.6
1234678-heptachlorodibenzo-p-dioxin	0.01	3.03	3.01	3.59	3.21
Octachlorodibenzo-p-dioxin	0.00	0.82	0.96	1.03	0.94
2378-tetrachlorodibenzofuran	0.10	94.9	110	96.9	100
12378-pentachlorodibenzofuran	0.05	35.1	36.7	36.6	36.1
23478-pentachlorodibenzofuran	0.50	263	353	311	309
123478-hexachlorodibenzofuran	0.10	70.8	83.3	109	87.6
123678-hexachlorodibenzofuran	0.10	47.5	60.8	68.4	58.9
234678-hexachlorodibenzofuran	0.10	23.3	25.6	39.8	29.6
123789-hexachlorodibenzofuran	0.10	2.03	2.35	2.35	2.25
1234678-heptachlorodibenzofuran	0.01	10.7	12.6	16.7	13.3
1234789-heptachlorodibenzofuran	0.01	0.72	0.89	1.05	0.89
Octachlorodibenzofuran	0.00	0.16	0.22	0.29	0.22
Total Dioxins & Furans		708	886	874	822

* 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 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	81.1	111	100	97.5
12378-pentachlorodibenzo-p-dioxin	1.000	128	151	160	146
123478-hexachlorodibenzo-p-dioxin	0.100	5.33	6.09	5.94	5.79
123678-hexachlorodibenzo-p-dioxin	0.100	8.38	9.19	10.1	9.22
123789-hexachlorodibenzo-p-dioxin	0.100	11.5	13.8	13.3	12.9
1234678-heptachlorodibenzo-p-dioxin	0.010	3.33	3.31	4.01	3.55
Octachlorodibenzo-p-dioxin	0.0003	0.27	0.32	0.35	0.31
2378-tetrachlorodibenzofuran	0.100	104	120	108	111
12378-pentachlorodibenzofuran	0.030	23.1	24.2	24.5	23.9
23478-pentachlorodibenzofuran	0.300	173	233	208	205
123478-hexachlorodibenzofuran	0.100	77.7	91.5	121	96.9
123678-hexachlorodibenzofuran	0.100	52.1	66.8	76.3	65.1
234678-hexachlorodibenzofuran	0.100	25.5	28.1	44.4	32.7
123789-hexachlorodibenzofuran	0.100	2.23	2.59	2.62	2.48
1234678-heptachlorodibenzofuran	0.010	11.7	13.8	18.7	14.7
1234789-heptachlorodibenzofuran	0.010	0.78	0.98	1.18	0.98
Octachlorodibenzofuran	0.0003	0.054	0.072	0.096	0.074
PCB 81	0.0003	0.012	0.012	0.012	0.012
PCB 77	0.0001	0.016	0.016	0.016	0.016
PCB 123	0.00003	0.00089	0.0011	0.00077	0.00091
PCB 118	0.00003	0.0053	0.0072	0.0097	0.0074
PCB 114	0.00003	0.00045	<0.00043	<0.00058	<0.00049
PCB 105	0.00003	0.0023	0.0030	0.0042	0.0032
PCB 126	0.100	8.32	9.11	<8.85	<8.76
PCB 167	0.00003	0.0011	0.0011	0.0013	0.0012
PCB 156 + PCB 157	0.00003	0.0018	0.0021	0.0025	0.0021
PCB 169	0.030	<0.71	0.72	<0.72	<0.72
PCB 189	0.00003	<0.00071	0.00096	0.0012	<0.00096
Total Dioxins & Furans Only		709	877	899	828
Total PCBs Only		<9.07	<9.87	<9.62	<9.52
Total Dioxins & Furans and PCBs		<718	<887	<908	<838

* 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	1.43	2.03	1.81	1.75
12378-pentachlorodibenzo-p-dioxin	1.000	2.26	2.75	2.89	2.63
123478-hexachlorodibenzo-p-dioxin	0.100	0.094	0.11	0.11	0.10
123678-hexachlorodibenzo-p-dioxin	0.100	0.15	0.17	0.18	0.17
123789-hexachlorodibenzo-p-dioxin	0.100	0.20	0.25	0.24	0.23
1234678-heptachlorodibenzo-p-dioxin	0.010	0.059	0.060	0.073	0.064
Octachlorodibenzo-p-dioxin	0.0003	0.0048	0.0058	0.0063	0.0056
2378-tetrachlorodibenzofuran	0.100	1.83	2.19	1.96	1.99
12378-pentachlorodibenzofuran	0.030	0.41	0.44	0.44	0.43
23478-pentachlorodibenzofuran	0.300	3.05	4.24	3.77	3.69
123478-hexachlorodibenzofuran	0.100	1.37	1.67	2.20	1.74
123678-hexachlorodibenzofuran	0.100	0.92	1.22	1.38	1.17
234678-hexachlorodibenzofuran	0.100	0.45	0.51	0.80	0.59
123789-hexachlorodibenzofuran	0.100	0.039	0.047	0.047	0.045
1234678-heptachlorodibenzofuran	0.010	0.21	0.25	0.34	0.27
1234789-heptachlorodibenzofuran	0.010	0.014	0.018	0.021	0.018
Octachlorodibenzofuran	0.0003	0.00095	0.0013	0.0017	0.0013
PCB 81	0.0003	0.00020	0.00022	0.00021	0.00021
PCB 77	0.0001	0.00029	0.00029	0.00029	0.00029
PCB 123	0.00003	0.000016	0.000019	0.000014	0.000016
PCB 118	0.00003	0.000094	0.00013	0.00017	0.00013
PCB 114	0.00003	0.0000078	<0.0000078	<0.000010	<0.0000087
PCB 105	0.00003	0.000041	0.000055	0.000076	0.000057
PCB 126	0.100	0.15	0.17	<0.16	<0.16
PCB 167	0.00003	0.000019	0.000020	0.000024	0.000021
PCB 156 + PCB 157	0.00003	0.000031	0.000038	0.000045	0.000038
PCB 169	0.030	<0.013	0.013	<0.013	<0.013
PCB 189	0.00003	<0.000013	0.000017	0.000022	<0.000017
Total Dioxins & Furans Only		12.5	16.0	16.3	14.9
Total PCBs Only		<0.16	<0.18	<0.17	<0.17
Total Dioxins & Furans and PCBs		<12.6	<16.1	<16.4	<15.1

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 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	64.7	115	88.3	97.5	1.75
12378-pentachlorodibenzo-p-dioxin	97.1	173	133	146	2.63
123478-hexachlorodibenzo-p-dioxin	3.84	6.84	5.24	5.79	0.10
123678-hexachlorodibenzo-p-dioxin	6.12	10.9	8.35	9.22	0.17
123789-hexachlorodibenzo-p-dioxin	8.53	15.2	11.6	12.9	0.23
1234678-heptachlorodibenzo-p-dioxin	2.35	4.19	3.21	3.55	0.064
Octachlorodibenzo-p-dioxin	0.21	0.37	0.28	0.31	0.0056
2378-tetrachlorodibenzofuran	73.5	131	100	111	1.99
12378-pentachlorodibenzofuran	15.9	28.3	21.7	23.9	0.43
23478-pentachlorodibenzofuran	136	242	185	205	3.69
123478-hexachlorodibenzofuran	64.2	114	87.6	96.9	1.74
123678-hexachlorodibenzofuran	43.2	76.9	58.9	65.1	1.17
234678-hexachlorodibenzofuran	21.7	38.6	29.6	32.7	0.59
123789-hexachlorodibenzofuran	1.64	2.93	2.25	2.48	0.045
1234678-heptachlorodibenzofuran	9.77	17.4	13.3	14.7	0.27
1234789-heptachlorodibenzofuran	0.65	1.16	0.89	0.98	0.018
Octachlorodibenzofuran	0.049	0.088	0.067	0.074	0.0013
PCB 81	0.0078	0.014	0.011	0.012	0.00021
PCB 77	0.011	0.019	0.015	0.016	0.00029
PCB 123	0.00060	0.0011	0.00082	0.00091	0.000016
PCB 118	0.0049	0.0087	0.0067	0.0074	0.00013
PCB 114	<0.00032	<0.00057	<0.00044	<0.00049	<0.0000087
PCB 105	0.0021	0.0038	0.0029	0.0032	0.000057
PCB 126	<5.81	<10.4	<7.93	<8.76	<0.16
PCB 167	0.00077	0.0014	0.0010	0.0012	0.000021
PCB 156 + PCB 157	0.0014	0.0025	0.0019	0.0021	0.000038
PCB 169	<0.48	<0.85	<0.65	<0.72	<0.013
PCB 189	<0.00064	<0.0011	<0.00087	<0.00096	<0.000017
Total Dioxins & Furans Only	549	978	750	828	14.9
Total PCBs Only	<6.31	<11.3	<8.63	<9.52	<0.17
Total Dioxins & Furans and PCBs	<555	<990	<758	<838	<15.1

* 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	64.7	115	88.3	97.5	1.75
12378-pentachlorodibenzo-p-dioxin	97.1	173	133	146	2.63
123478-hexachlorodibenzo-p-dioxin	3.84	6.84	5.24	5.79	0.10
123678-hexachlorodibenzo-p-dioxin	6.12	10.9	8.35	9.22	0.17
123789-hexachlorodibenzo-p-dioxin	8.53	15.2	11.6	12.9	0.23
1234678-heptachlorodibenzo-p-dioxin	2.35	4.19	3.21	3.55	0.064
Octachlorodibenzo-p-dioxin	0.21	0.37	0.28	0.31	0.0056
2378-tetrachlorodibenzofuran	73.5	131	100	111	1.99
12378-pentachlorodibenzofuran	15.9	28.3	21.7	23.9	0.43
23478-pentachlorodibenzofuran	136	242	185	205	3.69
123478-hexachlorodibenzofuran	64.2	114	87.6	96.9	1.74
123678-hexachlorodibenzofuran	43.2	76.9	58.9	65.1	1.17
234678-hexachlorodibenzofuran	21.7	38.6	29.6	32.7	0.59
123789-hexachlorodibenzofuran	1.64	2.93	2.25	2.48	0.045
1234678-heptachlorodibenzofuran	9.77	17.4	13.3	14.7	0.27
1234789-heptachlorodibenzofuran	0.65	1.16	0.89	0.98	0.018
Octachlorodibenzofuran	0.049	0.088	0.067	0.074	0.0013
PCB 81	0.0078	0.014	0.011	0.012	0.00021
PCB 77	0.011	0.019	0.015	0.016	0.00029
PCB 123	0.00060	0.0011	0.00082	0.00091	0.000016
PCB 118	0.0049	0.0087	0.0067	0.0074	0.00013
PCB 114	0.00021	0.00038	0.00029	0.00032	0.0000057
PCB 105	0.0021	0.0038	0.0029	0.0032	0.000057
PCB 126	4.83	8.62	6.61	7.28	0.13
PCB 167	0.00077	0.0014	0.0010	0.0012	0.000021
PCB 156 + PCB 157	0.0014	0.0025	0.0019	0.0021	0.000038
PCB 169	0.32	0.57	0.43	0.48	0.0086
PCB 189	0.00056	0.00099	0.00076	0.00084	0.0000152
Total Dioxins & Furans Only	549	978	750	828	14.9
Total PCBs Only	5.18	9.24	7.09	7.81	0.14
Total Dioxins & Furans and PCBs	554	988	757	836	15.0

* 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

MOECC Pre-Test Plan Acceptance Letter and ECA No. 7306-8FDKNX (82 pages)

Ministry of the Environment & Climate Change
Standards Development Branch

40 St. Clair Avenue West
Toronto ON M4V 1M2
www.ene.gov.on.ca

Ministère de l'Environnement et de l'Action en matière de changement climatique
Direction de l'élaboration des normes

40, avenue St. Clair ouest
Toronto, ON M4V 1M2
www.ene.gov.on.ca

Ontario

Via email: tsandersoni@ortech.ca
File No.: CR:SA:109247:16

2016/08/24

Ms. Tina Sanderson
ORTECH Consulting Inc.
804 Southdown Rd.
Mississauga, Ontario
L5J 2Y4

Re.: Pre Test Plan for source testing to be conducted at Durham-York Energy Centre. Environmental Compliance Approval No. 7306-8FDKNX.

Dear Ms. Sanderson:

We reviewed your pre-test plan, dated 2016/08/16, ORTECH Project 21698, prepared on behalf of Durham-York Energy Centre (DYEC), and referring to source testing to be conducted at DYEC's Energy-From-Waste facility. The testing is required by Condition 7(1) of the Environmental Compliance Approval No. 7306-8FDKNX, issued on 2011/06/28.

This source testing program is also designed to complete the final Phase II activities enumerated by the Abatement Plan.

Target Source:

- Municipal Solid Waste Combustor Unit 1 (Baghouse Outlet Duct)
- Municipal Solid Waste Combustor Unit 2 (Baghouse Outlet Duct)

Note: *Voluntary Dioxin and Furan testing will be undertaken at the Inlet to the air pollution control (APC) system concurrently with the Dioxin and Furan tests performed at the Baghouse Outlet.*

Target contaminants:

1. Total Suspended Particulate Matter (TSP),
2. PM_{10},
3. $PM_{2.5}$,
4. PM condensables,

5. Metals (17 selected metals, as listed in the ECA's Schedule "D"),
6. Semivolatile Organic Compounds (17 dioxins and furans isomers, 12 dioxin-like PCBs, 39 selected PAHs, 12 chlorobenzenes, and19 chlorophenols) – as listed in ECA's Schedule "D",
7. Volatile Organic Compounds (33 selected VOCs, as listed in the ECA's Schedule "D"),
8. Aldehydes (acetaldehyde, acrolein and formaldehyde,)
9. Halides (hydrogen fluoride and hydrogen chloride),
10. Nitrogen oxides (NO_X),
11. Sulphur dioxide (SO_2),
12. Combustion gases (oxygen, CO, and CO_2), and
13. Total organic matter (THC).

Reference methods:

1. TSP: OSTC Method ON-5,
2. $PM_{2.5}/PM_{10}$: US EPA 40CFR60 Method 201A,
3. PM condensables: US EPA 40CFR60 Method 202,
4. Metals: US EPA 40CFR60 Method 29,
5. SVOCs: Environment Canada's Report EPS 1/RM/2,
6. VOCs: US EPA SW-846 Method 0030,
7. Aldehydes: State of California Method CARB 430 (*see note*),
8. Halides & Ammonia: US EPA 40CFR60 Method 26A,
9. NOx: DYEC CEM,
10. SO_2: DYEC CEM,
11. CO_2: DYEC CEM,
12. O_2: DYEC CEM,
13. CO: DYEC CEM,
14. THC: US EPA 40CFR60 Method 25A, and
15. Stack Gas Parameters: Ontario Source Testing Code's Method ON-1 to ON-4.

Notes: *The use of method CARB 430 for the determination of aldehydes is acceptable, provided that Ashland modification (toluene co-solvent for optimization of acrolein collection) is incorporated as part of the aldehydes determination sampling strategy.*

It is indicated in the pre-test plan (page 5) that compliance of the facility with hydrogen chloride ECA's in-stack limit will be determine based on DYEC CEM

Coincident source tests and Dioxin and Furans Long Term Sampling System (LTSS) monitoring will be undertaken, as part of the strategy to assess the reliability of the LTSS.

Brief Process Description:

The DYEC is an energy-from-waste facility built with the aim at processing solid waste from the Regions of Durham and York. The maximum thermal processing rate stated in the ECA is 140,000 tonnes of waste per year. The facility is expected to operate on a continuous basis, 24 hours/day, 7 days/week, 365 days/year, with the waste delivered initially set at 6 days per week between 07:00 and 19:00 hours.

The facility consists of two thermal treatment lines, with each having a MSW processing nominal capacity 218 t/d of MSW, with a heat content of 13 MJ/kg, to generate 20 MW of electricity (nominal capacity) and 72,000 kilograms per hour of steam (nominal capacity).

Each thermal treatment line is equipped with independent an air pollution control equipment; consisting of a Selective Non-Catalytic Reduction System with ammonia injection (for NOx control), an activated carbon injection system (to reduce mercury and dioxins in flue gas), a dry recirculation lime injection scrubber (to control acid gases), and a pulse jet type baghouse (to control particulate emissions).

The treated exhaust gases from both lines are vented to the atmosphere via a common exhaust stack, having an exit diameter of 1.71 metres, extending 87.6 metres above grade.

Operating Conditions during the source testing program:

Not stated in the pre-test plan, but we expect the source testing program to be conducted under normal operating conditions, at approximately maximum capacity rate load.

The maximum rated load of the facility is stated (in the ECA) at 140,000 t/y; with each of the combustion units' nominal capacity (capacity at which Covanta will operate each combustion unit) set at 218 t/d of MSW.

We expect source testing to be conducted when operating each combustion unit at no higher than the nominal capacity stated in the ECA and no lower than 90% of the stated nominal capacity.

DYEC's personnel will be responsible for the monitoring, collection, compilation and reporting of the pertinent process data during the test program, in order to establish MSW processing levels that can be properly correlated to the magnitude of the emissions of the contaminants of interest being exhausted from the process.

The process parameters to be monitored and recorded include:

- Power output (MWh/d)
- Auxiliary fuel combusted (m^3/d)
- Average combustion zone temperature (^oC)
- Steam generated (t/d)
- MSW combusted (t/d)
- NOx reagent injection rate (L/d)
- Carbon injection rate (kg/d)
- Lime injection rate (kg/d)
- DYEC CEMs (printouts to be appended to the source testing report)

In addition to the above mentioned process parameters, we require:

- The reporting of the baghouses inlet temperature and pressure drop.
- Any upset conditions during the source testing program (including actions taken to correct it, if applicable).

Our review indicated that the pre-test plan is acceptable provided that DYEC targets process worst case emissions scenario (ECA's stated nominal/maximum MSW combustion capacity), the proposed reference methodologies incorporate the Ashland modification to Method CARB 430 (aldehydes determination), the monitoring/sampling strategies include the inlet temperature of the baghouse, baghouse pressure drop, and the reporting/inclusion in the report of any upset conditions during the source testing program.

Please provide the sampling schedule, at least, two weeks prior to conducting the source testing program. The sampling schedule needs to be forwarded to the MOECC's York-Durham District Office, and to the Technology Standards Section.

Just a reminder that the source testing report is required to be submitted only in electronic format to the Technology Standards Section; and in electronic and hardcopy formats to the MOECC's York-Durham District Office.

If you have any questions with regard to this assessment, I can be reached by phone at 416-327-6403, or by email at guillermo.azocar@ontario.ca.

Sincerely yours,

G Azocar

Guillermo Azocar
Source Assessment Specialist
Technology Standards Section

cc: L. Brasowski – Covanta Corp. (via email: lbrasowski@covanta.com)
G. Anello – Durham Region (via email: giospeh.anello@durham.ca)
C. Dugas – York-Durham District Office (via email: celeste.dugas@ontario.ca)
S. Thomas – York-Durham District Office (via email: sandra.thomas@ontario.ca)
P. Dunn – York-Durham District Office (via email: philip.dunn@ontario.ca)
M. Wojcik – EAB (via email: margaret.wojcik@ontario.ca)
L. Hussain – MOECC SDB TSS (via email: lubna.i.hussain@ontario.ca)
C. Ruddy - MOECC SDB TSS (via email: caitlyn.ruddy@ontario.ca)

File AQ-02 (Durham-York Energy Centre)

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. **<u>SITE OPERATIONS</u>**

(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.

<u>**SCHEDULE "A"**</u>

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
	2-monochlorophenol (2-MCP)
Monochlorobenzene (MCB)	3-monochlorophenol (3-MCP)
1,2-Dichlorobenzene (1,2-DCB)	4-monochlorophenol (4-MCP)
1,3-Dichlorobenzene (1,3-DCB)	2,3-dichlorophenol (2,3-DCP)
1,4-Dichlorobenzene (1,4-DCB)	2,4-dichlorophenol (2,4-DCP)
1,2,3-Trichlorobenzene (1,2,3-TCB)	2,5-dichlorophenol (2,5-DCP)
1,2,4-Trichlorobenzene (1,2,4-TCB)	2,6-dichlorophenol (2,6-DCP)
1,3,5-Trichlorobenzene (1,3,5-TCB)	3,4-dichlorophenol (3,4-DCP)
1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB)	3,5-dichlorophenol (3,5-DCP)
1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB)	2,3,4-trichlorophenol (2,3,4-T3CP)
1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB)	2,3,5-trichlorophenol (2,3,5-T3CP)
Pentachlorobenzene (PeCB)	2,3,6-trichlorophenol (2,3,6-T3CP)
Hexachlorobenzene (HxCB)	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

CONTENT COPY OF ORIGINAL

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

APPENDIX 6

Particulate and Metals Field Data Sheets
(30 pages)

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particulate/Metals
Test Date	october 25, 2016
Test Location	APC Outlet No. 1
Operator Signature	

Project No.:	21698
Page	1 of 5
Probe No.:	6 series
Meter Box No.:	Team 4
Impinger Box No.:	8

Pitot Factor	.846	
DGMCF	0.988	
Barometric Pressure	29.82	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	.2542	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:		inches

Particulate Gain

Filter	2.20	mg
Probe	2.4	mg

Moisture Gain

CWTR	510.7	g
WCBDA	22.2	g

Combustion Gas Concentration

Oxygen	9.18	%
Carbon Dioxide	10.28	%
Carbon Monoxide	15.0	ppm

Measuring Device	MII Numbers
Probe / Pitot ISA	B03775
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	—
Barometer	ENV. CAN.
Calipers	B03922

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

Nozzle Measurements	
1	.2535
2	.2535
3	.2555
4	.2545
Average:	.2542

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: October 25, 2016	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	33.09	1.0	.81	290	257	248	48	114	66	67	2.3	7
	2.5	35.20	1.1	.87	290	255	250	42	196	66	67	2.65	7
	5	37.25	1.1	.88	291	256	246	41	213	67	68	2.7	7
2	7.5	39.49	1.1	.88	290	254	250	41	217	67	68	2.7	7
	10	41.74	1.1	.88	291	255	249	42	220	67	69	2.65	7
	12.5	43.97	1.1	.88	291	256	246	42	221	67	69	2.6	7
3	15	46.18	1.0	.84	290	255	251	44	223	67	69	2.4	7
	17.5	48.31	1.0	.84	290	256	248	44	223	67	70	2.4	7
	20	50.44	.98	.83	289	257	249	45	222	67	70	2.3	6.5
4	22.5	52.54	.93	.81	289	260	250	45	223	67	71	2.2	6.5
	25	54.58	.90	.79	289	260	246	46	223	67	71	2.1	6.5
	27.5	56.58	.90	.80	289	256	250	46	223	68	72	2.15	6.5
5	30	58.60	.84	.77	289	256	247	46	222	68	72	2.0	6.5
	32.5	60.55	.81	.76	289	257	250	46	221	68	73	2.05	6.5
	35	62.51	.81	.76	288	257	247	46	221	68	73	2	6
6	37.5	64.43	.72	.71	288	256	248	46	220	68	73	1.7	6
	40	66.22	.71	.71	289	258	250	46	219	68	74	1.7	6
	42.5	67.99	.70	.70	288	259	246	46	218	68	74	1.65	6
7	45	69.74	.72	.71	288	258	251	46	218	68	74	1.7	6
	47.5	71.52	.72	.71	288	259	248	45	219	68	75	1.7	6
	50	73.32	.71	.71	288	258	249	45	218	69	75	1.7	6

Traverse:	1				
Start Time:	8:45	Initial Leak Check:	.004	cfm@ 15	"Hg
Finish Time:	—	Final Leak Check:	—	cfm@ —	"Hg

Project No.: 21698

Operator :

Field Data Sheet

Date: october 25, 2016	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter 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 *
8	52.5	75.12	.76	.74	288	259	249	45	219	69	75	1.8	6
	55	76.96	.77	.74	289	258	248	44	219	69	75	1.85	6
	57.5	78.82	.77	.74	288	261	250	44	219	69	75	1.81	6
9	60	80.68	.77	.74	288	259	247	44	219	68	75	1.9	6
	62.5	82.58	.75	.73	288	260	251	44	219	69	75	1.85	6
	65	84.45	.77	.74	288	258	247	44	219	68	75	1.95	6
10	67.5	86.35	.78	.75	288	258	251	44	219	70	75	1.95	6
	70	88.23	.78	.75	288	258	251	44	219	70	75	1.95	6
	72.5	90.17	.78	.75	288	258	251	44	219	70	75	1.95	6
11	75	92.08	.76	.74	288	261	251	44	220	70	75	1.95	6
	77.5	93.92	.76	.74	288	261	251	44	220	70	75	1.95	6
	80	95.76	.75	.73	289	260	251	44	220	70	75	1.8	6
12	82.5	97.74	.76	.74	289	257	248	44	219	70	76	1.8	6
	85	99.59	.76	.74	289	258	250	44	219	70	76	1.8	6
	87.5	101.43	.75	.73	289	258	248	44	219	70	76	1.8	6
	90	103.28											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@		"Hg
Finish Time:	Final Leak Check: .006	cfm@	15	"Hg

Project No.: 21698

Operator :

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: october 25, 2016	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp Inlet/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
1	0	103.74	.95	.82	289	261	250	56	141	70	71	2.25	7
	2.5	105.64	.95	.82	290	258	247	48	205	70	72	2.3	7
	5	107.73	.95	.82	290	259	250	45	217	70	72	2.3	7
2	7.5	109.83	.98	.83	290	262	247	43	221	70	72	2.4	7
	10	111.96	.97	.83	290	263	251	43	222	70	73	2.4	7
	12.5	114.09	1.0	.84	290	263	249	43	224	70	73	2.5	7.5
3	15	116.24	.93	.81	291	263	249	43	225	70	73	2.3	7
	17.5	118.34	.97	.83	291	263	250	43	225	70	73	2.4	7
	20	120.47	.97	.83	291	262	247	43	225	70	73	2.4	7
4	22.5	122.59	.91	.80	291	262	251	43	226	70	73	2.2	7
	25	124.65	.88	.79	291	262	248	44	225	70	73	2.1	7
	27.5	126.64	.90	.80	290	263	250	43	225	70	74	2.15	7
5	30	128.65	.85	.78	290	263	249	43	225	70	74	2.05	7
	32.5	130.62	.84	.77	290	264	248	43	223	70	74	2.05	7
	35	132.57	.84	.77	291	261	251	42	224	70	75	2.05	7
6	37.5	134.53	.75	.73	291	261	247	41	224	70	75	1.8	6.5
	40	136.37	.75	.73	290	262	251	41	223	70	75	1.8	6.5
	42.5	138.19	.77	.74	291	262	250	42	224	70	75	1.85	6.5
7	45	140.05	.82	.76	291	262	248	41	222	70	76	1.95	7
	47.5	141.96	.83	.77	291	262	251	42	224	70	76	2	7
	50	143.88	.83	.77	291	263	248	42	224	70	76	2	7

Traverse:	2				
Start Time:	10:24	Initial Leak Check:	.006 cfm@	15	"Hg
Finish Time:	–	Final Leak Check:	– cfm@	–	"Hg

Project No.: 21698

Operator :

Field Data Sheet

Date: October 25, 2016	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	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	145.82	.86	.78	291	263	251	42	224	70	76	2.1	7
	55	147.80	.84	.77	292	261	250	42	225	70	76	2.05	7
	57.5	149.77	.87	.79	291	259	248	42	224	70	76	2.1	7
9	60	151.75	.87	.79	292	258	249	42	224	71	76	2.1	7
	62.5	153.75	.87	.79	292	257	247	43	224	71	76	2.1	7
	65	155.74	.87	.79	292	257	251	44	224	71	75	2.1	7
10	67.5	157.74	.89	.79	292	258	248	44	224	71	75	2.1	7
	70	159.74	.89	.79	292	260	250	44	223	71	75	2.1	7
	72.5	161.74	.89	.79	292	258	251	44	224	71	75	2.1	7
11	75	163.75	.81	.76	292	259	247	44	223	71	75	1.95	7
	77.5	165.66	.80	.75	292	257	251	44	222	71	75	1.95	7
	80	167.57	.80	.75	292	258	250	45	223	71	76	1.95	7
12	82.5	169.51	.80	.75	292	261	250	45	221	71	76	1.95	7
	85	171.41	.77	.74	292	259	250	45	222	71	76	1.85	7
	87.5	173.28	.79	.75	292	259	247	45	221	71	76	1.95	7
	90	175.18											

Traverse: 2	
Start Time: —	Initial Leak Check: — cfm@ — "Hg
Finish Time: 11:54	Final Leak Check: .002 cfm@ 18.5 "Hg

Project No.: 21698
Operator :

Rev: April 28, 2005

ORTECH Environmental

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Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particulate/Metals
Test Date	october 25, 2016
Test Location	APC Outlet No. 1
Operator Signature	[illegible]

Project No.:	21698
Page	1 of 5
Probe No.:	6 series
Meter Box No.:	Team 4
Impinger Box No.:	9

Pitot Factor	.846	
DGMCF	.988	
Barometric Pressure	29.83	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	.2542	inches
Stack Diameter	4.5	feet
Length	-	feet
Width	-	feet
Port length:		inches

Particulate Gain

Filter	1.10	mg
Probe	2.6	mg

Moisture Gain

CWTR	514.5	g
WCBDA	23.9	g

Combustion Gas Concentration

Oxygen	9.35	%
Carbon Dioxide	~~10.28~~ 10.11	%
Carbon Monoxide	11.1	ppm

Measuring Device	MII Numbers
Probe / Pitot 15A	B03775
Trendicator	COE20090
Control Box	COE20090
Incline Manometer	COE20090
Comb.Gas.Analyzer	
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

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

Nozzle Measurements

1 SEE
2 TEST
3 #1
4
Average:

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: october 25, 2016	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. #1	

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	76.05	.95	.82	289	258	260	55	110	69	69	2.3	7
	2.5	78.12	1.0	.84	290	258	260	52	217	69	70	2.35	7
	5	80.24	1.0	.84	290	259	255	49	224	69	70	2.35	7
2	7.5	82.36	1.05	.86	291	260	251	48	223	69	71	2.5	7
	10	84.54	1.05	.86	291	261	248	48	222	70	71	2.5	7
	12.5	86.71	.99	.84	291	261	247	48	220	70	72	2.35	7
3	15	88.84	.99	.84	291	262	252	48	225	69	72	2.35	7
	17.5	90.98	.99	.83	291	262	253	48	226	69	72	2.3	7
	20	93.04	.98	.83	291	262	252	48	225	69	73	2.3	7
4	22.5	95.13	.91	.80	290	262	248	48	223	69	73	2.2	7
	25	97.17	.91	.80	291	262	246	48	220	69	73	2.2	7
	27.5	99.20	.92	.81	291	262	251	48	224	69	74	2.2	7
5	30	101.25	.86	.78	291	262	254	48	228	70	74	2.05	6.5
	32.5	103.23	.86	.78	291	262	252	48	227	70	74	2.05	6.5
	35	105.18	.87	.78	291	262	249	47	224	70	74	2.05	6.5
6	37.5	107.15	.81	.76	291	261	246	46	221	70	75	2	6.5
	40	109.10	.81	.76	291	261	251	46	225	70	75	2	6.5
	42.5	110.02	.86	.78	291	261	254	46	229	70	75	2.05	6.5
7	45	112.98	.90	.80	290	261	253	45	229	70	76	2.2	7
	47.5	114.99	.90	.80	291	261	251	45	228	70	76	2.2	7
	50	117.07	.91	.80	292	261	247	45	225	70	75	2.2	7

Traverse: 2			
Start Time: 12:48	Initial Leak Check: 0.004	cfm@ 19	"Hg
Finish Time:	Final Leak Check:	cfm@	"Hg

Project No.: 21698

Operator :

Field Data Sheet

Date: october 25, 2016	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	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	119.11	.90	.80	292	261	248	45	224	70	75	2.2	7
	55	121.15	.89	.79	292	261	252	45	226	70	75	2.15	7
	57.5	123.17	.89	.79	292	261	253	46	225	71	75	2.15	7
9	60	125.19	.93	.81	292	261	251	46	225	71	75	2.2	7
	62.5	127.25	.91	.80	292	261	247	45	225	71	75	2.2	7
	65	129.31	.91	.80	291	260	248	45	224	71	75	2.2	7
10	67.5	131.37	.91	.80	292	260	252	45	229	71	75	2.2	7
	70	133.43	.88	.79	292	261	253	45	230	71	75	2.15	7
	72.5	135.47	.88	.79	292	261	251	45	228	71	75	2.15	7
11	75	137.50	.88	.79	291	260	247	45	225	71	76	2.15	7
	77.5	139.54	.87	.79	290	258	248	45	225	71	76	2.15	7
	80	141.54	.87	.79	291	259	253	46	231	71	76	2.1	7
12	82.5	143.53	.92	.81	290	258	253	46	231	71	76	2.2	7
	85	145.59	.92	.81	290	259	249	46	228	71	76	2.2	7
	87.5	147.66	.86	.78	290	259	246	46	225	71	76	2.05	7
	90	149.63											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 14:18	Final Leak Check: .004	cfm@ 19	"Hg

Project No.: 21698

Operator :

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: October 25, 2016	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

	*	*	*		*			*		*	*	*	*
Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	150.22	1.1	.88	290	261	246	55	149	71	72	2.55	8
	2.5	152.44	1.1	.88	290	261	246	55	149	71	72	2.55	8
	5	154.68	1.1	.88	293	260	257	46	237	71	73	2.55	8
2	7.5	156.94	1.1	.88	294	261	258	45	236	71	73	2.55	8
	10	159.18	1.2	.92	294	261	255	45	233	71	74	2.75	8
	12.5	161.46	1.1	.88	294	261	252	45	229	71	74	2.55	8
3	15	163.68	1.0	.84	294	261	249	45	226	71	74	2.35	7.5
	17.5	165.82	1.1	.88	293	261	246	46	223	71	75	2.55	8
	20	168.04	.98	.83	293	262	252	45	225	71	75	2.35	7.5
4	22.5	170.16	.89	.80	291	261	255	45	230	71	76	2.15	7
	25	172.20	.89	.80	292	262	255	46	231	71	76	2.1[illegible]	7
	27.5	174.19	.92	.81	291	261	252	46	225	71	76	2.1	7
5	30	176.20	.82	.76	291	261	248	47	223	71	77	2	7
	32.5	178.13	.76	.74	291	261	247	47	221	71	77	1.8	6.5
	35	179.98	.81	.76	290	261	253	47	223	72	77	2	7
6	37.5	181.90	.71	.71	290	261	255	47	229	72	78	1.7	6.5
	40	183.70	.69	.70	290	260	253	48	224	72	78	1.7	6.5
	42.5	185.48	.75	.73	290	261	249	48	221	72	78	1.8	6.5
7	45	187.32	.74	.73	290	260	247	48	220	72	78	1.8	6.5
	47.5	189.18	.74	.73	290	260	253	47	224	72	79	1.8	6.5
	50	191.04	.79	.75	290	259	255	47	227	72	79	1.95	7

Traverse: 1				
Start Time: 14:26	Initial Leak Check: .005	cfm@	19	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Project No.: 21698

Operator :

Field Data Sheet

Date: october 25, 2016	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	192.95	.79	.75	290	258	253	46	226	73	79	1.95	7
	55	194.85	.76	.74	290	258	249	47	223	73	79	1.95	7
	57.5	196.76	.76	.74	290	257	246	46	221	73	79	1.9	7
9	60	198.65	.76	.74	289	259	252	46	224	73	79	1.9	7
	62.5	200.59	.76	.74	289	260	255	46	228	73	79	1.9	7
	65	202.42	.76	.74	289	260	253	46	227	73	79	1.95	7
10	67.5	204.29	.76	.74	289	260	249	46	224	73	79	1.95	7
	70	206.24	.71	.72	288	259	247	46	222	73	79	1.7	6.5
	72.5	208.03	.70	.71	288	259	250	47	224	73	79	1.65	6.5
11	75	209.79	.68	.70	287	260	254	47	229	73	79	1.7	7
	77.5	211.56	.68	.70	287	259	253	47	228	73	79	1.7	6.5
	80	213.32	.66	.69	287	260	249	47	225	73	79	1.7	6.5
12	82.5	215.07	.66	.69	287	257	247	47	222	73	80	1.7	6.5
	85	216.86	.69	.71	287	256	252	47	222	73	80	1.7	6.5
	87.5	218.64	.69	.71	287	257	254	47	230	73	80	1.7	6.5
	90	220.46											

Traverse: 1

Start Time: —	Initial Leak Check: — cfm@ — "Hg
Finish Time: 15:57	Final Leak Check: .004 cfm@ 14 "Hg

−11.25

Project No.: 21698

Operator :

ORTECH Environmental

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 3	Particulate/Metals	
Test Date	October 27, 2016	
Test Location	APC Outlet No. 1	
Operator Signature		

Project No.:	21698	
Page	1 of 5	
Probe No.:	6 Series	
Meter Box No.:	Team 4	
Impinger Box No.:	8	

Pitot Factor	.846	
DGMCF	.988	
Barometric Pressure	29.56	"Hg
Static Pressure	-11.3	"H2O
Nozzle Size	.2542	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Particulate Gain

Filter	2.90	mg
Probe	2.4	mg

Moisture Gain

CWTR	527.1	g
WCBDA	21.5	g

Combustion Gas Concentration

Oxygen	9.05	%
Carbon Dioxide	10.21	%
Carbon Monoxide	13.4	ppm

Measuring Device	MII Numbers
Probe / Pitot 15A	B03775
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

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

Nozzle Measurements

1 SEE
2
3 TEST
4 #1
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: october 27/16	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

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	93.47	1.05	.86	284	254	250	53	85	63	63	2.6	6
	2.5	95.62	1.0	.83	284	252	246	42	225	63	64	2.4	6
	5	97.76	1.0	.84	283	252	246	41	230	63	65	2.4	6
2	7.5	99.89	1.05	.86	283	253	250	40	234	63	66	2.5	6
	10	102.05	1.05	.86	284	254	250	41	235	63	67	2.5	6
	12.5	104.31	1.0	.84	284	254	248	41	232	64	68	2.4	6
3	15	106.36	1.0	.84	284	254	245	40	228	64	68	2.4	6
	17.5	108.49	1.05	.86	284	254	250	40	231	64	69	2.5	6
	20	110.68	1.0	.84	284	254	252	41	234	64	70	2.4	6
4	22.5	112.82	.91	.80	284	254	250	40	233	64	70	2.2	6
	25	114.86	.92	.81	285	255	247	41	229	65	70	2.2	6
	27.5	116.90	.92	.81	285	255	246	41	226	65	71	2.2	6
5	30	118.93	.86	.78	285	254	252	41	232	65	71	2.1	5.5
	32.5	120.91	.86	.78	285	254	252	41	233	65	72	2.1	5.5
	35	122.91	.86	.78	285	254	248	42	231	65	72	2.1	5.5
6	37.5	124.86	.85	.78	285	254	245	42	227	65	72	2.1	5.5
	40	126.87	.81	.76	285	254	250	42	229	65	72	2.0	5.5
	42.5	128.79	.82	.76	286	254	252	43	232	66	73	2	5.5
7	45	130.70	.84	.77	287	254	249	43	230	66	73	2.05	5.5
	47.5	132.64	.79	.75	288	254	246	43	227	66	73	1.95	5.5
	50	134.55	.81	.76	288	254	250	42	229	66	73	2	5.5

Traverse: 1		
Start Time: 8:14	Initial Leak Check: .006 cfm@ 15 "Hg	
Finish Time: —	Final Leak Check: — cfm@ — "Hg	

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: October 27, 2016	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	136.48	.82	.76	289	254	254	42	233	66	74	2	5.5
	55	138.41	.82	.76	289	254	250	43	232	66	74	2	5.5
	57.5	140.35	.82	.76	289	254	245	43	227	67	74	2	5.5
9	60	142.26	.76	.74	289	254	250	43	229	67	74	1.9	5.5
	62.5	144.13	.76	.74	289	254	252	43	233	67	74	1.9	5.5
	65	145.99	.76	.74	289	254	249	42	212	67	74	1.9	5.5
10	67.5	147.86	.76	.73	290	253	245	42	223	67	74	1.85	5.5
	70	149.72	.75	.73	290	254	250	42	225	67	74	1.85	5.5
	72.5	151.57	.76	.73	290	254	252	42	232	67	74	1.85	5.5
11	75	153.46	.76	.73	290	249	252	42	232	67	74	1.85	5.5
	77.5	155.30	.67	.69	290	253	245	42	229	67	74	1.65	5.5
	80	157.05	.67	.69	290	253	250	42	231	67	74	1.65	5.5
12	82.5	158.79	.67	.69	290	253	252	42	234	67	74	1.65	5.5
	85	160.55	.67	.69	290	253	248	42	232	67	74	1.65	5.5
	87.5	162.31	.71	.71	290	253	246	42	229	67	74	1.8	6
	90	164.12											

Traverse:	1				
Start Time:	—	Initial Leak Check:	—	cfm@	— "Hg
Finish Time:	9:44	Final Leak Check:	.006	cfm@	15 "Hg

Project No.: 21698

Operator: [signature]

Field Data Sheet

Date: October 27, 2016	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	164.62	1.1	.87	288	254	244	62	86	64	64	2.6	6.5
	2.5	166.77	1.15	.89	291	253	251	43	202	64	65	2.7	6.5
	5	169.04	1.1	.87	290	253	254	41	211	64	65	2.6	6.5
2	7.5	171.25	1.1	.88	290	254	253	39	211	65	66	2.55	6.5
	10	173.46	1.1	.88	289	255	251	39	212	64	67	2.55	6.5
	12.5	175.66	1.1	.88	290	255	248	39	227	64	68	2.55	6.5
3	15	177.86	1.1	.88	291	255	245	39	225	64	68	2.55	6.5
	17.5	180.06	1.1	.88	291	255	250	39	213	64	69	2.55	6.5
	20	182.26	1.1	.88	292	256	252	40	233	65	69	2.55	6.5
4	22.5	184.45	1.05	.86	291	256	250	40	233	65	70	2.5	6.5
	25	186.62	1.0	.84	291	256	247	40	229	65	70	2.35	6.5
	27.5	188.74	1.0	.84	291	255	246	39	227	65	70	2.35	6.5
5	30	190.87	.92	.80	290	257	251	39	232	65	71	2.2	6
	32.5	192.92	.95	.82	291	255	249	40	231	65	71	2.2	6
	35	194.97	.95	.82	291	255	246	40	229	65	71	2.2	6.
6	37.5	197.01	.84	.77	291	255	246	40	229	65	71	2.1	6
	40	198.96	.84	.77	291	255	252	40	233	66	72	2.1	6
	42.5	200.96	.84	.77	291	255	252	40	233	66	72	2.0	6
7	45	202.92	.88	.79	290	254	246	40	228	66	72	2.05	6
	47.5	204.91	.89	.79	290	254	246	40	228	66	72	2.05	6
	50	206.88	.89	.79	289	254	251	40	231	66	72	2.05	6

Traverse: 2					
Start Time: 11:40	Initial Leak Check:	0.003	cfm@	15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	—	"Hg

Project No.: 21698

Operator :

Field Data Sheet

Date: October 27, 2016	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

	*	*	*		*			*		*	*	*	*
Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	208.83	.87	.78	289	254	252	40	235	66	72	2.05	6
	55	210.83	.87	.79	289	254	250	40	233	66	73	2.1	6
	57.5	212.80	.87	.79	289	254	245	40	229	66	73	2.1	6
9	60	214.78	.87	.78	290	254	249	41	230	66	73	2.05	6
	62.5	216.75	.91	.80	290	254	252	41	235	66	73	2.2	6
	65	218.80	.87	.79	289	254	250	41	235	67	73	2.1	6
10	67.5	220.79	.86	.78	289	254	246	41	231	67	73	2.05	6
	70	222.74	.86	.78	289	253	247	41	230	67	73	2.05	6
	72.5	224.71	.86	.78	290	254	252	41	235	67	73	2.05	6
11	75	226.67	.78 ~~.86~~	.74	289	254	250	42	235	67	73	1.9	6
	77.5	228.57	.79	.75	289	253	246	42	231	67	73	1.95	6
	80	230.49	.78	.74	289	253	248	42	231	67	73	1.9	6
12	82.5	232.38	.78	.74	290	254	253	42	236	67	74	1.9	6
	85	234.27	.78	.74	289	254	251	42	236	67	74	1.9	6
	87.5	236.17	.78	.74	289	254	247	42	247	67	74	1.9	6
	90	238.03											

Traverse:	2			
Start Time:	—	Initial Leak Check:	— cfm@ —	"Hg
Finish Time:	13:10	Final Leak Check:	.003 cfm@ 14	"Hg

Project No.: 21698

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	1 Particulate/Metals
Test Date	October 26, 2016
Test Location	APC Outlet No. 2
Operator Signature	T. Timar

Project No.:	21698
Page	1 of 5
Probe No.:	6 Series
Meter Box No.:	Team 4
Impinger Box No.:	8

Pitot Factor	.846	
DGMCF	.988	
Barometric Pressure	30.01	"Hg
Static Pressure	- 9.5	"H2O
Nozzle Size	.2542	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	1.90	mg
Probe	2.6	mg

Moisture Gain

CWTR	508.9	g
WCBDA	18.6	g

Combustion Gas Concentration

Oxygen	8.44	%
Carbon Dioxide	11.02	%
Carbon Monoxide	17.6	ppm

Measuring Device	MII Numbers
Probe / Pitot 15A	B03775
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

Nozzle Measurements

1 ~~SEE TEST #1~~

2 ________

3 UNIT 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:

Rev. November 27, 2014

Field Data Sheet

Date: October 26 2016	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 2 of 5
	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	22.32	.82	.75	282	256	250	51	63	63	63	1.9	6
	2.5	24.26	.83	.76	284	260	248	42	188	63	63	1.9	6
	5	26.13	.84	.76	284	258	247	42	197	63	64	1.95	6
2	7.5	28.02	.84	.76	284	258	249	42	202	63	65	2	6
	10	29.93	.86	.77	284	259	245	42	205	63	66	2.1	6
	12.5	31.88	.89	.79	284	260	251	42	207	63	67	2.2	6.5
3	15	33.90	.81	.75	286	260	246	42	210	63	68	2	6
	17.5	35.82	.81	.75	286	259	250	42	210	63	68	2	6
	20	37.73	.80	.75	285	260	246	42	210	64	69	2	6
4	22.5	39.62	.74	.72	286	260	248	42	210	64	70	1.8	6
	25	41.45	.76	.73	286	259	248	42	211	64	70	1.9	6
	27.5	43.30	.75	.73	286	259	246	42	210	64	70	1.9	6
5	30	45.17	.66	.68	286	260	249	42	212	64	71	1.6	6
	32.5	46.92	.65	.68	286	260	245	42	211	64	71	1.6	6
	35	48.61	.65	.68	286	259	250	42	211	64	71	1.6	6
6	37.5	50.33	.65	.68	286	260	247	42	211	64	71	1.6	6
	40	52.05	.65	.68	286	260	251	42	211	65	72	1.6	6
	42.5	53.77	.63	.67	286	260	249	42	212	65	72	1.55	6
7	45	55.46	.70	.70	286	259	247	42	211	65	72	1.75	6
	47.5	57.24	.70	.70	286	258	249	42	212	65	72	1.75	6
	50	59.05	.70	.70	286	259	246	42	212	65	72	1.75	6

Traverse: 2			
Start Time: 8:09	Initial Leak Check: .01	cfm@ 16	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

-9.5

Project No.: 21698

Operator:

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: October 26, 2016	Plant: Covanta DYEC	Test No.: 1 Particulate/Metals	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	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	60.85	.71	.71	286	259	249	42	213	65	72	1.75	6
	55	62.63	.73	.72	286	259	246	42	212	65	72	1.8	6
	57.5	64.45	.72	.72	286	259	249	42	213	66	73	1.8	6
9	60	66.28	.72	.72	285	259	245	42	213	66	73	1.8	6
	62.5	68.08	.72	.72	285	258	251	42	213	66	73	1.8	6
	65	69.88	.72	.72	286	259	245	42	214	66	73	1.8	6
10	67.5	71.68	.72	.72	286	258	251	42	213	66	73	1.8	6
	70	73.49	.72	.72	286	260	249	42	214	66	73	1.8	6
	72.5	75.31	.71	.71	286	258	247	42	213	66	73	1.8	6
11	75	77.12	.71	.71	286	259	250	42	214	66	73	1.8	6
	77.5	78.93	.68	.70	286	258	247	42	213	66	73	1.7	6
	80	80.69	.68	.70	286	256	250	42	214	66	73	1.7	6
12	82.5	82.47	.67	.69	286	255	246	42	213	66	73	1.65	6
	85	84.24	.67	.69	286	255	250	42	213	66	73	1.65	6
	87.5	85.94	.70	.71	286	256	245	43	213	66	73	1.75	6
	90	87.74											

Traverse: 2					
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg	
Finish Time: 9:39	Final Leak Check: .004	cfm@	16	"Hg	

Project No.: 21698

Operator :

Field Data Sheet

Date: october 26, 2016	Plant:	Covanta DYEC	Test No.:	1	Particulate/Metals	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:		APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	88.27	.76	.73	282	258	250	53	137	65	67	1.9	6
	2.5	90.12	.78	.74	285	257	249	45	200	66	67	1.95	6.5
	5	92.02	.78	.74	285	258	246	43	208	66	68	1.95	6.5
2	7.5	93.90	.78	.74	285	259	250	42	211	66	69	1.95	6.5
	10	95.78	.79	.75	285	259	248	41	211	66	70	2	6.5
	12.5	97.68	.81	.76	285	258	248	41	212	66	70	2.05	6.5
3	15	99.62	.81	.76	285	260	249	41	214	66	71	2.05	6.5
	17.5	101.55	.76	.73	285	260	247	41	211	66	71	1.9	6.5
	20	103.41	.76	.74	285	260	249	41	212	66	72	1.9	6.5
4	22.5	105.27	.76	.74	285	260	245	41	214	66	72	1.9	6.5
	25	107.13	.72	.72	285	259	251	41	215	66	72	1.8	6
	27.5	108.93	.76	.74	285	260	245	41	214	66	72	1.9	6.5
5	30	110.79	.71	.71	284	260	251	41	215	66	73	1.8	6.5
	32.5	112.61	.71	.71	283	259	246	41	215	66	73	1.8	6.5
	35	114.42	.71	.71	282	259	249	41	215	66	73	1.8	6.5
6	37.5	116.24	.75	.73	282	260	247	41	215	66	73	1.9	6.5
	40	118.10	.69	.70	281	260	249	41	215	66	73	1.75	6.5
	42.5	119.90	.71	.71	282	260	248	41	216	67	73	1.8	6.5
7	45	121.70	.79	.75	282	260	250	41	215	67	73	2	6.5
	47.5	123.61	.79	.75	282	260	250	41	216	67	73	2	6.5
	50	125.52	.80	.76	283	260	247	41	216	67	73	2.05	7

Traverse: 1				
Start Time: 9:52	Initial Leak Check:	.003	cfm@ 15	"Hg
Finish Time: —	Final Leak Check:	—	cfm@ —	"Hg

Project No.: 21698
Operator : [signature]

Field Data Sheet

Date: october 26, 2016	Plant: Covanta DYEC	Test No.: 1	Particulate/Metals	Page 5 of 5
	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 *
8	52.5	127.46	.80	.76	283	260	250	41	217	67	73	2.05	7
	55	129.40	.79	.75	284	260	245	42	216	67	73	2	7
	57.5	131.32	.79	.75	285	260	251	42	216	67	73	2	7
9	60	133.23	.81	.76	286	260	246	42	216	67	73	2.05	7
	62.5	135.16	.78	.75	287	259	250	42	216	67	73	2	7
	65	137.07	.81	.76	287	260	246	42	216	67	73	2.05	7
10	67.5	138.98	.79	.75	287	260	253	42	216	67	73	2	7
	70	140.88	.79	.75	288	260	250	43	217	67	73	2	7
	72.5	142.78	.77	.74	288	260	247	43	216	67	73	1.9	7
11	75	144.66	.77	.74	288	258	248	43	216	67	74	1.9	7
	77.5	146.56	.65	.68	288	257	247	43	215	67	74	1.65	6
	80	148.32	.64	.68	288	257	249	43	214	68	74	1.6	6
12	82.5	150.05	.64	.68	288	259	250	43	213	67	74	1.5	6
	85	151.72	.63	.67	288	259	249	43	213	67	74	1.5	6
	87.5	153.39	.63	.67	288	259	248	44	212	67	74	1.55	6
	90	155.15											

Traverse: 1			
Start Time: -	Initial Leak Check: -	cfm@ -	"Hg
Finish Time: 11:22	Final Leak Check: .004	cfm@ 14.5	"Hg

Project No.: 21698
Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	Particulate/Metals
Test Date	October 26, 2016
Test Location 2	APC Outlet No. 2
Operator Signature	T. Tinder

Project No.:	21698
Page	1 of 5
Probe No.:	6 series
Meter Box No.:	Team 4
Impinger Box No.:	9

Pitot Factor	.846	
DGMCF	.988	
Barometric Pressure	29.96	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	.2542	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	2.10	mg
Probe	3.4	mg

Moisture Gain

CWTR	472.1	g
WCBDA	19.3	g

Combustion Gas Concentration

Oxygen	8.52	%
Carbon Dioxide	10.83	%
Carbon Monoxide	19.2	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot ISA	B03775
Trendicator	COE 20090
Control Box	COE 20090
Incline Manometer	COE 20090
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENVICAN.
Calipers	B03922

Nozzle Measurements

1 ~~SEE TEST #1~~
2
3 ~~UNIT 1~~
4
Average:

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: October 26, 2016	Plant: Covanta DYEC	Test No.: 2	Particulate/Metals
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2

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	55.89	.81	.75	279	257	254	64	117	66	67	2	6
	2.5	57.76	.81	.76	279	258	246	59	160	66	67	2.05	6
	5	59.69	.81	.76	278	259	252	57	192	67	68	2.05	6
2	7.5	61.63	.83	.77	278	261	245	57	202	67	69	2.1	6.5
	10	63.60	.83	.77	278	259	249	57	207	67	70	2.1	6.5
	12.5	65.58	.81	.76	278	260	252	57	213	67	71	2.05	6
3	15	67.52	.81	.76	279	261	246	56	213	67	72	2.05	6
	17.5	69.47	.82	.77	280	261	248	56	213	67	73	2.05	6
	20	71.41	.82	.77	280	261	252	56	213	67	73	2.05	6
4	22.5	73.35	.78	.75	281	261	248	55	213	68	74	2	6
	25	75.27	.75	.73	281	261	248	54	213	68	74	1.9	6
	27.5	77.14	.75	.74	281	261	252	54	213	68	75	1.9	6
5	30	79.01	.75	.74	281	261	248	53	213	68	75	1.9	6
	32.5	80.91	.71	.72	281	258	248	53	213	68	75	1.8	6
	35	82.71	.72	.72	282	261	252	53	213	68	75	1.8	6
6	37.5	84.50	.66	.69	281	261	248	52	213	69	76	1.65	6
	40	86.26	.67	.70	281	261	250	52	213	69	76	1.7	6
	42.5	88.03	.67	.70	282	260	252	51	213	69	76	1.7	6
7	45	89.80	.67	.70	282	259	246	51	225	69	76	1.7	6
	47.5	91.58	.64	.68	282	257	250	50	228	69	76	1.6	6
	50	93.31	.66	.69	282	259	252	50	230	69	77	1.65	6

Traverse: 1					
Start Time: 12:17	Initial Leak Check:	.006	cfm@	15	"Hg
Finish Time: –	Final Leak Check:	–	cfm@	–	"Hg

Project No.: 21698

Operator :

Field Data Sheet

Date: October 26, 2016	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

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 *
8	52.5	95.05	.66	.69	283	261	247	50	229	69	77	1.65	6
	55	96.80	.66	.69	283	260	251	50	228	69	77	1.65	6
	57.5	98.55	.66	.69	283	260	252	50	230	70	77	1.65	6
9	60	100.29	.70	.71	282	260	247	50	230	70	77	1.8	6
	62.5	102.10	.68	.70	282	261	251	50	229	70	77	1.7	6
	65	103.88	.68	.70	281	259	252	50	231	70	77	1.7	6
10	67.5	105.66	.68	.70	280	260	248	50	230	70	77	1.7	6
	70	107.43	.68	.70	280	260	249	50	230	70	77	1.7	6
	72.5	109.19	.71	.72	280	260	252	50	230	70	77	1.8	6
11	75	110.99	.64	.68	276	260	247	50	230	70	77	1.6	6
	77.5	112.74	.64	.69	273	260	250	50	228	71	77	1.6	6
	80	114.45	.64	.69	273	260	252	50	230	71	78	1.65	6
12	82.5	116.19	.64	.69	272	260	247	50	229	71	78	1.65	6
	85	117.95	.64	.69	273	259	250	50	228	71	78	1.65	6
	87.5	119.69	.65	.69	274	262	252	50	231	71	78	1.65	6
	90	121.45											

Traverse: 1				
Start Time: –	Initial Leak Check: –	cfm@ –	"Hg	
Finish Time: 13:47	Final Leak Check: .004	cfm@ 15	"Hg	

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: october 26 2016	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	121.88	.89	.80	285	260	246	58	151	70	72	2.25	7
	2.5	123.85	.87	.79	283	258	253	51	217	70	72	2.2	7
	5	125.90	.86	.79	283	259	248	47	217	70	73	2.2	7
2	7.5	127.92	.88	.80	284	260	250	46	227	70	74	2.2	7
	10	129.93	.88	.80	285	261	252	45	232	70	74	2.2	7
	12.5	131.94	.88	.80	285	261	249	45	232	70	75	2.2	7
3	15	133.97	.85	.78	284	261	249	45	231	70	75	2.1	7
	17.5	135.95	.85	.78	284	261	253	45	233	70	75	2.1	7
	20	137.93	.85	.78	283	261	249	45	233	70	76	2.1	7
4	22.5	139.91	.81	.77	282	261	248	45	232	70	76	2	7
	25	141.84	.78	.75	282	261	252	45	237	70	76	2	7
	27.5	143.76	.78	.75	282	262	249	45	233	70	76	2	7
5	30	145.67	.70	.71	282	261	250	45	232	70	76	1.8	6
	32.5	147.52	.71	.72	282	261	252	45	233	70	76	1.8	6
	35	149.33	.71	.72	282	261	249	45	232	71	77	1.8	6
6	37.5	151.16	.71	.72	282	260	250	45	230	71	77	1.8	6
	40	152.97	.60	.66	282	261	252	45	233	71	77	1.55	6
	42.5	154.67	.60	.66	282	261	248	45	231	71	77	1.5[illegible]	6
7	45	156.37	.66	.69	281	260	251	45	230	71	77	1.7	6
	47.5	158.12	.67	.70	283	261	252	45	231	71	77	1.7	6
	50	159.87	.67	.70	284	260	248	45	231	71	77	1.7	6

Traverse:	2				
Start Time:	13:57	Initial Leak Check:	.005	cfm@ 15	"Hg
Finish Time:	—	Final Leak Check:	—	cfm@ —	"Hg

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: october 26 2016	Plant: Covanta DYEC	Test No.: 2 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	161.65	.70	.71	284	260	250	45	230	71	77	1.8	6.5
	55	163.48	.70	.71	285	260	253	45	232	71	77	1.75	6.5
	57.5	165.29	.71	.72	285	261	249	45	231	71	77	1.8	6.5
9	60	167.11	.71	.72	286	260	252	46	231	71	77	1.8	6.5
	62.5	168.93	.71	.72	286	260	251	46	232	71	77	1.8	6.5
	65	170.74	.71	.72	286	260	251	46	232	71	77	1.8	6.5
10	67.5	172.57	.69	.71	281	259	252	46	231	71	77	1.75	6.5
	70	174.38	.69	.71	280	260	251	46	232	71	77	1.75	6.5
	72.5	176.17	.69	.71	280	260	251	46	232	71	77	1.75	6.5
11	75	177.96	.63	.68	280	258	252	46	230	71	77	1.80	6.5
	77.5	179.74	.63	.68	280	258	249	46	231	71	77	1.60	6.5
	80	181.43	.63	.68	280	258	249	46	230	71	77	1.60	6.3
12	82.5	183.12	.61	.67	280	257	252	46	229	71	77	1.60	6.3
	85	184.81	.61	.67	280	259	251	47	230	71	77	1.60	6.3
	87.5	186.50	.61	.67	280	259	250	47	230	71	77	1.60	6.3
	90	188.23											

Traverse: 2				
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg
Finish Time: 15:27	Final Leak Check: .004	cfm@	14	"Hg

Project No.: 21698

Operator :

ORTECH Environmental

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.:	3	Particulate/Metals
Test Date	OCTOBER 27, 2016	
Test Location	APC Outlet No. 2	
Operator Signature	[signature]	

Project No.:	21698	
Page	1 of 5	
Probe No.:	6.5	
Meter Box No.:	T2	
Impinger Box No.:	9	

Pitot Factor	0.847	
DGMCF	0.989	
Barometric Pressure	29.50	"Hg
Static Pressure	-10.75	"H2O
Nozzle Size	0.2543	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	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	2.30	mg
Probe	2.4	mg

Moisture Gain

CWTR	493.2	g
WCBDA	19.4	g

Combustion Gas Concentration

Oxygen	8.70	%
Carbon Dioxide	10.38	%
Carbon Monoxide	19.8	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 150	B03778
Trendicator	605 20092
Control Box	605 20092
Incline Manometer	605 20092
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN
Calipers	B03922

Nozzle Measurements

1	0.2540
2	0.2545
3	0.2545
4	0.2540
Average:	0.2543

Notes:

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 3	Particulate/Metals	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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 *
		71.31 ~~71.02~~											
1	0	~~70.66~~	.85	.78	281	240	259	54	63	64	63	2.1	3
	2.5	73.36	.86	.79	280	254	257	44	228	65	64	2.1	3
	5	75.38	.86	.79	281	254	258	43	234	65	65	2.1	3
2	7.5	77.40	.86	.79	280	255	259	42	236	65	65	2.1	3
	10	79.41	.84	.78	281	259	259	43	237	65	65	2.1	3
	12.5	81.42	.84	.78	280	255	259	43	238	65	65	2.1	3
3	15	83.41	.83	.78	280	255	259	43	239	66	65	2.1	3
	17.5	85.41	.83	.78	280	258	260	44	239	65	66	2.1	3
	20	87.39	.82	.78	280	260	265	44	241	67	65	2.1	3
4	22.5	89.35	.82	.78	279	260	270	44	244	67	65	2.0	3
	25	91.33	.82	.77	279	258	270	44	246	68	65	2.0	3
	27.5	93.29	.81	.77	279	252	266	44	246	68	65	2.0	3
5	30	95.23	.68	.70	277	253	259	45	242	68	66	1.7	3
	32.5	97.06	.67	.70	276	253	253	45	237	69	66	1.7	3
	35	98.82	.66	.70	275	253	255	45	238	69	66	1.7	3
6	37.5	100.63	.62	.68	275	254	248	45	230	69	66	1.6	3
	40	102.36	.64	.68	275	254	249	45	230	69	66	1.6	3
	42.5	104.10	.65	.69	276	254	249	45	230	69	66	1.6	3
7	45	105.82	.62	.68	277	255	250	45	229	70	66	1.6	3
	47.5	107.61	.60	.66	279	255	250	45	228	70	66	1.5	3
	50	109.22	.62	.68	280	255	250	45	228	71	67	1.5	3

1145

Traverse: 2				
Start Time: 904	Initial Leak Check: .003	cfm@	15	"Hg
Finish Time: —	Final Leak Check: —	cfm@	—	"Hg

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	110.94	.67	.70	280	254	249	45	228	71	67	1.7	3
	55	112.71	.67	.70	281	255	249	44	228	71	67	1.7	3
	57.5	114.51	.67	.70	281	254	250	44	228	71	67	1.7	3
9	60	116.30	.75	.74	282	255	250	44	229	72	67	1.9	3
	62.5	118.19	.74	.74	282	255	250	44	229	72	67	1.9	3
	65	120.08	.73	.73	282	254	250	44	230	72	68	1.8	3
10	67.5	121.96	.74	.74	282	254	250	45	229	72	68	1.8	3
	70	123.85	.74	.74	282	255	250	45	229	72	68	1.8	3
	72.5	125.70	.72	.73	282	254	250	45	229	72	68	1.8	3
11	75	127.57	.72	.73	282	255	250	45	229	72	69	1.8	3
	77.5	129.45	.70	.72	280	254	250	45	229	72	68	1.8	3
	80	131.32	.68	.71	280	254	250	45	229	73	69	1.7	3
12	82.5	133.13	.62	.68	280	254	250	45	229	73	69	1.6	3
	85	134.87	.60	.67	280	254	250	45	228	73	69	1.5	3
	87.5	136.56	.62	.66	278	254	250	45	226	73	69	1.5	3
	90	138.20											

Traverse: 2			
Start Time: —	Initial Leak Check: — cfm@ — "Hg		
Finish Time: 1315	Final Leak Check: .003 cfm@ 15 "Hg		

Project No.: 21698

Operator :

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	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	138.61	.77	.76	280	253	249	48	199	72	69	1.9	3
	2.5	140.60	.77	.76	281	254	250	45	225	72	69	1.9	3
	5	142.45	.77	.75	281	254	250	44	228	72	69	1.9	3
2	7.5	144.38	.87	.80	281	254	250	44	229	72	70	2.2	3.5
	10	146.43	.87	.80	282	254	250	44	231	72	70	2.2	3.5
	12.5	148.47	.87	.80	282	255	251	43	231	73	70	2.2	3.5
3	15	150.55	.80	.77	281	255	251	43	231	73	70	2.0	3.5
	17.5	152.50	.82	.78	281	255	250	43	232	73	70	2.0	3.5
	20	154.44	.81	.78	281	255	251	43	232	73	70	2.0	3.5
4	22.5	156.39	.76	.75	280	255	251	43	231	73	70	2.0	3.5
	25	158.33	.79	.77	281	255	251	43	232	73	70	2.0	3.5
	27.5	160.28	.77	.76	280	255	251	43	231	73	70	2.0	3.5
5	30	162.23	.71	.73	280	255	251	43	231	74	71	1.8	3.5
	32.5	164.05	.71	.73	281	254	252	43	231	74	71	1.8	3.5
	35	165.94	.72	.73	281	254	252	43	230	74	71	1.8	3.5
6	37.5	167.80	.62	.68	281	254	252	44	231	74	71	1.6	3.5
	40	169.56	.63	.69	281	255	252	44	234	74	71	1.6	3.5
	42.5	171.31	.62	.68	281	255	251	44	232	74	71	1.6	3.5
7	45	173.06	.67	.71	281	255	251	44	232	74	71	1.6	3.5
	47.5	174.82	.69	.72	281	255	249	44	230	74	71	1.6	3.5
	50	176.60	.67	.71	281	255	249	44	230	74	71	1.6	3.5

Traverse: 1			
Start Time: 1321	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: —	Final Leak Check: —	cfm@ —	"Hg

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 3 Particulate/Metals	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp Inlet/~~Trap~~ °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
8	52.5	178.34	.69	.72	281	255	250	44	229	74	71	1.7	3.5
	55	180.17	.69	.72	281	255	250	44	229	75	71	1.7	7.5
	57.5	181.96	.69	.72	281	255	250	44	229	75	71	1.7	3.5
9	60	183.78	.74	.74	281	255	250	44	228	75	72	1.8	3.6
	62.5	185.65	.74	.74	281	256	250	44	224	75	71	1.8	3.6
	65	187.55	.74	.74	281	254	250	44	227	75	72	1.8	3.6
10	67.5	189.39	.75	.75	280	255	250	44	229	75	72	1.8	3.6
	70	191.24	.75	.75	281	255	250	44	229	75	72	1.8	3.6
	72.5	193.12	.75	.75	280	255	250	40	226	75	72	1.8	3.6
11	75	194.98	.72	.73	276	255	250	41	228	75	72	1.8	3.6
	77.5	196.81	.72	.74	276	254	250	41	229	75	72	1.8	3.6
	80	198.68	.70	.73	275	254	250	41	229	75	72	1.8	3.6
12	82.5	200.54	.71	.73	276	254	250	41	228	75	72	1.8	3.6
	85	202.40	.71	.73	276	253	251	41	229	75	72	1.8	3.6
	87.5	204.25	.72	.74	277	252	250	41	228	75	72	1.8	3.6
	90	206.08											

Traverse: 1	
Start Time: —	Initial Leak Check: — cfm@ — "Hg
Finish Time: 14:51	Final Leak Check: .003 cfm@ 16 "Hg

Project No.: 21698

Operator : [signature]

APPENDIX 7

Particle Size Distribution Field Data Sheets
(12 pages)

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Particle Size
Test Date	October 26, 2016
Test Location	APC Outlet No. 1
Operator Signature	D. O

Project No.:	21698	
Page	1 of	
Probe No.:	4	
Meter Box No.:	T2	
Impinger Box No.:	147	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.71	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	0.1773	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	~~12~~ 6

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	138.2	g
WCBDA	8.9	g

Combustion Gas Concentration

Oxygen	9.81	%
Carbon Dioxide	9.88	%
Carbon Monoxide	20.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST 1
Incline Manometer	
Comb.Gas.Analyzer	UNIT 2
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 SEE
2 TEST 1
3
4 UNIT 2
Average:

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes: ΔP PORT 1 .90 .87 .79 .72 .70 .70
1.0 .99 .99 .86 .81 .90

Rev. November 27, 2014

Field Data Sheet

Date: Oct 26/16	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
*	*	*	*		*			*		*	*	*	*
1	0	42.48	1.0	.35	290	246	259	60		64	64	0.4	2.5
2	10.3	46.29	.91		289	248	258	54		64	64	0.4	2.5
3	20.4	49.95	.87		287	249	257	53		64	64	0.4	2.5
4	30.1	53.45	.68		285	248	257	52		64	64	0.4	2.5
5	39.3	56.76	.63		284	249	255	53		64	64	0.4	2.5
6	48.4	60.0	.62		282	244	259	53		66	66	0.4	2.5
	57.5	63.37											
1	0	63.37	.88		284	249	251	55		67	67	0.4	2.5
2	10.9	67.31	.87		287	249	251	53		67	67	0.4	2.5
3	21.7	71.15	.86		288	249	251	50		67	68	0.4	2.5
4	32.5	75.00	.83		291	250	260	50		70	68	0.4	2.5
5	42.6	78.6	.71		291	250	261	50		70	68	0.4	2.5
6	52.4	82.4	.79		288	250	260	51		70	68	0.4	2.5
	62.7	85.80											

Traverse: 1				
Start Time: 809	Initial Leak Check:	.012	cfm@ 15	"Hg
Finish Time: 907	Final Leak Check:		cfm@	"Hg

Traverse: 2				
Start Time: 914	Initial Leak Check:		cfm @	"Hg
Finish Time: 1017	Final Leak Check:	.009	cfm @ 14	"Hg

CR2016

Project No.: 21698

Operator: [signature]

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Particle Size
Test Date	October 26 2016
Test Location	APC Outlet No. 1
Operator Signature	[signature]

Project No.:	21698	
Page	1 of	4
Probe No.:	4	
Meter Box No.:	T2	
Impinger Box No.:	7	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.70	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	0.1773	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	135.4	g
WCBDA	7.3	g

Combustion Gas Concentration

Oxygen	9.30	%
Carbon Dioxide	10.79	%
Carbon Monoxide	13.1	ppm

Measuring Device	MII Numbers
Probe / Pitot	SEE
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	UNIT 2
Calipers	

Reading Interval	DWELL
Number of Ports	2
Number of Points/Port	~~12~~ 6

Nozzle Measurements

1 SEE T1
2
3 UNIT 2
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: Oct 26/16	Plant:	Covanta DYEC	Test No.:	Particle Size	Page 2 of 2
	Plant Location:	Courtice, Ontario	Test Location: 2	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
1	0	86.12	.91	.33	290	241	259	60		69	68	.35	2.5
2	10.5	89.59	.91		290	241	259	55		69	69	.35	2.5
3	21.0	93.20	.86		290	251	261	53		70	69	.35	2.5
4	31.4	96.68	.83		290	250	262	52		70	69	.35	2.5
5	41.6	100.06	.78		288	250	262	51		71	69	.35	2.5
6	51.0	103.18	.80		288	250	262	51		71	69	.35	2.5
	61.0	106.52											
1	0	106.52	1.0		280	250	261	56		72	71	.35	2.5
2	11.2	110.27	0.96		289	250	263	51		73	71	.35	2.5
3	21.9	113.90	.86		288	251	262	51		73	71	.35	2.5
4	32.1	117.23	.77		288	251	261	50		73	71	.35	2.5
5	41.3	120.38	.68		287	251	260	50		73	71	.35	2.5
6	50.2	123.46	.72		281	251	261	50		73	72	.35	2.5
	59.0	126.56											

Traverse: 2			
Start Time: 1105	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: 1206	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1242	Initial Leak Check:	cfm @	"Hg
Finish Time: 1311	Final Leak Check: .004	cfm @ 13	"Hg

Project No.: 21698

Operator: [signature]

ORTECH Environmental

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 3	Particle Size	PM 10/2.5
Test Date	October 26, 2016	
Test Location	APC Outlet No. 1	
Operator Signature	[illegible]	

Project No.:	21698	
Page	1 of 2	
Probe No.:	4	
Meter Box No.:	12	
Impinger Box No.:	14	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.93	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	0.173	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	150.3	g
WCBDA	8.0	g

Combustion Gas Concentration

Oxygen	9.00	%
Carbon Dioxide	10.48	%
Carbon Monoxide	16.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	566
Trendicator	
Control Box	TEST
Incline Manometer	
Comb.Gas.Analyzer	1
Micromanometer	
Barometer	UNIT 2
Calipers	

Reading Interval	Dwell
Number of Ports	2
Number of Points/Port	~~12~~ 6

Nozzle Measurements

1 ~~SEE T1~~
2
3 UNIT 2
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:

Rev. November 27, 2014

Field Data Sheet

Date: Oct 26/10	Plant: Covanta DYEC	Test No.: 3	Particle Size	Page of
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

	*	*	*		*			*		*	*	*	*
Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	27.51	.91	.34	288	249	260	63		72	72	.38	2.5
2	10.9	31.43	.85	.34	289	249	260	61		72	72	.38	2.5
3	21.6	35.23	.71	.34	288	249	261	59		73	72	.38	2.5
4	31.8	38.90	.66	.34	287	248	261	57		74	73	.38	2.5
5	41.4	42.22	.62	.34	286	250	260	56		73	72	.38	2.5
6	50.4	45.45	.70	.34	283	251	261	52		73	73	.38	2.5
	59.7	48.81											
1	0	48.81	.91	.34	282	251	260	52		75	73	.38	2.5
2	10.4	52.57	.88	.34	290	249	262	49		75	73	.38	2.5
3	20.8	56.19	.83	.34	291	250	261	49		75	74	.38	2.5
4	31.0	59.79	.80	.34	292	251	262	50		76	74	.38	2.5
5	40.9	63.28	.73	.34	293	252	261	51		76	74	.38	2.5
6	50.6	66.69	.79	.34	293	250	262	51		76	75	.38	2.5
	60.4	70.15											

Traverse: 1			
Start Time: 1413	Initial Leak Check: .012	cfm@ 16	"Hg
Finish Time: 1513	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time: 1516	Initial Leak Check:	cfm @	"Hg
Finish Time: 1616	Final Leak Check:	cfm @	"Hg

Project No.: 21698

Operator: [signature]

ORTECH Environmental

Plant	Covanta DYEC		
Plant Location	Courtice, Ontario		
Test No.: 1	Particle Size	PM 10/2.5	
Test Date	OCTOBER 25 2016		
Test Location	APC Outlet No. 2		
Operator Signature	[signature]		

Project No.:	21698		
Page	1 of 2		
Probe No.:	4		
Meter Box No.:	T2		
Impinger Box No.:	7		

Pitot Factor	0.846 ✓	
DGMCF	0.989 ✓	
Barometric Pressure	29.81	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	0.1773	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	160.1 ✓	g
WCBDA	9.0 ✓	g

Combustion Gas Concentration

Oxygen	8.93 ✓	%
Carbon Dioxide	10.40 ✓	%
Carbon Monoxide	16.5	ppm

Measuring Device	MII Numbers
Probe / Pitot 15A	PM10/2.5
Trendicator	COE 20092
Control Box	COE 20092
Incline Manometer	
Comb.Gas.Analyzer	—
Micromanometer	—
Barometer	ENV. CAN
Calipers	B03922

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

Nozzle Measurements	
1	.1770
2	.1775
3	.1775
4	.1770
Average:	.1773

Probe Liner Glass / Metal / Teflon / Other

Nozzle Glass / Metal / Other

Union None / Metal / Teflon / Other

Pitot Leak Checked? Yes No

Site Diagram

Notes: ~~TRAN~~ NW 1 ΔP .77, .69, .73, .76, .82, .84 274°F
TRAN 2 ΔP .63, .63, .68, .78, .85, .87

Rev. November 27, 2014

Field Data Sheet

Date: Oct 25/16	Plant: Covanta DYEC	Test No.: 1	Particle Size	Page 2 of 2
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter 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	7.39	~~.79~~ .87	.35	282	259	242	64		68	67	.45	2.5
2	10.8	11.67	.85	.35	282	260	244	53		68	67	.45	2.5
3	21.5	15.77	.91	.35	283	260	244	59		69	67	.45	2.5
4	31.7	19.61	.68	.35	283	260	245	48		70	68	.45	2.5
5	41.2	23.19	.64	.35	283	258	245	47		71	69	.45	2.5
6	50.4	26.65	.69	.35	279	258	245	47		72	70	.45	2.5
	59.6	30.25											
1	0	30.25	.86	.35	282	261	244	51		73	70	.45	2.5
2	10.6	34.25	.83	.35	282	261	246	47		73	71	.45	2.5
3	21.1	38.10	.78	.35	282	261	245	47		74	71	.45	2.5
4	31.2	41.84	.76	.35	282	258	245	47		74	72	.45	2.5
5	41.1	45.46	.68	.35	283	258	246	48		75	72	.45	2.5
6	50.7	49.21	.71	.35	282	260	247	47		75	73	.45	2.5
	60.5	53.06											

Traverse: 1			
Start Time: 847	Initial Leak Check: .009	cfm@ 16	"Hg
Finish Time: 947	Final Leak Check:	cfm@	"Hg

Traverse: 2			
Start Time: 954	Initial Leak Check:	cfm @	"Hg
Finish Time: 1055	Final Leak Check: .003	cfm @ 15	"Hg

Project No.: 21698

Operator : [signature]

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Covanta DYEC		
Plant Location	Courtice, Ontario		
Test No.: 2	Particle Size	PM10/2.5	
Test Date	OCTOBER 25 2016		
Test Location	APC Outlet No. 2		
Operator Signature			

Project No.:	21698	
Page	1 of 2	
Probe No.:	4	
Meter Box No.:	T2	
Impinger Box No.:	14	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.83	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	0.1773	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:	12	inches

Reading Interval	DWELL
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	158.2	g
WCBDA	9.7	g

Combustion Gas Concentration

Oxygen	8.73	%
Carbon Dioxide	10.55	%
Carbon Monoxide	16.3	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot	
Trendicator	566
Control Box	
Incline Manometer	TEST
Comb.Gas.Analyzer	
Micromanometer	
Barometer	
Calipers	

Nozzle Measurements

1 566
2
3 TEST
4
Average:

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: OCT 25/16	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	53.83	.70 .86	.35	277	269	242	63	53	72	72	.4	2.5
2	10.6	57.79	.85	.35	275	257	244	58		72	72	.4	2.5
3	21.0	61.62	.78	.35	278	261	245	55		73	72	.4	2.5
4	31.1	65.30	.57	.35	280	261	246	54		74	72	.4	2.5
5	41.1	68.90	.62	.35	283	261	247	54		75	73	.4	2.5
6	50.6	72.40	.69	.35	283	250	247	54		75	73	.4	2.5
	60.3	75.90											
1	0	75.90	.91	.35	283	250	244	55		76	74	.4	2.5
2	10.7	78.96	.86	.35	286	246	244	55		76	74	.4	2.5
3	21.3	82.80	.84	.35	286	250	246	50		76	74	.4	2.5
4	31.6	86.58	.83	.35	288	253	246	50		77	74	.4	2.5
5	41.1	90.08	.77	.35	289	253	247	50		77	74	.4	2.5
6	50.3	93.33	.82	.35	286	253	247	51		77	74	.4	2.5
	59.8	96.80											

7.1
8.6
9.9
10.4
11.6
12.1

Traverse: 2			
Start Time: 11:51	Initial Leak Check: .01	cfm@ 17	"Hg
Finish Time: 12:51	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1300	Initial Leak Check:	cfm @	"Hg
Finish Time: 1400	Final Leak Check: .002	cfm @ 14	"Hg

Project No.: 21698

Operator : D. O. [illegible]

ORTECH Environmental

Plant	Covanta DYEC		
Plant Location	Courtice, Ontario		
Test No.:	3	Particle Size	PM 10/2.5
Test Date	OCTOBER 25, 2016		
Test Location	APC Outlet No. 2		
Operator Signature	[illegible]		

Project No.:	21698	
Page	1	of
Probe No.:	4	
Meter Box No.:	7L	
Impinger Box No.:	7	

Pitot Factor	0.846	
DGMCF	0.989	
Barometric Pressure	29.84	"Hg
Static Pressure	-9.25	"H2O
Nozzle Size	0.1773	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	146.3	g
WCBDA	6.9	g

Combustion Gas Concentration

Oxygen	8.97	%
Carbon Dioxide	10.34	%
Carbon Monoxide	14.5	ppm

Measuring Device	MII Numbers
Probe / Pitot	566
Trendicator	
Control Box	T857
Incline Manometer	
Comb.Gas.Analyzer	
Micromanometer	1
Barometer	
Calipers	

Reading Interval	Dwell		
Number of Ports	2		
Number of Points/Port	~~12~~ 6		

Nozzle Measurements	
1	566
2	T857
3	
4	1
Average:	

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: Oct 25/16	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 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	96.99	.93	.35	282	248	261	50		1874	73	.4	2.5
2	10.2	100.89	.87	.35	282	246	260	46		73	73	.4	2.5
3	19.7	104.40	.80	.35	282	245	262	46		73	73	.4	2.5
4	29.0	107.77	.75	.35	283	245	260	46		74	74	.4	2.5
5	37.7	110.94	.65	.35	283	247	263	47		74	74	.4	2.5
6	46.8	114.28	.73	.35	283	247	263	47		74	74	.4	2.5
	56.8	117.80											
1	0	117.80	.93	.35	283	248	261	47		75	75	.4	2.5
2	11.0	121.79	.89	.35	284	248	264	48		77	75	.4	2.5
3	21.70	125.67	.79	.35	284	247	263	48		78	76	.4	2.5
4	32.3	129.53	.74	.35	282	246	259	48		76	76	.4	2.5
5	42.8	133.33	.68	.35	282	250	255	49		76	76	.4	2.5
6	53.0	137.05	.70	.35	280	251	256	49		76	76	.4	2.5
	63.5	140.90											

Traverse: 2			
Start Time: 517	Initial Leak Check: .01	cfm@ 16	"Hg
Finish Time: 1613	Final Leak Check:	cfm@	"Hg

Traverse: 1			
Start Time: 1618	Initial Leak Check:	cfm @	"Hg
Finish Time: 1722	Final Leak Check: .009	cfm @ 14.5	"Hg

-9.25

Project No.: 21698

Operator :

APPENDIX 8

SVOC Data Sheets
(60 pages)

ORTECH Environmental

Plant	Covanta DYEC	
Plant Location	Courtice, Ontario	
Test No.: 1	Semi-Volatile Organic Compounds	
Test Date	Oct 27/16	
Test Location	APC Outlet No. 1	
Operator Signature	[signature]	

Project No.:	21698	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1	
Impinger Box No.:	6	

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	29.53	"Hg
Static Pressure	−11.3	"H2O
Nozzle Size	0.2546	inches
Stack Diameter	4.5	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	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	983.7	g
WCBDA	28.3	g

Combustion Gas Concentration

Oxygen	9.11	%
Carbon Dioxide	10.12	%
Carbon Monoxide	12.9	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator TI	COE20094
Control Box	Team 1 COE 20094
Incline Manometer	Team 1 COE 20094
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

Nozzle Measurements	
1	.2540
2	.2550
3	.2545
4	.2550
Average:	0.2546

Notes:

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter 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
	*	*	*		*			*		*	*	*	*
		111.58	0.71 ~~0.75~~	.70				52				1.75	
1	0	~~111.340395~~	~~0.67~~	~~.68~~	280	251	260	~~62~~	49	64	63	~~1.65~~	4
	5	115.08	.69	.70	280	254	259	51	39	64	64	1.7	5
	10	118.54	.70	.70	281	254	259	49	38	64	64	1.75	5
2	15	122.06	.73	.71	281	254	260	49	39	64	64	1.85	5
	20	125.67	.73	.72	279	254	260	48	38	65	64	1.83	5
	25	129.28	.74	.72	279	253	260	47	38	65	64	1.85	5
3	30	132.92	.74	.72	279	254	260	47	39	65	64	1.85	5
	35	136.54	.75	.72	283	253	260	47	40	65	64	1.9	5
	40	140.18	.74	.72	284	250	260	47	40	65	64	1.87	5
4	45	143.82	.73	.71	285	254	260	47	41	65	65	1.85	5
	50	147.45	.73	.71	287	254	260	47	42	66	64	1.83	5
	55	151.06	.77	.73	287	254	260	47	42	66	64	1.93	5
5	60	154.76	.74	.72	288	251	260	48	43	66	65	1.87	6
	65	158.42	.73	.71	288	252	260	47	43	66	65	1.82	6
	70	162.05	.75	.72	288	254	260	47	46	66	65	1.87	6
6	75	165.70	.75	.72	289	254	260	46	39	67	65	1.87	6
	80	~~18~~ 169.37	.75	.72	289	255	259	46	39	67	65	1.87	6
	85	173.02	.76	.73	290	252	261	47	39	67	66	1.87	6
7	90	176.65	.70	.70	290	251	260	47	39	67	66	1.8	6
	95	180.20	.71	.70	291	255	258	48	40	68	66	1.75	6
	100	183.76	.71	.70	291	255	261	48	39	67	67	1.75	6

Traverse: 2 Near Wall			
Start Time: 08:18	Initial Leak Check: 0.002 cfm@ 12/14 "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.: 21698

Operator : AS

Field Data Sheet

Date:	Oct 27/16	Plant:	Covanta DYEC	Test No.:	SVOC	Page 3 of 5
		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
8	105	187.30	.76	.73	291	252	262	48	40	67	67	1.9	6
	110	190.99	.74	.73	291	256	261	48	41	68	67	1.85	6
	115	194.65	.74	.72	290	252	261	48	40	68	67	1.85	6
9	120	198.31	.81	.75	290	252	261	48	41	68	67	2.05	6
	125	202.14	.80	.75	290	254	261	48	42	68	67	2.03	6
	130	205.95	.79	.74	290	252	261	~~8~~48	43	68	67	2.0	6
10	135	209.74	.85	.77	289	253	261	48	43	68	67	2.1~~8~~2	7
	140	213.66	.83	.76	289	253	261	49	44	68	67	2.1	7
	145	217.55	.83	.76	289	252	261	49	45	68	67	2.05	7
11	150	221.40	.84	.77	289	255	261	49	46	67	67	2.05	7
	155	225.25	.84	.77	289	254	261	50	40	68	67	2.05	7
	160	229.08	.85	.77	288	255	261	50	40	67	67	2.07	7
12	165	232.94	.87	.78	289	253	261	50	42	67	67	2.2	7
	170	236.892	.87	.78	290	255	261	50	43	67	67	2.16	7
	175	240.89	.88	.78	290	255	261	51	43	67	67	2.16	7
	180	244.965											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@ —	"Hg
Finish Time: 11:18	Final Leak Check: 0.003	cfm@ 17	"Hg

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

Project No.: 21698

Operator : AS

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 1	SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	245.435	.77	.74	280	249	261	60	41	68	67	1.980	6
	5	249.18	.77	.74	280	255	259	50	43	67	67	1.85	6
	10	252.83	.77	.74	279	251	260	49	42	67	67	1.9	6
2	15	256.51	.77	.74	279	253	260	48	42	67	67	1.95	6
	20	260.24	.76	.73	279	253	260	48	42	67	67	1.93	6
	25	263.97	.75	.73	279	259	259	47	42	67	67	1.93	6
3	30	267.70	.78	.74	286	251	260	47	42	67	67	1.96	6
	35	271.45	.78	.74	287	254	260	47	42	68	67	1.96	6
	40	275.18	.78	.74	287	251	260	47	43	68	67	1.96	6
4	45	278.95	.75	.73	287	255	260	47	44	68	67	1.88	6
	50	282.64	.74	.72	287	255	260	48	43	68	67	1.88	6
	55	286.30	.74	.72	287	254	260	47	43	68	67	1.85	6
5	60	289.97	.73	.72	287	253	260	47	45	68	67	1.8	6
	65	293.58	.71	.71	287	251	260	47	44	68	67	1.76	6
	70	297.16	.70	.70	287	254	260	47	43	68	67	1.75	6
6	75	300.72	.70	.70	288	254	259	47	43	68	67	1.75	6
	80	304.29	.69	.70	289	253	260	47	44	69	67	1.72	6
	85	307.83	.67	.69	288	255	260	47	44	69	67	1.68	6
7	90	311.33	.62	.66	288	254	260	47	45	68	67	1.52	6
	95	314.67	.63	.66	288	254	259	48	46	68	67	1.5	6
	100	318.00	.62	.66	288	251	260	50	44	69	67	1.5	6

Traverse: 1 Near Wall			
Start Time: 11:42	Initial Leak Check: .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.: 21698

Operator : AS

Field Data Sheet

Date: Oct 27/16	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft³	* 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	105	321.31	.62	.65	289	251	260	52	44	68	67	1.53	6
	110	324.66	.70	.670	288	251	261	53	43	69	68	1.76	6
	115	328.18	.68	.69	287	255	260	52	44	69	68	1.73	6
9	120	331.76	.80	.75	286	252	262	56	45	69	68	2.0	6
	125	335.54	.81	.76	286	255	260	52	45	69	68	2.05	7
	130	339.39	.81	.76	285	253	260	55	47	69	68	2	7
10	135	343.22	.87	.78	285	256	261	57	49	69	68	2.1	7
	140	347.15	.87	.78	285	252	261	54	48	69	68	2.1	7
	145	351.06	.85	.78	284	256	261	56	50	69	68	2.1	7
11	150	354.97	.87	.79	283	254	260	57	55	69	68	2.20	7
	155	358.98	.85	.78	283	255	260	53	51	69	68	2.17	7
	160	362.98	.84	.77	282	256	260	57	52	69	68	2.17	7
12	165	366.89	.86	.78	282	252	260	57	50	70	69	2.135	7
	170	370.83	.84	.77	281	256	261	55	46	69	69	2.15	7
	175	374.79	.82	.76	281	254	261	57	50	69	68	2.08	7
	180	378.69											

Traverse:				
Start Time: —	Initial Leak Check: —	cfm@		"Hg
Finish Time: 14:42	Final Leak Check: 0.001	cfm@	17	"Hg

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

Project No.: 21698

Operator : AS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	Oct 28, 2016
Test Location	APC Outlet No. 1
Operator Signature	[signature]

Project No.:	21698	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1	
Impinger Box No.:	3	

Pitot Factor	.848	
DGMCF	0.993	
Barometric Pressure	29.76	"Hg
Static Pressure	~~X~~ -11.8	"H2O
Nozzle Size	0.2546	inches
Stack Diameter	4.5	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	0	mg
Probe	∅	mg

Moisture Gain

CWTR	1022.6	g
WCBDA	30.7	g

Combustion Gas Concentration

Oxygen	8.96	%
Carbon Dioxide	10.44	%
Carbon Monoxide	9.7	ppm

Site Diagram

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

see test #

Nozzle Measurements
1 ________
2 ________
3 ________
4 ________
Average:

see test #1

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: Oct 28/16	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

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	381.42~~46~~	.82	.75	280	254	255	61	~~52~~37	62	61	2.01	6
	5	385.16	.84	.76	282	252	260	42	46	62	61	2.1	7
	10	388.98	.81	.75	282	254	259	40	45	61	61	2.03	7
2	15	392.76	.82	.75	282	251	260	40	46	62	61	2.03	7
	20	396.52	.85	.76	282	251	260	40	45	61	61	2.10	7
	25	400.30	.86	.77	283	255	260	40	48	62	61	2.12	7
3	30	404.17	.84	.76	284	256	261	40	47	62	61	2.12	7
	35	~~407~~ 408.04	.89	.78	283	255	260	41	47	63	62	2.20	8
	40	412.01	.84	.76	283	255	260	41	47	63	62	2.08	8
4	45	415.84	.82	.75	283	255	260	42	46	63	62	2.03	8
	50	419.63	.80	.74	282	252	260	42	45	63	62	1.95	7
	55	423.36	.78	.73	282	254	260	43	45	63	62	1.93	7
5	60	427.06	.72	.71	282	252	260	43	46	63	62	1.80	7
	65	430.65	.73	.71	282	253	260	43	44	63	62	1.8	7
	70	434.18	.73	.71	282	255	260	44	44	63	62	1.8	7
6	75	437.74	.68	.69	282	254	260	44	45	64	62	1.68	7
	80	441.18	.70	.70	283	253	260	44	46	64	63	1.72	7
	85	444.06	.70	.70	283	252	260	45	46	64	62	1.75	7
7	90	448.19	.72	.71	283	254	260	45	45	64	63	1.80	7
	95	451.77	.75	.72	283	254	260	45	44	64	63	1.88	7
	100	455.41	.71	.70	283	~~260~~ 253	260	45	45	65	63	1.80	7

Traverse: 2 ~~A~~ FW		
Start Time: 8:04	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.: 21698

Operator : AS

Field Data Sheet

Date: Oct 28/16	Plant:	Covanta DYEC	Test No.: 2	SVOC	Page 3 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

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 *
8	105	458.97	.72	.71	282	255	261	45	45	65	64	1.8	7
	110	462.55	.77	.73	283	253	260	45	44	65	64	1.95	8
	115	466.26	.76	.76	287	255	261	47	46	66	64	1.94	8
9	120	469.97	.72	.71	282	255	261	47	45	65	64	1.80	7.5
	125	473.57	.74	.72	282	251	260	47	45	66	64	1.85	7.5
	130	477.21	.75	.72	283	254	261	48	47	66	65	1.85	7.5
10	135	480.86	.75	.72	282	255	261	49	46	66	65	1.85	7.5
	140	484.50	.76	.73	282	252	261	48	46	66	65	1.87	7.5
	145	488.14	.77	.73	282	253	260	46	44	66	65	1.90	8
11	150	491.83	.74	.72	279 ~~282~~	253	261	45	45	66	65	1.85	8
	155	495.50	.76	.73	279	252	260	45	45	66	65	1.85	8
	160	499.16	.73	.72	279	251	261	45	45	67	66	1.83	8
12	165	502.79	.72	.71	279	251	260	45	45	67	66	1.82	8
	170	506.40	.77	.74	279	251	260	46	47	67	66	1.95	8
	175	510.12	.75	.73	279	255	261	46	48	67	66	1.93	8
	180	513.77											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@	"Hg
Finish Time: 11:04	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.: ~~AS~~ 21698

Operator : AS

Field Data Sheet

Date: Oct 28/16	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	514.18	.84	.77	279	254	262	58	44	68	67	2.12	8
	5	518.06	.85	.77	283	252	261	45	52	67	67	2.15	8
	10	521.96	.85	.78	284	255	260	47	55	67	67	2.15	8
2	15	525.91	.88	.79	283	252	261	48	53	67	67	2.2	8
	20	529.98	.91	.80	284	253	261	47	53	67	67	2.25	8.5
	25	533.99	.91	.80	284	256	261	49	56	67	67	2.35	9
3	30	538.09	.90	.79	285	253	260	46	57	67	67	2.3	9
	35	542.16	.88	.79	284	252	260	48	57	67	67	2.22	9
	40	546.17	.87	.78	285	252	260	46	55	67	67	2.20	9
4	45	550.08	.85	.77	285	253	260	49	55	68	67	2.1	9
	50	554.08	.84	.76	285	254	261	46	56	68	67	2.0	8.8
	55	557.92	.84	.76	285	254	260	46	56	68	67	2.0	8.8
5	60	561.77	.73	.72	285	256	260	47	56	68	67	1.8	8.0
	65	565.41	.69	.70	284	253	261	47	57	68	68	1.7	8.0
	70	568.92	.68	.69	284	256	261	49	58	68	67	1.65	7.5
6	75	572.41	.63	.67	283	256	261	47	53	69	68	1.8	6.5
	80	575.67	.64	.67	282	253	260	48	45	69	68	1.55	7.0
	85	579.04	.64	.67	282	252	261	47	47	69	68	1.55	7.0
7	90	582.31	.68	.69	282	254	260	47	47	69	68	1.7	7
	95	585.71	.68	.69	282	256	261	46	45	69	68	1.75	7
	100	589.27	.68	.69	282	254	260	45	47	69	68	1.7	7

Traverse:	1 FW			
Start Time:	11:28	Initial Leak Check:	0.005 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.: 21698

Operator : AS

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Oct 28/16	Plant: Covanta DYEC	Test No.: 2 SVOC
	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
8	105	592.81	.68	.69	282	255	261	45	47	69	68	1.7	7
	110	596.31	.70	.70	282	255	261	44	49	69	68	1.75	7.5
	115	599.85	.70	.70	282	253	260	44	48	69	68	1.75	7.5
9	120	603.42	.71	.71	282	252	261	44	48	69	69	1.75	7.5
	125	606.97	.69	.70	282	255	260	44	48	70	69	1.75	7.5
	130	610.54	.69	.70	281	251	261	44	49	70	69	1.75	7.5
10	135	614.08	.68	.70	279	252	261	44	49	70	69	1.75	7.5
	140	617.65	.69 ~~.67~~	.70	278	255	261	44	47	70	69	1.75	7.5
	145	621.18	.69	.70	278	254	261	44	48	70	69	1.75	7.5
11	150	624.74	.67	.69	278	252	261	44	48	70	69	1.70	7.5
	155	628.26	.66	.69	278	252	261	45	48	71	70	1.68	7.8
	160	631.76	.66	.69	278	252	261	45	48	71	70	1.68	7.8
12	165	635.28	.67	.69	278	253	260	45	48	71	70	1.68	7.8
	170	638.76	.66	.69	278	255	260	45	47	71	70	1.68	7.8
	175	642.26	.69	.70	278	253	261	45	49	71	70	1.73	8
	180	645.758											

Traverse: 1				
Start Time: —	Initial Leak Check: —	cfm@	—	"Hg
Finish Time: 14:28	Final Leak Check: 0.004	cfm@	17	"Hg

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

Project No.: 21698

Operator :

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	Oct 31/16
Test Location	APC Outlet No. 1
Operator Signature	[signature]

Project No.:	21698	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 1	COE 20094
Impinger Box No.:	4	

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	29.80	"Hg
Static Pressure	-10.5	"H2O
Nozzle Size	0.2546	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	983.9	g
WCBDA	23.4	g

Combustion Gas Concentration

Oxygen	9.20	%
Carbon Dioxide	10.19	%
Carbon Monoxide	10.4	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	SEE
Control Box	
Incline Manometer	TEST
Comb.Gas.Analyzer	
Micromanometer	#1
Barometer	
Calipers	

see test #1

Nozzle Measurements	
1	~~.2445~~ 0.2550
2	~~.2445~~ .2545
3	~~.2450~~ .2545
4	~~.24~~ .2545
Average:	.2546

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:

Field Data Sheet

Date: Oct 31/16	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	646.283	0.81	.75	~~279~~ 287	255	264	64	70	64	63	~~7~~ 2.0	7
	5	650.10	.81	.75	287	259	263	52	47	64	64	~~8~~ 2.0	6.5
	10	653.83	.83	.76	287	258	263	48	48	64	63	2.03	6.5
2	15	657.62	.86	.77	288	260	254	47	43	64	64	2.10	7
	20	661.45	.87	.77	289	260	263	49	46	64	64	2.15	7
	25	665.36	.88	.78	288	260	265	45	43	65	64	2.15	7
3	30	669.26	.86	.77	289	260 ~~253~~	266	45	46	65	64	2.15	7
	35	673.16	.86	.77	290	258	266	48	51	65	64	2.15	7
	40	677.07	.88	.77	290	258	262	44	43	65	65	2.17	7
4	45	680.99	.82	.75	291	258	259	44	44	66	65	2.03	7
	50	684.81	.82	.75	290	261	262	47	44	66	65	2.03	7
	55	688.63	.85	.77	290	257	264	45	42	66	65	2.10	7
5	60	692.47	.73 ~~8~~	.71	290	261	263	46	43	66	65	1.85 ~~1.80~~	7
	65	696.04	.72	.71	290	260	265	49	45	67	65	1.85	7
	70	699.72	.76	.73	290	261	265	46	45	67	66	1.90	7
6	75	703.39	.64	.67	289	258	265	46	47	67	66	1.60	~~7~~ 6
	80	706.82	.63	.66	287	257	264	47	49	67	66	1.57	6
	85	710.21	.63	.66	285	260	262	46	49	68	66	1.55	6
7	90	713.57	.61	.65	285	261	267	46	43	68	66	1.50	6
	95	716.91	.67	.69	284	258	266	46	42	68	66	1.70	6
	100	720.36	.69	.70	283	257	263	45	41	68	67	1.75	6

Traverse: 1 FW			
Start Time: 10:17	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.: 21698

Operator : AS

Field Data Sheet

Date: Oct 31/16	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	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 *
8	105	723.91	.68	.69	283	257	266	45	42	69	67	1.75	6
	110	727.44	.70 ~~.67~~	.69	282	257	265	46	43	69	67	1.70	6
	115	730.98	.72	.71	282	256	265	46	45	69	67	1.85	6.5
9	120	734.59	.70	.70	282	261	267	46	47	70	68	1.80	6.5
	125	738.21	.70	.70	282	259	265	46	51	69	68	1.80	6.5
	130	741.79	.73	.72	282	260	266	47	54	70	68	1.85	7
10	135	745.42	.69	.70	280	258	265	47	57	70	68	1.77	7
	140	749.02	.67	.69	279	261	263	48	60	70	68	1.70	6.5
	145	752.55	.67	.69	279	260	266	49	63	70	69	1.70	6.5
11	150	756.05	.66	.69	279	259 ~~58~~	266	50	57	70	69	1.70	6.5
	155	759.57	.67	.69	279	256	265	50	45	70	69	1.70	6.5
	160	763.11	.68	.70	279	261	265	51	42	70	69	1.70	6.5
12	165	766.63	0.60	.66	279	256	266	51	43	71	70	1.50	6
	170	770.00	.60	.66	279	258	265	50	42	71	70	1.50	6
	175	773.30	.63	.67	279 ~~260~~	256 ~~265~~	265	51	43	71	70	1.6	6
	180	776.658											

Traverse: 1			
Start Time: —	Initial Leak Check: —	cfm@	"Hg
Finish Time: 13:17	Final Leak Check: 0.003	cfm@ 16	"Hg

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

Project No.: 21698

Operator : AS

Field Data Sheet

Date:	Oct 31/16	Plant:	Covanta DYEC	Test No.:	3 SVOC	Page 4 of 5
		Plant Location:	Courtice, Ontario	Test Location:	APC Outlet No. 1	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	777.08	.81	.76	282	257	261	62	46	71	70	2.05	7
	5	780.87	0.79	.75	282	257	267	50	44	71	70	2.0	7
	10	784.69	.78	.75	282	258	265	50	43	71	70	2.0	7
2	15	788.48	.78	.75	282	261	266	51	41	71	71	2.0	7
	20	792.27	.79	.75	282	259	265	52	41	71	71	2.0	7
	25	796.04	.86	.76	282	262	265	53	41	71	71	2.05	7
3	30	799.84	.80	.76	282	260	264	51	41	72	71	2.08	7
	35	803.66	.80	.76	282	263	265	49	40	71	71	2.0	7
	40	807.46	.82	.76	283	258	264	49	39	71	71	2.10	7
4	45	811.30	.78	.75	283	260	266	48	39	72	71	2.0	7
	50	815.11	.8	.75	284	262	265	47	39	72	71	2.0	7
	55	818.92	.80	.76	284	261	267	48	40	72	71	2.0	7
5	60	822.70	.80	.76	285	262	266	47	41	72	71	2.0	7
	65	826.51	.77	.74	284	261	265	48	43	73	72	1.95 ~~2.10~~	7
	70	830.26	.73	.72	285	260	265	48	44	72	71	1.90	7
6	75	833.99	.69	.70	285	260	264	49	47	73	72	1.80	7
	80	837.59	.67	.69	284	261	266	49	50	73	72	1.70	7
	85	841.12	.67	.69	284	263	266	50	53	73	72	1.70	7
7	90	844.63	.72	.72	284	262	267	50	57	73	72	1.85	7
	95	848.28	.72	.72	284	262	266	48	45	74	72	1.85	7
	100	851.99	.72	.72	284	261	265	46	42	74	73	1.85	7

Traverse:	1				
Start Time:	13:34	Initial Leak Check:	0.002 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.: 21698

Operator : AS

Field Data Sheet

Date: Oct 31/16	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 1	

Point *	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	105	855.68	.71	.71	283	259	267	46	42	74	73	1.83	7
	110	859.30	.72	.72	284	259	265	46	42	74	73	1.85	7
	115	863.03	.72	.72	284	259	265	46	42	74	73	1.83	7
9	120	866.68	.74	.73	284	258	265	47	43	74	73	1.9	7
	125	870.40	.75	.73	284	259	267	47	44	74	73	1.9	7
	130	874.10	.75	.73	284	259	265	47	44	74	73	1.9	7
10	135	877.80	.73	.72	284	259	265	48	46	75	73	1.85	7
	140	881.51	.73	.73	284	260	264	48	47	75	73	1.83	7
	145	885.17	.73	.73	283	257	266	49	49	74	74	1.83	7
11	150	888.83	.74	.73	281	262	267	48	52	75	74	1.83	7
	155	892.48	.73	.73	286	258	266	49	49	75	74	1.83	7
	160	896.16	.73	.73	280	258	264	49	42	75	74	1.83	7
12	165	899.86	.73	.73	280	261	266	49	42	75	74	1.83	7
	170	903.54	~~.74~~	.73	280	258	265	50	41	75	74	1.83	7
	175	907.22	.70	.72	279	260	266	50	42	75	74	1.80	7
	180	910.84											

Traverse: 2			
Start Time:	Initial Leak Check:	cfm@	"Hg
Finish Time: 16:34	Final Leak Check: 0.004	cfm@ 16	"Hg

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

Project No.: 21698

Operator : AS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	Nov 1, 2016
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	21698
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 2
Impinger Box No.:	12

Pitot Factor	0.848	
DGMCF	0.989	
Barometric Pressure	29.47	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2546	inches
Stack Diameter	4.5	feet
Length	~~4.5~~	feet
Width	—	feet
Port length:	—	inches

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

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	1032.9	g
WCBDA	10.1	g

Combustion Gas Concentration

Oxygen	8.89	%
Carbon Dioxide	10.24	%
Carbon Monoxide	13.6	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE20092
Control Box	Team 2 COE 20092
Incline Manometer	COE20092
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

Nozzle Measurements	
1	0.2550
2	0.2545
3	~~0~~ 0.2545
4	0.2545
Average:	

Same as T1 UNIT 1

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: Nov 1/16	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot Δ P "H_2O	Desired cfm	Stack Temp °F	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F	Meter Temp Inlet °F	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
	*	*	*		*			*		*	*	*	*
1	0	207.066	.86	0.79	276	258	249	50 ~~71~~	50	72	71	2.15	7
	5	211.07	.84	.78	276	254	250	52	50	72	71	2.10	7
	10	215.11	.85	.79	276	253	251	48	47	72	72	2.12	7
2	15	219.13	.85	.79	276	259	251	45	45	73	72	2.12	7
	20	223.10	.87	.80	277	258	251	44	63	73	72	2.18	8.5
	25	227.19	.87	.80	277	256	251	43	56	73	72	2.18	8.5
3	30	231.47	.84	.78	277	254	251	43	52	74	73	2.10	8
	35	235.56	.86	.79	277	255	251	44	54	75	73	2.12	8
	40	239.63	.84	.78	277	260	251	43	51	75	73	2.10	8
4	45	243.69	.81	.77	277	256	251	44	48	75	73	2.03	7.5
	50	247.63	.80	.77	278	257	251	44	48	76	74	2.0	7.5
	55	251.55	.80	.77	278	260	251	44	49	76	74	2.0	7.5
5	60	255.45	.78	.76	278	257	251	45	49	77	74 ~~77~~	1.95	7
	65	259.33	.77	.75	278	260	251	45	49	77	75	1.9	7
	70	263.16	.77	.76	278	261	251	45	50	78	75	1.9	7
6	75	267.00	.70	.72	278	259	251	45	47	78	75	1.75	~~6~~ 7
	80	270.69	.70	.72	278	261	251	45	45	78	76	1.70	7
	85	274.33	.69	.72	277	256	251	46	44	79	76	1.70	7
7	90	277.94	.74	.74	278	257	252	46	45	79	76	1.85	7
	95	281.70	.72	.73	277	257	252	46	46	79	76	1.8	7
	100	285.45	.72	.73	277	255	252	46	47	79	76	1.8	7

Traverse: 1 FW				
Start Time: 09:35	Initial Leak Check: 0.005	cfm@	16	"Hg
Finish Time: —	Final Leak Check: —	cfm@		"Hg

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

Project No.: 21698

Operator : AS

Field Data Sheet

Date: Nov 1/16	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft^3	Pitot 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	105	289.19	.72	.73	278	259	252	46	50	80	77	1.80	7
	110	292.94	.72	.73	277	256	252	46	48	80	77	1.80	7
	115	296.69	.72	.73	277	261	252	46	46	80	77	1.80	7
9	120	300.44	.73	.74	278	255	252	47	47	80	78	1.80	7
	125	304.18	.73	.74	278	254	252	47	48	80	78	1.8	7
	130	307.92	.74	.74	278	258	252	46	49	80	78	1.8	7
10	135	311.65	.71	.73	277	260	252	46	50	80	78	1.8	7
	140	315.36	.71	.73	280	261	254	47	51	82	79	1.8	7
	145	319.09	.71	.73	278	254	252	46	45	81	78	1.78	7
11	150	322.82	.67	.71	278	255	252	46	43	81	79	1.65	7
	155	326.41	.67	.71	278	254	252	46	44	81	78	1.65	7
	160	330.00	.65	.70	278	254	252	46	43	81	79	1.60	~~7~~ 6.5
12	165	333.53	.62	.68	278	256	252	46	43	81	79	1.52	6
	170	336.99	.60	.67	278	260	252	47	43	81	79	1.5	6
	175	340.43	.60	.67	278	255	252	47	44	81	79	1.5	6
	180	343.862											

Traverse: 1				
Start Time: —	Initial Leak Check:	— cfm@		"Hg
Finish Time: 12:35	Final Leak Check:	0.004 cfm@	15	"Hg

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

Project No.: 21698

Operator : AS

Field Data Sheet

Date: Nov 1/16	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot Δ P "H_2O	Desired cfm	* Stack Temp °F	Probe Temp °F	Oven Temp °F	* Impinger Temp Outlet °F	Impinger Temp ~~Inlet~~/Trap °F	* Meter Temp Outlet °F	* Meter Temp Inlet °F	* Meter Pressure Δ H "H_2O	* Pump Vacuum "Hg Gauge
1	0	344.222	.92	.83	277	259	251	50	44	80	79	2.3	8
	5	348.42	.89	.82	277	255	251	48	48	80	79	2.25	8
	10	352.63	.89	.82	277	259	253	48	46 ~~49~~	80	79	2.20	8
2	15	356.81	.91	.83	277	258	252	46	45	79	79	2.2	8
	20	360.96	.91	.82	277	266	253	46	45	80	79	2.2	8
	25	365.12	.91	.83	278	261	254	45	46	80	79	2.2	8
3	30	369.27	.91	.83	278	261	254	45	46	80	79	2.2	8
	35	373.33	.87	.81	278	262	253	45	46	80	79	2.2	8
	40	377.49	.84	.79	278	260	252	46	49	80	79	2.10	8
4	45	381.57	.78	.76	277	256	252	46	49	80	79	1.95	8
	50	385.47	.81	.78	278	258	252	47	50	80	79	2.0	8
	55	389.39	.81	.78	278	255	252	46	51	81	79	2.0	8
5	60	393.31	.74	.74	278	261	252	47	54	81	79	1.85	7.5
	65	397.13	.74	.74	278	261	252	48	51	81	80	1.85	7.5
	70	400.96	.74	.74	279	261	252	46	49	81	80	1.85	7.5
6	75	404.81	.66	.70	279	259	252	45	49	82	80	1.65	7
	80	408.43	.66	.70	279	259	252	45	48	82	80	1.65	7
	85	412.02	.66	.70	279	257	252	45	49	82	80	1.65	7
7	90	415.61	.71	.73	279	255	52	47	50	82	80	1.8	7
	95	419.32	.69	.72	279	255	252	45	49	82	80	1.75	7
	100	423.06	.70	.73	279	256	252	46	49~~45~~	82	80	1.75	7

Traverse: 2 FW				
Start Time: 12:46	Initial Leak Check: 0.005	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

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Project No.: 21698

Operator : AS

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Nov 1/16	Plant: Covanta DYEC	Test No.: 1 SVOC	
	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 *
8	105	426.77	.71	.73	278	259	253	46	48	82	80	1.75	7
	110	430.48	.73	.74	278	261	253	46	48	83	80	1.75	7
	115	434.19	.73	.74	278	261	253	46	48	82	81	1.75	7
9	120	437.90	.72	.74	278	257	253	46	48	83	81	1.75	7
	125	441.57	.75	.75	278	256	253	47	48	83	81	1.90	7
	130	445.39	.75	.75	278	257	252	47	50	83	81	1.90	7
10	135	449.22	.71	.73	278	260	252	48	50	83	81	1.80	7
	140	452.99	.71	.73	278	261	253	48	50	82	81	1.8	7
	145	456.73	.73	.74	278	261	252	48	45	83	81	1.8	7
11	150	460.46	.65	.70	277	261	253	48	44	83	81	1.6	6.5
	155	464.06	.66	.71	~~278~~ 277	255	252	48	44	83	81	1.6	6.5
	160	467.61	.66	.71	277	255	253	49	44	83	81	1.6	6.5
12	165	471.22	.69	.73	277	261	252	49	44	83	81	1.75	6
	170	474.84	.70	.73	277	257	253	49	46	83	81	1.80	7
	175	478.55	.70	.73	277	261	252	49	46	83	81	1.80	7
	180	482.236											

Traverse: 2				
Start Time: —	Initial Leak Check: —	cfm@		"Hg
Finish Time: 15:46	Final Leak Check:	cfm@	17	"Hg

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

Project No.: 21698

Operator : AS

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	Nov 2, 2016
Test Location	APC Outlet No. 2
Operator Signature	

Project No.:	21698	
Page	1 of 5	
Probe No.:		
Meter Box No.:	Team 2	
Impinger Box No.:	4	

Pitot Factor	0.848	
DGMCF	0.989	
Barometric Pressure	29.66	"Hg
Static Pressure	-10.7	"H2O
Nozzle Size	0.2546	inches
Stack Diameter	4.5	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	0	mg
Probe	0	mg

Moisture Gain

CWTR	989.1	g
WCBDA	23.9	g

Combustion Gas Concentration

Oxygen	8.91	%
Carbon Dioxide	10.24	%
Carbon Monoxide	12.8	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE20092
Control Box	Team 2 COE 20092
Incline Manometer	
Comb.Gas.Analyzer	SEE
Micromanometer	TEST
Barometer	
Calipers	#1

Nozzle Measurements

1 __________

2 __________

3 __________

4 __________

Average:

see test #1, Outlet 1

Site Diagram

Notes:

Field Data Sheet

Date: ~~Oct~~ Nov 2/16	Plant: Covanta DYEC	Test No.: 2 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time	Dry Gas Meter ft³	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	482.866	.79	.77	279	260	252	60	51 ~~58~~	81	81	2.0	5
	5	486.77	.79	.77	279	255	252	57	47	80	80	2.0	5
	10	490.74	.78	.76	279	260	253	52	45	80	86	1.95	5
2	15	494.65	.78	.77	280	260	253	51	44	80	80	1.9	5
	20	498.36	.79	.77	280	262	253	51	44	80	80	1.9	5
	25	502.19	.78	.76	279	261	253	51	44	80	80	1.9	5
3	30	506.03	.81	.78	279	261	253	51	43	81	80	1.9	5
	35	509.86	.78	.76 ~~.78~~	280	259	253	50	43	82	80	1.9	5
	40	513.74	.77	.76	279	260	253	50	43	82	80	1.9	5
4	45	517.59	.74	.75	279	258	253	51	43	83	81	1.8	5
	50	521.35	.72	.74	279	261	253	51	43	83	81	1.8	5
	55	525.10	.73	.74	278	263	253	51	44	83	81	1.8	5
5	60	528.81	.70	.73	278	256	253	51	44	84	81	1.7	5
	65	532.44	.67	.71	278	257	253	52	44	84	82	1.7	5
	70	536.06	.67	.71	278	262	253	52	44	84	81	1.7	5
6	75	~~543.20~~ 539.70	.63	.69	278	262	254	52	41	85	82	1.6	5
	80	543.20	.62	.69	278	258	253	53	41	85	82	1.6	5
	85	546.60	.62	.69	278	258	254	52	42	85	82	1.50	5
7	90	550.06	.67	.71	278	259	254	53	41	85	82	1.7	5
	95	553.68	.67	.71	278	259	254	53	42	85	82	1.7	5
	100	557.33	.67	.71	278	256	253	53	42	85	83	1.7	5

Traverse: 1	FW			
Start Time: 8:06	Initial Leak Check:	0.006	cfm@ 16	"Hg
Finish Time: —	Final Leak Check:	—	cfm@	"Hg

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

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Project No.: 21698

Operator : AS

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date:	Nov 1 /16	Plant:	Covanta DYEC	Test No.:	2	SVOC	
		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
	*	*	*		*			*		*	*	*	*
8	105	561.01	.67	.71	278	262	254	54	43	85	83	1.7	5
	110	564.60	.67	.71	279	261	253	54	44	86	83	1.7	5
	115	568.22	.67	.71	279	259	254	55	42	86	83	1.7	5
9	120	571.84	.67	.71	278	256	254	55	42	86	83	1.7	5
	125	575.49	.67	.72	278	260	254	56	42	86	84	1.7	5
	130	579.10	.68	.72	278	255	254	56	42	86	84	1.7	5
10	135	582.72	.70	.73	277	259	254	57	42	86	84	1.8	5
	140	586.44	.69	.73	277	257	253	57	43	86	84	1.8	5
	145	590.13	.69	.73	277	252	254	58	43	86	84	1.8	5
11	150	593.84	.68	.72	277	261	254	59	44	86	84	1.75	5
	155	597.54	.67	.72	277	261	254	59	44	86	84	1.7	5
	160	601.19	.66	.71	277	256	254	60	45	87 ~~86~~	84	1.7	5
12	165	604.81	.67	.72	277	261	254	56	45	87	84	1.7	5
	170	608.43	.67	.72	277	256	253	53	45	87	84	1.7	5
	175	612.06	.66	.71	277	255	254	51	45	87	85	1.7	5
	180	615.690											

Traverse:	1			
Start Time:	—	Initial Leak Check:	— cfm@	"Hg
Finish Time:	11:06	Final Leak Check:	0.003 cfm@ 15	"Hg

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

Project No.: 21698

Operator : AS

Field Data Sheet

Date: Nov 2/16	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	616.062	.79	.78	277	255	253	54	44	86	84	2.0	5.5
	5	620.04	.79	.78	278	260	253	49	43	85	84	1.9 ~~2.0~~	5.5
	10	623.93	.77	.77	278	256	254	50	42	85	84	1.9	5.5
2	15	627.74	.79	.78	277	257	254	50	43	85	84	1.9 ~~2.0~~	5.5
	20	631.63	.78	.77	278	258	254	51	43	86	84	1.9 ~~2.0~~	5.5
	25	635.52	.79	.78	278	259	254	51	43	86	85	1.9	5.5
3	30	639.341	.75	.76	278	257	254	52	44	86	85	1.85	5.5
	35	643.~~12~~23	.76	.76	279	263	254	52	43	86	85	1.85	5.5
	40	647.06	.77	.77	278	258	254	52	42	87	85	1.9 ~~1.85~~	5.5
4	45	650.94	.78	.77	278	259	254	53	43	87	85	1.9	5.5
	50	654.81	.76	.76	278	262	254	53	43	87	85	1.9	5.5
	55	658.67	.76	.76	278	256	254	54	43	87	85	1.9	5.5
5	60	662.54	.71	.74	278	263	254	54	43	87	85	1.8	5.5
	65	666.28	.71	.74	278	263	254	54	43	87	85	1.8	5.5
	70	670.12	.69	.73	279	257	254	56	45	88	85	1.75	5.5
6	75	673.83	.66	.71	278	263	254	56	45	88	85	1.7	5.5
	80	677.44	.64	.70	278	258	254	57	42	88	86	1.6	5
	85	681.02	.63	.70	278	261	254	57	42	88	86	1.6	5
7	90	684.56	.64	.70	278	262	254	58	42	88	86	1.6	5
	95	688.09	.62	.69	278	263	254	54	41	88	86	1.6	5
	100	691.49	.63	.70	278	261	254	52	42	88	86	1.7	5

Traverse: 2				
Start Time: 11:18	Initial Leak Check:	0.005	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.: 21698

Operator : AS

Field Data Sheet

Date: Nov 2/16	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	Clock Time *	Dry Gas Meter ft^3 *	Pitot 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	105	695.22	.63	.70	279	254	254	51	42	89	86	1.6	5
	110	698.77	.64	.70	278	261	254	51	42	88	86	1.6	5
	115	702.31	.63	.70	278	261	254	51	42	89	86	1.6	5
9	120	705.85	.67	.72	277	260	254	51	42	89	87	1.7	5
	125	709.50	.67	.72	277	257	254	51	43	89	87	1.7	5
	130	713.16	.66	.71	278	263	254	51	43	89	87	1.7	5
10	135	716.77	.68	.72	277	262	254	51	43	89	87	1.7	5
	140	720.45	.69	.73	277	262	254	52	43	89	87	1.7	5
	145	724.16	.68	.72	277	261	254	52	42	89	87	1.7	5
11	150	727.85	.65	.71	277	263	254	53	43	89	87	1.65	5
	155	731.45	.65	.71	277	261	253	54	43	90	87	1.65	5
	160	735.05	.67	.72	277	262	254	55	44	89	87	1.65	5
12	165	738.62	.67	.72	277	260	254	55	44	90	87	1.7	5
	170	742.27	.65	.71	277	258	254	56	46	90	88	1.7	5
	175	745.87	.68	.73	277	262	254	56	48	90	88	1.7	5
	180	749.585											

Traverse: 2		
Start Time:	Initial Leak Check:	cfm@ "Hg
Finish Time: 14:18	Final Leak Check: 0.004	cfm@ 16 "Hg

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

Project No.: 21698

Operator : AS

Rev: April 28, 2005

ORTECH Environmental

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Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	Nov 3, 2016
Test Location	APC Outlet No. 2
Operator Signature	[signature]

Project No.:	21698
Page	1 of 5
Probe No.:	
Meter Box No.:	Team 2 COE20092
Impinger Box No.:	12

Pitot Factor	0.848 ✓	
DGMCF	0.989 ✓	
Barometric Pressure	29.54	"Hg
Static Pressure	-10.2	"H2O
Nozzle Size	0.2546 ✓	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Particulate Gain

Filter	∅	mg
Probe	∅	mg

Moisture Gain

CWTR	999.9 ✓	g
WCBDA	7.4 ✓	g

Combustion Gas Concentration

Oxygen	8.61 ✓	%
Carbon Dioxide	10.41 ✓	%
Carbon Monoxide	18.0	ppm

Measuring Device	MII Numbers
Probe / Pitot	SP4
Trendicator	COE20092
Control Box	Team 2 COE 20092
Incline Manometer	Team 2
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

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

Nozzle Measurements	
1	.2545
2	.2545
3	.2545
4	.2550
Average:	.2546

Probe Liner Glass / Metal / Teflon / Other________

Nozzle Glass / Metal / Other________

~~Union~~ None / Metal / Teflon / Other________

Pitot Leak Checked? Yes No

Site Diagram

Notes: Nozzle/liner changed to one piece

Field Data Sheet

Date: Nov 3/16	Plant: Covanta DYEC	Test No.: 3 SVOC	
	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	750.305	.96	.84	279	259	258	58	43	74	74	2.3	8
	5	754.48	.88	.80	280	254	250	56	43	74	74	2.1	8
	10	758.54	.89	.81	279	255	251	51	44	74	74	2.1	8
2	15	762.53	.88	.80	279	260	250	47	45	74	74	2.1	8
	20	766.52	.88	.80	278	259	251	45	46	74	75	2.1	8
	25	770.52	.89	.81	278	258	251	45	47	75	74	2.1	8
3	30	774.58	.86	.79	278	261	251	44	45	76	74	2.1	8
	35	778.65	.88	.80	278	260	250	44	43	76	74	2.1	8
	40	782.67	.90	.81	278	256	251	44	43	76	74	2.2	8.5
4	45	786.79	.83	.78	278	256	251	44	43	76	75	2.0	8
	50	790.77	.81 ~~.89~~	.77 ~~.81~~	278	255	251	44	43	77	75	2.0	8
	55	794.74	.81	.77	277	258	251	45	43	77	75	2.0	8
5	60	798.68	.74	.74	278	256	251	45	45	77	75	1.8	7.5
	65	802.44	.76	.75	278	255	251	45	43	78	75	1.8	7.5
	70	806.20	.78	.76	278	255	251	45	41	78	76	1.98	7.5
6	75	810.03	.72	.73	278	254	251	46	41	78	76	1.7	7
	80	813.72	.71	.73	279	261	253	46	42	79	76	1.7	7
	85	817.42	.70	.72	278	255	251	46	42	79	76	1.7	7
7	90	821.08	.72	.73	278	261	252	47	43	79	77	1.7	7
	95	824.74	.72	.73	278	258	251	47	43	79	77	1.7	7
	100	828.42	.73	.74	278	258	251	47	42	79	77	1.8	7

Traverse: 1 FW			
Start Time: 8:08	Initial Leak Check: 0.007	cfm@ 16	"Hg
Finish Time: —	Final Leak Check: —	cfm@	"Hg

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

δ = .8569

Project No.: 21698

Operator : AS

Field Data Sheet

Date: Nov 3/16	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Outlet No. 2	

Point	* Clock Time	* Dry Gas Meter ft^3	* Pitot 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	105	832.12	.72	.73	278	260	251	47	42	79	77	1.8	7
	110	835.82	.73	.74	277	258	252	48	42	79	77	1.8	7
	115	839.53	.73	.74	277	259	251	48	41	79	77	1.8	7
9	120	843.30	.75	.75	277	257	251	49	41	79	78	1.8	7
	125	847.10	.76	.75	277	260	251	49	42	80	78	1.8	7
	130	850.83	.76	.75	277	254	252	50	43	79	78	1.9	7.5
10	135	854.57	.76	.75	277	254	251	50	44	79	78	1.9	7.5
	140	858.44	.76	.75	277	261	251	51	44	79	78	1.9	7.5
	145	862.31	.75	.75	277	257	251	51	42	80	78	1.9	7.5
11	150	866.10	.68	.71	277	258	251	53	52	79	78	1.7	7
	155	869.76	.69	.72	277	258	252	54	45	80	79	1.7	7
	160	873.42	.67	.71	277	257	251	53	43	79	78	1.7	7
12	165	877.06	.56	.65	277	259	251	53	44	80	78	1.4	6
	170	880.39	.55	.64	277	257	251	48	43	80	78	1.4	6
	175	883.67	.53	.63	277	259	251 ~~254~~	47	44	80	78	1.3	6
	180	886.940											

Traverse: 1	
Start Time: —	Initial Leak Check: — cfm@ — "Hg
Finish Time: 11:08	Final Leak Check: 0.004 cfm@ 15 "Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Nov 3/16	Plant: Covanta DYEC	Test No.: 3 SVOC	
	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	887.256	.92	.83	277	253	251	60	45	79	78	2.3	9
	5	891.42	.92	.83	277	253	251	45	44	78	78	2.3	9
	10	895.75	.92	.83	278	260 ~~253~~	251	45	42	78	78	2.3	9
2	15	899.85	.92	.83	278	260	252	46	44	78	78	2.3	9
	20	904.05	.92	.83	278	259	251	46	43	78	77	2.3	9
	25	908.23	.91	.82	277	254	251	46	44	78	78	2.3	9
3	30	912.40	.90	.82	278	258	251	46	43	78	77	2.2	9
	35	916.54	.91	.82	278	259	251	47	44	78	77	2.2	9
	40	920.67	.91	.82	278	257	251	47	45	78	77	2.2	9
4	45	924.80	.84	.79	278	260	252	48	46	78	78	2.1	8.5
	50	928.79	.84	.79	278	258	251	48	47	78	77	2.1	8.5
	55	932.77	.82	.78	278	259	251	49	49	78	77	2.1	8.5
5	60	936.75	.70 ~~.81~~	.72 ~~.78~~	278	254	251	49	43	78	78	~~2~~ 1.7	~~8.5~~ 7.5
	65	940.57	.70	.72	278	254	252	50	40	79	78	1.7	7.5
	70	944.25	.73	.74	278	259	251	50	39	79	78	1.7	7.5
6	75	947.92	.65	.70	278	254	252	52	40	79	78	1.6	7
	80	951.43	.67	.71	278	255	251	50	40	80	78	1.6	7
	85	954.93	.68	.71	279	256	252	49	40	80	78	1.6	7
7	90	958.47	.66	.70	278	258	251	48	41	80	78	1.6	7
	95	962.03	.66	.70	279	255	252	47	42	81	79	1.6	7
	100	965.55	.67	.71	278	255	251	46	42	81	79	1.6	7

Traverse: 2				
Start Time: 11:20	Initial Leak Check:	0.007 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.: 21698

Operator : AS

Field Data Sheet

Date: Nov 3/16 | Plant: Covanta DYEC | Plant Location: Courtice, Ontario | Test No.: 3 SVOC | 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 *
8	105	969.09	.71	.73	278	257	252	46	44	81	79	1.8	7
	110	972.79	.73	.74	278	254	252	46	44	81	79	1.8	7
	115	976.46	.73	.74	277	260	252	46	47	81	79	1.8	7
9	120	980.15	.73	.74	277	256	252	46	44	81	79	1.8	7
	125	983.84	.76	.76	278	259	252	47	41	81	79	2.0	8
	130	987.68	.76	.76	278	261	252	47	39	81	79	2.0	8
10	135	991.57	.78	.76	277	260	252	47	39	81	81	2.0	8
	140	995.48	.76	.76	277	254	252	47	39	81	79	2.0	8
	145	999.39	.77	.76	283	263	255	50	40	82	81	1.9	8
11	150	1003.26	.77	.76	278	260	252	48	40	81	80	1.9	8
	155	1007.13	.68	.72	277 ~~270~~	254	251	48	40	81	80	1.7	7.5
	160	1010.82	.67	.71	277	258	252	48	40	81	80	1.7	7.5
12	165	1014.45	.64	.69	277	257	252	48	41	81	80	1.6	7
	170	1017.98	.64	.69	277 ~~258~~	258	252	48	41	82	80	1.6	7
	175	1021.53	.62	.68	277	257	251	48	41	82	80	1.6	7
	180	1025.075											

Traverse: 2			
Start Time: —	Initial Leak Check: —	cfm@	"Hg
Finish Time: 14:20	Final Leak Check: 0.007	cfm@ 17	"Hg

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

Project No.: 21698

Operator : AS

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	~~October 27~~ 2016
Test Location	APC Inlet No. 1
Operator Signature	[signature]

Project No.:	21698
Page	1 of 5
Probe No.:	6.5
Meter Box No.:	#4
Impinger Box No.:	#1

Pitot Factor	0.840	
DGMCF	1.019	
Barometric Pressure	29.53	"Hg
Static Pressure	-2.0	"H2O
Nozzle Size	0.2602	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Reading Interval	4
Number of Ports	4
Number of Points/Port	6

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	759.6	g
WCBDA	24.0	g

Combustion Gas Concentration

Oxygen	8.51	%
Carbon Dioxide	10.12	%
Carbon Monoxide	15.2	ppm

Measuring Device	MII Numbers
Probe / Pitot 5A	COE 20112
Trendicator #4	A04713
Control Box #4	A04713
Incline Manometer #10	B02107
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENVCAN
Calipers	B02103

Nozzle Measurements	
1	.2605
2	.2605
3	.2600
4	.2600
Average:	.2602

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: oct 27, 2011	Plant:	Covanta DYEC	Test No.: 1	SVOC	Page 2 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Inlet 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 *
1	0	561.28	.54	.63	326	254	264	68	45	72	72	.75	3.0
	4	563.60	.54	.63	334	256	266	53	38	71	79	.85	4.0
	8	566.02	.56	.64	334	257	265	57	37	71	83	.90	5.0
2	12	568.62	.72	.73	334	257	262	48	37	74	88	1.1	7.0
	16	571.53	.70	.72	335	257	261	47	38	74	92	1.1	7.0
	20	574.48	.70	.73	334	257	260	46	37	72	96	1.0	7.5
3	24	577.40	.77	.77	333	259	260	46	37	78	98	1.1	9.0
	28	580.41	.77	.77	334	258	260	45	37	80	100	1.1	9.0
	32	583.40	.71	.74	334	256	259	47	38	82	102	1.0	9.0
4	36	586.30	.71	.74	334	250	258	45	39	85	104	1.05	9.5
	40	589.26	.71	.74	334	254	260	46	38	85	106	1.05	10.0
	44	592.21	.71	.75	334	257	260	45	39	90	107	1.05	10.5
5	48	595.16	.72	.75	334	254	260	46	38	88	108	1.05	11
	52	598.17	.72	.75	334	256	260	46	43	91	109	1.05	11
	56	601.13	.73	.76	335	259	260	46	38	90	110	1.1	12
6	60	604.16	.75	.77	335	259	260	46	38	91	111	1.1	13
	64	607.21	.75	.77	335	260	261	46	38	92	112	1.1	13
	68	610.27	.79	.79	335	260	260	46	38	93	113	1.1	14
	72	613.32											

Traverse: 1	FW FILTER #1			
Start Time: 0820	Initial Leak Check:	.003	cfm@ 15	"Hg
Finish Time: 0933	Final Leak Check:	.003	cfm@ 16	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Oct 22, 2016	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 1	

Point	* Clock Time	* Dry Gas Meter ft³	* 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	613.59	.87	.82	328	249.	250	63	43	91	96	1.2	7
	4	616.79	.94	.86	337	258	261	50	40	90	103.	1.3	7.
	8	620.12	.94	.86	337.	259	262	48	40	90	107	1.3	7.
2	12	623.52	.94	.86	336	261	263	47	40	91	110	1.3	8.5
	16	626.90	.94	.86	336	259	261	47	39	91	111	1.3	8.5
	20	630.23	.90	0.85	335	260	262	47	40	100	112.	1.3	10
3	24	633.55	.89	0.84	334	258	262	46	39	92	112	1.25	10
	28	636.85	.89	0.85	334	258	261	44	39	100	113.	1.25	10.
	32	640.13	.87	0.84	334.	259	261	43	39	93	113	1.25	10
4	36	643.44	.84	0.82	333	259	262	43	39	94	114.	1.20	11.
	40	646.70	.84	0.82	333	258	261	42	39	94	114	1.20	11
	44	649.94	.84	0.82	333	258	261	42	39	95	115	1.20	12
5	48	653.17.	~~.78~~ .75	0.78	332	258	261	42	39	95	115	1.1	12
	52	656.35	.75	0.79	324	258	261	42	39	96	116	1.1	13
	56	659.53.	.73	0.77	323	258	261	42	39	95	116	1.1	13
6	60	662.66.	.71	0.77	320	259	261	43	40	97	115	1.1	13.
	64	665.76	0.68	0.75	316	258	260	45	40	96	115	1.05	13.
	68	668.80.	0.68	0.75	316	258	261	44	45	97	115	1.05	13.
	72	671.80.											

Traverse: 1 FILTER #2			
Start Time: 0945	Initial Leak Check:	.002 cfm@	16 "Hg
Finish Time: 1057	Final Leak Check:	.005 cfm@	18" "Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: 05 27, 2016	Plant:	Covanta DYEC	Test No.: 1	SVOC	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Inlet No. 1	

Point	Clock Time	Dry Gas Meter ft³	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	672.34	.76	0.75	338	260	269	67	47	84	85	1.1	7
	4	675.37	.72	0.73	340	261	264	47	42	78	88	1	7.
	8	678.28	.73	0.74	339	261	255	43	39	78	91	1.05	7.5
2	12	681.20	.82	0.79	338	260	255	47	39	80	95	1.1	9
	16	684.20	.84	0.80	337	260	255	42	39	80	98	1.2	10
	20	687.30	.83	0.80	337	260	252	42	44	83	100.	1.2	10.5
3	24	690.48	.83	0.80	337	259	251	41	39	83	102	1.2	11
	28	693.68	.83	0.80	336	258	252	42	40	85	105	1.2	11.
	32	696.91	.83	0.81	336	258	252	43	40	86	106	1.2	12
4	36	700.15	.80	0.79	335	259	252	42	39	88	108	1.15	12.5
	40	703.33	.78	0.78	334	258	251	42	40	88	109	1.1	13
	44	706.46	.78	0.79	335	258	256	43	40	89	110.	1.1	13.5
5	48	709.58	.76	0.78	336	258	251	44	40	90	110	1.1	13.5
	52	712.66	.76	0.78	335	260	251	43	40	91	111	1.1	14
	56	715.74	.74	0.77	334	259	251	43	40	92	112	1.05	14
6	60	718.76	.74	0.77	334	261	252	44	40	92	114	1.0	14
	64	721.74	.74	0.77	335	259	251	45	40	93	113	1.0	14
	68	724.71	.73	0.77	335	259	251	44	40	95	113	1.0	14
	72	727.62.											

Traverse: 2 - FILTER 3		Traverse:	
Start Time: 1151	Initial Leak Check: .002 cfm@ 16 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 1303	Final Leak Check: .002 cfm@ 16.5 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21698

Operator :

Rev: April 28, 2005

ORTECH Environmental

Field Data Sheet

Date: Oct 27, 2016	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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
1	0	727.93	.85	0.81	334	258	250	59	43	94	96	1.2	8
	4	731.18	.85	0.82	336	260	256	46	40	96	107	1.2	8
	8	734.42	.84	0.81	356	260	252	45	40	90	105	1.2	8
2	12	737.63	.84	0.81	337	261	252	45	39	93	108	1.2	8
	16	740.75	.89	0.84	335	264	253	45	39	90	109	1.25	10
	20	744.02	.90	0.85	336	260	253	45	39	91	110	1.3	11
3	24	747.37	.90	0.85	335	259	251	48	39	92	111	1.3	11
	28	750.79	.94	0.87	335	261	253	46	40	94	113	1.3	12
	32	754.17	.92	0.86	335	265	251	47	40	95	113	1.25	12
4	36	757.50	.93	0.87	335	259	251	46	39	96	114	1.25	13
	40	760.82	.91	0.86	334	258	254	45	39	95	114	1.25	13
	44	764.09	.91	0.86	334	259	251	45	39	98	114	1.2	13
5	48	767.27	.77	0.79	327	258	251	45	39	95	115	1.1	13
	52	770.41	.77	0.80	325	260	252	47	40	97	119	1.1	13
	56	773.51	.77	0.80	325	260	255	45	40	95	118	1.1	14
6	60	776.64	.75	0.79	316	258	253	46	39	98	116	1.1	14
	64	779.72	.74	0.78	320	258	255	46	40	96	116	1.1	14
	68	782.76	.74	0.78	322	250	252	45	39	96	116	1.1	14
	72	785.75											

Traverse: 2 FILTER 4	
Start Time: 817	Initial Leak Check: .002 cfm@ 16.5 "Hg
Finish Time: 1419	Final Leak Check: cfm@ "Hg

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

Project No.: 21698

Operator :

Rev: April 28, 2005

ORTECH Environmental

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	OCTOBER 28, 2016
Test Location	APC Inlet No. 1
Operator Signature	

Project No.:	21698	
Page	1 of 5	
Probe No.:	6.5	
Meter Box No.:	#4	
Impinger Box No.:	#12	

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

Pitot Factor	0.840	
DGMCF	1.019	
Barometric Pressure	29.76	"Hg
Static Pressure	-2.6	"H2O
Nozzle Size	.2366	inches
Stack Diameter	4.5	feet
Length	Ø	feet
Width	Ø	feet
Port length:		inches

Reading Interval	4
Number of Ports	4
Number of Points/Port	6

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	687.4	g
WCBDA	18.5	g

Combustion Gas Concentration

Oxygen	8.32	%
Carbon Dioxide	10.44	%
Carbon Monoxide	11.7	ppm

Nozzle Measurements	
1	.2360
2	.2375
3	.2355
4	.2375
Average:	.2366

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: Oct 28, 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	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	786.15	0.5	0.49	334	256	257	64	57	68	72.	.5	2
	4	787.87	0.51	0.44	335	256	256	52	40	68	76	.7	3
	8	790.03	0.53	0.48	334	256	255	45	39	69	89.	.6	3
2	12	792.07.	0.76	0.62	334.	256	253	44	39	74	86	.75	4
	16	794.36	0.75	0.62	334	260	253	41	38	74	88.	.85	4.5
	20	796.85	0.75	0.62	335	257	251	40	39	75	91	.85	5.0
3	24	799.37.	0.76	0.63	335	256	254	40	39	77	95	.9	5.0
	28	802.07	0.76	0.63	336	257	250	40	39	79	97	.85	5.0
	32	804.55	0.76	0.63	334	256	259	38	40	80	99	.85	5.0
4	36	807.12	0.76	0.63	334.	250	250	40	39	82	100	.85	5.0
	40	809.70.	0.72	0.62	334	258	253	39	39	82	102	.80	6.0
	44	812.24	0.73	0.62	339.	257	252	39	39	85	103	.85	6.0
5	48	814.80	0.75	0.63	336	262	252	38	42	87	105	.85	6.0
	52	817.34	0.73	0.63	335	257	251	40	40	87	105	.85	6.5
	56	819.89.	0.74	0.63	334	261	251	40	40	92	106	.85	7.0
6	60	822.45	0.76	0.64	334	260	251	40	40	89	107	.90	8.0
	64	825.12	0.78	0.65	334	258	256	41	43	90	109.	.90	9.0
	68	827.86	0.78	0.65	334.	258	252	41	41	90	109	.90	9.0
	72	830.58.											

Traverse: 1 - FILTER 1			
Start Time: 0813	Initial Leak Check: .002	cfm@ 15	"Hg
Finish Time: 0825	Final Leak Check: .002	cfm@ 18	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Oct 28 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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
1	0	831.37	0.90	0.69	336	260	257	57	50	90	97	1.0	5
	4	834.30	0.90	0.69	336	260	255	41	41	89	103	.90	4.5
	8	837.14	0.90	0.70	336	260	254	40	40	89	105	.90	5
2	12	839.92	0.90	0.70	334	244	253	40	40	91	108	.95	5
	16	842.75	0.95	0.72	333	254	253	43	42	90	108	1.0	6
	20	845.65	0.94	0.72	333	256	258	43	41	91	109	1.0	6
3	24	848.59	0.90	0.70	338	254	253	40	40	92	110	.95	6.5
	28	851.45	0.89	0.70	334	260	260	40	40	93	113	0.90	6.5
	32	854.23	0.91	0.71	335	254	252	41	40	92	111	0.95	7.0
4	36	857.05	0.86	0.69	331	253	256	40	43	93	112	0.90	7.0
	40	859.85	0.86	0.69	338	253	257	40	40	93	112	0.90	7.5
	44	862.60	0.87	0.69	333	253	257	40	41	95	112	0.95	8.5
5	48	865.42	0.82	0.67	332	253	252	41	40	94	112	0.90	9.0
	52	868.23	0.82	0.67	333	254	253	40	40	95	113	0.85	9.0
	56	870.94	0.80	0.66	333	263	253	40	40	95	112	0.80	9.0
6	60	873.59	0.75	0.65	325	254	255	41	40	96	112	0.80	9.0
	64	876.18	0.75	0.65	326	253	252	42	40	95	112	0.85	9.5
	68	878.86	0.75		328	255	252	43	42	97	112	0.80	10
	72	881.49											

Traverse: 1 - Port 2		
Start Time: 0938	Initial Leak Check: .002 cfm@ 18 "Hg	
Finish Time: 1050	Final Leak Check: .002 cfm@ 23 "Hg	

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Oct 28, 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 1	

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	881.97	0.75	0.62	332	254	260	66	46	82	83	0.8	4
	4	884.44	0.76	0.63	339	257	264	42	41	83	91	0.85	5
	8	887.01	0.77	0.63	340	257	260	41	41	82	95	0.85	5
2	12	889.60	0.83	0.66	338	257	255	40	41	82	97	0.9	6
	16	892.26	0.86	0.67	338	256	254	40	41	83	99	0.95	6
	20	895.03	0.87	0.68	338	256	254	40	44	83	103	0.95	6
3	24	897.77	0.86	0.68	340	255	253	42	40	85	104	0.9	6.5
	28	900.49	0.83	0.67	339	255	255	46	42	87	106	0.85	7.0
	32	903.17	0.85	0.68	339	255	252	42	42	91	107	0.9	7.0
4	36	905.93	0.80	0.66	338	255	254	41	42	90	108	0.85	7.5
	40	908.62	0.82	0.67	338	254	252	42	40	91	109	0.85	7.5
	44	911.28	0.82	0.67	338	255	254	42	40	93	110	0.9	8.0
5	48	914.00	0.78	0.65	338	255	252	39	41	92	111	0.85	9.0
	52	916.66	0.82	0.67	339	255	256	40	41	93	112	0.9	9.0
	56	919.43	0.79	0.66	339	255	253	47	41	93	112	0.85	9.0
6	60	922.13	0.77	0.65	338	256	254	42	41	94	112	0.75	9.0
	64	924.74	0.77	0.65	338	255	252	43	41	94	113	0.75	9.0
	68	927.32	0.74	0.64	336	256	255	43	42	100	113	0.75	9.0
	72	929.86											

Traverse: 2 - FILTER 3				
Start Time: 1132	Initial Leak Check:	.007	cfm@ 15	"Hg
Finish Time: 1244	Final Leak Check:	.004	cfm@ 16	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Oct 28, 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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
	*	*	*		*			*		*	*	*	*
1	0	930.24	0.75	0.63	338	252	259	64	48	92	95	0.8	5.0
	4	932.78	0.75	0.64	337	257	258	44	41	91	104	0.8	5.0
	8	935.34	0.73	0.63	336	256	257	44	41	92	106	0.8	5.0
2	12	937.91	0.73	0.63	337	256	258	42	45	99	108	0.8	5.0
	16	940.47	0.76	0.64	337	260	261	42	40	92	108	0.85	6.0
	20	943.17	0.74	0.64	336	256	260	41	41	92	110	0.8	6.0
3	24	945.80	0.88	0.69	336	256	253	42	41	94	111	0.95	7.0
	28	948.63	0.90	0.70	336	261	253	41	41	93	111	1.0	7.0
	32	951.56	0.88	0.70	336	256	253	41	41	94	112	0.95	7.0
4	36	954.47	0.88	0.70	334	261	253	41	41	95	113	0.95	7.0
	40	957.35	0.92	0.71	335	256	253	41	41	95	114	0.95	7.5
	44	960.30	0.92	0.71	334	264	254	42	42	96	114	0.95	8.0
5	48	963.06	0.90	0.71	333	255	254	43	42	96	115	0.95	8.0
	52	965.90	0.92	0.72	333	255	255	42	42	97	115	0.95	8.5
	56	968.80	0.92	0.72	334	255	252	45	43	99	115	0.95	9.0
6	60	971.67	0.82	0.68	320	255	253	43	44	97	119	0.85	9.0
	64	974.44	0.80	0.67	319	255	253	43	45	97	117	0.85	9.0
	68	977.18	0.80	0.68	318	255	255	43	46	98	117	0.85	9.5
	72	979.93											

Traverse: 11-2-FILTER 4		Traverse:	
Start Time: 1259	Initial Leak Check: .003 cfm@ 16 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 1411	Final Leak Check: .003 cfm@ 15 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21698

Operator :

ORTECH Environmental

Plant		Covanta DYEC
Plant Location		Courtice, Ontario
Test No.:	3	Semi-Volatile Organic Compounds
Test Date		October 31, 2016
Test Location		APC Inlet No. 1
Operator Signature		[signature]

Project No.:	21698
Page	1 of 5
Probe No.:	6 series
Meter Box No.:	4
Impinger Box No.:	1

Pitot Factor	.840	
DGMCF	1.019	
Barometric Pressure	29.80	"Hg
Static Pressure	-2.6	"H2O
Nozzle Size	.2366	inches
Stack Diameter	4.5	feet
Length	-	feet
Width	-	feet
Port length:		inches

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	671.6	g
WCBDA	14.1	g

Combustion Gas Concentration

Oxygen	8.59	%
Carbon Dioxide	10.19	%
Carbon Monoxide	12.6	ppm

Measuring Device	MII Numbers
Probe / Pitot 57	B03768
Trendicator	A04713
Control Box	A04713
Incline Manometer	302107
Comb.Gas.Analyzer	
Micromanometer	
Barometer	Env. Canada
Calipers	B02103

Reading Interval	4
Number of Ports	4
Number of Points/Port	6

Nozzle Measurements

1 SEE
2
3 TEST
4
Average: #2

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: october 31, 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	Pitot Δ P "H_2O *	Desired cfm	Stack Temp °F *	Probe Temp °F	Oven Temp °F	Impinger Temp Outlet °F *	Impinger Temp ~~Inlet~~/Trap °F	Meter Temp Outlet °F *	Meter Temp Inlet °F *	Meter Pressure Δ H "H_2O *	Pump Vacuum "Hg Gauge *
1	0	80.65	.57	.53	335	256	263	71	74	73	73	.5	2
	4	82.55	.57	.53	336	259	261	68	55	72	81	.6	2
	8	84.60	.56	.53	335	263	254	55	44	80	84	.7	3.5
2	12	86.94	.66	.58	334	266	253	54	48	80	88	~~.75~~	4
	16	89.47	.66	.58	334	258	253	52	49	76	91	.65	4
	20	91.82	.71	.61	334	254	254	55	42	79	95	.7	4
3	24	94.24	.76	.63	336	257	261	50	54	80	96	.75	4.5
	28	96.75	.77	.64	336	253	258	48	46	82	99	.8	5
	32	99.33	.77	.64	336	254	258	48	48	84	102	.8	5
4	36	101.92	.77	.64	336	258	263	48	43	86	105	.8	5
	40	104.47	.76	.64	336	255	250	48	44	87	106	.8	6
	44	107.09	.81	.66	337	255	250	48	46	88	108	.85	6.5
5	48	109.82	.79	.65	337	255	254	51	44	90	109	.8	6.5
	52	112.45	.79	.65	337	255	254	49	48	90	110	.8	6.5
	56	115.05	.79	.66	338	255	252	48	45	92	111	.85	7
6	60	117.74	.83	.67	338	259	254	48	45	93	112	.85	8
	64	120.46	.80	.66	338	255	254	49	45	95	113	.85	8
	68	123.13	.80	.66	337	255	256	50	44	94	112	.85	8
	72	125.78											

Traverse: 1		
Start Time: 10:13	Initial Leak Check: .004 cfm@ 15 "Hg	
Finish Time: 11:25	Final Leak Check: .003 cfm@ 22 "Hg	

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

Project No.: 21698

Operator :

Field Data Sheet

Date: october 31, 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 1	

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	126.23	.94	.71	334	255	245	64	47	94	100	.95	4
	4	129.10	.90	.70	335	256	249	51	45	93	107	.9	4
	8	131.87	.89	.70	335	263	258	50	45	94	110	.9	4.5
2	12	134.65	.92	.71	335	258	256	50	44	94	112	.95	5
	16	137.52	.92	.71	334	258	253	50	46	95	113	.95	5
	20	140.43	.91	.71	333	256	256	51	45	96	114	.95	5.5
3	24	143.31	.91	.71	333	255	254	50	45	95	114	.95	6
	28	146.19	.91	.71	333	256	259	50	45	96	115	.95	6
	32	149.08	.89	.71	333	261	254	52	45	98	116	.95	6.5
4	36	151.95	.90	.71	333	256	253	54	45	97	116	.95	6.5
	40	154.82	.88	.70	333	260	257	51	45	97	116	.95	7
	44	157.66	.88	.70	333	258	257	48	45	98	118	.9	7
5	48	160.48	.83	.68	333	257	255	47	45	98	118	.85	7
	52	163.24	.82	.68	333	258	254	47	45	98	117	.85	7
	56	165.99	.83	.68	333	258	257	48	46	99	117	.85	7
6	60	168.74	.69	.62	333	256	254	48	44	100	118	.75	7
	64	171.29	.67	.61	333	259	257	47	45	100	118	.7	7
	68	173.74	.70	.63	333	257	253	47	42	99	117	.75	7.5
	72	176.26											

Traverse: 1				
Start Time: 11:35	Initial Leak Check:	.004	cfm@ 15	"Hg
Finish Time: 12:47	Final Leak Check:	.003	cfm@ 16	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: october 31 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 1	

Point	Clock Time *	Dry Gas Meter ft³ *	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	176.93	.78	.64	335	256	255	73	48	93	95	.8	4
	4	179.48	.77	.64	337	259	260	50	43	86	94	.8	4
	8	182.02	.78	.64	336	260	259	47	45	85	97	.8	4.5
2	12	184.60	.82	.66	336	259	258	46	47	90	101	.85	5
	16	187.27	.80	.65	336	259	259	45	43	88	103	.8	5
	20	189.89	.79	.65	335	261	254	46	43	89	104	.8	5
3	24	192.49	.84	.67	336	261	253	47	44	89	108	.85	6
	28	195.21	.84	.68	336	258	254	45	44	92	108	.85	7
	32	197.96	.84	.68	336	257	253	44	45	91	109	.85	7
4	36	200.68	.81	.67	336	260	259	45	44	93	111	.85	7.5
	40	203.39	.82	.67	337	257	255	46	45	95	112	.85	7.5
	44	206.08	.84	.68	337	257	254	47	46	95	113	.85	8.5
5	48	208.83	.82	.67	338	257	255	47	46	96	114	.85	9
	52	211.58	.82	.67	338	257	254	47	45	98	116	.85	9
	56	214.29	.85	.69	338	257	259	48	47	98	117	.9	10.5
6	60	217.04	.80	.67	339	257	258	48	48	98	118	.85	10.5
	64	219.84	.84	.69	340	259	256	48	47	100	119	.9	11.5
	68	222.66	.82	.68	340	257	257	48	47	100	119	.85	11.5
	72	225.47											

Traverse:				
Start Time: 13:34	Initial Leak Check: .004	cfm@ 15.5	"Hg
Finish Time: 14:46	Final Leak Check: .004	cfm@ 16	"Hg

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

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Project No.: 21698

Operator :

Field Data Sheet

Date: October 31, 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC 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	225.88	.88	.69	337	257	245	70	49	98	100	.9	4
	4	228.62	.87	.69	338	258	255	49	44	97	109	.9	5
	8	231.41	.89	.70	337	258	256	47	46	97	111	.9	5
2	12	234.20	.95	.73	337	260	259	47	46	100	113	1.0	6
	16	237.15	.95	.73	337	260	255	46	45	99	114	1.0	6.5
	20	240.11	.95	.73	338	261	259	46	46	99	116	1.0	7
3	24	243.08	.97	.73	338	260	259	46	46	99	116	1.0	7
	28	246.05	.97	.74	338	259	256	47	46	99	117	1.05	8
	32	249.12	.97	.74	338	257	254	50	47	100	118	1.05	8
4	36	252.15	.97	.74	338	258	254	47	46	101	119	1	8.5
	40	255.13	.97	.74	338	256	256	47	46	101	120	1	9
	44	258.15	.98	.74	338	256	259	48	47	102	120	1	9
5	48	261.13	.97	.74	338	258	260	48	47	102	120	1	9.5
	52	264.11	.92	.72	337	257	260	48	47	103	121	.95	10
	56	267.07	.92	.72	337	258	256	48	47	103	122	.9	9.5
6	60	269.92	.83	.69	337	259	256	49	47	103	122	.9	10
	64	272.70	.83	.69	337	260	256	49	48	103	122	.9	10.5
	68	275.53	.82	.68	337	259	258	49	48	104	122	.8	10
	72	278.22											

Traverse: 2			
Start Time: 15:02	Initial Leak Check: .007	cfm@ 16	"Hg
Finish Time: 16:14	Final Leak Check: .003	cfm@ 15	"Hg

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

Project No.: 21698

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	Semi-Volatile Organic Compounds
Test Date	November 1, 2016
Test Location	APC Inlet No. 2
Operator Signature	

Project No.:	21698	
Page	1 of 5	
Probe No.:	6 series	
Meter Box No.:	7	
Impinger Box No.:	6	

Pitot Factor	.840	
DGMCF	.978	
Barometric Pressure	29.47	"Hg
Static Pressure	-2.5	"H2O
Nozzle Size	.2571	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Reading Interval	4
Number of Ports	4
Number of Points/Port	6

Probe Liner Glass /Metal /Teflon / Other__________

Nozzle Glass / Metal / Other__________

Union None/Metal / Teflon / Other__________

Pitot Leak Checked? Yes No

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	738.1	g
WCBDA	23.4	g

Combustion Gas Concentration

Oxygen	8.05	%
Carbon Dioxide	10.24	%
Carbon Monoxide	17.9	ppm

Site Diagram

Measuring Device	MII Numbers
Probe / Pitot 57	B 03768
Trendicator	A09072
Control Box 7	A09072
Incline Manometer	A 11630 #8
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV, CAN.
Calipers	B 03922

Nozzle Measurements	
1	.2565
2	.2575
3	.2580
4	.2565
Average:	.2571

Notes:

Field Data Sheet

Date: Nov. 1, 2016	Plant: Covanta DYEC	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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	17.74	.64	.68	336	250	251	75	45	76	76	1.5	5
	4	20.57	.65	.69	337	254	256	55	41	77	79	1.4	5.5
	8	23.28	.63	.68	337	255	257	52	40	77	80	1.4	5.5
2	12	26.0	.67	.70	337	255	257	51	41	77	82	1.5	6.5
	16	28.81	.71	.72	338	256	257	50	41	78	83	1.6	7
	20	31.68	.73	.74	338	255	257	50	41	79	85	1.7	8
3	24	34.66	.73	.74	339	256	257	50	42	79	86	1.7	8
	28	37.66	.72	.73	339	256	255	50	42	80	87	1.65	8
	32	40.62	.73	.74	339	255	256	50	41	81	88	1.7	9
4	36	43.60	.73	.74	338	256	256	50	41	81	89	1.7	9
	40	46.62	.72	.74	338	256	256	50	41	82	90	1.7	9.5
	44	49.60	.74	.75	338	256	255	50	41	82	90	1.75	10
5	48	52.61	.72	.74	338	256	256	50	41	83	91	1.7	10
	52	55.59	.73	.74	338	256	256	50	41	83	91	1.7	11
	56	58.60	.72	.74	339	256	255	50	41	84	92	1.7	11
6	60	61.59	.72	.74	339	256	256	50	41	84	92	1.7	11
	64	64.55	.71	.73	338	256	256	50	41	84	92	1.65	12
	68	67.46	.73	.75	338	256	256	51	41	85	92	1.7	12.5
	72	70.40											

Traverse: 1			
Start Time: 9:35	Initial Leak Check: .005	cfm@ 13	"Hg
Finish Time: 10:47	Final Leak Check: .003	cfm@ 14	"Hg

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

Project No.: 21698
Operator :

Field Data Sheet

Date: November 1 2016	Plant: Covanta DYEC	Test No.: 1 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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	71.11	.8	.78	335	254	249	76	44	83	85	1.9	7.5
	4	74.32	.81	.78	339	256	255	54	42	83	85	1.85	7.5
	8	77.48	.82	.79	339	255	257	52	42	83	88	1.9	8
2	12	80.63	.85	.80	339	255	256	52	43	83	89	1.9	8.5
	16	83.83	.87	.81	339	255	255	51	42	83	90	1.95	9.5
	20	87.09	.88	.82	340	255	256	50	43	84	91	2	10
3	24	90.38	.89	.82	340	255	257	50	43	84	92	2	10.5
	28	93.64	.90	.83	341	255	256	51	43	85	93	2.05	11
	32	96.97	.90	.83	341	255	255	50	44	85	94	2.05	11.5
4	36	100.27	.92	.84	341	255	256	50	44	86	94	2.1	12.5
	40	103.62	.92	.84	342	255	254	50	44	86	95	2.1	12.5
	44	106.98	.98	.87	341	255	255	50	42	87	95	2.1	12.5
5	48	110.16	.83	.80	342	255	255	51	42	87	95	1.9	13
	52	113.35	.82	.79	340	255	255	51	43	88	96	1.9	13
	56	116.53	.82	.79	340	255	255	51	43	88	96	1.9	13
6	60	119.64	.65	.71	340	255	254	52	41	88	96	1.6	12.5
	64	122.59	.61	.68	340	254	255	52	41	88	96	1.45	11
	68	125.39	.62	.69	340	254	255	53	40	89	96	1.45	11
	72	128.14											

Traverse: 1			
Start Time: 11:20	Initial Leak Check: .006	cfm@ 14	"Hg
Finish Time: 12:32	Final Leak Check: .002	cfm@ 15	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: November 1, 2016	Plant:	Covanta DYEC	Test No.:	1	SVOC	Page 4 of 5
	Plant Location:	Courtice, Ontario	Test Location:		APC Inlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	128.51	.53	.63	341	255	255	72	42	88	90	1.25	6
	4	131.06	.51	.62	342	257	259	58	42	87	91	1.2	5.5
	8	133.55	.51	.62	342	257	253	56	42	87	92	1.2	6
2	12	136.05	.50	.62	342	257	257	55	43	87	93	1.2	6.5
	16	138.58	.50	.62	341	258	259	55	43	87	94	1.2	6.5
	20	141.08	.51	.62	341	258	260	55	44	87	94	1.2	7
3	24	143.58	.51	.63	341	257	258	55	44	88	95	1.25	7
	28	146.11	.51	.63	341	257	258	55	44	88	95	1.25	7
	32	148.62	.51	.63	341	257	258	55	44	88	95	1.25	8
4	36	151.15	.51	.63	341	257	258	55	44	88	95	1.25	8
	40	153.71	.51	.63	340	257	257	55	43	88	96	1.25	8.5
	44	156.27	.51	.63	340	257	257	55	43	89	96	1.25	8.5
5	48	158.80	.51	.63	341	257	257	56	44	89	97	1.25	9
	52	161.72	.51	.63	341	257	257	56	44	89	97	1.25	9
	56	163.89	.51	.63	340	257	257	56	43	89	97	1.25	9.5
6	60	166.32	.52	.63	341	257	257	55	45	89	97	1.25	~~9.5~~ 10
	64	168.85	.52	.63	342	257	257	55	47	89	97	1.25	10
	68	171.38	.52	.63	342	257	257	58	47	89	97	1.25	10
	72	173.86											

Traverse: 2			
Start Time: 12:50	Initial Leak Check: .008	cfm@ 15	"Hg
Finish Time: 14:02	Final Leak Check: .006	cfm@ 15	"Hg

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

~2.5

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: November 1, 2016	Plant: Covanta DYEC	Test No.: 1 SVOC	
	Plant Location: Courtice, Ontario	Test Location: APC 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	174.22	.82	.79	338	255	255	76	48	88	91	1.95	8
	4	177.49	.82	.79	342	257	252	54	42	89	93	1.95	9
	8	180.71	.8	.78	341	256	255	53	42	89	95	1.95	9
2	12	183.87	.85	.81	341	256	254	53	43	88	96	2	10
	16	187.16	.84	.80	341	256	255	53	42	88	96	2	10
	20	190.41	.85	.81	341	255	255	53	42	89	97	2	11
3	24	193.70	.86	.81	340	255	256	53	42	88	97	2	12
	28	196.99	.87	.82	340	255	257	54	42	88	97	2	12.5
	32	200.32	.87	.82	340	255	256	54	42	89	97	2	12.0
4	36	203.58	.88	.82	340	255	257	54	42	89	96	1.9	13
	40	206.79	.88	.82	339	255	256	54	42	89	96	1.9	13
	44	209.93	.88	.82	340	255	256	55	41	89	96	1.8	13.5
5	48	213.01	.81	.79	340	255	256	55	42	90	97	1.7	13.5
	52	216.01	.8	.79	340	255	256	56	42	90	97	1.7	14
	56	219.0	.81	.79	340	255	256	56	42	90	98	1.7	14
6	60	221.94	.67	.72	340	255	256	56	43	91	98	1.55	14
	64	224.84	.69	.73	340	255	255	56	43	91	98	1.5	14
	68	227.69	.68	.73	340	255	256	57	44	91	98	1.45	14
	72	230.50											

Traverse: 2		Traverse:	
Start Time: 14:17	Initial Leak Check: .01 cfm@ 15 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 15:29	Final Leak Check: .002 cfm@ 20 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21698

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	Semi-Volatile Organic Compounds
Test Date	November 2 2016
Test Location	APC Inlet No. 2
Operator Signature	

Project No.:	21698
Page	1 of 5
Probe No.:	6 series
Meter Box No.:	Box 7
Impinger Box No.:	1

Pitot Factor	.846	
DGMCF	.978	
Barometric Pressure	29.66	"Hg
Static Pressure	-2.5	"H2O
Nozzle Size	.2420	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Reading Interval	4
Number of Ports	4
Number of Points/Port	6

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	681.9	g
WCBDA	11.9	g

Combustion Gas Concentration

Oxygen	8.08	%
Carbon Dioxide	10.24	%
Carbon Monoxide	17.7	ppm

Measuring Device	MII Numbers
Probe / Pitot 154	B03773
Trendicator	A09072
Control Box 7	A09072
Incline Manometer	A11630
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

Nozzle Measurements	
1	.2425
2	.2415
3	.2425
4	.2415
Average:	.2420

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: November 2, 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 2	

Point	Clock Time	Dry Gas Meter ft³ *	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	31.43	.67	.63	331	249	250	85	80	83	86	1.3	2
	4	34.05	.65	.62	335	254	254	75	39	84	86	1.2	2
	8	36.56	.65	.63	334	255	256	67	40	85	88	1.2	3
2	12	39.12	.72	.66	335	255	258	57	40	85	89	1.35	3.5
	16	41.82	.71	.66	335	256	257	56	40	86	91	1.33	3.5
	20	44.49	.70	.65	335	256	256	54	41	86	92	1.3	3.5
3	24	47.12	.75	.68	335	256	256	52	41	87	93	1.4	4
	28	49.83	.77	.69	336	256	256	52	41	87	94	1.5	5
	32	52.67	.79	.70	336	256	257	51	42	88	95	1.5	5
4	36	55.50	.77	.69	335	257	256	51	42	89	96	1.45	5
	40	58.26	.79	.70	335	256	256	51	42	89	96	1.5	5.5
	44	61.07	.77	.69	335	256	256	51	42	90	97	1.45	6
5	48	63.89	.71	.67	335	256	257	51	43	91	97	1.4	6
	52	66.64	.72	.67	334	257	256	51	43	91	97	1.4	6
	56	69.35	.73	.68	334	257	257	52	44	92	98	1.4	6
6	60	72.08	.74	.68	334	257	257	52	46	92	98	1.4	9
	64	74.75	.73	.68	334	256	256	51	41	92	99	1.4	14
	68	77.38	.73	.68	335	256	255	50	41	92	99	1.35	14.5
	72	80.06											

Traverse: 1			
Start Time: 8:09	Initial Leak Check: .002	cfm@ 21	"Hg
Finish Time: 9:21	Final Leak Check: .002	cfm@ 15	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: November 2 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 3 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 2	

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	80.41	.84	.72	335	255	250	69	43	91	93	1.6	4
	4	83.36	.84	.72	335	257	254	51	42	91	94	1.6	4
	8	86.29	.84	.73	335	257	257	50	42	91	96	1.6	4.5
2	12	89.24	.88	.74	335	257	257	49	42	91	97	1.7	5
	16	92.25	.88	.74	336	256	257	49	42	91	98	1.7	5.5
	20	95.26	.88	.74	336	256	257	50	42	92	99	1.7	5.5
3	24	98.29	.88	.75	336	256	257	50	42	92	100	1.7	6
	28	101.34	.89	.75	336	256	257	50	41	93	101	1.7	6
	32	104.35	.89	.75	335	255	257	50	41	93	101	1.7	6.5
4	36	107.41	.89	.75	335	255	256	49	41	93	102	1.7	7
	40	110.44	.90	.76	335	255	256	49	42	94	102	1.75	8
	44	113.51	.90	.76	335	255	257	49	42	94	102	1.75	8
5	48	116.61	.79	.71	335	255	257	49	41	94	103	1.6	7.5
	52	119.55	.8	.71	335	255	256	50	41	94	103	1.6	7.5
	56	122.46	.78	.71	334	255	256	49	41	94	103	1.6	8
6	60	125.39	.77	.70	332	255	256	50	41	94	103	1.5	8
	64	128.26	.78	.71	334	255	256	50	41	94	103	1.5	8
	68	131.08	.78	.71	334	255	257	50	41	95	102	1.5	8.5
	72	133.93											

Traverse: 1				
Start Time: 9:39	Initial Leak Check:	.01	cfm@	14.5 "Hg
Finish Time: 10:51	Final Leak Check:	.008	cfm@	13 "Hg

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

Project No.: 21698

Operator : [signature]

Field Data Sheet

Date: November 2 2016	Plant: Covanta DYEC	Test No.: 2 SVOC
	Plant Location: Courtice, Ontario	Test Location: APC 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	134.29	.60	.61	337	256	255	79	48	93	95	1.15	3
	4	136.75	.60	.61	337	257	256	50	41	92	95	1.15	3
	8	139.17	.60	.61	336	257	258	49	41	92	96	1.2	4
2	12	141.71	.61	.62	336	257	257	49	41	92	97	1.2	4
	16	144.24	.64	.63	337	257	258	49	41	92	98	1.3	4.5
	20	146.80	.62	.62	336	257	258	49	41	92	98	1.25	4.5
3	24	149.35	.65	.64	336	257	258	49	41	92	99	1.3	5
	28	151.99	.64	.64	336	257	258	50	42	92	99	1.3	5
	32	154.56	.65	.64	337	257	258	50	42	93	100	1.2	5
4	36	157.05	.64	.64	337	257	257	50	42	93	100	1.25	5.5
	40	159.57	.63	.63	337	257	257	50	42	93	101	1.25	5.5
	44	162.12	.64	.64	337	257	257	51	43	93	101	1.25	5.5
5	48	164.67	.63	.63	337	257	257	51	42	93	101	1.25	6
	52	167.17	.60	.62	337	257	257	51	40	94	101	1.2	6
	56	169.65	.61	.62	337	256	256	51	40	94	101	1.2	6.2
6	60	172.12	.63	.64	337	256	258	51	40	94	102	1.3	7
	64	174.73	.65	.64	337	256	257	51	41	95	102	1.3	7.5
	68	177.32	.66	.65	337	256	257	51	41	95	102	1.3	8
	72	179.94											

Traverse: 2			
Start Time: 11:20	Initial Leak Check: .008	cfm@ 13	"Hg
Finish Time: 12:32	Final Leak Check: .005	cfm@ 14	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: November 2 2016	Plant: Covanta DYEC	Test No.: 2 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 2	

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	181.99	.83	.72	337	257	250	81	49	92	94	1.6	4
	4	184.93	.83	.72	337	257	248	49	41	92	93	1.55	4
	8	187.83	.84	.73	337	256	250	48	41	92	97	1.6	5
2	12	190.76	.84	.73	337	256	253	49	42	92	98	1.6	5
	16	193.69	.85	.73	337	256	254	49	42	92	99	1.6	5
	20	196.62	.85	.73	337	256	254	49	42	92	99	1.6	5
3	24	199.55	.84	.73	336	255	256	50	43	93	101	1.65	6
	28	202.55	.84	.73	336	256	256	50	43	94	101	1.65	6
	32	205.50	.88	.75	336	256	256	51	40	94	102	1.75	7.5
4	36	208.58	.87	.74	338	256	256	51	41	94	102	1.7	7.5
	40	211.63	.83	.73	338	256	256	51	41	94	103	1.6	8
	44	214.58	.83	.73	338	256	256	51	40	95	103	1.6	8
5	48	217.53	.83	.73	338	256	257	51	40	95	103	1.6	8
	52	220.44	.68	.66	337	256	257	51	41	95	103	1.35	8
	56	223.14	.68	.66	337	256	257	52	40	95	103	1.35	8
6	60	225.82	.52	.58	337	255	252	52	40	95	103	1.0	7
	64	228.15	.54	.59	337	255	258	52	41	96	103	1.05	7.5
	68	230.51	.53	.58	337	256	258	52	41	96	103	1.05	7.5
	72	232.86											

Traverse: 2				
Start Time: 13:17	Initial Leak Check:	.01	cfm@ 15	"Hg
Finish Time: 14:29	Final Leak Check:	.006	cfm@ 11	"Hg

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

Project No.: 21698

Operator :

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	Semi-Volatile Organic Compounds
Test Date	November 3, 2016
Test Location	APC Inlet No. 2
Operator Signature	

Project No.:	21698	
Page	1 of 5	
Probe No.:	6 series	
Meter Box No.:	7	
Impinger Box No.:	3	

Pitot Factor	.846	
DGMCF	.978	
Barometric Pressure	29.54	"Hg
Static Pressure	-2.5	"H2O
Nozzle Size	.2420	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

Reading Interval	4
Number of Ports	4
Number of Points/Port	6

Particulate Gain

Filter	Ø	mg
Probe	Ø	mg

Moisture Gain

CWTR	654.0	g
WCBDA	22.9	g

Combustion Gas Concentration

Oxygen	7.89	%
Carbon Dioxide	10.41	%
Carbon Monoxide	73.3	ppm

Measuring Device	MII Numbers
Probe / Pitot 15A	B02775
Trendicator	A09072
Control Box	A09072
Incline Manometer	A-11630
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

Nozzle Measurements

1 SEE
2
3 TEST
4
Average: #2

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: November 3 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 2 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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	33.42	.64	.62	335	249	250	79	75	79	80	1.15	5
	4	35.89	.61	.60	335	254	252	60	43	79	81	1.1	5.5
	8	38.33	.61	.61	335	255	254	57	42	80	82	1.1	5.5
2	12	40.77	.61	.61	334	256	255	54	43	80	84	1.1	5.5
	16	43.23	.70	.65	335	256	255	53	43	80	85	1.3	7
	20	45.97	.76	.68	335	256	255	51	44	81	86	1.4	8.5
3	24	48.63	.78	.69	335	256	255	51	45	81	87	1.45	9
	28	51.43	.80	.70	335	256	255	51	45	82	88	1.5	10
	32	54.29	.80	.70	336	257	255	51	45	82	89	1.5	10
4	36	57.14	.78	.69	335	257	255	51	45	83	90	1.45	10
	40	59.95	.80	.70	336	256	255	51	45	84	90	1.5	11
	44	62.82	.79	.70	335	257	255	51	45	84	91	1.5	11
5	48	65.70	.78	.69	335	257	255	52	44	85	92	1.45	11
	52	68.53	.77	.69	335	257	255	52	45	85	92	1.45	11
	56	71.33	.75	.68	335	257	255	52	44	86	92	1.4	11.5
6	60	74.10	.79	.70	335	257	255	53	45	86	93	1.5	12.5
	64	76.92	.79	.70	336	257	255	53	45	87	93	1.5	12.5
	68	79.75	.79	.70	335	256	255	53	45	87	93	1.5	13.5
	72	82.56											

Traverse: 1			
Start Time: 8:10	Initial Leak Check: .004	cfm@ 15	"Hg
Finish Time: 9:22	Final Leak Check: .004	cfm@ 14.5	"Hg

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

Project No.: 21698
Operator :

Field Data Sheet

Date: Nov. 3 2016	Plant:	Covanta DYEC	Test No.:	3 SVOC	Page 3 of 5
	Plant Location:	Courtice, Ontario	Test Location:	APC Inlet 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	82.86	.91	.75	336	256	235	73	45	85	87	1.7	9
	4	85.91	.87	.73	336	256	252	50	45	85	88	1.65	9.5
	8	88.98	.87	.73	336	256	252	50	45	85	88	1.65	9.5
2	12	91.90	.88	.74	335	256	255	48	45	85	91	1.7	10
	16	94.94	.91	.75	335	256	255	47	46	85	92	1.7	10
	20	97.95	.87	.73	334	255	255	47	45	86	92	1.65	10.5
3	24	100.93	.87	.74	334	255	255	47	45	86	93	1.65	10.5
	28	103.88	.88	.74	334	255	255	47	45	86	93	1.65	10.5
	32	106.85	.89	.74	335	255	255	47	46	86	93	1.65	11
4	36	109.80	.80	.71	334	255	259	47	46	87	94	1.5	11
	40	112.68	.80	.71	334	255	254	47	46	87	94	1.5	11
	44	115.51	.81	.71	334	255	255	48	45	87	94	1.5	11.5
5	48	118.37	.77	.69	333	255	255	48	46	87	95	1.4	11.5
	52	121.17	.76	.69	334	255	255	48	45	88	95	1.4	11.5
	56	123.93	.76	.69	334	255	255	49	45	88	95	1.4	11.5
6	60	126.74	.66	.64	332	255	255	49	46	88	95	1.3	11.5
	64	129.48	.66	.64	332	255	255	49	45	88	95	1.3	11.5
	68	132.13	.66	.64	332	255	255	50	46	88	95	1.2	11
	72	134.69											

Traverse: 1				
Start Time: 9:42	Initial Leak Check:	.006	cfm@ 15	"Hg
Finish Time: 10:54	Final Leak Check:	.005	cfm@ 14.5	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Nov 3 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 4 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet 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	135.0	.60	.61	336	256	254	73	43	86	88	1.1	6
	4	137.38	.60	.61	336	256	255	54	43	85	87	1.15	7
	8	139.80	.61	.61	336	258	257	52	42	84	88	1.15	7
2	12	142.27	.65	.63	336	258	258	51	43	84	89	1.2	8
	16	144.82	.63	.62	336	258	258	51	44	85	90	1.2	8
	20	147.37	.65	.63	337	258	258	51	43	85	91	1.2	8
3	24	149.92	.67	.64	336	258	258	51	43	85	91	1.3	9.5
	28	152.56	.66	.64	336	257	257	51	43	85	92	1.25	9.5
	32	155.14	.65	.63	336	257	257	51	45	86	93	1.2	9
4	36	157.73	.65	.63	337	257	256	51	43	86	93	1.2	9
	40	160.18	.64	.63	337	257	256	51	44	86	93	1.3	10
	44	162.78	.64	.63	336	257	256	51	44	86	93	1.25	10
5	48	165.38	.61	.61	336	257	256	51	43	86	93	1.15	10.5
	52	167.84	.61	.61	337	257	256	52	43	86	93	1.15	10.5
	56	170.31	.60	.61	336	258	256	52	43	86	94	1.15	10.5
6	60	172.78	.58	.60	335	257	257	52	43	87	94	1.1	11
	64	175.23	.59	.61	335	258	257	52	43	87	94	1.1	11
	68	177.69	.60	.61	336	257	257	53	43	87	94	1.1	12
	72	180.14											

Traverse: 2			
Start Time: 11:21	Initial Leak Check: .004	cfm@ 14.5	"Hg
Finish Time: 12:33	Final Leak Check: .003	cfm@ 15.5	"Hg

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

Project No.: 21698

Operator :

Field Data Sheet

Date: Nov. 3 2016	Plant: Covanta DYEC	Test No.: 3 SVOC	Page 5 of 5
	Plant Location: Courtice, Ontario	Test Location: APC Inlet No. 2	

Point	Clock Time *	Dry Gas Meter ft³ *	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	180.48	.84	.72	337	256	245	72	44	87	89	1.6	9.5
	4	183.42	.84	.72	338	257	250	50	44	87	91	1.6	9.0
	8	186.37	.85	.73	337	257	253	49	45	87	92	1.6	10
2	12	189.29	.89	.74	337	257	254	48	45	87	93	1.75	11.5
	16	192.40	.86	.73	337	257	254	48	45	87	94	1.6	11.5
	20	195.38	.87	.74	336	256	255	48	44	87	94	1.6	11.5
3	24	198.32	.87	.74	335	256	255	49	44	87	94	1.6	11.5
	28	201.26	.87	.74	335	256	255	49	44	87	95	1.6	12
	32	204.20	.86	.73	335	256	255	49	45	87	95	1.65	14
4	36	207.12	.84	.72	335	256	255	49	45	87	95	1.6	14
	40	210.0	.84	.72	335	256	254	50	45	88	95	1.6	14
	44	213.10	.84	.72	335	256	256	50	45	88	95	1.5	14
5	48	216.0	.83	.72	335	256	254	50	44	88	95	1.5	14
	52	218.78	.64	.63	334	256	254	50	44	88	95	1.2	12
	56	221.34	.64	.63	335	256	255	51	44	88	95	1.2	12
6	60	223.87	.56	.59	333	256	255	51	44	88	95	1.05	11
	64	226.26	.56	.59	334	256	255	51	44	88	95	1.05	11
	68	228.64	.57	.60	334	256	255	51	42	88	96	1.1	12
	72	231.06											

Traverse: 2			
Start Time: 12:48	Initial Leak Check: .006	cfm@ 15.5	"Hg
Finish Time: 14:00	Final Leak Check: .005	cfm@ 17	"Hg

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

Project No.: 21698

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	october 25, 2016
Test Location	APC Outlet No. 1
Operator Signature	CB.

Project No.:	21698
Page	1 of 2
Probe No.:	6 series
Meter Box No.:	Team 1
Impinger Box No.:	16 —

Measuring Device	MII Numbers
Probe / Pitot SP4	B04011
Trendicator	COE 20094
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	DYEC
Micromanometer	—
Barometer	ENV.CAN.
Calipers	B03922

Pitot Factor	.848	
DGMCF	.993	
Barometric Pressure	29.81	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	.2550	inches
Stack Diameter	4.5	feet
Length	–	feet
Width	–	feet
Port length:		inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	146.7	g
WCBDA	15.1	g

Combustion Gas Concentration

Oxygen	9.42	%
Carbon Dioxide	10.08	%
Carbon Monoxide	12.8	ppm

Nozzle Measurements

1	~~.255~~ .2545
2	.2545
3	.2555
4	.2555
Average:	.2550

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:

Field Data Sheet

Date: Oct. 25/16	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 ft³ *	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 *
5	0	57.95	.80	.75	289	248	268	64	81	68	68	1.95	2.5
2	5	61.80	.86	.78	289	248	264	52	190	68	68	1.95	2.5
3	10	65.52	.82	.76	289	250	264	50	193	68	68	1.95	2.5
4	15	69.25	.82	.76	288	250	265	53	193	68	68	1.95	2.5
5	20	72.96	.81	.75	287	250	265	55	193	68	68	1.95	2.5
6	25	76.66	.81	.76	287	250	265	57	192	68	68	1.95	2.5
7	30	80.44	.80	.75	287	248	265	56	192	69	68	1.95	2.5
8	35	84.17	.79	.75	286	245	265	56	191	69	68	1.95	2.5
9	40	87.94	.76	.73	286	250	267	53	193	69	68	1.95	2.5
10	45	91.70	.76	.73	286	250	267	52	194	69	68	1.95	2.5
11	50	95.45	.77	.73	286	253	267	51	192	70	68	1.95	2.5
12	55	99.24	.76	.73	286	253	267	50	195	70	68	1.95	2.5
	60	102.91											

Traverse: 2		Traverse:	
Start Time: 08:46	Initial Leak Check: .004 cfm@ 15.5 "Hg	Start Time:	Initial Leak Check: cfm @ "Hg
Finish Time: 09:46	Final Leak Check: .004 cfm@ 13.5 "Hg	Finish Time:	Final Leak Check: cfm @ "Hg

Project No.: 21698

Operator : CHRIS BELORE

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	OCTOBER 25, 2016
Test Location	APC Outlet No. 1
Operator Signature	CHRIS BELORE

Project No.:	21698
Page	1 of 2
Probe No.:	6 SERIES
Meter Box No.:	TEAM 1
Impinger Box No.:	

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	29.83	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	0.2550	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	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	162.8	g
WCBDA	10.7	g

Combustion Gas Concentration

Oxygen	8.97	%
Carbon Dioxide	10.44	%
Carbon Monoxide	16.4	ppm

Site Diagram

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

Nozzle Measurements

1 SEE

2

3 TEST #1

4

Average:

Notes:

Field Data Sheet

Date: OCT. 25/16	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
*	*	*	*		*			*		*	*	*	*
5	0	3.50	.72	.72	286	251	270	66	86	68	70	1.75	3.5
2	5	7.16	.72	.71	289	250	268	54	238	69	70	1.75	3.5
3	10	10.71	.72	.71	288	252	268	52	239	69	69	1.75	3.5
4	15	14.30	.70	.70	291	256	270	55	240	72	70	1.75	3.5
5	20	17.87	.71	.70	288	248	268	49	238	70	69	1.75	3.5
6	25	21.42	.70	.70	290	250	270	50	238	71	70	1.75	3.5
7	30	24.95	.70	.70	289	249	267	48	238	70	70	1.75	3.5
8	35	28.48	.70	.71	289	251	268	48	238	70	69	1.75	3.5
9	40	32.04	.71	.71	289	252	267	48	238	70	70	1.75	3.5
10	45	35.55	.72	.72	289	252	268	48	239	70	70	1.75	3.5
11	50	39.07	.72	.72	290	248	268	49	238	71	70	1.75	3.5
12	55	42.63	.71	.72	290	249	268	49	238	71	70	1.75	3.5
	60	46.18											

Traverse: 1			
Start Time: 10:40	Initial Leak Check: .004	cfm@ 13.5	"Hg
Finish Time: 11:40	Final Leak Check: .004	cfm@ 15.5	"Hg

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

Project No.: 21698

Operator : CHRIS BELORE

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.:	3 M26A
Test Date	OCTOBER 25, 2016
Test Location	APC Outlet No. 1
Operator Signature	CB

Project No.:	21698
Page	1 of 2
Probe No.:	6 SERIES
Meter Box No.:	TEAM 1
Impinger Box No.:	

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

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	29.83	"Hg
Static Pressure	-11.25	"H2O
Nozzle Size	0.2550	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:		inches

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	165.5	g
WCBDA	11.0	g

Combustion Gas Concentration

Oxygen	9.03	%
Carbon Dioxide	10.42	%
Carbon Monoxide	8.0	ppm

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

Nozzle Measurements

1 SEE

2 TEST #1

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:

Rev. November 27, 2014

Field Data Sheet

Date: Oct. 25/16	Plant: Covanta DYEC	Test No.: 3 ~~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 *
5	0	47.00	.76	.74	285	247	269	68	82	71	70	1.8	2.5
2	5	50.54	.72	.72	288	252	267	52	224	71	70	1.9	2.5
3	10	54.24	.70	.71	288	253	270	52	226	70	70	1.8	2.2
4	15	57.88	.71	.71	288	252	268	55	225	71	70	1.8	2.2
5	20	61.52	.71	.71	288	253	268	56	225	70	70	1.8	2.2
6	25	65.05	.71	.71	289	253	268	58	225	70	70	1.8	2.2
7	30	68.63	.69	.70	288	252	268	59	223	71	70	1.8	2.2
8	35	72.22	.71	.71	288	253	269	57	223	71	70	1.8	2.2
9	40	75.78	.75	.73	288	249	268	54	224	71	70	1.9	2.7
10	45	79.43	.74	.73	288	250	268	53	224	71	70	1.9	2.7
11	50	83.16	.74	.73	289	252	268	52	225	72	70	1.9	2.7
12	55	86.84	.75	.73	289	252	268	52	225	72	70	1.9	2.7
	60	90.58											

Traverse: 1			
Start Time: 12:51	Initial Leak Check: 0.004 cfm@ 15.5 "Hg		
Finish Time: 13:51	Final Leak Check: 0.003 cfm@ 15 "Hg		

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

Project No.: 21698

Operator : Chris Belore

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 1	M26A
Test Date	OCTOBER 26, 2016
Test Location	APC Outlet No. 2
Operator Signature	CHRIS BELORE

Project No.:	21698
Page	1 of 2
Probe No.:	6 SERIES
Meter Box No.:	TEAM 1
Impinger Box No.:	—

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	30.01	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2550	inches
Stack Diameter	4.5	feet
Length	0	feet
Width	0	feet
Port length:		inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	148.7	g
WCBDA	10.5	g

Combustion Gas Concentration

Oxygen	8.45	%
Carbon Dioxide	10.94	%
Carbon Monoxide	22.8	ppm

Measuring Device	MII Numbers
Probe / Pitot 6P4	B6401I
Trendicator	COE 20094
Control Box	COE 20094
Incline Manometer	COE 20094
Comb.Gas.Analyzer	NMEC
Micromanometer	
Barometer	ENV.CAN.
Calipers	B03922

Nozzle Measurements	
1	.2545
2	.2545
3	.2555
4	.2555
Average:	.2550

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: OCT. 26/16	Plant:	Covanta DYEC	Test No.:	1	~~Particulate/Metals~~ 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 *
5	0	91.53	.62	.66	283	252	273	62	90	64	63	1.45	2.0
2	5	94.90	.63	.67	284	251	267	46	233	64	64	1.45	2.0
3	10	98.26	.66	.68	283	253	268	46	233	64	64	1.45	2.0
4	15	101.68	.66	.68	284	250	267	47	233	64	64	1.45	2.0
5	20	104.89	.66	.68	284	250	267	47	233	64	64	1.45	2.0
6	25	107.98	.65	.67	284	250	267	47	233	64	64	1.45	2.0
7	30	111.24	.65	.67	284	254	263	49	230	64	64	1.60	2.5
8	35	114.55	.65	.67	284	254	263	50	231	65	64	1.60	2.5
9	40	117.95	.64	.67	284	253	262	51	230	65	64	1.60	2.5
10	45	121.33	.64	.67	284	253	262	51	230	65	64	1.60	2.5
11	50	124.81	.64	.67	284	254	263	54	231	66	64	1.60	2.5
12	55	128.10	.63	.66	284	254	263	55	231	66	64	1.60	2.5
	60	131.57											

Traverse: 1			
Start Time: 08:10	Initial Leak Check: .004	cfm@ 12	"Hg
Finish Time: 09:10	Final Leak Check: .004	cfm@ 14	"Hg

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

Project No.: 21698

Operator : CHRIS BELORE

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 2	M26A
Test Date	OCTOBER 26, 2016
Test Location	APC Outlet No. 2
Operator Signature	CHRIS BELORE

Project No.:	21698
Page	1 of 2
Probe No.:	6 SERIES
Meter Box No.:	TEAM 1
Impinger Box No.:	

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	30.00	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2550	inches
Stack Diameter	4.5	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	155.0	g
WCBDA	9.7	g

Combustion Gas Concentration

Oxygen	8.45	%
Carbon Dioxide	11.08	%
Carbon Monoxide	12.2	ppm

Site Diagram

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

Nozzle Measurements

1 SEE
2 TEST #1
3
4
Average:

Notes:

Rev. November 27, 2014

Field Data Sheet

Date: OCT. 26/16	Plant:	Covanta DYEC	Test No.: 2	~~Particulate/Metals~~ 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 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	32.15	.58	.64	281	252	264	61	76	66	65	1.4	2.0
2	5	35.47	.58	.64	282	253	263	46	237	66	66	1.4	2.0
3	10	38.67	.57	.64	283	253	263	44	237	66	65	1.4	2.0
4	15	41.83	.57	.64	284	255	263	43	236	66	66	1.4	2.0
5	20	45.00	.57	.64	281	255	263	42	236	66	66	1.4	2.0
6	25	48.19	.58	.64	280	254	263	43	236	67	65	1.4	2.0
7	30	51.38	.62	.67	281	250	263	43	236	66	65	1.5	2.2
8	35	54.74	.63	.67	281	252	263	44	237	67	66	1.6	2.2
9	40	57.98	.63	.67	281	250	263	44	237	67	66	1.65	2.3
10	45	61.45	.63	.67	284	252	263	45	237	68	66	1.65	2.3
11	50	64.88	.62	.67	286	251	263	46	237	68	66	1.65	2.3
12	55	68.29	.62	.67	286	252	263	48	237	68	66	1.65	2.3
	60	71.70											

Traverse: 2			
Start Time: 10:03	Initial Leak Check: .004	cfm@ 14	"Hg
Finish Time: 11:03	Final Leak Check: .002	cfm@ 12	"Hg

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

Project No.: 21698

Operator : CHRIS BELORE

ORTECH Environmental

Plant	Covanta DYEC
Plant Location	Courtice, Ontario
Test No.: 3	M26A
Test Date	OCTOBER 26, 2016
Test Location	APC Outlet No. 2
Operator Signature	CHRIS BELORE

Project No.:	21698	
Page	1 of 2	
Probe No.:	6 SERIES	
Meter Box No.:	TEAM 1	
Impinger Box No.:		

Pitot Factor	0.848	
DGMCF	0.993	
Barometric Pressure	29.98	"Hg
Static Pressure	-9.5	"H2O
Nozzle Size	0.2550	inches
Stack Diameter	4.5	feet
Length	—	feet
Width	—	feet
Port length:		inches

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

Particulate Gain

Filter		mg
Probe		mg

Moisture Gain

CWTR	129.6	g
WCBDA	7.4	g

Combustion Gas Concentration

Oxygen	8.61	%
Carbon Dioxide	10.74	%
Carbon Monoxide	17.6	ppm

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

Nozzle Measurements

1 SEE
2 TEST #1
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:

Rev. November 27, 2014

Field Data Sheet

Date: Oct. 26/16	Plant: Covanta DYEC	Test No.: 3	~~Particulate/Metals~~ 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 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	72.35	.56	.64	276	250	265	66	42	68	67	1.4	2.0
2	5	75.62	.56	.64	276	250	264	49	160	68	67	1.4	2.0
3	10	78.90	.56	.64	271	254	264	47	232	68	67	1.4	2.0
4	15	82.04	.55	.64	278	254	264	47	232	68	68	1.4	2.0
5	20	85.25	.55	.64	278	254	264	46	232	68	67	1.4	2.0
6	25	88.37	.54	.63	279	252	264	47	232	68	67	1.4	2.0
7	30	91.60	.54	.63	279	251	265	47	233	68	67	1.4	2.0
8	35	94.70	.57	.64	279	254	264	47	232	68	68	1.4	2.0
9	40	97.87	.58	.65	279	255	264	46	232	70	68	1.4	2.0
10	45	101.15	.57	.64	280	252	264	46	233	70	68	1.4	2.0
11	50	104.26	.57	.64	280	253	264	46	232	70	68	1.4	2.0
12	55	107.49	.56	.63	280	254	264	46	232	71	68	1.4	2.0
	60	110.66											

Traverse: 2				
Start Time: 12:21	Initial Leak Check:	.003	cfm@ 13	"Hg
Finish Time: 13:21	Final Leak Check:	.002	cfm@ 10	"Hg

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

Project No.: 21698

Operator : CHRIS PELORE

APPENDIX 10

VOST Field Data Sheets
(8 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No./ Pair No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1-1	1.021	64.20	85.00	20.80	29.77	1.00	20.0	21.54	0.0215
1-2	1.021	85.15	105.30	20.15	29.77	1.00	26.4	20.42	0.0204
1-3	1.021	5.62	26.15	20.53	29.77	1.00	30.0	20.56	0.0206
1-4	1.021	26.40	46.50	20.10	29.77	1.00	32.8	19.95	0.0199
2-1	1.021	51.37	72.77	21.40	29.72	1.00	38.8	20.79	0.0208
2-2	1.021	73.27	94.90	21.63	29.72	1.00	38.0	21.07	0.0211
2-3	1.021	95.30	115.99	20.69	29.72	1.00	38.8	20.10	0.0201
2-4	1.021	16.45	37.48	21.03	29.72	1.00	39.2	20.41	0.0204
3-1	1.021	37.75	58.53	20.78	29.80	1.00	22.0	21.40	0.0214
3-2	1.021	58.70	78.75	20.05	29.80	1.00	27.4	20.28	0.0203
3-3	1.021	79.10	99.73	20.63	29.80	1.00	31.2	20.60	0.0206
3-4	1.021	0.04	21.99	21.95	29.80	1.00	33.2	21.78	0.0218

* Dry at 25°C and 1 atmosphere

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Volatile Organics Sampling Train
Sample Volume Corrections

Test No./ Pair No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm3)*
1-1	1.021	52.00	71.61	19.61	29.47	1.00	27.4	19.61	0.0196
1-2	1.021	71.95	92.10	20.15	29.47	1.00	31.6	19.87	0.0199
1-3	1.021	92.40	113.13	20.73	29.47	1.00	65.6	18.39	0.0184
1-4	1.021	13.40	34.22	20.82	29.47	1.00	38.4	20.09	0.0201
2-1	1.021	65.88	85.90	20.02	29.67	1.00	31.4	19.89	0.0199
2-2	1.021	86.28	106.94	20.66	29.67	1.00	36.6	20.18	0.0202
2-3	1.021	7.35	28.12	20.77	29.67	1.00	40.0	20.07	0.0201
2-4	1.021	28.51	49.21	20.70	29.67	1.00	43.0	19.81	0.0198
3-1	1.021	81.85	101.00	19.15	29.53	1.00	28.2	19.14	0.0191
3-2	1.021	1.30	20.93	19.63	29.53	1.00	33.0	27.40	0.0274
3-3	1.021	21.35	41.40	20.05	29.53	1.00	36.8	19.48	0.0195
3-4	1.021	41.90	64.10	22.20	29.53	1.00	40.0	21.35	0.0214

* Dry at 25°C and 1 atmosphere

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Location Courtice, ON	Test No: 1	Control Box ID: A 11542	
Test location: APC Outlet No. 1	DGMCF: 1.021	Operator: [illegible]	
Date: ~~Oct 28~~ 28/16	Barometric Pressure: 29.77 "Hg	Project No: 21698	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 30A 30B	

16-21698-VOST-

Tube Pair 1 Start Time: 806	Initial Leak Check NDL @ 17 "Hg			Sample ID: 1A, 1B	
Tube Pair 1 End Time: 826	Final Leak Check NDL @ 12 "Hg			Lab ID: 1A, 1B	

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	64.2	130	138	5	16	1.0	3
5	69.5	130	139	5	19	1.0	3.5
10	74.8	130	139	5	21	1.0	4.5
15	80.0	131	140	6	22	1.0	4.5
20	85.00	131	140	6	22	1.0	4.5

Tube Pair 2 Start Time: 832	Initial Leak Check NDL @ 11 "Hg			Sample ID: 2A, 2B	
Tube Pair 2 End Time: 852	Final Leak Check NDL @ 12 "Hg			Lab ID: 2A, 2B	

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	85.15	131	138	5	22	1	3.5
5	90.3	131	140	5	25	1	4
10	95.8	131	140	5	28	1	4
15	100.7	130	140	5	28	1	4
20	105.3	134	139	7	29	1	4

Tube Pair 3 Start Time: 859	Initial Leak Check NDL @ 17 "Hg			Sample ID: 3A, 3B	
Tube Pair 3 End Time: 919	Final Leak Check NDL @ 13.5 "Hg			Lab ID: 3A, 3B	

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	105.62	132	137	7	26	1	4
5	10.6	132	138	5	29	1	4.5
10	15.5	133	140	5	31	1	5.5
15	20.7	134	139	4	32	1	6
20	26.15	134	138	5	32	1	6

Tube Pair 4 Start Time: 927	Initial Leak Check NDL @ 13.5 "Hg			Sample ID: 4A, 4B	
Tube Pair 4 End Time: 947	Final Leak Check @ 13 "Hg			Lab ID: 4A, 4B	

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	26.40	131	137	4	29	1	4
5	31.4	131	139	5	33	1	5.5
10	36.0	140	140	5	34	1	6
15	41.7	134	138	5	34	1	6
20	46.5	134	130	5	34	1	6

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ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Location Courtice, ON	Test No: 2	Control Box ID: 11512	
Test location: APC Outlet No. 1	DGMCF: 1.021	Operator: [illegible]	
Date: OCT 28/16	Barometric Pressure: 29.72 "Hg	Project No: 21698	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 30A, 30B	DAF#946

Tube Pair 1 Start Time: 1356		Initial Leak Check NDL @ 17 "Hg				Sample ID: 5A, 5B	
Tube Pair 1 End Time: 1416		Final Leak Check NDL @ 15.5 "Hg				Lab ID: 5A, 5B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	51.37	131	137	6	35	1	3
5	56.7	138	139	6	39	1	4
10	62.12	136	138	6	40	1	4.5
15	67.6	135	139	5	40	1	4.5
20	72.77	137	138	5	40	1	4.5

DAF#[illegible]

Tube Pair 2 Start Time: 1423		Initial Leak Check NDL @ 15.5 "Hg				Sample ID: 6A, 6B	
Tube Pair 2 End Time: 1443		Final Leak Check NDL @ 14.0 "Hg				Lab ID: 6A, 6B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	73.27	135	137	5	35	1	3
5	78.40	137	138	5	38	1	4
10	84.10	136	139	6	39	1	4.5
15	89.74	136	139	6	39	1	4.5
20	94.90	137	139	6	39	1	4.5

DAF#[illegible]

14.0

Tube Pair 3 Start Time: 1451		Initial Leak Check NDL @ ~~15.5~~ "Hg				Sample ID: 7A, 7B	
Tube Pair 3 End Time: 1511		Final Leak Check NDL @ 15.0 "Hg				Lab ID: 7A, 7B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	95.30	134	136	5	35	1	5
5	100.9	135	139	6	38	1	6
10	106.1	135	139	6	40	1	6
15	111.1	134	139	5	40	1	6.5
20	115.99	137	139	6	41	1	7

DAF#[illegible]

Tube Pair 4 Start Time: 1520		Initial Leak Check NDL @ 15.0 "Hg				Sample ID: 8A, 8B	
Tube Pair 4 End Time: 1540		Final Leak Check NDL @ 13.5 "Hg				Lab ID: 8A, 8B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	16.45	135	136	5	35	1	4
5	22.1	143	136	6	40	1	4.5
10	27.4	136	138	6	40	1	4.5
15	32.5	138	139	6	40	1	4.5
20	37.48	137	140	5	41	1	5

DAF#[illegible]

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ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Location Courtice, ON	Test No: 3	Control Box ID: A11542	
Test location: APC Outlet No. 1	DGMCF: 1.021	Operator: QM	
Date: OCTOBER 31, 2016	Barometric Pressure: 29.80 "Hg	Project No: 21698	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 30A, 30B	

Tube Pair 1 Start Time: 10 21		Initial Leak Check NDL @ 15.5 "Hg				Sample ID: 9A, 9B	
Tube Pair 1 End Time: 10 41		Final Leak Check NDL @ 15 "Hg				Lab ID: 9A, 9B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	37.75	135	142	16	17	1	4
5	42.8	136	142	10	21	1	5
10	48.1	136	142	9	24	1	5
15	53.4	134	142	10	24	1	5
20	58.53	134	142	10	24	1	5

Tube Pair 2 Start Time: 10 48		Initial Leak Check NDL @ 15 "Hg				Sample ID: 10A, 10B	
Tube Pair 2 End Time: 11 08		Final Leak Check NDL @ 15 "Hg				Lab ID: 10A, 10B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	58.70	133	142	10	22	1.0	3.5
5	63.9	135	143	10	27	1.0	5.5
10	68.7	136	143	9	28	1.0	5.5
15	73.7	133	142	8	30	1.0	5.5
20	78.75	135	144	8	30	1.0	5.5

Tube Pair 3 Start Time: 11 16		Initial Leak Check NDL @ 15 "Hg				Sample ID: 11A, 11B	
Tube Pair 3 End Time: 11 36		Final Leak Check NDL @ 15. "Hg				Lab ID: 11A, 11B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	79.1	133	142	7	26	1	5
5	84.1	135	142	7	31	1	7.5
10	88.9	135	143	7	33	1	9
15	94.2	132	143	8	33	1	9
20	99.73	132	142	8	33	1	9

Tube Pair 4 Start Time: 11 43		Initial Leak Check NDL @ 15.5 "Hg				Sample ID: 12A, 12B	
Tube Pair 4 End Time: 12 03		Final Leak Check NDL @ 17 "Hg				Lab ID: 12A, 12B	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	0.04	130	139	7	30	1	3
5	5.6	133	140	8	32	1	5
10	11.2	136	140	9	34	1	5
15	16.5	134	139	9	35	1	5
20	21.99	132	139	9	35	1	5

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Location Courtice, ON	Test No: 1	Control Box ID: 11512	
Test location: APC Outlet No. 2	DGMCF: 1.021 ✓	Operator: [illegible]	
Date: NOVEMBER 1, 2016	Barometric Pressure: 29.47 "Hg	Project No: 21698	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 29, DFH945	

Tube Pair 1 Start Time:	937	Initial Leak Check	NDL @ 17.5 "Hg	Sample ID:	13A 13B
Tube Pair 1 End Time:	957	Final Leak Check	NDL @ 14.0 "Hg	Lab ID:	DFH929

Clock Time	Dry Gas Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	52.00	127	136	21	23	1	3.5
5	57.4	127	136	17	26	1	4
10	62.1	125	137	12	28	1	5.5
15	66.7	128	137	10	29	1	6
20	71.61	126	137	10	31	1	6

Tube Pair 2 Start Time:	1003	Initial Leak Check	NDL @ 15 "Hg	Sample ID:	14A 14B
Tube Pair 2 End Time:	1023	Final Leak Check	NDL @ 14 "Hg	Lab ID:	DFH930

Clock Time	Dry Gas Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	71.95	123	135	8	27	1	4
5	77.4	125	137	8	31	1	5.5
10	82.3	127	136	8	32	1	6
15	87.3	128	135	8	34	1	6
20	92.10	129	136	8	34	1	6

Tube Pair 3 Start Time:	1029	Initial Leak Check	NDL @ 15 "Hg	Sample ID:	15A 15B
Tube Pair 3 End Time:	1049	Final Leak Check	NDL @ 15 "Hg	Lab ID:	DFH931

Clock Time	Dry Gas Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	92.40	136	135	8	31	1	4
5	96.5	138	136	7	35	1	6
10	102.3	136	136	7	37	1	6
15	107.8	137	135	7	37	1	6
20	113.13	136	136	8	38	1	6

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Tube Pair 4 Start Time:	1055	Initial Leak Check	NDL @ 14.5 "Hg	Sample ID:	16A 16B
Tube Pair 4 End Time:	1115	Final Leak Check	NDL @ 16 "Hg	Lab ID:	DFH932

Clock Time	Dry Gas Meter L	Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	13.40	136	135	8	35	1	4
5	18.6	135	136	8	38	1	5.5
10	23.9	136	136	8	39	1	6
15	29.1	138	136	8	40	1	6
20	34.22	135	135	8	40	1	6

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ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Location Courtice, ON	Test No: 2	Control Box ID: 11542	
Test location: APC Outlet No. 2	DGMCF: 1.021	Operator: DW	
Date: NOVEMBER 2, 2016	Barometric Pressure: 29.67 "Hg	Project No: 21698	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 29 DFH945	

Tube Pair 1 Start Time: 807	Initial Leak Check NDL @ 16 "Hg	Sample ID: 17A, 17B	
Tube Pair 1 End Time: 827	Final Leak Check NDL @ 17 "Hg	Lab ID: DFH933	

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	65.85	132	137	16	28	1	4
5	71.0	132	138	16	30	1	5
10	75.6	133	139	16	33	1	6
15	80.8	133	138	17	33	1	6
20	85.90	133	138	16	33	1	6

Tube Pair 2 Start Time: 833	Initial Leak Check NDL @ 17 "Hg	Sample ID: 18A, 18B
Tube Pair 2 End Time: 853	Final Leak Check NDL @ 14 "Hg	Lab ID: DFH 934

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	86.28	132	136	16	33	1	3.5
5	91.3	134	138	11	36	1	5
10	96.3	134	138	9	38	1	5
15	101.9	134	138	9	38	1	5.5
20	106.94	133	138	9	38	1	5.5

Tube Pair 3 Start Time: 859	Initial Leak Check NDL @ 15 "Hg	Sample ID: 19A, 19B
Tube Pair 3 End Time: 919	Final Leak Check NDL @ 14.5 "Hg	Lab ID: DFH 935

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	7.35	132	135	7	36	1	3.5
5	12.9	130	137	7	41	1	4.5
10	17.9	133	137	8	41	1	4.5
15	22.9	133	137	8	41	1	4.5
20	28.12	133	137	8	41	1	5

Tube Pair 4 Start Time: 926	Initial Leak Check NDL @ 14.5 "Hg	Sample ID: 20A, 20B ARCHIVE
Tube Pair 4 End Time: 946	Final Leak Check NDL @ 15 "Hg	Lab ID: DFH 936

Clock Time	Dry Gas Meter L	Temperatures Probe °C	Stack °C	Condensor °C	Meter Avg °C	Meter Pressure "H_2O	Pump Vacuum "Hg
0	28.51	130	136	6	39	1	4
5	33.5	133	136	6	43	1	5.5
10	38.5	133	136	6	45	1	5.5
15	43.9	133	136	6	44	1	5.5
20	49.21	134	136	6	44	1	5.5

ORTECH Environmental

Vost Data Sheet

Plant: Covanta DYEC	Test Condition: COMPLIANCE		
Plant Location Courtice, ON	Test No: 3	Control Box ID: 11542	
Test location: APC Outlet No. 2	DGMCF: 1.021	Operator: A11542	
Date: NOVEMBER 3, 2016	Barometric Pressure: 29.53 "Hg	Project No: 21698	
~ 1 LPM for 20 minutes	NDL - No Dectectable Leak	Field Blank Pair ID: 29 DFH945	

Tube Pair 1 Start Time: 810		Initial Leak Check NDL @ 15.5 "Hg				Sample ID: 21A, 21B	
Tube Pair 1 End Time: 830		Final Leak Check NDL @ 15 "Hg				Lab ID: DFH937	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	81.95	131	137	22	23	1	3.5
5	86.6	131	138	7	27	1	4.5
10	91.2	131	138	8	28	1	5
15	96.0	132	138	7	31	1	6
20	101.00	132	136	7	32	1	6

Tube Pair 2 Start Time: 835		Initial Leak Check NDL @ 15 "Hg				Sample ID: 22A, 22B	
Tube Pair 2 End Time: 855		Final Leak Check NDL @ 16 "Hg				Lab ID: DFH938	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	1.30	132	136	7	28	1	4
5	6.0	130	137	7	32	1	6
10	11.0	132	138	7	34	1	6.5
15	16.0	133	138	8	35	1	7
20	20.93	132	137	7	36	1	7

Tube Pair 3 Start Time: 900		Initial Leak Check NDL @ 16 "Hg				Sample ID: 23A 23B	
Tube Pair 3 End Time: 920		Final Leak Check NDL @ 15 "Hg				Lab ID: DFH 939	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	21.35	128	136	6	32	1	4
5	26.3	130	137	7	36	1	6
10	31.1	133	136	7	38	1	6.5
15	36.3	130	137	7	39	1	7
20	~~41.40~~ 41.40	131	136	8	39	1	7

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Tube Pair 4 Start Time: 925		Initial Leak Check NDL @ 15 "Hg				Sample ID: 24A 24B	
Tube Pair 4 End Time: 945		Final Leak Check NDL @ "Hg				Lab ID: DFH 940	
Clock Time	Dry Gas Meter L	Temperatures				Meter Pressure "H_2O	Pump Vacuum "Hg
		Probe °C	Stack °C	Condensor °C	Meter Avg °C		
0	41.90	131	135	7	37	1	3.5
5	46.9	131	136	8	40	1	5
10	52.2	134	136	8	40	1	5
15	58.4	130	136	7	42	1	5
20	64.1	131	135	7	41	1	5

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APPENDIX 11

Aldehydes Field Data Sheets
(8 pages)

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	0.993	80.15	109.52	29.37	29.76	0.50	37.8	27.85	0.0279
2	0.993	19.10	51.05	31.95	29.74	0.50	41.0	29.97	0.0300
3	0.993	22.75	51.66	28.91	29.80	0.50	37.4	27.49	0.0275

* Dry at 25°C and 1 atmosphere.

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet
Aldehydes
Sample Volume Corrections

Test No.	DGMCF	Initial DGM Reading (L)	Final DGM Reading (L)	Actual Vol. Sampled (L)	Barometric Pressure (in Hg)	Average DGM Pressure del H (in H_2O)	Average DGM Temperature (°C)	Corrected Volume (L)*	Corrected Volume (Rm^3)*
1	0.993	34.70	65.72	31.02	29.47	0.50	42.5	28.69	0.0287
2	0.993	49.65	81.80	32.15	29.67	0.50	46.6	29.55	0.0296
3	0.993	64.65	93.38	28.73	29.55	0.50	42.9	26.61	0.0266

* Dry at 25°C and 1 atmosphere.

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 1
Date:	OCTOBER 29, 2016
Project No.:	21698

Measuring Device	MII Number
Control Module	11542
NOVA	–
Barometer	ENV. CAN

P_{Bar}	29.76

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	80.15	130	~~22~~ 139	134	16	33		.5	1
5	82.6	131	140	139	16	35		.5	1
10	85.1	131	140	139	16	36		.5	1
15	87.4	131	140	139	17	37		.5	1
20	90.0	131	140	138	17	37		.5	1
25	92.3	131	140	138	17	38		.5	1
30	94.9	130	140	141	17	39		.5	1
35	97.2	129	140	141	17	39		.5	1
40	99.7	129	141	141	17	39		.5	1
45	102.0	130	140	140	17	39		.5	1
50	104.5	130	140	140	17	40		.5	1
55	106.9	129	140	140	16	40		.5	1
60	109.52	129	140	141	16	40		.5	1

Start Time:	1132
Finish Time:	1232
Initial Leak Check:	0.01 Lpm @ 17 " Hg
Final Leak Check:	0.01 Lpm @ 19 " Hg

DGMCF:	0.993
Sample Volume:	29.37
Average DGM Temp:	37.77
Average DGM Δ H:	0.5

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator : [signature]

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 1
Date:	OCTOBER 28, 2016
Project No.:	21698

Measuring Device	MII Number
Control Module	11542
NOVA	
Barometer	ENV. CAN

P_{Bar}	29.74

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	19.10	130	139	140	17	39		0.5	1
5	21.7	127	138	137	17	39		0.5	1
10	24.630	131	139	139	18	42		0.5	2
15	27.22	130	139	139	17	41		0.5	2
20	29.67	131	139	139	17	41		0.5	2
25	32.23	130	139	140	17	41		0.5	2
30	34.99	131	139	141	17	41		0.5	2
35	37.5	131	139	141	17	41		0.5	2
40	40.2	131	139	140	16	41		0.5	2
45	42.9	131	139	141	16	41		0.5	2
50	45.5	131	139	141	16	42		0.5	2
55	48.2	131	138	143	16	42		0.5	2
60	51.05	132	138	143	17	42		0.5	2

Start Time:	1243		
Finish Time:	1343		
Initial Leak Check:	2.01	Lpm @	14 " Hg
Final Leak Check:	2.01	Lpm @	5 " Hg

DGMCF:	0.993
Sample Volume:	31.95
Average DGM Temp:	41.0
Average DGM Δ H:	0.5

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator :

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 1
Date:	OCTOBER 31, 2016
Project No.:	21698

Measuring Device	MII Number
Control Module	A11542
NOVA	—
Barometer	ENV. CAN

P_{Bar}	29.80

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	22.75	130	139	130	16	32		0.5	2
5	25.0	126	139	130	16	34		0.5	2
10	27.8	128	140	130	17	35		0.5	2
15	30.2	129	140	129	16	36		0.5	2
20	32.4	130	139	121	16	37		0.5	2
25	34.9	129	139	123	16	37		0.5	2
30	37.4	125	139	123	16	37		0.5	2
35	39.8	129	139	122	17	39		0.5	2
40	42.1	129	139	122	16	39		0.5	2
45	44.5	129	139	122	16	40		0.5	2
50	46.8	125	139	122	16	40		0.5	2
55	49.4	129	139	123	16	40		0.5	2
60	51.66	130	139	125	16	40		0.5	2

Start Time:	12 18			
Finish Time:	13 18			
Initial Leak Check:	<.01	Lpm @	7	" Hg
Final Leak Check:	<.01	Lpm @	7	" Hg

DGMCF:	0.993
Sample Volume:	28.91
Average DGM Temp:	37.38
Average DGM Δ H:	0.5

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator :

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	1
Test location:	APC Outlet No. 2
Date:	NOVEMBER 1, 2016
Project No.:	21698

Measuring Device	MII Number
Control Module	11542
NOVA	—
Barometer	ENV-CAN

P_{Bar}	29.47

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	34.7	135	136	147	21	39		.5	2
5	37.5	130	137	147	22	41		.5	2
10	40.0	136	136	150	17	42		.5	2
15	42.6	128	138	118	21	42		.5	2
20	45.3	120	138	121	19	~~45~~ 43		.5	2
25	47.8	119	136	130	15	43		.5	2
30	50.4	120	136	130	18	43		.5	2
35	53.0	125	136	131	18	43		.5	2
40	55.5	130	138	131	17	45		.5	2
45	58.1	128	139	131	16	43		.5	2
50	60.5	128	139	131	16	43		.5	2
55	63.2	128	~~2~~140	131	16	43		.5	2
60	65.72	129	~~2~~139	131	16	44		.5	2

Start Time:	11 25		
Finish Time:	12 25		
Initial Leak Check:	<.01	Lpm @	15 " Hg
Final Leak Check:	N/A	Lpm @	" Hg

DGMCF:	0.993
Sample Volume:	31.02
Average DGM Temp:	42.54
Average DGM ΔH:	0.5

Comments: WATER BATH EXTREMELY COLD

: sample @ ~0.5 lpm for 60 minutes.

Operator : Ben

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	2
Test location:	APC Outlet No. 2
Date:	NOVEMBER 2, 2016
Project No.:	21698

Measuring Device	MII Number
Control Module	11542
NOVA	—
Barometer	ENV-CAN

P_{Bar}	29.67

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure Δ H "H_2O	Pump Vacuum "Hg Gauge
0	49.65	130	136	119	16	42		0.5	2
5	53.1	128	138	121	22	44		0.5	2
10	55.4	129	138	122	22	44		0.5	2
15	57.8	128	138	122	BATT 0 TEMP	45		0.5	2
20	60.6	129	139	119	0	47		0.5	2
25	63.1	128	138	121	0	47		0.5	2
30	65.8	128	138	122	0	47		0.5	2
35	68.6	127	138	119	0	47		0.5	2
40	71.1	128	138	120	0	47		0.5	2
45	73.8	127	139	118	0	49		0.5	2
50	76.5	128	138	122	0	49		0.5	2
55	79.1	128	138	123	0	49		0.5	2
60	81.80	129	138	124	0	49		0.5	2

Start Time:	~~959~~ 1000
Finish Time:	1100
Initial Leak Check:	<.01 Lpm @ 15 " Hg
Final Leak Check:	NA Lpm @ " Hg

DGMCF:	0.993
Sample Volume:	32.15
Average DGM Temp:	46.62
Average DGM Δ H:	0.5

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator : [signature]

ORTECH Environmental
CARB 430

Plant:	Covanta DYEC
Plant Location:	Courtice, Ontario
Test No.:	3
Test location:	APC Outlet No. 2
Date:	NOVEMBER 3, 2016
Project No.:	21698

Measuring Device	MII Number
Control Module	11542
NOVA	–
Barometer	ENV. CAN

P_{Bar}	29.55

Clock Time	Dry Gas Meter L	Probe Temp °C	Stack Temp °C	Oven Temp °C	Impinger Outlet °C	Meter Temperature ~~Outlet~~ AVG °C	Meter Temperature Inlet °C	Meter Pressure ΔH "H_2O	Pump Vacuum "Hg Gauge
0	64.65	120	137	121	39	7		0.5	2
5	67.2	128	137	124	41	4		0.5	2
10	70.7	127	137	123	41	3		0.5	2
15	73.3	127	137	123	42	3		0.5	2
20	75.0	128	137	122	43	2		0.5	2
25	77.3	129	137	122	43	2		0.5	2
30	79.4	129	137	122	44	2		0.5	2
35	81.6	128	136	122	44	2		0.5	2
40	83.9	128	138	122	44	2		0.5	2
45	85.9	129	137	122	44	2		0.5	2
50	88.3	129	137	122	44	2		0.5	2
55	90.6	128	137	122	44	2		0.5	2
60	93.38	127	137	122	45	1		0.5	2

Start Time:	9:54
Finish Time:	10:54
Initial Leak Check:	<.01 Lpm @ 15 " Hg
Final Leak Check:	NA Lpm @ " Hg

DGMCF:	0.993
Sample Volume:	28.73
Average DGM Temp:	42.92
Average DGM ΔH:	0.5

Comments:

: sample @ ~0.5 lpm for 60 minutes.

Operator :

APPENDIX 12

ORTECH Sample Log/Chain of Custody Forms
(17 pages)

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16 - 21698 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
1		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
6		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

Refer to request letter dated October 5, 2016 for lists of analytes.

Relinquished To: [signature] ASAD BHATTI Date: 2016/10/28 17:34

Relinquished By: [signature] Date: Oct 28, 16

6.2 / 6.1 / 9.4
14.7 / 15.2 / 15.3
9.2 / 8.4 / 10.4
11.1 / 11.2 / 10.5
14.5 / 13.1 / 12.2
9.4 / 9.7 / 9.2

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16 - 21698 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
11	oct 31, 16	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
16	oct 31, 16	Blank 1 Probe Rinse	Blank	Hexane/Acetone	SVOC
17		Blank 1 Filter		Particulate	SVOC
18		Blank 1 XAD-II Trap		N.A.	SVOC
19		Blank 1 Impinger Solution		Ethylene Glycol	SVOC
20		Blank 1 Impinger Rinse		Hexane/Acetone	SVOC

Refer to request letter dated October 5, 2016 for lists of analytes.

Relinquished To: ______ Date: ______

Relinquished By: CHRIS BELORE Date: Oct. 31, 2016

DAM7 MARCOAK 2161031 19:48 13/15/13
DM7 2161031 ~~ONO~~ NO ICE

ORTECH Environmental Sample Log

Semi-Volatile Organics Samples

Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16 - 21698 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
21 ✓		Test 1 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
22 ✓		Test 1 Filter		Particulate	SVOC
23 ✓		Test 1 XAD-II Trap		XAD-2 Resin	SVOC
24 ✓		Test 1 Impinger Solution		Ethylene Glycol	SVOC
25 ✓		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
26 ✓		Test 2 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
27 ✓		Test 2 Filter		Particulate	SVOC
28 ✓		Test 2 XAD-II Trap		XAD-2 Resin	SVOC
29 ✓		Test 2 Impinger Solution		Ethylene Glycol	SVOC
30 ✓		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
31 ✓		Test 3 Probe Rinse	# 2 APC Outlet	Hexane/Acetone	SVOC
32 ✓		Test 3 Filter		Particulate	SVOC
33 ✓		Test 3 XAD-II Trap		XAD-2 Resin	SVOC
34 ✓		Test 3 Impinger Solution		Ethylene Glycol	SVOC
35 ✓		Test 3 Impinger Rinse		Hexane/Acetone	SVOC
36 ✓		Blank 2 Probe Rinse	Blank	Hexane/Acetone	SVOC
37 ✓		Blank 2 Filter		Particulate	SVOC
38 ✓		Blank 2 XAD-II Trap		XAD-2 Resin	SVOC
39 ✓		Blank 2 Impinger Solution		Ethylene Glycol	SVOC
40 ✓		Blank 2 Impinger Rinse		Hexane/Acetone	SVOC

Refer to request letter dated October 5, 2016 for lists of analytes.

Relinquished To: Asad Bhatti Date: 2016/11/03 18:08

Relinquished By: [signature] Date: Nov 3/16

8.5/9.1/6.8 15.7/15.4/13.8
7.7/7.5/5.0 9.7/9.5/8.7
11.5/11.8/12.2 9.5/11.5/11.8

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16 - 21698 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
101		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
106		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

Refer to request letter dated October 5, 2016 for lists of analytes.

Relinquished To: [signature] ABD BROWN Date: 2016/10/28 17:34

Relinquished By: [signature] Date: Oct 28/16

6.2 / 6.1 / 9.4
14.7 / 15.2 / 15.3
9.2 / 8.4 / 10.4
11.1 / 11.2 / 10.5
14.5 / 13.1 / 12.2
9.4 / 9.7 / 9.2

ORTECH Environmental Sample Log

Semi-Volatile Organics Samples

Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16 - 21698 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
111	Oct 31, 16	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

Refer to request letter dated October 5, 2016 for lists of analytes.

Relinquished To: ____________________ Date: ____________

Relinquished By: CHRIS BELORE Date: Oct. 31, 2016

OANY MARCAS cc 2161031 19:48 13/15/13
NO ICE

ORTECH Environmental Sample Log
Semi-Volatile Organics Samples
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16 - 21698 -SVOC-	Date	Sample Description	Location	Sample Media	Sample Analysis
131		Test 1 Probe Rinse	# 2 Quench Inlet	Hexane/Acetone	SVOC
132		Test 1 Filter		Particulate	SVOC
133		Test 1 XAD-II Trap		XAD-2 Resin	SVOC
134		Test 1 Impinger Solution		Ethylene Glycol	SVOC
135		Test 1 Impinger Rinse		Hexane/Acetone	SVOC
136		Test 2 Probe Rinse	# 2 Quench Inlet	Hexane/Acetone	SVOC
137		Test 2 Filter		Particulate	SVOC
138		Test 2 XAD-II Trap		XAD-2 Resin	SVOC
139		Test 2 Impinger Solution		Ethylene Glycol	SVOC
140		Test 2 Impinger Rinse		Hexane/Acetone	SVOC
141		Test 3 Probe Rinse	# 2 Quench Inlet	Hexane/Acetone	SVOC
142		Test 3 Filter		Particulate	SVOC
143		Test 3 XAD-II Trap		XAD-2 Resin	SVOC
144		Test 3 Impinger Solution		Ethylene Glycol	SVOC
145		Test 3 Impinger Rinse		Hexane/Acetone	SVOC

Refer to request letter dated October 5, 2016 for lists of analytes.

Relinquished To: Asad Bhabu Date: 2016/11/03 15:08

Relinquished By: Date: NOV 3/16

8.5/9.1/6.8
7.7/7.5/5.0
15.7/15.4/13.8
9.7/9.5/8.7
11.5/11.8/12.2
9.5/11.5/11.8

ORTECH Environmental Sample Log
Particulate and Metals Samples
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train recovery
Job Assigned To: Maxxam
QUOTE #: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-PM-	Sample Date	Sample Description	Location	Sample Media	Sample Analysis
1		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
7		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
13		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
19		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

6.2/6.1/9.4
14.7/15.2/15.3
9.2/8.4/10.4
11.1/11.2/10.5

ASSO BARAOV

2016/10/28
17:34

ORTECH
14.5/13.1/12.2
9.4/9.7/9.2

ORTECH Environmental Sample Log

Particulate and Metals Samples

Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train recovery
Job Assigned To: Maxxam
QUOTE #: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-PM-	Sample Date	Sample Description	Location	Sample Media	Sample Analysis
25		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
31		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
37		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
43		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: [signature] Date: Oct 28, 16

Relinquished To: [signature] Date: 2016/10/28 17:34

6.2/6.1/9.4
14.7/15.2/15.3

ABN 20161028
~~9.2/8.4/10.4~~
9.2/8.4/10.4
11.1/11.2/14.5

ORTECH
14.5/13.1/12.2
9.4/9.7/9.2

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: **21698**
Received By:
How Received: **Train recovery**
Job Assigned To: **Maxxam**
Quote/ PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
1		# 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	Particulate
8		# 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	Particulate
15		# 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	Particulate

6.2/6.1/9.4
14.7/15.2/15.3
11.1/11.2/10.5
14.5/13.1/12.2
9.4/9.7/9.2

[illegible] 20161028
[illegible] 17:34

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train recovery
Job Assigned To: Maxxam
Quote/ PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
22		# 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	Particulate
29		# 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	Particulate
36		#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	Particulate

6.2/6.1/9.4
14.7/15.2/15.3
11.1/11.2/10.5
14.5/13.1/12.2
9.4/9.7/9.2

[signature]
ASIM BHATTI

2016/10/28
17:34

ORTECH Environmental Sample Log

Method 201A & Method 202

Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train recovery
Job Assigned To: Maxxam
Quote/ PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
43		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	Particulate
50		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	Particulate

ORTECH has all filters & will determine weights for those.

Relinquished By: [signature] Date: Oct 28, /16

Relinquished To: [signature] Asad Baylor Date: 2016/10/28 17:34

6.2/6.1/9.4
14.7/15.2/15.3
9.2/8.4/10.4
11.1/11.2/10.5
14.5/13.1/12.2
9.4/9.7/9.2

ORTECH Environmental Sample Log
Method 201A & Method 202
Covanta

Client: Covanta
Job/Report Number: 21698
Received By: Dan Turton
How Received: Train recovery
Job Assigned To: Maxxam
Quote/ PO: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-M201A-	Date	Location	Sample Description	Sample Media	Sample Analysis
6		# 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			**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: CHRIS BELORE Date: Oct. 31, 2016

Relinquished To: Date:

DANY MARLEAU 161031 19:48

17/18/18 No ICE

ORTECH Sample Log
Method 430 Samples
Covanta

Client: Covanta
Project Number: 21698
Received By:
How Received: Train recovery
Job Assigned To: Maxxam
QUOTE/P.O.: Ortech P.O. : 21698 - J2290

Test Location	Test Number	ORTECH Sample ID 16-21698-M430-	Sample Date	Sample Media
#1 APC Outlet	1	1	October 28, 2016	DNPH & Toluene
	2	2	October 28, 2016	DNPH & Toluene
	3	3	October 31, 2016	DNPH & Toluene
	Blank 1	Blank 1	October 31, 2016	DNPH & Toluene

Analyse for: Formaldehyde
Acetaldehyde
Acrolein

Relinquished To: Date:

Relinquished By: CHRIS BELORE Date: Oct. 31, 2016

DANY MARCEAU 2016/10/31 19:48 13/15/15
NO1C

ORTECH

ORTECH Environmental Sample Log
Acid Gases
Covanta

Client: Covanta
Job/Report Number: 21698
Received By:
How Received: Train Recovery
Job Assigned To: Maxxam
Quote / PO #: Ortech PO# : 21698 - J2290

ORTECH Sample ID 16-21698-M26A-	Sample Date	Location	Sample Description	Media	Initial Volume(ml)	Final Volume(ml)	Sample Analysis
1	oct 25, 16	APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	441	HCl, HF & Ammonia
2		APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	473	HCl, HF & Ammonia
3		APC Outlet # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	475	HCl, HF & Ammonia
4	oct 26, 16	APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	420	HCl, HF & Ammonia
5		APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	461	HCl, HF & Ammonia
6		APC Outlet # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	409	HCl, HF & Ammonia
BLANK #1		APC # 1	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	449	HCl, HF & Ammonia
BLANK #2		APC # 2	Impinger Soln & rinse	0.1N $H_2SO_4 + DH_2O$	200	454	HCl, HF & Ammonia

Analyze for HCl, HF and Ammonia

Relinquished By: [signature] Date: oct 28, 16

Relinquished To: [signature] ASAD BHATTU Date: 2016/10/28 17:34

6.2/6.1/9.4
14.7/15.2/15.3
11.1/11.2/10.5
ASM 2016/10/28
~~14.5/13.1/12~~
14.5/13.1/12.2
9.4/9.7/9.2

ORTECH Sample Log
Method 430 Samples
Covanta

Client: Covanta
Project Number: 21698
Received By:
How Received: Train recovery
Job Assigned To: Maxxam
QUOTE/P.O.: Ortech P.O. : 21698 - J2290

Test Location	Test Number	ORTECH Sample ID 16-21698-M430-	Sample Date	Sample Media
#2 APC Outlet	1	4	November 1, 2016	DNPH & Toluene
	2	5	November 2, 2016	DNPH & Toluene
	3	6	November 3, 2016	DNPH & Toluene
	Blank 2	Blank 2	November 3, 2016	DNPH & Toluene
	Trip Spike	9	November 3, 2016	

Analyse for: Formaldehyde
Acetaldehyde
Acrolein

Relinquished To: [signature] ASAD BHATSU Date: 2016/11/03 18:08

Relinquished By: [signature] Date: NOV 3/16

8.5/9.1/8.8
7.7/7.5/5.0
15.7/15.4/13.8
9.7/9.5/8.7
11.5/11.8/12.2
9.5/11.5/11.8

ORTECH

ORTECH Sample Log
VOCs

Client: Covanta
Project Number: 21698
Received By:
Job Assigned To: Maxxam
Quote / PO : ORTECH P.O. : 21698 - J2290

Test Location	Test Number	Pair Number	ORTECH Sample ID 16-21698-VOST-	Sample Date	Sample Description	Sample Analysis	Maxxam Sample Number
# 1 APC Outlet	1	1	1A,1B	October 28, 2016	Tenax and Tenax/Charcoal	VOCs	DFH917
		2	2A,2B		Tenax and Tenax/Charcoal	VOCs	DFH918
		3	3A,3B		Tenax and Tenax/Charcoal	VOCs	DFH919
		4	4A,4B		Archived @ ORTECH		DFH920
		Field Blank	30A,30B		Tenax and Tenax/Charcoal	VOCs	DFH946
	2	1	5A,5B	October 28, 2016	Tenax and Tenax/Charcoal	VOCs	DFH921
		2	6A,6B		Tenax and Tenax/Charcoal	VOCs	DFH922
		3	7A,7B		Archived @ ORTECH	VOCs	DFH923
		4	8A,8B		Tenax and Tenax/Charcoal		DFH924
	3	1	9A,9B	October 31, 2016	Tenax and Tenax/Charcoal	VOCs	DFH925
		2	10A,10B		Tenax and Tenax/Charcoal	VOCs	DFH926
		3	11A,11B		Archived @ ORTECH	VOCs	DFH927
		4	12A,12B		Tenax and Tenax/Charcoal		DFH928
	Combined Condesate				Archived @ ORTECH		

Refer to request letter dated October 5, 2016 for lists of analytes.

AMY MARCOACC 2016/03/1 19:48 13/14/13 ~~AON~~ AMR 2016/03/1 ON ICE PACK

Custody Relinquished by: CHRIS BELORE Date: Oct. 31, 2016

Custody Received by: Date:

ORTECH Sample Log
VOCs

Client: Covanta
Project Number: 21698
Received By:
Job Assigned To: Maxxam
Quote / PO : ORTECH P.O. : 21698 - J2290

Test Location	Test Number	Pair Number	ORTECH Sample ID 16-21698-VOST-	Sample Date	Sample Description	Sample Analysis	Maxxam Sample Number
# 2 APC Outlet	1	1	13A,13B		Tenax and Tenax/Charcoal	VOCs	DFH929
		2	14A,14B		Tenax and Tenax/Charcoal	VOCs	DFH930
		3	15A,15B		Tenax and Tenax/Charcoal	VOCs	DFH931
		4	16A,16B		Archived @ ORTECH		DFH932
		Field Blank	29A,29B		Tenax and Tenax/Charcoal	VOCs	DFH945
	2	1	17A,17B		Tenax and Tenax/Charcoal	VOCs	DFH933
		2	18A,18B		Tenax and Tenax/Charcoal	VOCs	DFH934
		3	19A,19B		Tenax and Tenax/Charcoal	VOCs	DFH935
		4	20A,20B		Archived @ ORTECH	VOCs	DFH936
	3	1	21A,21B		Tenax and Tenax/Charcoal	VOCs	DFH937
		2	22A,22B		Tenax and Tenax/Charcoal	VOCs	DFH938
		3	23A,23B		Tenax and Tenax/Charcoal	VOCs	DFH939
		4	24A,24B		Archived @ ORTECH	VOCs	DFH940
		Combined Condensate			Archived @ ORTECH		

Refer to request letter dated October 5, 2016 for lists of analytes.
ALL UNUSED TUBES RETURNED WITH SHIPMENT

Custody Relinquished by: Date: Nov 3/16

Received by: Date: 2016/11/03 18:58

8.5/9.1/6.8
7.7/7.5/5.0
15.7/15.4/13.8
9.7/9.5/8.7
11.5/11.8/12.2
9.5/~~10~~11.5/11.8
ABH 2016/11/03

APPENDIX 13

Particulate and Metals Train Recovery Data Sheets
(8 pages)

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: OCT 25, 16
Test No.: 1
Test Location: UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	279.1
After Act. Rinse:	386.1
Total TS1:	108.0

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	277.5
After 0.1N HNO_3 Rinse:	454.5
Total TS2:	177.0

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA QF1 (16101201)

CONTAINER TS3

Initial Wt:	70070
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	655.2
	Final Wt:	915.5
1	Gain:	260.3
	Colour:	CLEAR

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	534.6
	Final Wt:	714.5
2	Gain:	179.9
	Colour:	CLEAR

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	645.3
	Initial Wt:	748.6
	Final Wt:	805.1
3	Gain:	56.5
	Colour:	CLEAR

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	655.3
	Initial Wt:	762.2
	Final Wt:	774.5
4	Gain:	12.3
	Colour:	CLEAR

	Impinger #5 Empty	
	Empty Wt:	646.6
	Final Wt:	647.2
5	Gain:	0.6
	Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	417.9
w/ Imp. 1-5 Soln:	1140.9
Imp. 1 to 5 Volume:	723.0
After HNO_3 Rinse:	1290.9
Total TS4:	873.0

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	665.0
	Initial Wt:	~~748~~ 772.4
	Final Wt:	772.0
6	Gain:	-0.4
	Colour:	Purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	644.4
	Initial Wt:	761.8
	Final Wt:	763.3
7	Gain:	1.5
	Colour:	Purple

CWTR = 1 to 7: 510.7

WCBDA= 8: 22.2

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	417.0
With Imp. 6&7 Soln:	641.5
Imp. 6&7 Volume:	224.5
After $KMnO_4$ Rinse:	751.2
After100g H_2O Rinse:	848.5
Total TS5-A:	431.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	286.3
With 150 mL DI H_2O:	433.5
After HCl Rinse:	467.9
After DI H_2O Rinse:	573.9
Total TS5-B:	287.6

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	808.3
	Final Wt:	830.5
8	Gain:	~~830.5~~

22.2

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	16-21698-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

Train Loaded By: BT
Train Recovered By: BT
Recovery Witnessed By:
Date: OCT 25, 16

Box 8

ORTECH Enivronmental

/Ar

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: OCT 25,16
Test No.: 2
Test Location: UNIT 1 OUTLET

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	279.5
After Act. Rinse:	415.0
Total TS1:	135.5

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.0
After 0.1N HNO_3 Rinse:	541.7
Total TS2:	261.7

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA-OF-2

CONTAINER TS3

Initial Wt:	.68255
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

(16101202)

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	644.5
Final Wt:	955.9
1 Gain:	311.4
Colour:	clear

Impinger #2 Empty (Knock-out)	
Empty Wt:	614.9
Final Wt:	696.4
2 Gain:	81.5
Colour:	clear

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	656.3
Initial Wt:	757.2
Final Wt:	832.8
3 Gain:	75.6
Colour:	clear

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	531.8
Initial Wt:	646.3
Final Wt:	677.4
4 Gain:	31.1
Colour:	clear

Impinger #5 Empty	
Empty Wt:	641.6
Final Wt:	647.9
5 Gain:	6.3
Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	418.4
w/ Imp. 1-5 Soln:	1137.6
Imp. 1 to 5 Volume:	719.2
After HNO_3 Rinse:	1252.1
Total TS4:	833.7

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	675.3
Initial Wt:	789.5
Final Wt:	791.8
6 Gain:	2.3
Colour:	Purple

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	648.5
Initial Wt:	759.4
Final Wt:	765.7
7 Gain:	6.3
Colour:	Purple

CWTR = 1 to 7: 514.5

WCBDA= 8: 23.9

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	417.6
With Imp. 6&7 Soln:	646.6
Imp. 6&7 Volume:	229.0
After $KMnO_4$ Rinse:	768.5
After100g H_2O Rinse:	868.1
Total TS5-A:	450.5

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.6
With 150 mL DI H_2O:	433.0
After HCl Rinse:	477.1
After DI H_2O Rinse:	647.8
Total TS5-B:	365.2

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	946.6
Final Wt:	970.5
8 Gain:	23.9

SAMPLE IDENTIFICATION	16-21698-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

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: oct 25,16

Box 9

ORTECH Enivronmental

VAN

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: OCT 27, 16
Test No.: 3
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	280.3
After Act. Rinse:	377.5
Total TS1:	97.2 ✓

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	280.5
After 0.1N HNO_3 Rinse:	456.4
Total TS2:	175.9 ✓

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA-3F-5

CONTAINER TS3

Initial Wt:	.70815
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	654.5
	Final Wt:	872.8
1	Gain:	218.3 ✓
	Colour:	clear

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	533.6
	Final Wt:	766.0
2	Gain:	232.4 ✓
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	645.2
	Initial Wt:	753.7
	Final Wt:	812.9
3	Gain:	59.2 ✓
	Colour:	clear

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	655.2
	Initial Wt:	760.4
	Final Wt:	773.4
4	Gain:	13.0 ✓
	Colour:	clear

	Impinger #5 Empty	
	Empty Wt:	645.0
	Final Wt:	646.9
5	Gain:	1.9 ✓
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	418.3
w/ Imp. 1-5 Soln:	1157.0
Imp. 1 to 5 Volume:	738.7 ✓
After HNO_3 Rinse:	1254.1
Total TS4:	835.8 ✓

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	665.4
	Initial Wt:	778.2
	Final Wt:	778.0
6	Gain:	-0.2 ✓
	Colour:	Purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	644.6
	Initial Wt:	761.0
	Final Wt:	763.5
7	Gain:	2.5 ✓
	Colour:	Purple

CWTR = 1 to 7: 527.1 ✓

WCBDA= 8: 21.5 ✓

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	418.4
With Imp. 6&7 Soln:	645.6
Imp. 6&7 Volume:	227.2 ✓
After $KMnO_4$ Rinse:	765.9
After100g H_2O Rinse:	868.6
Total TS5-A:	450.2 ✓

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	276.9
With 150 mL DI H_2O:	425.3
After HCl Rinse:	472.0
After DI H_2O Rinse:	603.8
Total TS5-B:	327.0 ✓

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	805.8
	Final Wt:	827.3
8	Gain:	21.5 ✓

Box 8

SAMPLE IDENTIFICATION	16-21698-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

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

Train Loaded By: DJ
Train Recovered By: DJ
Recovery Witnessed By:
Date: Oct 27, 16

ORTECH Enivronmental

/A.1

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: OCT 28, 16
Test No.: BLANK 1
Test Location:

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	282.1
After Act. Rinse:	491.4
Total TS1:	209.3

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	278.7
After 0.1N HNO_3 Rinse:	512.5
Total TS2:	233.8

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA - QF7 (1610/207)

CONTAINER TS3

Initial Wt:	.70825
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	654.5
Final Wt:	654.5
1 Gain:	0.0
Colour:	—

Impinger #2 Empty (Knock-out)	
Empty Wt:	533.6
Final Wt:	533.6
2 Gain:	0.0
Colour:	—

Impinger #3 HNO_3/H_2O_2	
Empty Wt:	645.2
Initial Wt:	761.9
Final Wt:	761.9
3 Gain:	0.0
Colour:	clear

Impinger #4 HNO_3/H_2O_2	
Empty Wt:	635.2
Initial Wt:	757.4
Final Wt:	757.4
4 Gain:	0.0
Colour:	clear

Impinger #5 Empty	
Empty Wt:	645.0
Final Wt:	645.0
5 Gain:	0.0
Colour:	—

CONTAINER TS4 WEIGHTS	
Empty Wt:	414.2
w/ Imp. 1-5 Soln:	633.8
Imp. 1 to 5 Volume:	219.6
After HNO_3 Rinse:	749.0
Total TS4:	334.8

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

Impinger #6 $KMnO_4/H_2SO_4$	
Empty Wt:	665.4
Initial Wt:	782.3
Final Wt:	782.3
6 Gain:	0.0
Colour:	Purple

Impinger # 7 $KMnO_4/H_2SO_4$	
Empty Wt:	~~[illegible]~~ 644.6
Initial Wt:	744.4
Final Wt:	744.4
7 Gain:	0.0
Colour:	Purple

CWTR = 1 to 7: —

WCBDA= 8: —

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	414.9
With Imp. 6&7 Soln:	631.0
Imp. 6&7 Volume:	216.1
After $KMnO_4$ Rinse:	744.7
After100g H_2O Rinse:	840.8
Total TS5-A:	425.9

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	280.8
With 150 mL DI H_2O:	428.2
After HCl Rinse:	473.8
After DI H_2O Rinse:	603.6
Total TS5-B:	322.8

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel	
Initial Wt:	821.3
Final Wt:	821.3
8 Gain:	0.0

SAMPLE IDENTIFICATION	16-21698-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

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

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By: —
Date: Oct 28, 16

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: OCT 26, 16
Test No.: 1
Test Location: UNIT 2

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	278.6
After Act. Rinse:	383.2
Total TS1:	104.6 ✓

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	278.4
After 0.1N HNO_3 Rinse:	502.6
Total TS2:	224.2 ✓

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA - QF-3 (16101203)

CONTAINER TS3

Initial Wt:	71645
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

1	Impinger #1 Empty	
	Empty Wt:	655.0
	Final Wt:	954.0
1	Gain:	299.0 ✓
	Colour:	clear

2	Impinger #2 Empty (Knock-out)	
	Empty Wt:	533.3
	Final Wt:	689.0
2	Gain:	155.7 ✓
	Colour:	clear

3	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	644.3
	Initial Wt:	748.8
	Final Wt:	791.4
3	Gain:	42.6 ✓
	Colour:	clear

4	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	654.5
	Initial Wt:	763.3
	Final Wt:	773.0
4	Gain:	9.7 ✓
	Colour:	clear

5	Impinger #5 Empty	
	Empty Wt:	645.1
	Final Wt:	645.9
5	Gain:	0.8 ✓
	Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	416.9
w/ Imp. 1-5 Soln:	1136.9
Imp. 1 to 5 Volume:	720.0 ✓
After HNO_3 Rinse:	1245.2
Total TS4:	828.3 ✓

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

6	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	664.2
	Initial Wt:	772.9
	Final Wt:	773.5
6	Gain:	0.6 ✓
	Colour:	Purple

7	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	644.2
	Initial Wt:	763.5
	Final Wt:	764.0
7	Gain:	0.5 ✓
	Colour:	Purple

CWTR = 1 to 7: 508.9 ✓

WCBDA= 8: 18.6 ✓

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	416.7
With Imp. 6&7 Soln:	640.7
Imp. 6&7 Volume:	224.0 ✓
After $KMnO_4$ Rinse:	753.1
After100g H_2O Rinse:	857.5
Total TS5-A:	440.8 ✓

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	282.1
With 150 mL DI H_2O:	432.2
After HCl Rinse:	476.7
After DI H_2O Rinse:	666.0
Total TS5-B:	383.9 ✓

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

8	Impinger #8 Silica Gel	
	Initial Wt:	830.4
	Final Wt:	849.0
8	Gain:	18.6 ✓

SAMPLE IDENTIFICATION	16-21698-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

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 8

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 26, 16

ORTECH Enivronmental

1A-1

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: Oct 26/16
Test No.: 2
Test Location: Unit 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	274.3
After Act. Rinse:	341.4
Total TS1:	67.1

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	277.3
After 0.1N HNO_3 Rinse:	422.3
Total TS2:	145.0

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA QF4 (16101204)

CONTAINER TS3

Initial Wt:	-70910
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	644.9
	Final Wt:	935.9
1	Gain:	291.0
	Colour:	Clear

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	614.7
	Final Wt:	698.0
2	Gain:	83.3
	Colour:	Clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	657.8
	Initial Wt:	746.6
	Final Wt:	809.0
3	Gain:	62.4
	Colour:	CLEAR

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	532.3
	Initial Wt:	656.5
	Final Wt:	682.5
4	Gain:	26.0
	Colour:	CLEAR

	Impinger #5 Empty	
	Empty Wt:	641.6
	Final Wt:	646.0
5	Gain:	4.4
	Colour:	CLEAR

CONTAINER TS4 WEIGHTS	
Empty Wt:	417.6
w/ Imp. 1-5 Soln:	1096.7
Imp. 1 to 5 Volume:	679.1
After HNO_3 Rinse:	1203.5
Total TS4:	785.9

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	677.2
	Initial Wt:	786.8
	Final Wt:	788.5
6	Gain:	1.7
	Colour:	purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	649.1
	Initial Wt:	770.0
	Final Wt:	773.3
7	Gain:	3.3
	Colour:	purple

CWTR = 1 to 7:	472.1
WCBDA= 8:	19.3

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	417.1
With Imp. 6&7 Soln:	650.4
Imp. 6&7 Volume:	233.3
After $KMnO_4$ Rinse:	768.0
After100g H_2O Rinse:	870.1
Total TS5-A:	453.0

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	286.1
With 150 mL DI H_2O:	436.4
After HCl Rinse:	407.7
After DI H_2O Rinse:	646.6
Total TS5-B:	360.5

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	970.4
	Final Wt:	989.7
8	Gain:	19.3

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	16-21698-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

Train Loaded By: DK
Train Recovered By: DK
Recovery Witnessed By:
Date: Oct 26/16

Box 9

ORTECH Enivronmental

JAN

Particulate and Metals Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Date:	Oct 27, 16
Test No.:	3
Test Location:	UNIT 2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	414.9
After Act. Rinse:	527.9
Total TS1:	113.0

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	415.1
After 0.1N HNO_3 Rinse:	639.7
Total TS2:	224.6

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA QF 6

CONTAINER TS3

Initial Wt:	.64575
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	645.0
	Final Wt:	911.5
1	Gain:	266.5
	Colour:	clear

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	615.3
	Final Wt:	757.7
2	Gain:	142.4
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	656.3
	Initial Wt:	764.2
	Final Wt:	825.6
3	Gain:	61.4
	Colour:	clear

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	532.1
	Initial Wt:	639.4
	Final Wt:	655.9
4	Gain:	16.5
	Colour:	clear

	Impinger #5 Empty	
	Empty Wt:	641.4
	Final Wt:	643.8
5	Gain:	2.4
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	414.4
w/ Imp. 1-5 Soln:	1114.3
Imp. 1 to 5 Volume:	699.9
After HNO_3 Rinse:	1278.2
Total TS4:	863.8

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	676.6
	Initial Wt:	796.4
	Final Wt:	798.9
6	Gain:	2.5
	Colour:	Purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	649.3
	Initial Wt:	760.3
	Final Wt:	761.8
7	Gain:	1.5
	Colour:	Purple

CWTR = 1 to 7:	493.2
WCBDA= 8:	19.4

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	414.4
With Imp. 6&7 Soln:	644.9
Imp. 6&7 Volume:	230.5
After $KMnO_4$ Rinse:	756.2
After100g H_2O Rinse:	848.0
Total TS5-A:	433.6

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	284.4
With 150 mL DI H_2O:	435.7
After HCl Rinse:	491.4
After DI H_2O Rinse:	632.8
Total TS5-B:	348.4

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

Impinger #8 Silica Gel		
	Initial Wt:	974.1
	Final Wt:	993.5
8	Gain:	19.4

SAMPLE IDENTIFICATION	16-21698-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 9

Train Loaded By:	DT
Train Recovered By:	DT/CB
Recovery Witnessed By:	
Date:	Oct 27, 16

ORTECH Enivronmental

Particulate and Metals Train Recovery Data Sheet

Client: Covanta DYEC
Project No.: 21698
Date: Oct 28, 16
Test No.: BLANK 2
Test Location:

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	283.1
After Act. Rinse:	532.9
Total TS1:	249.8 ✓

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS2

Container TS2 Weights	
Empty Wt:	279.9
After 0.1N HNO_3 Rinse:	511.7
Total TS2:	231.8 ✓

MARK FLUID LEVEL

SEAL AND LABEL TS2

Filter

Filter ID: COVANTA QF8 (16101208)

CONTAINER TS3

Initial Wt:	.77170
Final Wt:	
Gain:	
Colour:	WHITE

Seal and label container TS3

Impingers 1, 2, 3, 4 and 5

CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	646.8
	Final Wt:	646.8
1	Gain:	— ✓
	Colour:	clear

	Impinger #2 Empty (Knock-out)	
	Empty Wt:	615.5
	Final Wt:	615.5
2	Gain:	— ✓
	Colour:	clear

	Impinger #3 HNO_3/H_2O_2	
	Empty Wt:	659.1
	Initial Wt:	766.3
	Final Wt:	766.3
3	Gain:	0.0 ✓
	Colour:	clear

	Impinger #4 HNO_3/H_2O_2	
	Empty Wt:	533.7
	Initial Wt:	639.4
	Final Wt:	639.4
4	Gain:	0.0 ✓
	Colour:	clear

	Impinger #5 Empty	
	Empty Wt:	641.7
	Final Wt:	641.7
5	Gain:	— ✓
	Colour:	clear

CONTAINER TS4 WEIGHTS	
Empty Wt:	416.3
w/ Imp. 1-5 Soln:	631.4
Imp. 1 to 5 Volume:	216.1 ✓
After HNO_3 Rinse:	736.0
Total TS4:	320.7 ✓

MARK FLUID LEVEL

SEAL AND LABEL TS4

Impinger 6 & 7

	Impinger #6 $KMnO_4/H_2SO_4$	
	Empty Wt:	677.9
	Initial Wt:	792.4
	Final Wt:	792.4
6	Gain:	0.0 ✓
	Colour:	Purple

	Impinger # 7 $KMnO_4/H_2SO_4$	
	Empty Wt:	650.6
	Initial Wt:	764.6
	Final Wt:	764.6
7	Gain:	0.0 ✓
	Colour:	Purple

CWTR = 1 to 7: — ✓

WCBDA= 8: — ✓

Impinger 6 & 7

CONTAINER TS5-A & TS5-B

CONTAINER TS5-A	
Empty Wt:	415.4
With Imp. 6&7 Soln:	644.1
Imp. 6&7 Volume:	228.7 ✓
After $KMnO_4$ Rinse:	761.0
After100g H_2O Rinse:	860.0
Total TS5-A:	444.6 ✓

MARK FLUID LEVEL

SEAL & LABEL TS5-A

CONTAINER TS5-B	
Empty Wt:	279.1
With 150 mL DI H_2O:	430.1
After HCl Rinse:	465.4
After DI H_2O Rinse:	665.4
Total TS5-B:	386.3 ✓

MARK FLUID LEVEL

SEAL & LABEL TS5-B

Impinger 8

	Impinger #8 Silica Gel	
	Initial Wt:	993.4
	Final Wt:	993.4
8	Gain:	— ✓

SAMPLE IDENTIFICATION	16-21698-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

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 9

Train Loaded By: DT/CB
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 28, 16

ORTECH Enivronmental

JAN

APPENDIX 14

Inorganics Analytical Reports
(30 pages)

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:Chris Belore
ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/07
Report #: R4238509
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N4397
Received: 2016/10/28, 17:34

Sample Matrix: Stack Sampling Train
Samples Received: 32

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Extractable Condensables (M202)	8	2016/11/01	2016/11/07	BRL SOP-00118	EPA 202 m
Non Extractable Condensibles (M202)	8	2016/11/02	2016/11/07	BRL SOP-00118 / BRL SOP-00109	EPA 202 m
Mercury 3C in HCl Rinse	8	2016/11/04	2016/11/06	BRL SOP-00104	EPA M29/M0060 m
Mercury 2B in HNO3/H2O2 Imp.	8	2016/11/01	2016/11/04	BRL SOP-00104	EPA M29/M0060 m
Mercury 3B in KMnO4/H2SO4 Imp.	8	2016/11/02	2016/11/03	BRL SOP-00104	EPA M29/M0060 m
Mercury 1B in Filter + Rinse (M29)	8	2016/11/03	2016/11/06	BRL SOP-00104	EPA 29 m
Hydrogen Halides in H2SO4 Imp.	8	2016/11/03	2016/11/03	BRL SOP-00108	EPA 26A m
Metals B.H. in H2O2/HNO3 Imp.(6020A)	8	2016/11/03	2016/11/04	BRL SOP-00103 / BRL SOP-00102	EPA M29/CARB 436 m
Metals F.H. in Filter + Rinses (6020A)	8	2016/11/03	2016/11/04	BRL SOP-00103/ BRL SOP-00102	EPA M29/CARB 436 m
Ammonium in H2SO4 Impingers (CTM-027)	8	2016/11/02	2016/11/02	BRL SOP-00107	EPA CTM-027 m
>10um Particulates in Rinse	8	2016/11/02	2016/11/07	BRL SOP-00109	EPA M201A/OTM-027 m
2.5-10um Particulates in Rinse	8	2016/11/02	2016/11/07	BRL SOP-00109	EPA M201A/OTM-027 m
<2.5um Particulates in Rinse	8	2016/11/02	2016/11/07	BRL SOP-00109	EPA M201A/OTM-027 m
Particulates/Acetone Rinse (M5/315/M201)	8	2016/11/02	2016/11/03	BRL SOP-00109	EPA 5/315 m
Particulates/Filter (M5/315/NJATM1/M201)	8	N/A	2016/11/01	BRL SOP-00109	EPA 5/315/NJATM1 m
Final Volume of Acetone Probe Rinse	8	N/A	2016/11/03	BRL SOP-00109	
Final Volume of Acetone Probe Rinse	8	N/A	2016/11/07	BRL SOP-00109	
Volume of Sulfuric Acid Impinger	8	N/A	2016/11/02		
Weight of Solvent from Impingers	8	N/A	2016/11/07		
Weight of Water from Impingers	8	N/A	2016/11/07		

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:Chris Belore

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/07
Report #: R4238509
Version: 2 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N4397
Received: 2016/10/28, 17:34

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
08 Nov 2016 11:00:06 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N4397
Report Date: 2016/11/07

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPA M201A - PARTICULATES (STACK SAMPLING TRAIN)

Maxxam ID		DIR325	DIR326	DIR327			
Sampling Date		U1- Blank	U2- Blank	U1- T1			
	UNITS	16-21698-M201A- 43-45	16-21698-M201A- 50-52	16-21698-M201A- 1-3	RDL	MDL	QC Batch
> 10 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	0.5	0.5	0.1	4729506
< 2.5 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	<0.5	0.5	0.5	4729500
2.5 - 10 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	<0.5	0.5	0.5	4729505
Acetone Rinse Volume (10)	ml	66	51	43	1	N/A	4729503
Acetone Rinse Volume (2.5 - 10)	ml	56	45	35	1	N/A	4729503
Acetone Rinse Volume (2.5)	ml	45	42	21	1	N/A	4729503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		DIR328	DIR329	DIR330			
Sampling Date		U1- T2	U1- T3	U2- T1			
	UNITS	16-21698-M201A- 8-10	16-21698-M201A- 15-17	16-21698-M201A- 22-24	RDL	MDL	QC Batch
> 10 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	1.3	0.5	0.1	4729506
< 2.5 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	<0.5	0.5	0.5	4729500
2.5 - 10 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	<0.5	0.5	0.5	4729505
Acetone Rinse Volume (10)	ml	79	54	34	1	N/A	4729503
Acetone Rinse Volume (2.5 - 10)	ml	77	47	38	1	N/A	4729503
Acetone Rinse Volume (2.5)	ml	19	28	19	1	N/A	4729503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		DIR331	DIR332			
Sampling Date		U2- T2	U2- T3			
	UNITS	16-21698-M201A- 29-31	16-21698-M201A- 36-38	RDL	MDL	QC Batch
> 10 Particulate Weight in Acetone Rinse	mg	3.8	0.5	0.5	0.1	4729506
< 2.5 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	0.5	0.5	4729500
2.5 - 10 Particulate Weight in Acetone Rinse	mg	<0.5	<0.5	0.5	0.5	4729505
Acetone Rinse Volume (10)	ml	33	42	1	N/A	4729503
Acetone Rinse Volume (2.5 - 10)	ml	50	33	1	N/A	4729503
Acetone Rinse Volume (2.5)	ml	21	17	1	N/A	4729503

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N4397
Report Date: 2016/11/07

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPA M202 CONDENSIBLE PM (STACK SAMPLING TRAIN)

Maxxam ID		DIR403	DIR413	DIR414			
Sampling Date		U1- Blank	U2- Blank	U1-T1			
	UNITS	16-21698-M201A- 47-49	16-21698-M201A- 54-56	16-21698-M201A- 5-7	RDL	MDL	QC Batch
Weight	g	220	210	230	0.1	0.1	4728117
Weight of Solvent	g	140	100	110	0.1	N/A	4728103
Inorganic Condensibles	mg	1.8	1.4	6.0	0.5	0.1	4729516
Organic Condensibles	mg	<1.0	<1.0	<1.0	1.0	0.20	4728099

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		DIR415	DIR416	DIR417			
Sampling Date		U1-T2	U1-T3	U2-T1			
	UNITS	16-21698-M201A- 12-14	16-21698-M201A- 19-21	16-21698-M201A- 26-28	RDL	MDL	QC Batch
Weight	g	230	240	210	0.1	0.1	4728117
Weight of Solvent	g	130	96	69	0.1	N/A	4728103
Inorganic Condensibles	mg	5.8	7.3	14	0.5	0.1	4729516
Organic Condensibles	mg	<1.0	<1.0	<1.0	1.0	0.20	4728099

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam ID		DIR418	DIR419			
Sampling Date		U2-T2	U2-T3			
	UNITS	16-21698-M201A- 33-35	16-21698-M201A- 40-42	RDL	MDL	QC Batch
Weight	g	200	200	0.1	0.1	4728117
Weight of Solvent	g	120	140	0.1	N/A	4728103
Inorganic Condensibles	mg	11	11	0.5	0.1	4729516
Organic Condensibles	mg	2.7	<1.0	1.0	0.20	4728099

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N/A = Not Applicable

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EPA M26A HYDROGEN HALIDES AND HALOGENS (STACK SAMPLING TRAIN)

U1-T1

Maxxam ID		DIR455	DIR475	DIR476			
Sampling Date		2016/10/26	2016/10/26	2016/10/24			
	UNITS	16-21698-M26A- BLANK#1	16-21698-M26A- BLANK#2	16-21698-M26A- 1	RDL	MDL	QC Batch
Sulfuric Acid Volume	ml	449	454	441	1	1	4729336
Hydrochloric Acid	ug	<200	<200	7100	200	60	4733676
Hydrofluoric Acid	ug	<200	<200	<200	200	110	4733676

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

U1-T2 U1-T3 U2-T1

Maxxam ID		DIR476	DIR477	DIR478	DIR479			
Sampling Date		2016/10/24	2016/10/24	2016/10/24	2016/10/26			
	UNITS	16-21698-M26A-1 Lab-Dup	16-21698-M26A- 2	16-21698-M26A- 3	16-21698-M26A- 4	RDL	MDL	QC Batch
Sulfuric Acid Volume	ml	N/A	473	475	420	1	1	4729336
Hydrochloric Acid	ug	7100	6300	7400	4200	200	60	4733676
Hydrofluoric Acid	ug	<200	<200	<200	<200	200	110	4733676

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

U2-T2 U2-T3

Maxxam ID		DIR480	DIR481			
Sampling Date		2016/10/26	2016/10/26			
	UNITS	16-21698-M26A- 5	16-21698-M26A- 6	RDL	MDL	QC Batch
Sulfuric Acid Volume	ml	461	408	1	1	4729336
Hydrochloric Acid	ug	3800	3500	200	60	4733676
Hydrofluoric Acid	ug	<200	<200	200	110	4733676

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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EPA CTM 027 AMMONIA (STACK SAMPLING TRAIN)

U1-T1

Maxxam ID		DIR455	DIR475			DIR476			
Sampling Date		2016/10/26	2016/10/26			2016/10/24			
	UNITS	16-21698-M26A- BLANK#1	16-21698-M26A- BLANK#2	RDL	MDL	16-21698-M26A- 1	RDL	MDL	QC Batch
Ammonium (NH4)	ug	<25	<25	25	4.8	2200	50	9.6	4729329

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

U1-T2 U1-T3 U2-T1

Maxxam ID		DIR476			DIR477	DIR478	DIR479			
Sampling Date		2016/10/24			2016/10/24	2016/10/24	2016/10/26			
	UNITS	16-21698-M26A- 1 Lab-Dup	RDL	MDL	16-21698-M26A- 2	16-21698-M26A- 3	16-21698-M26A- 4	RDL	MDL	QC Batch
Ammonium (NH4)	ug	2200	50	9.6	2200	1900	2000	25	4.8	4729329

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

U2-T2 U2-T3

Maxxam ID		DIR480	DIR481			
Sampling Date		2016/10/26	2016/10/26			
	UNITS	16-21698-M26A- 5	16-21698-M26A- 6	RDL	MDL	QC Batch
Ammonium (NH4)	ug	2000	1500	25	4.8	4729329

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EPA M29 METALS (FRONT & BACK SEPARATE)

Maxxam ID		DIR308	DIR308	DIR309	DIR310			
Sampling Date		U1-Blank		U1-T1	U1-T2			
	UNITS	16-21698-PM 19-24	16-21698-PM 19-24 Lab-Dup	16-21698-PM 1-6	16-21698-PM 7-12	RDL	MDL	QC Batch
Front Half Antimony (Sb)	ug	<0.80	<0.80	<0.80	<0.80	0.80	0.080	4731710
Front Half Arsenic (As)	ug	<0.80	<0.80	<0.80	<0.80	0.80	0.080	4731710
Front Half Barium (Ba)	ug	6.1	<6.0	7.9	6.3	6.0	0.80	4731710
Front Half Beryllium (Be)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.040	4731710
Front Half Cadmium (Cd)	ug	<0.20	<0.20	0.23	0.28	0.20	0.040	4731710
Front Half Chromium (Cr)	ug	2.56	2.80	3.95	24.1	0.60	0.10	4731710
Front Half Cobalt (Co)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.020	4731710
Front Half Copper (Cu)	ug	<4.0	<4.0	<4.0	<4.0	4.0	0.20	4731710
Front Half Lead (Pb)	ug	0.42	<0.40	1.28	1.12	0.40	0.040	4731710
Front Half Manganese (Mn)	ug	2.0	2.0	2.4	3.2	1.5	0.10	4731710
Front Half Molybdenum (Mo)	ug	24.3	23.9	23.2	22.4	1.0	0.10	4731710
Front Half Nickel (Ni)	ug	1.2	1.2	3.8	4.2	1.0	0.20	4731710
Front Half Selenium (Se)	ug	<2.0	<2.0	<2.0	<2.0	2.0	0.50	4731710
Front Half Silver (Ag)	ug	<0.40	<0.40	<0.40	<0.40	0.40	0.040	4731710
Front Half Thallium (Tl)	ug	<1.0	<1.0	<1.0	<1.0	1.0	0.10	4731710
Front Half Vanadium (V)	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.080	4731710
Front Half Zinc (Zn)	ug	<10	<10	17	15	10	1.0	4731710
Back Half Antimony (Sb)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.040	4731715
Back Half Arsenic (As)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.040	4731715
Back Half Barium (Ba)	ug	7.3	7.7	7.8	8.1	1.5	0.040	4731715
Back Half Beryllium (Be)	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.050	4731715
Back Half Cadmium (Cd)	ug	<0.050	<0.050	<0.050	0.230	0.050	0.030	4731715
Back Half Chromium (Cr)	ug	0.93	1.00	0.98	2.66	0.15	0.070	4731715
Back Half Cobalt (Co)	ug	<0.050	<0.050	0.189	0.176	0.050	0.010	4731715
Back Half Copper (Cu)	ug	7.7	8.6	8.2	8.4	2.0	1.6	4731715
Back Half Lead (Pb)	ug	0.39	0.41	1.22	0.76	0.10	0.040	4731715
Back Half Manganese (Mn)	ug	6.32	6.84	1.38	1.45	0.25	0.060	4731715
Back Half Molybdenum (Mo)	ug	<0.25	<0.25	<0.25	<0.25	0.25	0.050	4731715
Back Half Nickel (Ni)	ug	1.00	1.08	1.44	1.40	0.25	0.060	4731715
Back Half Selenium (Se)	ug	<0.50	<0.50	<0.50	<0.50	0.50	0.20	4731715
Back Half Silver (Ag)	ug	<0.10	<0.10	<0.10	<0.10	0.10	0.020	4731715
Back Half Thallium (Tl)	ug	<0.25	<0.25	<0.25	<0.25	0.25	0.050	4731715
Back Half Vanadium (V)	ug	<0.15	<0.15	<0.15	<0.15	0.15	0.030	4731715
Back Half Zinc (Zn)	ug	<2.5	<2.5	11.0	7.1	2.5	0.60	4731715

RDL = Reportable Detection Limit
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Lab-Dup = Laboratory Initiated Duplicate

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ORTECH Environmental
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EPA M29 METALS (FRONT & BACK SEPARATE)

Maxxam ID		DIR311	DIR312	DIR322	DIR323			
Sampling Date		U1-T3	U2-Blank	U2-T1	U2-T2			
	UNITS	16-21698-PM 13-18	16-21698-PM 43-48	16-21698-PM 25-30	16-21698-PM 31-36	RDL	MDL	QC Batch
Front Half Antimony (Sb)	ug	<0.80	<0.80	<0.80	<0.80	0.80	0.080	4731710
Front Half Arsenic (As)	ug	<0.80	<0.80	<0.80	<0.80	0.80	0.080	4731710
Front Half Barium (Ba)	ug	7.0	<6.0	6.0	6.2	6.0	0.80	4731710
Front Half Beryllium (Be)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.040	4731710
Front Half Cadmium (Cd)	ug	0.25	<0.20	0.89	0.23	0.20	0.040	4731710
Front Half Chromium (Cr)	ug	2.36	7.02	2.37	5.51	0.60	0.10	4731710
Front Half Cobalt (Co)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.020	4731710
Front Half Copper (Cu)	ug	<4.0	<4.0	<4.0	<4.0	4.0	0.20	4731710
Front Half Lead (Pb)	ug	0.58	0.43	0.62	1.24	0.40	0.040	4731710
Front Half Manganese (Mn)	ug	2.1	2.8	2.1	2.6	1.5	0.10	4731710
Front Half Molybdenum (Mo)	ug	23.5	49.5	23.7	23.4	1.0	0.10	4731710
Front Half Nickel (Ni)	ug	2.3	17.6	2.1	3.9	1.0	0.20	4731710
Front Half Selenium (Se)	ug	<2.0	<2.0	<2.0	<2.0	2.0	0.50	4731710
Front Half Silver (Ag)	ug	<0.40	<0.40	<0.40	<0.40	0.40	0.040	4731710
Front Half Thallium (Tl)	ug	<1.0	<1.0	<1.0	<1.0	1.0	0.10	4731710
Front Half Vanadium (V)	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.080	4731710
Front Half Zinc (Zn)	ug	11	<10	15	18	10	1.0	4731710
Back Half Antimony (Sb)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.040	4731715
Back Half Arsenic (As)	ug	<0.20	<0.20	<0.20	<0.20	0.20	0.040	4731715
Back Half Barium (Ba)	ug	12.3	8.2	9.0	7.7	1.5	0.040	4731715
Back Half Beryllium (Be)	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.050	4731715
Back Half Cadmium (Cd)	ug	0.069	<0.050	0.057	0.051	0.050	0.030	4731715
Back Half Chromium (Cr)	ug	1.07	1.06	0.90	1.86	0.15	0.070	4731715
Back Half Cobalt (Co)	ug	0.105	<0.050	0.065	0.053	0.050	0.010	4731715
Back Half Copper (Cu)	ug	7.5	7.5	7.4	7.3	2.0	1.6	4731715
Back Half Lead (Pb)	ug	0.64	0.39	0.61	0.48	0.10	0.040	4731715
Back Half Manganese (Mn)	ug	1.44	1.50	1.33	2.02	0.25	0.060	4731715
Back Half Molybdenum (Mo)	ug	<0.25	<0.25	<0.25	<0.25	0.25	0.050	4731715
Back Half Nickel (Ni)	ug	1.30	0.85	1.11	0.74	0.25	0.060	4731715
Back Half Selenium (Se)	ug	<0.50	<0.50	<0.50	<0.50	0.50	0.20	4731715
Back Half Silver (Ag)	ug	<0.10	<0.10	<0.10	<0.10	0.10	0.020	4731715
Back Half Thallium (Tl)	ug	<0.25	<0.25	<0.25	<0.25	0.25	0.050	4731715
Back Half Vanadium (V)	ug	<0.15	<0.15	<0.15	<0.15	0.15	0.030	4731715
Back Half Zinc (Zn)	ug	6.5	3.5	5.5	6.3	2.5	0.60	4731715

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EPA M29 METALS (FRONT & BACK SEPARATE)

Maxxam ID		DIR324			
Sampling Date		U2-T3			
	UNITS	16-21698-PM 37-42	RDL	MDL	QC Batch
Front Half Antimony (Sb)	ug	<0.80	0.80	0.080	4731710
Front Half Arsenic (As)	ug	<0.80	0.80	0.080	4731710
Front Half Barium (Ba)	ug	<6.0	6.0	0.80	4731710
Front Half Beryllium (Be)	ug	<0.20	0.20	0.040	4731710
Front Half Cadmium (Cd)	ug	0.47	0.20	0.040	4731710
Front Half Chromium (Cr)	ug	2.00	0.60	0.10	4731710
Front Half Cobalt (Co)	ug	<0.20	0.20	0.020	4731710
Front Half Copper (Cu)	ug	7.6	4.0	0.20	4731710
Front Half Lead (Pb)	ug	0.57	0.40	0.040	4731710
Front Half Manganese (Mn)	ug	2.1	1.5	0.10	4731710
Front Half Molybdenum (Mo)	ug	22.4	1.0	0.10	4731710
Front Half Nickel (Ni)	ug	1.4	1.0	0.20	4731710
Front Half Selenium (Se)	ug	<2.0	2.0	0.50	4731710
Front Half Silver (Ag)	ug	<0.40	0.40	0.040	4731710
Front Half Thallium (Tl)	ug	<1.0	1.0	0.10	4731710
Front Half Vanadium (V)	ug	<0.60	0.60	0.080	4731710
Front Half Zinc (Zn)	ug	<10	10	1.0	4731710
Back Half Antimony (Sb)	ug	<0.20	0.20	0.040	4731715
Back Half Arsenic (As)	ug	<0.20	0.20	0.040	4731715
Back Half Barium (Ba)	ug	9.9	1.5	0.040	4731715
Back Half Beryllium (Be)	ug	<0.050	0.050	0.050	4731715
Back Half Cadmium (Cd)	ug	<0.050	0.050	0.030	4731715
Back Half Chromium (Cr)	ug	1.15	0.15	0.070	4731715
Back Half Cobalt (Co)	ug	<0.050	0.050	0.010	4731715
Back Half Copper (Cu)	ug	8.2	2.0	1.6	4731715
Back Half Lead (Pb)	ug	0.50	0.10	0.040	4731715
Back Half Manganese (Mn)	ug	2.09	0.25	0.060	4731715
Back Half Molybdenum (Mo)	ug	<0.25	0.25	0.050	4731715
Back Half Nickel (Ni)	ug	1.28	0.25	0.060	4731715
Back Half Selenium (Se)	ug	<0.50	0.50	0.20	4731715
Back Half Silver (Ag)	ug	<0.10	0.10	0.020	4731715
Back Half Thallium (Tl)	ug	<0.25	0.25	0.050	4731715
Back Half Vanadium (V)	ug	<0.15	0.15	0.030	4731715
Back Half Zinc (Zn)	ug	5.3	2.5	0.60	4731715

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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EPA M29 MERCURY (STACK SAMPLING TRAIN)

Maxxam ID		DIR308			DIR309	DIR309			
Sampling Date		U1-Blank			U1-T1				
	UNITS	16-21698-PM 19-24	RDL	MDL	16-21698-PM 1-6	16-21698-PM 1-6 Lab-Dup	RDL	MDL	QC Batch
1B Mercury (Hg)	ug	<0.015	0.015	0.015	<0.015	N/A	0.015	0.015	4731703
2B Mercury (Hg)	ug	<0.17	0.17	0.034	<0.44	<0.44	0.44	0.088	4728409
3B Mercury (Hg)	ug	<0.023	0.023	0.0046	<0.023	N/A	0.023	0.0046	4729861
3C Mercury (Hg)	ug	<0.02	0.02	0.004	0.317	N/A	0.018	0.0036	4733929

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		DIR310	DIR310	DIR311			
Sampling Date		U1-T2		U1-T3			
	UNITS	16-21698-PM 7-12	16-21698-PM 7-12 Lab-Dup	16-21698-PM 13-18	RDL	MDL	QC Batch
1B Mercury (Hg)	ug	<0.015	N/A	<0.015	0.015	0.015	4731703
2B Mercury (Hg)	ug	<0.42	N/A	<0.42	0.42	0.084	4728409
3B Mercury (Hg)	ug	<0.023	<0.023	<0.023	0.023	0.0046	4729861
3C Mercury (Hg)	ug	0.18	N/A	0.23	0.02	0.004	4733929

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		DIR312			DIR322	DIR322			
Sampling Date		U2-Blank			U2-T1				
	UNITS	16-21698-PM 43-48	RDL	MDL	16-21698-PM 25-30	16-21698-PM 25-30 Lab-Dup	RDL	MDL	QC Batch
1B Mercury (Hg)	ug	<0.015	0.015	0.015	<0.015	N/A	0.015	0.015	4731703
2B Mercury (Hg)	ug	<0.16	0.16	0.032	<0.41	N/A	0.41	0.082	4728409
3B Mercury (Hg)	ug	<0.023	0.023	0.0046	<0.023	N/A	0.023	0.0046	4729861
3C Mercury (Hg)	ug	<0.023	0.023	0.0046	0.155	0.157	0.023	0.0046	4733929

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Report Date: 2016/11/07

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPA M29 MERCURY (STACK SAMPLING TRAIN)

Maxxam ID		DIR323			DIR324	DIR324			
Sampling Date		U2-T2			U2-T3				
	UNITS	16-21698-PM 31-36	RDL	MDL	16-21698-PM 37-42	16-21698-PM 37-42 Lab-Dup	RDL	MDL	QC Batch
1B Mercury (Hg)	ug	<0.015	0.015	0.015	<0.015	<0.015	0.015	0.015	4731703
2B Mercury (Hg)	ug	<0.39	0.39	0.078	<0.43	N/A	0.43	0.086	4728409
3B Mercury (Hg)	ug	<0.023	0.023	0.0046	<0.023	N/A	0.023	0.0046	4729861
3C Mercury (Hg)	ug	0.13	0.02	0.004	0.17	N/A	0.02	0.004	4733929

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPA M5 PARTICULATE MATTER (PM)

Maxxam ID		DIR308	DIR309	DIR310			
Sampling Date		U1-Blank	U1-T1	U1-T2			
	UNITS	16-21698-PM 19-24	16-21698-PM 1-6	16-21698-PM 7-12	RDL	MDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	1.1	2.4	2.6	0.5	0.1	4729537
Front Half Particulate Weight on Filter	mg	2.40	2.20	1.10	0.30	0.060	4727574
Acetone Rinse Volume	ml	260	130	170	1	1	4729542

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		DIR311	DIR312	DIR322			
Sampling Date		U1-T3	U2-Blank	U2-T1			
	UNITS	16-21698-PM 13-18	16-21698-PM 43-48	16-21698-PM 25-30	RDL	MDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	2.4	1.7	2.6	0.5	0.1	4729537
Front Half Particulate Weight on Filter	mg	2.90	2.40	1.90	0.30	0.060	4727574
Acetone Rinse Volume	ml	120	320	130	1	1	4729542

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		DIR323	DIR324			
Sampling Date		U2-T2	U2-T3			
	UNITS	16-21698-PM 31-36	16-21698-PM 37-42	RDL	MDL	QC Batch
Acetone Rinse Particulate Weight in Acetone Rinse	mg	3.4	2.4	0.5	0.1	4729537
Front Half Particulate Weight on Filter	mg	2.10	2.30	0.30	0.060	4727574
Acetone Rinse Volume	ml	83	140	1	1	4729542

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIR308
Sample ID: 16-21698-PM 19-24
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR308 Dup
Sample ID: 16-21698-PM 19-24
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha

Maxxam ID: DIR309
Sample ID: 16-21698-PM 1-6
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR309 Dup
Sample ID: 16-21698-PM 1-6
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison

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Report Date: 2016/11/07

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIR310
Sample ID: 16-21698-PM 7-12
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR310 Dup
Sample ID: 16-21698-PM 7-12
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison

Maxxam ID: DIR311
Sample ID: 16-21698-PM 13-18
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR312
Sample ID: 16-21698-PM 43-48
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIR312
Sample ID: 16-21698-PM 43-48
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR322
Sample ID: 16-21698-PM 25-30
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR322 Dup
Sample ID: 16-21698-PM 25-30
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison

Maxxam ID: DIR323
Sample ID: 16-21698-PM 31-36
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

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TEST SUMMARY

Maxxam ID: DIR324
Sample ID: 16-21698-PM 37-42
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 3C in HCl Rinse	CV/AA	4733929	2016/11/04	2016/11/06	Ron Morrison
Mercury 2B in HNO3/H2O2 Imp.	CV/AA	4728409	2016/11/01	2016/11/04	Ron Morrison
Mercury 3B in KMnO4/H2SO4 Imp.	CV/AA	4729861	2016/11/02	2016/11/03	Ron Morrison
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison
Metals B.H. in H2O2/HNO3 Imp.(6020A)	ICP1/MS	4731715	2016/11/03	2016/11/04	Nan Raykha
Metals F.H. in Filter + Rinses (6020A)	ICP1/MS	4731710	2016/11/03	2016/11/04	Nan Raykha
Particulates/Acetone Rinse (M5/315/M201)	BAL	4729537	2016/11/02	2016/11/03	Farag Farag
Particulates/Filter (M5/315/NJATM1/M201)	BAL	4727574	N/A	2016/11/01	Brenda Moore
Final Volume of Acetone Probe Rinse		4729542	N/A	2016/11/03	Farag Farag

Maxxam ID: DIR324 Dup
Sample ID: 16-21698-PM 37-42
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury 1B in Filter + Rinse (M29)	CV/AA	4731703	2016/11/03	2016/11/06	Ron Morrison

Maxxam ID: DIR325
Sample ID: 16-21698-M201A- 43-45
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR326
Sample ID: 16-21698-M201A- 50-52
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR327
Sample ID: 16-21698-M201A- 1-3
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIR327
Sample ID: 16-21698-M201A- 1-3
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR328
Sample ID: 16-21698-M201A- 8-10
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR329
Sample ID: 16-21698-M201A- 15-17
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR330
Sample ID: 16-21698-M201A- 22-24
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR331
Sample ID: 16-21698-M201A- 29-31
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

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Maxxam Job #: B6N4397
Report Date: 2016/11/07

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIR332
Sample ID: 16-21698-M201A- 36-38
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
>10um Particulates in Rinse	BAL	4729506	2016/11/02	2016/11/07	Farag Farag
2.5-10um Particulates in Rinse	BAL	4729505	2016/11/02	2016/11/07	Farag Farag
<2.5um Particulates in Rinse	BAL	4729500	2016/11/02	2016/11/07	Farag Farag
Final Volume of Acetone Probe Rinse		4729503	N/A	2016/11/07	Farag Farag

Maxxam ID: DIR403
Sample ID: 16-21698-M201A- 47-49
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR413
Sample ID: 16-21698-M201A- 54-56
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR414
Sample ID: 16-21698-M201A- 5-7
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR415
Sample ID: 16-21698-M201A- 12-14
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

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TEST SUMMARY

Maxxam ID: DIR416
Sample ID: 16-21698-M201A- 19-21
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR417
Sample ID: 16-21698-M201A- 26-28
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR418
Sample ID: 16-21698-M201A- 33-35
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR419
Sample ID: 16-21698-M201A- 40-42
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Extractable Condensables (M202)	BAL	4728099	2016/11/01	2016/11/07	Muhammad M Rahman
Non Extractable Condensibles (M202)	BAL	4729516	2016/11/02	2016/11/07	Muhammad M Rahman
Weight of Solvent from Impingers		4728103	N/A	2016/11/07	Muhammad M Rahman
Weight of Water from Impingers		4728117	N/A	2016/11/07	Muhammad M Rahman

Maxxam ID: DIR455
Sample ID: 16-21698-M26A- BLANK#1
Matrix: Stack Sampling Train

Collected: 2016/10/26
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

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TEST SUMMARY

Maxxam ID: DIR475
Sample ID: 16-21698-M26A- BLANK#2
Matrix: Stack Sampling Train

Collected: 2016/10/26
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

Maxxam ID: DIR476
Sample ID: 16-21698-M26A- 1
Matrix: Stack Sampling Train

Collected: 2016/10/24
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

Maxxam ID: DIR476 Dup
Sample ID: 16-21698-M26A- 1
Matrix: Stack Sampling Train

Collected: 2016/10/24
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera

Maxxam ID: DIR477
Sample ID: 16-21698-M26A- 2
Matrix: Stack Sampling Train

Collected: 2016/10/24
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

Maxxam ID: DIR478
Sample ID: 16-21698-M26A- 3
Matrix: Stack Sampling Train

Collected: 2016/10/24
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

Maxxam ID: DIR479
Sample ID: 16-21698-M26A- 4
Matrix: Stack Sampling Train

Collected: 2016/10/26
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern

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TEST SUMMARY

Maxxam ID: DIR479
Sample ID: 16-21698-M26A- 4
Matrix: Stack Sampling Train

Collected: 2016/10/26
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

Maxxam ID: DIR480
Sample ID: 16-21698-M26A- 5
Matrix: Stack Sampling Train

Collected: 2016/10/26
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

Maxxam ID: DIR481
Sample ID: 16-21698-M26A- 6
Matrix: Stack Sampling Train

Collected: 2016/10/26
Shipped:
Received: 2016/10/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4733676	2016/11/03	2016/11/03	Ann-Marie Stern
Ammonium in H2SO4 Impingers (CTM-027)	IC/SPEC	4729329	2016/11/02	2016/11/02	Manoj Gera
Volume of Sulfuric Acid Impinger		4729336	N/A	2016/11/02	Frank Mo

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GENERAL COMMENTS

FILTERS : Untared filters were received.

Sample DIR403 [16-21698-M201A- 47-49] : Organic Extraction : No residue noted in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample DIR413 [16-21698-M201A- 54-56] : Organic Extraction : No residue noted in vial.
INORGANIC EXTRACTION : Whitish residue found in Teflon dish.

Sample DIR414 [16-21698-M201A- 5-7] : ORGANIC EXTRACTION : Whitish residue found in vial.
INORGANIC EXTRACTION : Yellowish residue found in Teflon dish.

Sample DIR415 [16-21698-M201A- 12-14] : ORGANIC EXTRACTION : Whitish residue found in vial.
INORGANIC EXTRACTION : Brownish residue found in Teflon dish.

Sample DIR416 [16-21698-M201A- 19-21] : ORGANIC EXTRACTION : Light whitish residue found in vial.
INORGANIC EXTRACTION : Yellowish residue found in Teflon dish.

Sample DIR417 [16-21698-M201A- 26-28] : ORGANIC EXTRACTION : Light whitish residue found in vial.
INORGANIC EXTRACTION : Brownish residue found in Teflon dish.

Sample DIR418 [16-21698-M201A- 33-35] : ORGANIC EXTRACTION : Whitish residue found in vial.
INORGANIC EXTRACTION : Light yellow residue found in Teflon dish.

Sample DIR419 [16-21698-M201A- 40-42] : ORGANIC EXTRACTION : Whitish residue found in vial.
INORGANIC EXTRACTION : Brownish white residue found in Teflon dish.

EPA M29 METALS (FRONT & BACK SEPARATE)

Metals F.H. in Filter + Rinses (6020A): Post digestion duplicate and spike were done on sample DIR308.
Metals B.H. in H2O2/HNO3 Imp.(6020A): Post digestion duplicate and spike were done on sample DIR308.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4728099	MOR	Spiked Blank	Organic Condensibles	2016/11/07		98	%	70 - 130
4728099	MOR	Method Blank	Organic Condensibles	2016/11/07	<1.0		mg	
4728409	RON	Matrix Spike(DIR309)	2B Mercury (Hg)	2016/11/04		98	%	85 - 115
4728409	RON	Matrix Spike DUP(DIR309)	2B Mercury (Hg)	2016/11/04		98	%	85 - 115
4728409	RON	MS/MSD RPD	2B Mercury (Hg)	2016/11/04	0.41		%	20
4728409	RON	Spiked Blank	2B Mercury (Hg)	2016/11/04		99	%	90 - 110
4728409	RON	Spiked Blank DUP	2B Mercury (Hg)	2016/11/04		98	%	90 - 110
4728409	RON	RPD	2B Mercury (Hg)	2016/11/04	1.1		%	20
4728409	RON	Method Blank	2B Mercury (Hg)	2016/11/04	<0.015		ug	
4728409	RON	RPD - Sample/Sample Dup	2B Mercury (Hg)	2016/11/04	NC		%	20
4729329	MGE	Matrix Spike(DIR476)	Ammonium (NH4)	2016/11/02		101	%	75 - 125
4729329	MGE	Spiked Blank	Ammonium (NH4)	2016/11/02		103	%	90 - 110
4729329	MGE	Method Blank	Ammonium (NH4)	2016/11/02	<25		ug	
4729329	MGE	RPD - Sample/Sample Dup	Ammonium (NH4)	2016/11/02	2.0		%	20
4729500	FF	Method Blank	< 2.5 Particulate Weight in Acetone Rinse	2016/11/07	<0.5		mg	
4729505	FF	Method Blank	2.5 - 10 Particulate Weight in Acetone Rinse	2016/11/07	<0.5		mg	
4729506	FF	Method Blank	> 10 Particulate Weight in Acetone Rinse	2016/11/07	<0.5		mg	
4729516	MOR	Method Blank	Inorganic Condensibles	2016/11/07	<0.5		mg	
4729537	FF	Method Blank	Acetone Rinse Particulate Weight in Acetone	2016/11/03	<0.5		mg	
4729861	RON	Reagent Blank	3B Mercury (Hg)	2016/11/03	<0.013		ug	
4729861	RON	Matrix Spike(DIR310)	3B Mercury (Hg)	2016/11/03		98	%	85 - 115
4729861	RON	Matrix Spike DUP(DIR310)	3B Mercury (Hg)	2016/11/03		97	%	85 - 115
4729861	RON	MS/MSD RPD	3B Mercury (Hg)	2016/11/03	0.82		%	20
4729861	RON	Spiked Blank	3B Mercury (Hg)	2016/11/03		97	%	90 - 110
4729861	RON	Spiked Blank DUP	3B Mercury (Hg)	2016/11/03		97	%	90 - 110
4729861	RON	RPD	3B Mercury (Hg)	2016/11/03	0.21		%	20
4729861	RON	Method Blank	3B Mercury (Hg)	2016/11/03	<0.013		ug	
4729861	RON	RPD - Sample/Sample Dup	3B Mercury (Hg)	2016/11/03	NC		%	20
4731703	RON	Reagent Blank	1B Mercury (Hg)	2016/11/06	<0.015		ug	
4731703	RON	Matrix Spike(DIR324)	1B Mercury (Hg)	2016/11/06		105	%	85 - 115
4731703	RON	Matrix Spike DUP(DIR324)	1B Mercury (Hg)	2016/11/06		106	%	85 - 115
4731703	RON	MS/MSD RPD	1B Mercury (Hg)	2016/11/06	0.47		%	20
4731703	RON	Spiked Blank	1B Mercury (Hg)	2016/11/06		105	%	90 - 110
4731703	RON	Spiked Blank DUP	1B Mercury (Hg)	2016/11/06		105	%	90 - 110
4731703	RON	RPD	1B Mercury (Hg)	2016/11/06	0.48		%	20
4731703	RON	Method Blank	1B Mercury (Hg)	2016/11/06	<0.015		ug	
4731703	RON	RPD - Sample/Sample Dup	1B Mercury (Hg)	2016/11/06	NC		%	20
4731710	N_R	Matrix Spike(DIR308)	Front Half Antimony (Sb)	2016/11/04		102	%	70 - 130
			Front Half Arsenic (As)	2016/11/04		91	%	70 - 130
			Front Half Barium (Ba)	2016/11/04		97	%	70 - 130
			Front Half Beryllium (Be)	2016/11/04		94	%	70 - 130
			Front Half Cadmium (Cd)	2016/11/04		95	%	70 - 130
			Front Half Chromium (Cr)	2016/11/04		95	%	70 - 130
			Front Half Cobalt (Co)	2016/11/04		94	%	70 - 130
			Front Half Copper (Cu)	2016/11/04		94	%	70 - 130
			Front Half Lead (Pb)	2016/11/04		99	%	70 - 130
			Front Half Manganese (Mn)	2016/11/04		95	%	70 - 130
			Front Half Molybdenum (Mo)	2016/11/04		97	%	70 - 130
			Front Half Nickel (Ni)	2016/11/04		92	%	70 - 130
			Front Half Selenium (Se)	2016/11/04		87	%	70 - 130
			Front Half Silver (Ag)	2016/11/04		100	%	70 - 130
			Front Half Thallium (Tl)	2016/11/04		97	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Vanadium (V)	2016/11/04		94	%	70 - 130
			Front Half Zinc (Zn)	2016/11/04		98	%	70 - 130
4731710	N_R	Matrix Spike DUP(DIR308)	Front Half Antimony (Sb)	2016/11/04		104	%	70 - 130
			Front Half Arsenic (As)	2016/11/04		95	%	70 - 130
			Front Half Barium (Ba)	2016/11/04		103	%	70 - 130
			Front Half Beryllium (Be)	2016/11/04		95	%	70 - 130
			Front Half Cadmium (Cd)	2016/11/04		104	%	70 - 130
			Front Half Chromium (Cr)	2016/11/04		96	%	70 - 130
			Front Half Cobalt (Co)	2016/11/04		97	%	70 - 130
			Front Half Copper (Cu)	2016/11/04		95	%	70 - 130
			Front Half Lead (Pb)	2016/11/04		99	%	70 - 130
			Front Half Manganese (Mn)	2016/11/04		96	%	70 - 130
			Front Half Molybdenum (Mo)	2016/11/04		99	%	70 - 130
			Front Half Nickel (Ni)	2016/11/04		96	%	70 - 130
			Front Half Selenium (Se)	2016/11/04		87	%	70 - 130
			Front Half Silver (Ag)	2016/11/04		100	%	70 - 130
			Front Half Thallium (Tl)	2016/11/04		96	%	70 - 130
			Front Half Vanadium (V)	2016/11/04		97	%	70 - 130
			Front Half Zinc (Zn)	2016/11/04		100	%	70 - 130
4731710	N_R	MS/MSD RPD	Front Half Antimony (Sb)	2016/11/04	1.9		%	20
			Front Half Arsenic (As)	2016/11/04	4.3		%	20
			Front Half Barium (Ba)	2016/11/04	6.0		%	20
			Front Half Beryllium (Be)	2016/11/04	1.1		%	20
			Front Half Cadmium (Cd)	2016/11/04	9.0		%	20
			Front Half Chromium (Cr)	2016/11/04	1.0		%	20
			Front Half Cobalt (Co)	2016/11/04	3.1		%	20
			Front Half Copper (Cu)	2016/11/04	1.1		%	20
			Front Half Lead (Pb)	2016/11/04	0		%	20
			Front Half Manganese (Mn)	2016/11/04	1.0		%	20
			Front Half Molybdenum (Mo)	2016/11/04	2.0		%	20
			Front Half Nickel (Ni)	2016/11/04	4.3		%	20
			Front Half Selenium (Se)	2016/11/04	0		%	20
			Front Half Silver (Ag)	2016/11/04	0		%	20
			Front Half Thallium (Tl)	2016/11/04	1.0		%	20
			Front Half Vanadium (V)	2016/11/04	3.1		%	20
			Front Half Zinc (Zn)	2016/11/04	2.0		%	20
4731710	N_R	Spiked Blank	Front Half Antimony (Sb)	2016/11/04		109	%	85 - 115
			Front Half Arsenic (As)	2016/11/04		96	%	85 - 115
			Front Half Barium (Ba)	2016/11/04		110	%	85 - 115
			Front Half Beryllium (Be)	2016/11/04		102	%	85 - 115
			Front Half Cadmium (Cd)	2016/11/04		101	%	85 - 115
			Front Half Chromium (Cr)	2016/11/04		103	%	85 - 115
			Front Half Cobalt (Co)	2016/11/04		101	%	85 - 115
			Front Half Copper (Cu)	2016/11/04		98	%	85 - 115
			Front Half Lead (Pb)	2016/11/04		102	%	85 - 115
			Front Half Manganese (Mn)	2016/11/04		98	%	85 - 115
			Front Half Molybdenum (Mo)	2016/11/04		104	%	85 - 115
			Front Half Nickel (Ni)	2016/11/04		101	%	85 - 115
			Front Half Selenium (Se)	2016/11/04		91	%	85 - 115
			Front Half Silver (Ag)	2016/11/04		105	%	85 - 115
			Front Half Thallium (Tl)	2016/11/04		101	%	85 - 115
			Front Half Vanadium (V)	2016/11/04		100	%	85 - 115

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Front Half Zinc (Zn)	2016/11/04		100	%	85 - 115
4731710	N_R	Spiked Blank DUP	Front Half Antimony (Sb)	2016/11/04		106	%	85 - 115
			Front Half Arsenic (As)	2016/11/04		102	%	85 - 115
			Front Half Barium (Ba)	2016/11/04		107	%	85 - 115
			Front Half Beryllium (Be)	2016/11/04		99	%	85 - 115
			Front Half Cadmium (Cd)	2016/11/04		100	%	85 - 115
			Front Half Chromium (Cr)	2016/11/04		101	%	85 - 115
			Front Half Cobalt (Co)	2016/11/04		103	%	85 - 115
			Front Half Copper (Cu)	2016/11/04		104	%	85 - 115
			Front Half Lead (Pb)	2016/11/04		97	%	85 - 115
			Front Half Manganese (Mn)	2016/11/04		101	%	85 - 115
			Front Half Molybdenum (Mo)	2016/11/04		102	%	85 - 115
			Front Half Nickel (Ni)	2016/11/04		102	%	85 - 115
			Front Half Selenium (Se)	2016/11/04		95	%	85 - 115
			Front Half Silver (Ag)	2016/11/04		102	%	85 - 115
			Front Half Thallium (Tl)	2016/11/04		95	%	85 - 115
			Front Half Vanadium (V)	2016/11/04		98	%	85 - 115
			Front Half Zinc (Zn)	2016/11/04		101	%	85 - 115
4731710	N_R	RPD	Front Half Antimony (Sb)	2016/11/04	2.6		%	20
			Front Half Arsenic (As)	2016/11/04	5.6		%	20
			Front Half Barium (Ba)	2016/11/04	2.8		%	20
			Front Half Beryllium (Be)	2016/11/04	3.2		%	20
			Front Half Cadmium (Cd)	2016/11/04	1.5		%	20
			Front Half Chromium (Cr)	2016/11/04	1.8		%	20
			Front Half Cobalt (Co)	2016/11/04	1.9		%	20
			Front Half Copper (Cu)	2016/11/04	5.3		%	20
			Front Half Lead (Pb)	2016/11/04	5.0		%	20
			Front Half Manganese (Mn)	2016/11/04	3.3		%	20
			Front Half Molybdenum (Mo)	2016/11/04	2.5		%	20
			Front Half Nickel (Ni)	2016/11/04	1.8		%	20
			Front Half Selenium (Se)	2016/11/04	4.0		%	20
			Front Half Silver (Ag)	2016/11/04	2.8		%	20
			Front Half Thallium (Tl)	2016/11/04	6.3		%	20
			Front Half Vanadium (V)	2016/11/04	1.9		%	20
			Front Half Zinc (Zn)	2016/11/04	0.74		%	20
4731710	N_R	Method Blank	Front Half Antimony (Sb)	2016/11/04	<0.80		ug	
			Front Half Arsenic (As)	2016/11/04	<0.80		ug	
			Front Half Barium (Ba)	2016/11/04	<6.0		ug	
			Front Half Beryllium (Be)	2016/11/04	<0.20		ug	
			Front Half Cadmium (Cd)	2016/11/04	<0.20		ug	
			Front Half Chromium (Cr)	2016/11/04	<0.60		ug	
			Front Half Cobalt (Co)	2016/11/04	<0.20		ug	
			Front Half Copper (Cu)	2016/11/04	<4.0		ug	
			Front Half Lead (Pb)	2016/11/04	<0.40		ug	
			Front Half Manganese (Mn)	2016/11/04	<1.5		ug	
			Front Half Molybdenum (Mo)	2016/11/04	<1.0		ug	
			Front Half Nickel (Ni)	2016/11/04	<1.0		ug	
			Front Half Selenium (Se)	2016/11/04	<2.0		ug	
			Front Half Silver (Ag)	2016/11/04	<0.40		ug	
			Front Half Thallium (Tl)	2016/11/04	<1.0		ug	
			Front Half Vanadium (V)	2016/11/04	<0.60		ug	
			Front Half Zinc (Zn)	2016/11/04	<10		ug	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4731710	N_R	RPD - Sample/Sample Dup	Front Half Antimony (Sb)	2016/11/04	NC		%	20
			Front Half Arsenic (As)	2016/11/04	NC		%	20
			Front Half Barium (Ba)	2016/11/04	NC		%	20
			Front Half Beryllium (Be)	2016/11/04	NC		%	20
			Front Half Cadmium (Cd)	2016/11/04	NC		%	20
			Front Half Chromium (Cr)	2016/11/04	NC		%	20
			Front Half Cobalt (Co)	2016/11/04	NC		%	20
			Front Half Copper (Cu)	2016/11/04	NC		%	20
			Front Half Lead (Pb)	2016/11/04	NC		%	20
			Front Half Manganese (Mn)	2016/11/04	NC		%	20
			Front Half Molybdenum (Mo)	2016/11/04	1.4		%	20
			Front Half Nickel (Ni)	2016/11/04	NC		%	20
			Front Half Selenium (Se)	2016/11/04	NC		%	20
			Front Half Silver (Ag)	2016/11/04	NC		%	20
			Front Half Thallium (Tl)	2016/11/04	NC		%	20
			Front Half Vanadium (V)	2016/11/04	NC		%	20
			Front Half Zinc (Zn)	2016/11/04	NC		%	20
4731715	N_R	Matrix Spike(DIR308)	Back Half Antimony (Sb)	2016/11/04		103	%	70 - 130
			Back Half Arsenic (As)	2016/11/04		96	%	70 - 130
			Back Half Barium (Ba)	2016/11/04		107	%	70 - 130
			Back Half Beryllium (Be)	2016/11/04		104	%	70 - 130
			Back Half Cadmium (Cd)	2016/11/04		96	%	70 - 130
			Back Half Chromium (Cr)	2016/11/04		102	%	70 - 130
			Back Half Cobalt (Co)	2016/11/04		97	%	70 - 130
			Back Half Copper (Cu)	2016/11/04		98	%	70 - 130
			Back Half Lead (Pb)	2016/11/04		93	%	70 - 130
			Back Half Manganese (Mn)	2016/11/04		99	%	70 - 130
			Back Half Molybdenum (Mo)	2016/11/04		100	%	70 - 130
			Back Half Nickel (Ni)	2016/11/04		99	%	70 - 130
			Back Half Selenium (Se)	2016/11/04		84	%	70 - 130
			Back Half Silver (Ag)	2016/11/04		104	%	70 - 130
			Back Half Thallium (Tl)	2016/11/04		92	%	70 - 130
			Back Half Vanadium (V)	2016/11/04		100	%	70 - 130
			Back Half Zinc (Zn)	2016/11/04		97	%	70 - 130
4731715	N_R	Matrix Spike DUP(DIR308)	Back Half Antimony (Sb)	2016/11/04		98	%	70 - 130
			Back Half Arsenic (As)	2016/11/04		94	%	70 - 130
			Back Half Barium (Ba)	2016/11/04		107	%	70 - 130
			Back Half Beryllium (Be)	2016/11/04		105	%	70 - 130
			Back Half Cadmium (Cd)	2016/11/04		92	%	70 - 130
			Back Half Chromium (Cr)	2016/11/04		103	%	70 - 130
			Back Half Cobalt (Co)	2016/11/04		100	%	70 - 130
			Back Half Copper (Cu)	2016/11/04		97	%	70 - 130
			Back Half Lead (Pb)	2016/11/04		96	%	70 - 130
			Back Half Manganese (Mn)	2016/11/04		98	%	70 - 130
			Back Half Molybdenum (Mo)	2016/11/04		99	%	70 - 130
			Back Half Nickel (Ni)	2016/11/04		98	%	70 - 130
			Back Half Selenium (Se)	2016/11/04		80	%	70 - 130
			Back Half Silver (Ag)	2016/11/04		100	%	70 - 130
			Back Half Thallium (Tl)	2016/11/04		97	%	70 - 130
			Back Half Vanadium (V)	2016/11/04		101	%	70 - 130
			Back Half Zinc (Zn)	2016/11/04		97	%	70 - 130
4731715	N_R	MS/MSD RPD	Back Half Antimony (Sb)	2016/11/04	5.0		%	20

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Back Half Arsenic (As)	2016/11/04	2.1		%	20
			Back Half Barium (Ba)	2016/11/04	0		%	20
			Back Half Beryllium (Be)	2016/11/04	0.96		%	20
			Back Half Cadmium (Cd)	2016/11/04	4.3		%	20
			Back Half Chromium (Cr)	2016/11/04	0.98		%	20
			Back Half Cobalt (Co)	2016/11/04	3.0		%	20
			Back Half Copper (Cu)	2016/11/04	1.0		%	20
			Back Half Lead (Pb)	2016/11/04	3.2		%	20
			Back Half Manganese (Mn)	2016/11/04	1.0		%	20
			Back Half Molybdenum (Mo)	2016/11/04	1.0		%	20
			Back Half Nickel (Ni)	2016/11/04	1.0		%	20
			Back Half Selenium (Se)	2016/11/04	4.9		%	20
			Back Half Silver (Ag)	2016/11/04	3.9		%	20
			Back Half Thallium (Tl)	2016/11/04	5.3		%	20
			Back Half Vanadium (V)	2016/11/04	1.0		%	20
			Back Half Zinc (Zn)	2016/11/04	0		%	20
4731715	N_R	Spiked Blank	Back Half Antimony (Sb)	2016/11/04		104	%	85 - 115
			Back Half Arsenic (As)	2016/11/04		100	%	85 - 115
			Back Half Barium (Ba)	2016/11/04		107	%	85 - 115
			Back Half Beryllium (Be)	2016/11/04		105	%	85 - 115
			Back Half Cadmium (Cd)	2016/11/04		99	%	85 - 115
			Back Half Chromium (Cr)	2016/11/04		107	%	85 - 115
			Back Half Cobalt (Co)	2016/11/04		98	%	85 - 115
			Back Half Copper (Cu)	2016/11/04		101	%	85 - 115
			Back Half Lead (Pb)	2016/11/04		96	%	85 - 115
			Back Half Manganese (Mn)	2016/11/04		103	%	85 - 115
			Back Half Molybdenum (Mo)	2016/11/04		105	%	85 - 115
			Back Half Nickel (Ni)	2016/11/04		103	%	85 - 115
			Back Half Selenium (Se)	2016/11/04		91	%	85 - 115
			Back Half Silver (Ag)	2016/11/04		101	%	85 - 115
			Back Half Thallium (Tl)	2016/11/04		96	%	85 - 115
			Back Half Vanadium (V)	2016/11/04		102	%	85 - 115
			Back Half Zinc (Zn)	2016/11/04		99	%	85 - 115
4731715	N_R	Spiked Blank DUP	Back Half Antimony (Sb)	2016/11/04		99	%	85 - 115
			Back Half Arsenic (As)	2016/11/04		98	%	85 - 115
			Back Half Barium (Ba)	2016/11/04		106	%	85 - 115
			Back Half Beryllium (Be)	2016/11/04		115	%	85 - 115
			Back Half Cadmium (Cd)	2016/11/04		98	%	85 - 115
			Back Half Chromium (Cr)	2016/11/04		104	%	85 - 115
			Back Half Cobalt (Co)	2016/11/04		101	%	85 - 115
			Back Half Copper (Cu)	2016/11/04		102	%	85 - 115
			Back Half Lead (Pb)	2016/11/04		98	%	85 - 115
			Back Half Manganese (Mn)	2016/11/04		102	%	85 - 115
			Back Half Molybdenum (Mo)	2016/11/04		102	%	85 - 115
			Back Half Nickel (Ni)	2016/11/04		102	%	85 - 115
			Back Half Selenium (Se)	2016/11/04		88	%	85 - 115
			Back Half Silver (Ag)	2016/11/04		101	%	85 - 115
			Back Half Thallium (Tl)	2016/11/04		95	%	85 - 115
			Back Half Vanadium (V)	2016/11/04		107	%	85 - 115
			Back Half Zinc (Zn)	2016/11/04		100	%	85 - 115
4731715	N_R	RPD	Back Half Antimony (Sb)	2016/11/04	4.9		%	20
			Back Half Arsenic (As)	2016/11/04	2.3		%	20

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Back Half Barium (Ba)	2016/11/04	1.2		%	20
			Back Half Beryllium (Be)	2016/11/04	8.5		%	20
			Back Half Cadmium (Cd)	2016/11/04	1.4		%	20
			Back Half Chromium (Cr)	2016/11/04	2.5		%	20
			Back Half Cobalt (Co)	2016/11/04	3.7		%	20
			Back Half Copper (Cu)	2016/11/04	0.81		%	20
			Back Half Lead (Pb)	2016/11/04	2.4		%	20
			Back Half Manganese (Mn)	2016/11/04	0.70		%	20
			Back Half Molybdenum (Mo)	2016/11/04	2.9		%	20
			Back Half Nickel (Ni)	2016/11/04	0.19		%	20
			Back Half Selenium (Se)	2016/11/04	2.8		%	20
			Back Half Silver (Ag)	2016/11/04	0.29		%	20
			Back Half Thallium (Tl)	2016/11/04	0.39		%	20
			Back Half Vanadium (V)	2016/11/04	5.0		%	20
			Back Half Zinc (Zn)	2016/11/04	1.2		%	20
4731715	N_R	Method Blank	Back Half Antimony (Sb)	2016/11/04	<0.20		ug	
			Back Half Arsenic (As)	2016/11/04	<0.20		ug	
			Back Half Barium (Ba)	2016/11/04	<1.5		ug	
			Back Half Beryllium (Be)	2016/11/04	<0.050		ug	
			Back Half Cadmium (Cd)	2016/11/04	<0.050		ug	
			Back Half Chromium (Cr)	2016/11/04	<0.15		ug	
			Back Half Cobalt (Co)	2016/11/04	<0.050		ug	
			Back Half Copper (Cu)	2016/11/04	<2.0		ug	
			Back Half Lead (Pb)	2016/11/04	0.11, RDL=0.10		ug	
			Back Half Manganese (Mn)	2016/11/04	<0.25		ug	
			Back Half Molybdenum (Mo)	2016/11/04	<0.25		ug	
			Back Half Nickel (Ni)	2016/11/04	<0.25		ug	
			Back Half Selenium (Se)	2016/11/04	<0.50		ug	
			Back Half Silver (Ag)	2016/11/04	<0.10		ug	
			Back Half Thallium (Tl)	2016/11/04	<0.25		ug	
			Back Half Vanadium (V)	2016/11/04	<0.15		ug	
			Back Half Zinc (Zn)	2016/11/04	<2.5		ug	
4731715	N_R	RPD - Sample/Sample Dup	Back Half Antimony (Sb)	2016/11/04	NC		%	20
			Back Half Arsenic (As)	2016/11/04	NC		%	20
			Back Half Barium (Ba)	2016/11/04	NC		%	20
			Back Half Beryllium (Be)	2016/11/04	NC		%	20
			Back Half Cadmium (Cd)	2016/11/04	NC		%	20
			Back Half Chromium (Cr)	2016/11/04	7.2		%	20
			Back Half Cobalt (Co)	2016/11/04	NC		%	20
			Back Half Copper (Cu)	2016/11/04	NC		%	20
			Back Half Lead (Pb)	2016/11/04	NC		%	20
			Back Half Manganese (Mn)	2016/11/04	8.0		%	20
			Back Half Molybdenum (Mo)	2016/11/04	NC		%	20
			Back Half Nickel (Ni)	2016/11/04	NC		%	20
			Back Half Selenium (Se)	2016/11/04	NC		%	20
			Back Half Silver (Ag)	2016/11/04	NC		%	20
			Back Half Thallium (Tl)	2016/11/04	NC		%	20
			Back Half Vanadium (V)	2016/11/04	NC		%	20
			Back Half Zinc (Zn)	2016/11/04	NC		%	20
4733676	A_S	Matrix Spike(DIR476)	Hydrochloric Acid	2016/11/03		85	%	80 - 120
			Hydrofluoric Acid	2016/11/03		95	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4733676	A_S	Spiked Blank	Hydrochloric Acid	2016/11/03		100	%	90 - 110
			Hydrofluoric Acid	2016/11/03		103	%	90 - 110
4733676	A_S	Method Blank	Hydrochloric Acid	2016/11/03	<200		ug	
			Hydrofluoric Acid	2016/11/03	<200		ug	
4733676	A_S	RPD - Sample/Sample Dup	Hydrochloric Acid	2016/11/03	0.53		%	20
			Hydrofluoric Acid	2016/11/03	NC		%	20
4733929	RON	Reagent Blank	3C Mercury (Hg)	2016/11/06	<0.013		ug	
4733929	RON	Matrix Spike(DIR322)	3C Mercury (Hg)	2016/11/06		100	%	85 - 115
4733929	RON	Matrix Spike DUP(DIR322)	3C Mercury (Hg)	2016/11/06		101	%	85 - 115
4733929	RON	MS/MSD RPD	3C Mercury (Hg)	2016/11/06	0.40		%	20
4733929	RON	Spiked Blank	3C Mercury (Hg)	2016/11/06		105	%	90 - 110
4733929	RON	Spiked Blank DUP	3C Mercury (Hg)	2016/11/06		107	%	90 - 110
4733929	RON	RPD	3C Mercury (Hg)	2016/11/06	1.4		%	20
4733929	RON	Method Blank	3C Mercury (Hg)	2016/11/06	<0.013		ug	
4733929	RON	RPD - Sample/Sample Dup	3C Mercury (Hg)	2016/11/06	1.2		%	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Reagent Blank: A blank matrix containing all reagents used in the analytical procedure. Used to determine any analytical contamination.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Brenda Moore

Brenda Moore, Team Lead

Frank Mo, B.Sc., Inorganic Lab. Manager

Ralph Siebert, Operations Manager - Inorganic Analyses

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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APPENDIX 15

Particle Size Distribution Train Recovery Data Sheets
(8 pages)

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: OCT 26, 16

Test No.: 1
Test Location: UNIT 1 OUTLET

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	136.2
After Act. Rinse:	170.4
Total TS1:	34.2

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:	136.5
After Act. Rinse:	164.8
Total TS2:	28.3

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:	135.8
After Act. Rinse:	153.0
Total TS3:	17.2

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47mm-7

CONTAINER TS4

Initial Wt:	0.1240
Final Wt:	0.1245
Gain:	0.5
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	492.3
	Final Wt:	630.8
1	Gain:	138.5
	Colour:	clear

	Impinger #2 Empty	
	Empty Wt:	657.6
	Final Wt:	657.6
2	Gain:	—
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	665.2
	Initial Wt:	767.3
	Final Wt:	767.0
3	Gain:	-0.3
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	893.4
	Final Wt:	902.3
4	Gain:	8.9
	% Spent:	—

CWTR=1+2+3:	138.2
WCBDA=4:	8.9

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	10:51
Purge Off:	11:51

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	288.8
With Imp 2:	419.4
After H_2O Rinse:	516.4
Total Volume TS5:	227.6

CONTAINER TS6
Secondary Filter

Filter ID:	16-M202-11
Initial Wt:	1.0749
Final Wt:	1.0749
TS6 Gain:	0
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	282.[illegible]
After Acetone Rinse:	348.[illegible]
After Hexane Rinse:	395.[illegible]

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-M201A-
TS1 (Part. > 10)	1
TS2 (Part. > 2.5)	2
TS3 (Part. < 2.5)	3
TS4 (Back Up Filter, <2.5)	4
TS5 (Imp 2 H_2O and rinse)	5
TS6 (Secondary Filter)	6
TS7 (Acetone / Hexane rinse)	7

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: OCT 26, 16

Box 14

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: Oct 26, 16

Test No.: 2
Test Location: UNIT 1 OUTLET

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	136.2
After Act. Rinse:	199.4
Total TS1:	63.2 ✓

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:	135.7
After Act. Rinse:	196.9
Total TS2:	61.2 ✓

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:	136.2
After Act. Rinse:	151.6
Total TS3:	15.4 ✓

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47m-10

CONTAINER TS4

Initial Wt:	.1236
Final Wt:	0.1241
Gain:	0.5
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	475.6
	Final Wt:	612.1
1	Gain:	136.5 ✓
	Colour:	CLEAR

	Impinger #2 Empty	
	Empty Wt:	631.3
	Final Wt:	630.7
2	Gain:	-0.6 ✓
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	641.2
	Initial Wt:	744.6
	Final Wt:	744.1
3	Gain:	-0.5 ✓
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	897.9
	Final Wt:	905.2
4	Gain:	7.3 ✓
	% Spent:	—

CWTR=1+2+3:	135.4 ✓
WCBDA=4:	7.3 ✓

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:	14:20
Purge Off:	15:20

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	282.3
With Imp 2:	412.7
After H_2O Rinse:	516.2
Total Volume TS5:	233.9 ✓

CONTAINER TS6
Secondary Filter

Filter ID:	16-MR02-1
Initial Wt:	1.1025
Final Wt:	1.1025
TS6 Gain:	Ø
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	288.[illegible]
After Acetone Rinse:	348.[illegible]
After Hexane Rinse:	416.[illegible]

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-M201A-
TS1 (Part. > 10)	~~10~~ 8
TS2 (Part. > 2.5)	~~11~~ 9
TS3 (Part. < 2.5)	~~12~~ 10
TS4 (Back Up Filter, <2.5)	~~13~~ 11
TS5 (Imp 2 H_2O and rinse)	~~14~~ 12
TS6 (Secondary Filter)	~~15~~ 13
TS7 (Acetone / Hexane rinse)	~~16~~ 14

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By: —
Date: OCT 26, 16

Box 7

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: Oct 26, 16

Test No.: 3
Test Location: UNIT 1 OUTLET

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	136.4
After Act. Rinse:	179.8
Total TS1:	43.4

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:	136.4
After Act. Rinse:	174.4
Total TS2:	38.0

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:	136.1
After Act. Rinse:	159.2
Total TS3:	23.1

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47mm-12

CONTAINER TS4

Initial Wt:	.1238
Final Wt:	0.1240
Gain:	0.2
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	491.8
	Final Wt:	640.0
1	Gain:	148.2
	Colour:	CLEAR

	Impinger #2 Empty	
	Empty Wt:	657.6
	Final Wt:	657.6
2	Gain:	—
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	665.2
	Initial Wt:	766.9
	Final Wt:	769.0
3	Gain:	2.1
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	902.2
	Final Wt:	910.2
4	Gain:	8.0
	% Spent:	—

CWTR=1+2+3:	150.3
WCBDA=4:	8.0

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:	16:44
Purge Off:	17:44

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	280.8
With Imp 2:	419.1
After H_2O Rinse:	526.1
Total Volume TS5:	245.3

CONTAINER TS6
Secondary Filter

Filter ID:	16MR02-15
Initial Wt:	1.0374
Final Wt:	1.0374
TS6 Gain:	0
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	282.5
After Acetone Rinse:	338.
After Hexane Rinse:	379.9

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-M201A-
TS1 (Part. > 10)	15
TS2 (Part. > 2.5)	16
TS3 (Part. < 2.5)	17
TS4 (Back Up Filter, <2.5)	18
TS5 (Imp 2 H_2O and rinse)	19
TS6 (Secondary Filter)	20
TS7 (Acetone / Hexane rinse)	21

Train Loaded By: DY
Train Recovered By: DY
Recovery Witnessed By: —
Date: Oct 26, 16

14

 JA

PM_{10} , $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: Oct 26, 16

Test No.: BLANK 1
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	136.3
After Act. Rinse:	189.9
Total TS1:	53.6

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:	169.1
After Act. Rinse:	214.1
Total TS2:	45.0

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:	167.3
After Act. Rinse:	203.4
Total TS3:	36.1

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47mm-18

CONTAINER TS4

Initial Wt:	.1241
Final Wt:	0.1240
Gain:	0.1
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 Empty	
	Empty Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	
	% Spent:	

CWTR=1+2+3:	
WCBDA=4:	

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:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	288.6
With Imp 2:	439.3
After H_2O Rinse:	505.8
Total Volume TS5:	217.2

CONTAINER TS6
Secondary Filter

Filter ID:	16-M2OL-L
Initial Wt:	1.1230
Final Wt:	1.1230
TS6 Gain:	0
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	280.8
After Acetone Rinse:	345.[illegible]
After Hexane Rinse:	421.[illegible]

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-M201A-
TS1 (Part. > 10)	43
TS2 (Part. > 2.5)	44
TS3 (Part. < 2.5)	45
TS4 (Back Up Filter, <2.5)	46
TS5 (Imp 2 H_2O and rinse)	47
TS6 (Secondary Filter)	48
TS7 (Acetone / Hexane rinse)	49

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 26, 16

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: 08/24/16

Test No.: 1
Test Location: UNIT 2 OUTLET

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	135.7
After Act. Rinse:	163.3
Total TS1:	27.6

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:	135.9
After Act. Rinse:	166.7
Total TS2:	30.8

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:	136.9
After Act. Rinse:	152.7
Total TS3:	15.8

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47mm-6

CONTAINER TS4

Initial Wt:	.1242
Final Wt:	0.1242
Gain:	—
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

Impinger #1	Knock Out
Empty Wt:	475.4
Final Wt:	635.9
1 Gain:	160.5
Colour:	CLEAR

Impinger #2	Empty
Empty Wt:	630.6
Final Wt:	630.5
2 Gain:	-0.1
Colour:	CLEAR

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	641.2
Initial Wt:	740.5
Final Wt:	740.2
3 Gain:	-0.3
Colour:	CLEAR

Impinger #4	Silica Gel
Initial Wt:	882.7
Final Wt:	891.7
4 Gain:	9.0
% Spent:	—

CWTR=1+2+3:	160.1
WCBDA=4:	9.0

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	12:50
Purge Off:	13:50

Rinse all glassware from filter to 2nd u-tube with di H2O into TS5

CONTAINER TS5	
Empty Wt:	281.2
With Imp 2:	433.5
After H_2O Rinse:	492.1
Total Volume TS5:	210.9

CONTAINER TS6
Secondary Filter

Filter ID:	16-202-14
Initial Wt:	1.0887
Final Wt:	1.0887
TS6 Gain:	—
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	236.5
After Acetone Rinse:	318.5
After Hexane Rinse:	356.3

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-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_2O and rinse)	26
TS6 (Secondary Filter)	27
TS7 (Acetone / Hexane rinse)	28

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: 08/25/16

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: Oct 05, 16

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:	136.4
After Act. Rinse:	162.1
Total TS1:	25.7

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:	137.2
After Act. Rinse:	176.4
Total TS2:	39.2

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:	136.7
After Act. Rinse:	153.1
Total TS3:	16.4

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47mm-5

CONTAINER TS4

Initial Wt:	0.1236
Final Wt:	0.1238
Gain:	0.2
Colour:	ORANGE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	491.2
	Final Wt:	650.1
1	Gain:	158.9
	Colour:	CLEAR

	Impinger #2 Empty	
	Empty Wt:	657.6
	Final Wt:	657.6
2	Gain:	—
	Colour:	—

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	665.2
	Initial Wt:	768.0
	Final Wt:	767.3
3	Gain:	-0.7
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	884.0
	Final Wt:	893.7
4	Gain:	9.7
	% Spent:	—

CWTR=1+2+3:	158.2
WCBDA=4:	9.7

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:	15:07
Purge Off:	16:07

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	286.9
With Imp 2:	435.8
After H_2O Rinse:	488.2
Total Volume TS5:	201.3

CONTAINER TS6 Secondary Filter	
Filter ID:	16-M202-10
Initial Wt:	1.0604
Final Wt:	1.0604
TS6 Gain:	0
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	288.7
After Acetone Rinse:	354.9
After Hexane Rinse:	406.

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-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: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 05, 16

Box 14

ORTECH Environmental JAN

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: Oct 25, 16

Test No.: 3
Test Location: UNIT 2 OUTLET

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem
CONTAINER TS1

Container TS1 Weights	
Empty Wt:	136.8
After Act. Rinse:	170.6
Total TS1:	33.8 ✓

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:	136.6
After Act. Rinse:	163.7
Total TS2:	27.1 ✓

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:	136.9
After Act. Rinse:	150.6
Total TS3:	13.7 ✓

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47mm-9

CONTAINER TS4

Initial Wt:	0.1229
Final Wt:	0.1209
Gain:	-0-
Colour:	LIGHT ORANGE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

	Impinger #1 Knock Out	
	Empty Wt:	475.6
	Final Wt:	607.1
1	Gain:	131.5 ✓
	Colour:	clear

	Impinger #2 Empty	
	Empty Wt:	630.4
	Final Wt:	640.8
2	Gain:	10.4 ✓
	Colour:	clear

Secondary Filter

	Impinger #3 H_2O	
	Empty Wt:	641.2
	Initial Wt:	740.2
	Final Wt:	744.6
3	Gain:	4.4 ✓
	Colour:	clear

	Impinger #4 Silica Gel	
	Initial Wt:	891.4
	Final Wt:	898.3
4	Gain:	6.9 ✓
	% Spent:	30

CWTR=1+2+3:	~~153.2~~ 146.3 ✓
WCBDA=4:	6.9 ✓

CONTAINER TS5 & TS6

Perform nitrogen purge of imp 1 transfered to Impaction stem impinger (14 lpm for 1 hr)
** if there is no gain purge is not required.*

Purge On:	17:55
Purge Off:	18:55

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	284.5
With Imp 2:	417.2
After H_2O Rinse:	481.2
Total Volume TS5:	~~681.0~~ 196.7 ✓

CONTAINER TS6 Secondary Filter	
Filter ID:	16-M202-19
Initial Wt:	1.0927
Final Wt:	1.0927
TS6 Gain:	-0-
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	282.5
After Acetone Rinse:	341.[illegible]
After Hexane Rinse:	4[illegible]

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-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_2O and rinse)	40
TS6 (Secondary Filter)	41
TS7 (Acetone / Hexane rinse)	42

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By: —
Date: Oct 25, 16

Box ~~8~~ 7

ORTECH Environmental VAT

PM_{10}, $PM_{2.5}$ & Condensate Recovery Data Sheet

Client: Covanta
Project No.: 21698
Date: BLANK 2 Oct 26, 16

Test No.: BLANK 2
Test Location:

Nozzle, PM 10 Cyclone walls, collection cup, outside of exit stem

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	135.9
After Act. Rinse:	176.8
Total TS1:	40.9 ✓

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:	136.7
After Act. Rinse:	173.1
Total TS2:	36.4 ✓

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:	136.2
After Act. Rinse:	169.6
Total TS3:	33.4 ✓

Seal and label container TS3

CONTAINER TS3

Beaker Initial Wt:	
Final Wt:	
Gain:	

Back-Up Filter

Filter ID: 16-47pm-14

CONTAINER TS4

Initial Wt:	.1239
Final Wt:	0.1239
Gain:	Ø
Colour:	WHITE

Seal and label container TS4

CONTAINER TS4

Impingers 1, 2, 3, 4

Impinger #1 Knock Out	
Empty Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 Empty	
Empty Wt:	
Final Wt:	
2 Gain:	
Colour:	

Secondary Filter

Impinger #3 H_2O	
Empty Wt:	
Initial Wt:	
Final Wt:	
3 Gain:	
Colour:	

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	
% Spent:	

CWTR=1+2+3:	
WCBDA=4:	

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:	
Purge Off:	

Rinse all glassware from filter to 2nd u-tube with di H2O into TS3

CONTAINER TS5	
Empty Wt:	288.6
With Imp 2:	419.1
After H_2O Rinse:	496.2
Total Volume TS5:	207.6 ✓

CONTAINER TS6 Secondary Filter	
Filter ID:	16-M202-13
Initial Wt:	1.0450
Final Wt:	1.0450
TS6 Gain:	Ø
Colour:	WHITE

CONTAINER TS7

Rinse all glassware from filter to 2nd u-tube with Acetone & Hexane into TS7

Acetone/Hexane Rinse	
Empty Wt:	287.1
After Acetone Rinse:	338
After Hexane Rinse:	390.

Mark Fluid Level and Seal and Label Container

SAMPLE IDENTIFICATION	16-21656-M201A-
TS1 (Part. > 10)	50
TS2 (Part. > 2.5)	51
TS3 (Part. < 2.5)	52
TS4 (Back Up Filter, <2.5)	53
TS5 (Imp 2 H_2O and rinse)	54
TS6 (Secondary Filter)	55
TS7 (Acetone / Hexane rinse)	56

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 26, 16

APPENDIX 16

SVOC Train Recovery Data Sheets
(14 pages)

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 1
Test Date: Oct 27, 16
Test Location: UNIT 1 OUTLET

Sample ID 1 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	415.5
After Acetone/ Hexane Rinse:	621.2
Total TS1:	205.8

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 2 — Filter

CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 3 — XAD-II Trap

CONTAINER TS3

Initial Wt:	325.0
Final Wt:	330.3
1 Gain:	5.3
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 4 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	676.5
Final Wt:	973.2
2 Gain:	296.7
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	661.5
Initial Wt:	764.8
Final Wt:	945.9
3 Gain:	181.1
Colour:	clear

Impinger #3 Empty	
Empty Wt:	670.1
Final Wt:	702.6
4 Gain:	32.5
Colour:	clear

Container TS4 Weights	
Empty Wt:	416.7
With Imp Soln:	1010.4
Imp Volume:	593.7
After ~100g H_2O Rinse:	1183.8
Total TS4:	767.1

Sample ID 5 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.5
After Acetone Rinse:	532.6
Acetone Rinse Gain:	117.1
After Hexane Rinse:	650.8
Hexane Rinse Gain:	118.2
Total TS5:	235.3

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

IMP EMPTY @ ½ test
416.7
884.8
468.1

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	910.0
Final Wt:	938.3
5 Gain:	28.3
% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	G
Trap ID:	1
HPLC Batch No.:	DE1682-01
Ethylene Gylcol Batch No.:	164546
Hexane Batch No.:	164453
Acetone Batch No.:	163347

CWTR = 1 + 2 + 3 + 4: 983.7

WCBDA=S: 28.3

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: KG
Train Recovered By: DT
Recovery Witnessed By: —
Date: Oct 27, 16

Box 6

VAN

Revision: June 19, 2014

ORTECH Environmental

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 2
Test Date: Oct 28, 16
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)

TS1

Empty Wt:	415.6
After Acetone/ Hexane Rinse:	628.9
Total TS1:	213.3

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

Initial Wt:	348.9
Final Wt:	353.1
1 Gain:	4.2
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

Impinger #1 Empty	
Empty Wt:	655.9
Final Wt:	979.2
2 Gain:	323.3
Colour:	clear

Impinger #2 Ethylene Glycol	
Empty Wt:	656.4
Initial Wt:	791.8
Final Wt:	804.5
3 Gain:	12.7
Colour:	clear

Impinger #3 Empty	
Empty Wt:	654.3
Final Wt:	902.1
4 Gain:	247.8
Colour:	clear

2 Bottles →

Container TS4 Weights	
Empty Wt:	416.6
With Imp Soln:	1124.2
Imp Volume:	707.6
After ~100g H_2O Rinse:	1262.2
Total TS4:	845.6

~~415.4~~ 415.1
~~706.0~~ 849.7
~~290.6~~ 434.6

CWTR = 1 + 2 + 3 + 4: 1022.6

WCBDA=5: 30.7

TS5

Empty Wt:	415.1
After Acetone Rinse:	~~598.9~~ 580.4
Acetone Rinse Gain:	165.3
After Hexane Rinse:	709.9
Hexane Rinse Gain:	129.5
Total TS5:	294.8

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

TS6

Initial Wt:	824.8
Final Wt:	855.5
5 Gain:	30.7
% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	I
Trap ID:	3
HPLC Batch No.:	DE1682-01
Ethylene Gylcol Batch No.:	164546
Hexane Batch No.:	164453
Acetone Batch No.:	163747

Train Loaded By: KG
Train Recovered By: DT / CB
Recovery Witnessed By:
Date: Oct 28, 16

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Box 3

Revision: June 19, 2014

ORTECH Environmental

✓ AN

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 3
Test Date: Oct 31, 16
Test Location: UNIT 1 OUTLET

Sample ID 11 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	415.0
After Acetone/ Hexane Rinse:	627.9
Total TS1:	212.9 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 12 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 13 — XAD-II Trap — CONTAINER TS3

Initial Wt:	390.9
Final Wt:	395.9
1 Gain:	5.0 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 14 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	~~663~~ 770.1
Final Wt:	1700.9
2 Gain:	930.8 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	656.7
Initial Wt:	771.8
Final Wt:	819.6
3 Gain:	47.8 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	660.3
Final Wt:	660.6
4 Gain:	0.3 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	415.7
With Imp Soln:	1345.7
Imp Volume:	930.0 ✓
After ~100g H_2O Rinse:	—
Total TS4:	930.0

CWTR = 1 + 2 + 3 + 4: 983.9 ✓

WCBDA=5: 23.4 ✓

Sample ID 15 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	415.6
After Acetone Rinse:	556.5
Acetone Rinse Gain:	140.9 ✓
After Hexane Rinse:	667.9
Hexane Rinse Gain:	111.4 ✓
Total TS5:	252.3 ✓

Use 100 - 150g acetone total & 100- 150g of hexone total for rinses

Impinger Box ID: 4

Bottle 2
415.0
571.0
156.0 ✓
692.1
277.1 ✓

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	799.2
Final Wt:	822.6
5 Gain:	23.4 ✓
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	Q
Trap ID:	7
HPLC Batch No.:	DF1692-01
Ethylene Gylcol Batch No.:	164546
Hexane Batch No.:	164453
Acetone Batch No.:	163347

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 31, 16

VA

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: BLANK 1
Test Date: Oct 31, 16
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)

TS1

Empty Wt:	415.9
After Acetone/ Hexane Rinse:	628.9
Total TS1:	213.0 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3 (1)

Initial Wt:	353.6
Final Wt:	353.6
Gain:	0.0 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

2

Impinger #1 Empty	
Empty Wt:	736.8
Final Wt:	736.8
Gain:	0.0 ✓
Colour:	—

3

Impinger #2 Ethylene Glycol	
Empty Wt:	655.8
Initial Wt:	760.2
Final Wt:	760.2 ✓
Gain:	0.0
Colour:	CLEAR

4

Impinger #3 Empty	
Empty Wt:	648.3
Final Wt:	648.3
Gain:	0.0 ✓
Colour:	—

Container TS4 Weights	
Empty Wt:	415.7
With Imp Soln:	519.4
Imp Volume:	103.7 ✓
After ~100g H_2O Rinse:	632.2
Total TS4:	216.5 ✓

TS5

Empty Wt:	415.3
After Acetone Rinse:	520.2
Acetone Rinse Gain:	104.9 ✓
After Hexane Rinse:	630.7
Hexane Rinse Gain:	110.5 ✓
Total TS5:	215.4 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

TS6 (5)

Initial Wt:	854.8
Final Wt:	854.8
Gain:	— ✓
% Spent:	

Impinger Box ID: 12

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	K
Trap ID:	13
HPLC Batch No.:	
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By: —
Date: Oct 31, 16

CWTR = 1 + 2 + 3 + 4: ✓

WCBDA=5: ✓

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.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 1
Test Date: NOV 1/16
Test Location: OUTLET UNIT 2

Sample ID 21 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	415.2
After Acetone/ Hexane Rinse:	664.3
Total TS1:	249.1

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 22 — Filter — CONTAINER TS2

Colour:	White

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 23 — XAD-II Trap — CONTAINER TS3

Initial Wt:	410.8
Final Wt:	415.0
Gain:	4.2
Colour:	White

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 24 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	736.8
Final Wt:	1719.0
Gain:	982.2
Colour:	CLEAR

2

Impinger #2 Ethylene Glycol	
Empty Wt:	655.8
Initial Wt:	762.0
Final Wt:	808.5
Gain:	46.5
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	648.5
Final Wt:	648.5
Gain:	0.0
Colour:	—

4

Container TS4 Weights	
Empty Wt:	415.4
With Imp Soln:	560.9
Imp Volume:	145.5
After ~100g H_2O Rinse:	666.0
Total TS4:	250.6

CWTR = 1 + 2 + 3 + 4:	1032.9
WCBDA=5:	10.1

Sample ID 25 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	415.1
After Acetone Rinse:	498.4
Acetone Rinse Gain:	83.3
After Hexane Rinse:	622.1
Hexane Rinse Gain:	123.7
Total TS5:	207.0

Use 100 - 150g acetone total & 100-150g of hexane total for rinses

Impinger Box ID: 12

Bottle 2
415.6
1397.7
982.1

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	854.9
Final Wt:	865.0
Gain:	10.1
% Spent:	

5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	K
Trap ID:	8
HPLC Batch No.:	
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DJ
Train Recovered By: DJ/DU
Recovery Witnessed By:
Date: NOV 1, 16

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.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 2
Test Date: Nov 2, 16
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)

TS1

Empty Wt:	415.5
After Acetone/ Hexane Rinse:	582.8
Total TS1:	167.3

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

TS3

Initial Wt:	391.1
Final Wt:	397.3
1 Gain:	6.2
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

TS4

Impinger #1 Empty	
Empty Wt:	770.1
Final Wt:	1709.1
2 Gain:	939.0
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	673.5
Initial Wt:	765.0
Final Wt:	808.2
3 Gain:	43.2
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	658.6
Final Wt:	659.3
4 Gain:	0.97
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	415.5
With Imp Soln:	545.9
Imp Volume:	130.4
After ~100g H_2O Rinse:	644.7
Total TS4:	229.2

TS5

Empty Wt:	~~387.7~~ 416.3
After Acetone Rinse:	523.7
Acetone Rinse Gain:	107.4
After Hexane Rinse:	659.8
Hexane Rinse Gain:	136.1
Total TS5:	243.5

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 4

Bottle 2
415.3
1354.4
939.1

TS6

Initial Wt:	967.5
Final Wt:	991.4
5 Gain:	23.9
% Spent:	~

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	M
Trap ID:	13
HPLC Batch No.:	MAXXAM
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

CWTR = 1 + 2 + 3 + 4: 989.1

WCBDA=5: 23.9

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Train Loaded By: DK
Train Recovered By: DK
Recovery Witnessed By:
Date: Nov 2, 16

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 3
Test Date: NOV 3/16
Test Location: OUTLET UNIT 2

Sample ID 31 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	415.7
After Acetone/ Hexane Rinse:	649.7
Total TS1:	234.0 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 32 — Filter — CONTAINER TS2

Colour: WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 33 — XAD-II Trap — CONTAINER TS3

Initial Wt:	391.1
Final Wt:	397.7
1 Gain:	6.6 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 34 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	768.4
Final Wt:	1719.2
2 Gain:	950.8 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	666.9
Initial Wt:	743.0
Final Wt:	784.8
3 Gain:	41.8 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	662.0
Final Wt:	662.7
4 Gain:	0.7 ✓
Colour:	CLEAR

1 of 2

Container TS4 Weights	
Empty Wt:	417.5
With Imp Soln:	1364.1
Imp Volume:	—
After ~100g H_2O Rinse:	—
Total TS4:	946.6 ✓

CWTR = 1 + 2 + 3 + 4:	999.9 ✓
WCBDA=5:	7.4 ✓

Sample ID 35 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	416.7
After Acetone Rinse:	494.0
Acetone Rinse Gain:	77.3 ✓
After Hexane Rinse:	620.0
Hexane Rinse Gain:	126.0 ✓
Total TS5:	203.3 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 12

2 of 2
418.0
525.1
690.1
~~272.~~ 272.1

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	864.5
Final Wt:	871.9
5 Gain:	7.4 ✓
% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	5
Trap ID:	5
HPLC Batch No.:	MAXXAM
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DM/DT
Recovery Witnessed By:
Date: NOV 3/16

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.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: BLANK 2
Test Date: NOV 3, 16
Test Location:

Sample ID 36 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	415.7
After Acetone/ Hexane Rinse:	677.5
Total TS1:	261.8

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 37 — Filter — CONTAINER TS2

Colour:	WHITE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 38 — XAD-II Trap — CONTAINER TS3

Initial Wt:	323.6
Final Wt:	323.6
Gain:	—
Colour:	WHITE

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 39 — Impingers 1, 2 & 3 — CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	736.8
Final Wt:	736.8
Gain:	—
Colour:	—

2

Impinger #2 Ethylene Glycol	
Empty Wt:	656.1
Initial Wt:	729.5
Final Wt:	729.5
Gain:	0.0
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	656.3
Final Wt:	656.3
Gain:	—
Colour:	—

4

Container TS4 Weights	
Empty Wt:	416.5
With Imp Soln:	487.1
Imp Volume:	70.6
After ~100g H_2O Rinse:	595.8
Total TS4:	179.3

CWTR = 1 + 2 + 3 + 4: —

WCBDA=5: —

Sample ID 40 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	417.1
After Acetone Rinse:	519.0
Acetone Rinse Gain:	101.9
After Hexane Rinse:	628.5
Hexane Rinse Gain:	109.5
Total TS5:	211.4

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

Initial Wt:	991.2
Final Wt:	991.2
Gain:	—
% Spent:	—

5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	V
Trap ID:	14
HPLC Batch No.:	
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DX
Train Recovered By: DX
Recovery Witnessed By:
Date: Nov 3, 16

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.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 1
Test Date: OCT 27/16
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:	415.8
After Acetone/ Hexane Rinse:	929.8
Total TS1:	514.0 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 102

Filter

4 FILTERS

CONTAINER TS2

Colour: GREY

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 103

XAD-II Trap

CONTAINER TS3

Initial Wt:	398.6
Final Wt:	409.1
1 Gain:	6.5 ✓
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:	673.3
Final Wt:	1011.1
2 Gain:	337.8 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	658.8
Initial Wt:	764.9
Final Wt:	963.4
3 Gain:	198.5 ✓
Colour:	~~963~~ CLEAR

Impinger #3 Empty	
Empty Wt:	685.5
Final Wt:	902.3
4 Gain:	216.8 ✓
Colour:	Clear

Container TS4 Weights	
Empty Wt:	416.2
With Imp Soln:	1257.8
Imp Volume:	841.6 ✓
After ~100g H_2O Rinse:	1413.0
Total TS4:	996.8 ✓

CWTR = 1 + 2 + 3 + 4: 759.6 ✓

WCBDA=5: 24.0 ✓

Sample ID 105

Back-Half Rinses
Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.9
After Acetone Rinse:	572.2
Acetone Rinse Gain:	156.3 ✓
After Hexane Rinse:	645.3
Hexane Rinse Gain:	73.1 ✓
Total TS5:	229.4 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 1

Impinger 4
Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	900.1
Final Wt:	924.1
5 Gain:	24.0 ✓
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	H
Trap ID:	2
HPLC Batch No.:	DF1682-01
Ethylene Gylcol Batch No.:	164546
Hexane Batch No.:	164453
Acetone Batch No.:	163347

Train Loaded By: JG
Train Recovered By: DJ
Recovery Witnessed By:
Date: OCT. 27, 2016

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Bool

 VAT

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 2
Test Date: OCT 28, 16
Test Location: UNIT #1 INLET

Sample ID 106 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser — CONTAINER TS1

Empty Wt:	415.4
After Acetone/ Hexane Rinse:	1018.3
Total TS1:	602.9

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 107 — Filter — 4 FILTERS — CONTAINER TS2

Colour:	BEIGE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 108 — XAD-II Trap — CONTAINER TS3

	Initial Wt:	381.0
	Final Wt:	386.6
1	Gain:	5.6
	Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 109 — Impingers 1, 2 & 3 — CONTAINER TS4

	Impinger #1 Empty	
	Empty Wt:	653.1
	Final Wt:	994.6
2	Gain:	341.5
	Colour:	CLEAR

	Impinger #2 Ethylene Glycol	
	Empty Wt:	653.5
	Initial Wt:	764.6
	Final Wt:	952.8
3	Gain:	188.2
	Colour:	CLEAR

	Impinger #3 Empty	
	Empty Wt:	656.7
	Final Wt:	808.8
4	Gain:	152.1
	Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	415.0
With Imp Soln:	1188.1
Imp Volume:	773.1 ~~296~~
After ~100g H_2O Rinse:	1360.8
Total TS4:	945.8

~~415.4~~
~~706.0~~
~~290.6~~

CWTR = 1 + 2 + 3 + 4: ~~681.8~~ 687.4

WCBDA=5: 18.5

Sample ID 110 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers — CONTAINER TS5

Empty Wt:	415.1
After Acetone Rinse:	509.4
Acetone Rinse Gain:	94.3
After Hexane Rinse:	623.9
Hexane Rinse Gain:	114.5
Total TS5:	208.8

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID:

Impinger 4 Silica Gel — CONTAINER TS6 (Impinger)

	Initial Wt:	926.4
	Final Wt:	944.9
5	Gain:	18.5
	% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	I
Trap ID:	4
HPLC Batch No.:	DF1021-01
Ethylene Gylcol Batch No.:	164546
Hexane Batch No.:	164453
Acetone Batch No.:	163347

Train Loaded By: JG
Train Recovered By: DT
Recovery Witnessed By:
Date: OCT 28, 16

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Box 12.

VA

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 3
Test Date: Oct 31, 16
Test Location: INLET UNIT 1

Sample ID 111
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	415.6
After Acetone/ Hexane Rinse:	948.4
Total TS1:	532.8

MARK FLUID LEVEL
SEAL AND LABEL CONTAINER TS1

Sample ID 112
Filter
4 FILTERS
CONTAINER TS2
Colour: BEIGE
FOLD IN FOIL
SEAL AND LABEL CONTAINER TS2

Sample ID 113
XAD-II Trap
CONTAINER TS3

Initial Wt:	364.3
Final Wt:	368.2
1 Gain:	3.9
Colour:	WHITE

SEAL TRAP
WRAP IN FOIL
LABEL AS CONTAINER TS3

Sample ID 114
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	665.0
Final Wt:	989.7
2 Gain:	324.7
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	653.4
Initial Wt:	763.8
Final Wt:	1000.2
3 Gain:	236.4
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	654.1
Final Wt:	760.7
4 Gain:	106.6
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	414.5
With Imp Soln:	1176.0
Imp Volume:	761.5
After ~100g H_2O Rinse:	1296.2
Total TS4:	881.7

CWTR = 1 + 2 + 3 + 4: 671.6
WCBDA=5: 14.1

Sample ID 115
Back-Half Rinses
Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	417.0
After Acetone Rinse:	533.6
Acetone Rinse Gain:	116.6
After Hexane Rinse:	643.1
Hexane Rinse Gain:	109.5
Total TS5:	226.1

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 1

Impinger 4
Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	1001.0
Final Wt:	1015.1
5 Gain:	14.1
% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	R
Trap ID:	12
HPLC Batch No.:	DE1682-01
Ethylene Gylcol Batch No.:	164546
Hexane Batch No.:	164453
Acetone Batch No.:	163347

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: Oct 31, 16

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

Revision: June 19, 2014

ORTECH Environmental JAN

Semi-Volatile Organics Train Recovery Data Sheet

Client : Covanta DYEC
Project No.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 1
Test Date: NOV 1, 16
Test Location: UNIT 2 INLET

Sample ID 131 — Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	414.5
After Acetone/ Hexane Rinse:	786.3
Total TS1:	371.8

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 132 — Filter

CONTAINER TS2

Colour: BEIGE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 133 — XAD-II Trap

CONTAINER TS3

Initial Wt:	413.7
Final Wt:	~~413.7~~ 418.1
Gain:	~~0.0~~ 4.4
Colour:	WHITE

1

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 134 — Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	655.8
Final Wt:	956.0
Gain:	300.2
Colour:	CLEAR

2

Impinger #2, Ethylene Glycol	
Empty Wt:	670.1
Initial Wt:	773.4
Final Wt:	950.0
Gain:	176.6
Colour:	CLEAR

3

Impinger #3 Empty	
Empty Wt:	678.0
Final Wt:	~~678.0~~ 934.9
Gain:	256.9
Colour:	CLEAR

4

Container TS4 Weights	
Empty Wt:	414.5
With Imp Soln:	1235.4
Imp Volume:	820.9
After ~100g H_2O Rinse:	1374.9
Total TS4:	960.4

CWTR = 1 + 2 + 3 + 4: 738.1

WCBDA=5: 23.4

Sample ID 135 — Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	415.4
After Acetone Rinse:	539.2
Acetone Rinse Gain:	123.8
After Hexane Rinse:	621.4
Hexane Rinse Gain:	82.2
Total TS5:	206.0

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:	842.6
Final Wt:	866.0
Gain:	23.4
% Spent:	—

5

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	L
Trap ID:	10
HPLC Batch No.:	MAXXAM
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DK
Train Recovered By: DK
Recovery Witnessed By:
Date: NOV 1, 16

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.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 2
Test Date: Nov 2, 16
Test Location: UNIT 2 INLET

Sample ID 136
Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser
CONTAINER TS1

Empty Wt:	415.2
After Acetone/ Hexane Rinse:	882.8
Total TS1:	467.6 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

Sample ID 137
Filter
CONTAINER TS2

Colour:	BEIGE

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

Sample ID 138
XAD-II Trap
CONTAINER TS3

Initial Wt:	376.2
Final Wt:	383.0
1 Gain:	6.8 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

Sample ID 139
Impingers 1, 2 & 3
CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	673.5
Final Wt:	1028.4
2 Gain:	354.9 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	653.6
Initial Wt:	771.4
Final Wt:	983.6
3 Gain:	212.2 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	675.3
Final Wt:	783.3
4 Gain:	108.0 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	415.7
With Imp Soln:	1192.0
Imp Volume:	776.3 ✓
After ~100g H_2O Rinse:	1275.7
Total TS4:	860.0 ✓

CWTR = 1 + 2 + 3 + 4: 681.9 ✓

WCBDA=5: 11.9 ✓

Sample ID 140
Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers
CONTAINER TS5

Empty Wt:	415.7
After Acetone Rinse:	515.8
Acetone Rinse Gain:	100.1 ✓
After Hexane Rinse:	600.8
Hexane Rinse Gain:	85.0 ✓
Total TS5:	185.1 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 1

Impinger 4 Silica Gel
CONTAINER TS6 (Impinger)

Initial Wt:	822.4
Final Wt:	834.3
5 Gain:	11.9 ✓
% Spent:	—

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	N
Trap ID:	11
HPLC Batch No.:	MAXXAM
Ethylene Gylcol Batch No.:	153713
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DJ
Train Recovered By: DJ
Recovery Witnessed By:
Date: ~~20~~ NOV 2, 16

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.: 21698
Sample Batch No.: 16-21698-SVOC-

Test No.: 3
Test Date: NOV 3/16
Test Location: UNIT 2 INLET

141
Sample ID ~~126~~

Nozzle, Probe Liner, Cyclone Bypass, F.H. & B.H. Filter Housing, Frit & Connecting Glassware to Top of Condenser

CONTAINER TS1

Empty Wt:	416.5
After Acetone/ Hexane Rinse:	877.8
Total TS1:	461.3 ✓

MARK FLUID LEVEL

SEAL AND LABEL CONTAINER TS1

142
Sample ID ~~127~~

Filter

CONTAINER TS2

Colour: GREY

FOLD IN FOIL

SEAL AND LABEL CONTAINER TS2

143
Sample ID ~~128~~

XAD-II Trap

CONTAINER TS3

Initial Wt:	325.0
Final Wt:	331.7
1 Gain:	6.7 ✓
Colour:	WHITE

SEAL TRAP

WRAP IN FOIL

LABEL AS CONTAINER TS3

144
Sample ID ~~129~~

Impingers 1, 2 & 3

CONTAINER TS4

Impinger #1 Empty	
Empty Wt:	663.7
Final Wt:	1007.3
2 Gain:	343.6 ✓
Colour:	CLEAR

Impinger #2 Ethylene Glycol	
Empty Wt:	654.2
Initial Wt:	730.3
Final Wt:	955.2
3 Gain:	224.9 ✓
Colour:	CLEAR

Impinger #3 Empty	
Empty Wt:	611.4
Final Wt:	690.2
4 Gain:	78.8 ✓
Colour:	CLEAR

Container TS4 Weights	
Empty Wt:	417.3
With Imp Soln:	1124.1
Imp Volume:	706.8 ✓
After ~100g H_2O Rinse:	1259.6
Total TS4:	842.3 ✓

CWTR = 1 + 2 + 3 + 4: 654.0 ✓

WCBDA=5: 22.9 ✓

145
Sample ID ~~130~~

Back-Half Rinses Trap Bottom U-Tube, Imp. Inlet Stem, U-Tubes and Impingers

CONTAINER TS5

Empty Wt:	418.1
After Acetone Rinse:	544.5
Acetone Rinse Gain:	126.4 ✓
After Hexane Rinse:	648.5
Hexane Rinse Gain:	104.0 ✓
Total TS5:	230.4 ✓

Use 100 - 150g acetone total & 100- 150g of hexane total for rinses

Impinger Box ID: 3

Impinger 4 Silica Gel

CONTAINER TS6 (Impinger)

Initial Wt:	854.7
Final Wt:	877.6
5 Gain:	22.9 ✓
% Spent:	

Train & Proofing Identification	
Glassware Train Proofing Provided By:	Maxxam
Glassware Train ID:	T
Trap ID:	19
HPLC Batch No.:	MAXXAM
Ethylene Gylcol Batch No.:	
Hexane Batch No.:	
Acetone Batch No.:	

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By:
Date: NOV 3/16

TS1, TS4, TS5 - 1L Amber Glass Bottle
TS2 - Glass Petri Dish
TS3 - Glass Trap

APPENDIX 17

SVOC Analytical Report
(102 pages)

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:CHRIS BELORE
ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/23
Report #: R4257126
Version: 6 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N5683
Received: 2016/10/31, 20:48

Sample Matrix: Stack Sampling Train
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Chlorobenzenes in MM5 Trains (EPA M0010)	4	2016/11/01	2016/11/07	BRL SOP-00202	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	4	2016/11/01	2016/11/10	BRL SOP-00204	In house (M0010)
2,3,7,8-TCDF Confirmation (M23)	4	N/A	2016/11/07	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	1	2016/11/01	2016/11/04	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	3	2016/11/01	2016/11/05	BRL SOP-00404	EPA M23/23A m
PAH's in MM5 SamplingTrains (CARB429mod)	4	2016/11/01	2016/11/09	BRL SOP-00201	CARB429(ARBM1,M2)mod
PCBs in a Sampling Train (1668Amod)	1	2016/11/01	2016/11/06	BRL SOP-00408	EPA 1668A m
PCBs in a Sampling Train (1668Amod)	3	2016/11/01	2016/11/07	BRL SOP-00408	EPA 1668A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/23
Report #: R4257126
Version: 6 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N5683
Received: 2016/10/31, 20:48

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
23 Nov 2016 12:29:21

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ192							
Sampling Date		Ud - Blank				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 16-20	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<5.5	5.5	50	10	1.00	5.50	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	<5.5	5.5	50	10	1.00	5.50	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	<4.7	4.7	50	10	0.100	0.470	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	<4.8	4.8	50	10	0.100	0.480	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	<4.4	4.4	50	10	0.100	0.440	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	<5.2	5.2	50	15	0.0100	0.0520	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	16.8	4.5	500	15	0.000300	0.00504	N/A	4734800
Total Tetra CDD *	pg	<14 (1)	14	50	N/A	N/A	N/A	0	4734800
Total Penta CDD *	pg	<13 (1)	13	50	N/A	N/A	N/A	0	4734800
Total Hexa CDD *	pg	<24 (1)	24	50	N/A	N/A	N/A	0	4734800
Total Hepta CDD *	pg	<5.2	5.2	50	N/A	N/A	N/A	0	4734800
1,2,3,7,8-Penta CDF **	pg	<5.4	5.4	50	10	0.0300	0.162	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	<5.4	5.4	50	10	0.300	1.62	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	<4.5	4.5	50	10	0.100	0.450	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	<4.3	4.3	50	10	0.100	0.430	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	<4.7	4.7	50	10	0.100	0.470	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	<5.0	5.0	50	10	0.100	0.500	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	<5.5	5.5	50	15	0.0100	0.0550	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	<6.5	6.5	50	10	0.0100	0.0650	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	<6.0	6.0	500	25	0.000300	0.00180	N/A	4734800
Total Tetra CDF **	pg	<5.0	5.0	50	N/A	N/A	N/A	0	4734800
Total Penta CDF **	pg	<5.4	5.4	50	N/A	N/A	N/A	0	4734800
Total Hexa CDF **	pg	<4.6	4.6	50	N/A	N/A	N/A	0	4734800
Total Hepta CDF **	pg	<5.9	5.9	50	N/A	N/A	N/A	0	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	<5.0	5.0	50	N/A	0.100	0.500	N/A	4738268
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	16.7	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ192							
Sampling Date		UL - Blank				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 16-20	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	116	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	115	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

** CDF = Chloro Dibenzo-p-Furan

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ193							
Sampling Date		U1-T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 1-5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<5.5	5.5	50	10	1.00	5.50	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	12.8	6.2	50	10	1.00	12.8	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	18.3	5.1	50	10	0.100	1.83	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	43.7	5.2	50	10	0.100	4.37	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	40.3	4.7	50	10	0.100	4.03	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	386	4.2	50	15	0.0100	3.86	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	894	6.2	500	15	0.000300	0.268	N/A	4734800
Total Tetra CDD *	pg	187	5.5	50	N/A	N/A	N/A	6	4734800
Total Penta CDD *	pg	314	6.2	50	N/A	N/A	N/A	6	4734800
Total Hexa CDD *	pg	992	5.0	50	N/A	N/A	N/A	7	4734800
Total Hepta CDD *	pg	768	4.2	50	N/A	N/A	N/A	2	4734800
1,2,3,7,8-Penta CDF **	pg	28.3	6.0	50	10	0.0300	0.849	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	43.9	6.0	50	10	0.300	13.2	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	63.0	4.7	50	10	0.100	6.30	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	38.6	4.5	50	10	0.100	3.86	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	40.8	4.9	50	10	0.100	4.08	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	<5.1	5.1	50	10	0.100	0.510	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	178	4.8	50	15	0.0100	1.78	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	22.0 (1)	5.7	50	10	0.0100	0.220	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	123	5.9	500	25	0.000300	0.0369	N/A	4734800
Total Tetra CDF **	pg	328	6.6	50	N/A	N/A	N/A	13	4734800
Total Penta CDF **	pg	436	6.0	50	N/A	N/A	N/A	10	4734800
Total Hexa CDF **	pg	309	4.8	50	N/A	N/A	N/A	10	4734800
Total Hepta CDF **	pg	287	5.2	50	N/A	N/A	N/A	4	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	15.1	4.5	50	N/A	0.100	1.51	N/A	4738268
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	65.0	N/A	N/A

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ193							
Sampling Date		W1-T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 1-5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	63	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	125	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	63	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	124	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

** CDF = Chloro Dibenzo-p-Furan

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ194							
Sampling Date		U1-T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 6-10	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<5.2	5.2	50	10	1.00	5.20	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	9.2	4.3	50	10	1.00	9.20	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	15.9	6.0	50	10	0.100	1.59	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	39.7	6.1	50	10	0.100	3.97	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	39.7	5.6	50	10	0.100	3.97	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	332	5.6	50	15	0.0100	3.32	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	680	5.6	500	15	0.000300	0.204	N/A	4734800
Total Tetra CDD *	pg	131	5.2	50	N/A	N/A	N/A	5	4734800
Total Penta CDD *	pg	266	4.3	50	N/A	N/A	N/A	5	4734800
Total Hexa CDD *	pg	268	5.9	50	N/A	N/A	N/A	6	4734800
Total Hepta CDD *	pg	674	5.6	50	N/A	N/A	N/A	2	4734800
1,2,3,7,8-Penta CDF **	pg	15.8	6.9	50	10	0.0300	0.474	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	31.3	6.9	50	10	0.300	9.39	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	48.0 (1)	5.4	50	10	0.100	4.80	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	26.5	5.1	50	10	0.100	2.65	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	28.2	5.6	50	10	0.100	2.82	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	<6.9 (2)	6.9	50	10	0.100	0.690	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	128	4.7	50	15	0.0100	1.28	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	22.4	5.5	50	10	0.0100	0.224	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	103	4.8	500	25	0.000300	0.0309	N/A	4734800
Total Tetra CDF **	pg	218	5.3	50	N/A	N/A	N/A	11	4734800
Total Penta CDF **	pg	254	6.9	50	N/A	N/A	N/A	8	4734800
Total Hexa CDF **	pg	215	5.5	50	N/A	N/A	N/A	10	4734800
Total Hepta CDF **	pg	224	5.0	50	N/A	N/A	N/A	4	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	<10	10	50	N/A	0.100	1.00	N/A	4738268
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	50.8	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak
(2) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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Maxxam Job #: B6N5683
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ORTECH Environmental
Client Project #: 21698
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EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ194							
Sampling Date		UI-72				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 6-10	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	53	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	59	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	56	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	142 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	57	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
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EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ195							
Sampling Date		U1 - T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 11-15	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	12.9 (1)	5.6	50	10	1.00	12.9	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	16.1 (1)	5.7	50	10	1.00	16.1	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	17.0	5.2	50	10	0.100	1.70	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	35.8	5.3	50	10	0.100	3.58	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	38.0	4.8	50	10	0.100	3.80	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	220	4.7	50	15	0.0100	2.20	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	459	6.1	500	15	0.000300	0.138	N/A	4734800
Total Tetra CDD *	pg	196	5.6	50	N/A	N/A	N/A	7	4734800
Total Penta CDD *	pg	257	5.7	50	N/A	N/A	N/A	6	4734800
Total Hexa CDD *	pg	733	5.1	50	N/A	N/A	N/A	6	4734800
Total Hepta CDD *	pg	448	4.7	50	N/A	N/A	N/A	2	4734800
1,2,3,7,8-Penta CDF **	pg	93.3	5.2	50	10	0.0300	2.80	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	115	5.2	50	10	0.300	34.5	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	136 (2)	5.5	50	10	0.100	13.6	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	<85 (3)	85	50	10	0.100	8.50	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	58.5	5.8	50	10	0.100	5.85	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	12.4	6.0	50	10	0.100	1.24	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	226	4.4	50	15	0.0100	2.26	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	29.5	5.2	50	10	0.0100	0.295	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	83.2	4.8	500	25	0.000300	0.0250	N/A	4734800
Total Tetra CDF **	pg	1910	5.3	50	N/A	N/A	N/A	15	4734800
Total Penta CDF **	pg	1100	5.2	50	N/A	N/A	N/A	14	4734800
Total Hexa CDF **	pg	511	5.6	50	N/A	N/A	N/A	11	4734800
Total Hepta CDF **	pg	340	4.8	50	N/A	N/A	N/A	4	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	57.2	6.3	50	N/A	0.100	5.72	N/A	4738268

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ195							
Sampling Date		U1-T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 11-15	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	115	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	59	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	124	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	58	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	61	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	138 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	62	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
* CDD = Chloro Dibenzo-p-Dioxin
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DIZ192			DIZ193	DIZ194			
Sampling Date		U1 - Blank			U1 - T1	U1 - T2			
	UNITS	16-21698 -SVOC 16-20	RDL	MDL	16-21698 -SVOC 1-5	16-21698 -SVOC 6-10	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
1-Methylphenanthrene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
2-Chloronaphthalene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
2-Methylanthracene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
2-Methylnaphthalene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
3-Methylcholanthrene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
7,12-Dimethylbenzo(a)anthracene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
9,10-Dimethylanthracene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
9-Methylphenanthrene	ug	<0.25	0.25	N/A	<0.25	<0.25	0.25	N/A	4727478
Acenaphthene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Acenaphthylene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Anthracene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Benzo(a)anthracene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Benzo(a)fluorene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
Benzo(a)pyrene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Benzo(b)fluoranthene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Benzo(b)fluorene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Benzo(e)pyrene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Benzo(g,h,i)perylene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Benzo(k)fluoranthene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Biphenyl	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Chrysene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Coronene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
Dibenz(a,h)anthracene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Dibenzo(a,c)anthracene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Dibenzo(a,e)pyrene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
Fluoranthene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Fluorene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Indeno(1,2,3-cd)pyrene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
m-Terphenyl	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Naphthalene	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
o-Terphenyl	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Perylene	ug	<1.0	1.0	0.25	<1.0	<1.0	1.0	0.25	4727478
Phenanthrene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam
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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DIZ192			DIZ193	DIZ194			
Sampling Date		U1 - Blank			U1 - T1	U1 - T2			
	UNITS	16-21698 -SVOC 16-20	RDL	MDL	16-21698 -SVOC 1-5	16-21698 -SVOC 6-10	RDL	MDL	QC Batch
Picene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
p-Terphenyl	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Pyrene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
Tetralin	ug	<0.50	0.50	0.25	<0.50	<0.50	0.50	0.25	4727478
Triphenylene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727478
1,2,3,4-Tetrachlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,2,3-Trichlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,2,4-Trichlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,2-Dichlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,3,5-Trichlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,3-Dichlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
1,4-Dichlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
Hexachlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
Pentachlorobenzene	ug	<0.25	0.25	0.050	<0.25	<0.25	0.25	0.050	4727465
2,3,4,5-Tetrachlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,3,4,6-Tetrachlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,3,4-Trichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,3,5,6-Tetrachlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,3,5-Trichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,3,6-Trichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,3-Dichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,4 + 2,5-Dichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,4,5-Trichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,4,6-Trichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2,6-Dichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
2-Chlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
3,4,5-Trichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
3,4-Dichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
3,5-Dichlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
3-Chlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477
4-Chlorophenol	ug	<0.25	0.25	0.20	<1.0	<1.0	1.0	0.80	4727477
Pentachlorophenol	ug	<0.25	0.25	0.20	<0.25	<0.25	0.25	0.20	4727477

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DIZ192			DIZ193	DIZ194			
Sampling Date		U1-Blank			U1-T1	U1-T2			
	UNITS	16-21698 -SVOC 16-20	RDL	MDL	16-21698 -SVOC 1-5	16-21698 -SVOC 6-10	RDL	MDL	QC Batch
Surrogate Recovery (%)									
13C6-Hexachlorobenzene	%	94	N/A	N/A	74	85	N/A	N/A	4727465
2H3-1,2,3-Trichlorobenzene (FS)	%	83	N/A	N/A	60	85	N/A	N/A	4727465
2H3-1,2,4-Trichlorobenzene	%	84	N/A	N/A	58	83	N/A	N/A	4727465
2H4-1,3-Dichlorobenzene	%	82	N/A	N/A	62	69	N/A	N/A	4727465
2H4-1,4-Dichlorobenzene (FS)	%	96	N/A	N/A	71	77	N/A	N/A	4727465
2,6-Dibromo-4-fluorophenol (FS)	%	91	N/A	N/A	88	101	N/A	N/A	4727477
D3-2,4-Dichlorophenol	%	90	N/A	N/A	81	93	N/A	N/A	4727477
D6-Pentachlorophenol	%	90	N/A	N/A	86	98	N/A	N/A	4727477
D10-2-Methylnaphthalene	%	92	N/A	N/A	86	98	N/A	N/A	4727478
D10-Fluoranthene	%	98	N/A	N/A	100	104	N/A	N/A	4727478
D10-Fluorene (FS)	%	96	N/A	N/A	95	102	N/A	N/A	4727478
D10-Phenanthrene	%	94	N/A	N/A	96	100	N/A	N/A	4727478
D12-Benzo(a)anthracene	%	64	N/A	N/A	70	70	N/A	N/A	4727478
D12-Benzo(a)pyrene	%	58	N/A	N/A	86	94	N/A	N/A	4727478
D12-Benzo(b)fluoranthene	%	76	N/A	N/A	76	80	N/A	N/A	4727478
D12-Benzo(ghi)perylene	%	76	N/A	N/A	78	82	N/A	N/A	4727478
D12-Benzo(k)fluoranthene	%	78	N/A	N/A	80	82	N/A	N/A	4727478
D12-Chrysene	%	108	N/A	N/A	106	110	N/A	N/A	4727478
D12-Indeno(1,2,3-cd)pyrene	%	74	N/A	N/A	74	78	N/A	N/A	4727478
D12-Perylene	%	56	N/A	N/A	74	78	N/A	N/A	4727478
D14-Dibenzo(a,h)anthracene	%	76	N/A	N/A	78	78	N/A	N/A	4727478
D14-Terphenyl (FS)	%	100	N/A	N/A	106	107	N/A	N/A	4727478
D8-Acenaphthylene	%	70	N/A	N/A	70	78	N/A	N/A	4727478
D8-Naphthalene	%	72	N/A	N/A	66	76	N/A	N/A	4727478

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DIZ195			
Sampling Date		U1-T3			
	UNITS	16-21698 -SVOC 11-15	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.50	0.50	0.25	4727478
1-Methylphenanthrene	ug	<0.50	0.50	0.25	4727478
2-Chloronaphthalene	ug	<0.50	0.50	0.25	4727478
2-Methylanthracene	ug	<0.50	0.50	0.25	4727478
2-Methylnaphthalene	ug	<0.25	0.25	0.050	4727478
3-Methylcholanthrene	ug	<1.0	1.0	0.25	4727478
7,12-Dimethylbenzo(a)anthracene	ug	<1.0	1.0	0.25	4727478
9,10-Dimethylanthracene	ug	<1.0	1.0	0.25	4727478
9-Methylphenanthrene	ug	<0.25	0.25	N/A	4727478
Acenaphthene	ug	<0.25	0.25	0.050	4727478
Acenaphthylene	ug	<0.25	0.25	0.050	4727478
Anthracene	ug	<0.25	0.25	0.050	4727478
Benzo(a)anthracene	ug	<0.25	0.25	0.050	4727478
Benzo(a)fluorene	ug	<1.0	1.0	0.25	4727478
Benzo(a)pyrene	ug	<0.25	0.25	0.050	4727478
Benzo(b)fluoranthene	ug	<0.25	0.25	0.050	4727478
Benzo(b)fluorene	ug	<0.50	0.50	0.25	4727478
Benzo(e)pyrene	ug	<0.50	0.50	0.25	4727478
Benzo(g,h,i)perylene	ug	<0.25	0.25	0.050	4727478
Benzo(k)fluoranthene	ug	<0.25	0.25	0.050	4727478
Biphenyl	ug	<0.50	0.50	0.25	4727478
Chrysene	ug	<0.25	0.25	0.050	4727478
Coronene	ug	<1.0	1.0	0.25	4727478
Dibenz(a,h)anthracene	ug	<0.25	0.25	0.050	4727478
Dibenzo(a,c)anthracene	ug	<0.25	0.25	0.050	4727478
Dibenzo(a,e)pyrene	ug	<1.0	1.0	0.25	4727478
Fluoranthene	ug	<0.25	0.25	0.050	4727478
Fluorene	ug	<0.25	0.25	0.050	4727478
Indeno(1,2,3-cd)pyrene	ug	<0.25	0.25	0.050	4727478
m-Terphenyl	ug	<0.50	0.50	0.25	4727478
Naphthalene	ug	<0.50	0.50	0.25	4727478
o-Terphenyl	ug	<0.50	0.50	0.25	4727478
Perylene	ug	<1.0	1.0	0.25	4727478
Phenanthrene	ug	<0.25	0.25	0.050	4727478

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DIZ195			
Sampling Date		U1 - T3			
	UNITS	16-21698 -SVOC 11-15	RDL	MDL	QC Batch
Picene	ug	<0.25	0.25	0.050	4727478
p-Terphenyl	ug	<0.50	0.50	0.25	4727478
Pyrene	ug	<0.25	0.25	0.050	4727478
Tetralin	ug	<0.50	0.50	0.25	4727478
Triphenylene	ug	<0.25	0.25	0.050	4727478
1,2,3,4-Tetrachlorobenzene	ug	<0.25	0.25	0.050	4727465
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.25	0.25	0.050	4727465
1,2,3-Trichlorobenzene	ug	<0.25	0.25	0.050	4727465
1,2,4-Trichlorobenzene	ug	<0.25	0.25	0.050	4727465
1,2-Dichlorobenzene	ug	<0.25	0.25	0.050	4727465
1,3,5-Trichlorobenzene	ug	<0.25	0.25	0.050	4727465
1,3-Dichlorobenzene	ug	<0.25	0.25	0.050	4727465
1,4-Dichlorobenzene	ug	<0.25	0.25	0.050	4727465
Hexachlorobenzene	ug	<0.25	0.25	0.050	4727465
Pentachlorobenzene	ug	<0.25	0.25	0.050	4727465
2,3,4,5-Tetrachlorophenol	ug	<0.25	0.25	0.20	4727477
2,3,4,6-Tetrachlorophenol	ug	<0.25	0.25	0.20	4727477
2,3,4-Trichlorophenol	ug	<0.25	0.25	0.20	4727477
2,3,5,6-Tetrachlorophenol	ug	<0.25	0.25	0.20	4727477
2,3,5-Trichlorophenol	ug	<0.25	0.25	0.20	4727477
2,3,6-Trichlorophenol	ug	<0.25	0.25	0.20	4727477
2,3-Dichlorophenol	ug	<0.25	0.25	0.20	4727477
2,4 + 2,5-Dichlorophenol	ug	<0.25	0.25	0.20	4727477
2,4,5-Trichlorophenol	ug	<0.25	0.25	0.20	4727477
2,4,6-Trichlorophenol	ug	<0.25	0.25	0.20	4727477
2,6-Dichlorophenol	ug	<0.25	0.25	0.20	4727477
2-Chlorophenol	ug	<0.25	0.25	0.20	4727477
3,4,5-Trichlorophenol	ug	<0.25	0.25	0.20	4727477
3,4-Dichlorophenol	ug	<0.25	0.25	0.20	4727477
3,5-Dichlorophenol	ug	<0.25	0.25	0.20	4727477
3-Chlorophenol	ug	<0.25	0.25	0.20	4727477
4-Chlorophenol	ug	<1.0	1.0	0.80	4727477
Pentachlorophenol	ug	<0.25	0.25	0.20	4727477

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DIZ195			
Sampling Date		U1-T3			
	UNITS	16-21698 -SVOC 11-15	RDL	MDL	QC Batch
Surrogate Recovery (%)					
13C6-Hexachlorobenzene	%	96	N/A	N/A	4727465
2H3-1,2,3-Trichlorobenzene (FS)	%	86	N/A	N/A	4727465
2H3-1,2,4-Trichlorobenzene	%	85	N/A	N/A	4727465
2H4-1,3-Dichlorobenzene	%	77	N/A	N/A	4727465
2H4-1,4-Dichlorobenzene (FS)	%	91	N/A	N/A	4727465
2,6-Dibromo-4-fluorophenol (FS)	%	66	N/A	N/A	4727477
D3-2,4-Dichlorophenol	%	60	N/A	N/A	4727477
D6-Pentachlorophenol	%	73	N/A	N/A	4727477
D10-2-Methylnaphthalene	%	90	N/A	N/A	4727478
D10-Fluoranthene	%	96	N/A	N/A	4727478
D10-Fluorene (FS)	%	93	N/A	N/A	4727478
D10-Phenanthrene	%	92	N/A	N/A	4727478
D12-Benzo(a)anthracene	%	66	N/A	N/A	4727478
D12-Benzo(a)pyrene	%	76	N/A	N/A	4727478
D12-Benzo(b)fluoranthene	%	74	N/A	N/A	4727478
D12-Benzo(ghi)perylene	%	74	N/A	N/A	4727478
D12-Benzo(k)fluoranthene	%	76	N/A	N/A	4727478
D12-Chrysene	%	104	N/A	N/A	4727478
D12-Indeno(1,2,3-cd)pyrene	%	72	N/A	N/A	4727478
D12-Perylene	%	64	N/A	N/A	4727478
D14-Dibenzo(a,h)anthracene	%	72	N/A	N/A	4727478
D14-Terphenyl (FS)	%	100	N/A	N/A	4727478
D8-Acenaphthylene	%	72	N/A	N/A	4727478
D8-Naphthalene	%	70	N/A	N/A	4727478

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ192							
Sampling Date		U1-Blank				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 16-20	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<70	70	500	N/A	0.00010	0.0070	N/A	4727482
344'5-TetraCB-(81)	pg	<72	72	500	N/A	0.00030	0.022	N/A	4727482
233'44'-PentaCB-(105)	pg	<36	36	500	N/A	0.000030	0.0011	N/A	4727482
2344'5-PentaCB-(114)	pg	<36	36	500	N/A	0.000030	0.0011	N/A	4727482
23'44'5-PentaCB-(118)	pg	<36	36	500	N/A	0.000030	0.0011	N/A	4727482
23'44'5'-PentaCB-(123)	pg	<40	40	500	N/A	0.000030	0.0012	N/A	4727482
33'44'5-PentaCB-(126)	pg	<37	37	500	N/A	0.10	3.7	N/A	4727482
HexaCB-(156)+(157)	pg	<12	12	1000	N/A	0.000030	0.00036	N/A	4727482
23'44'55'-HexaCB-(167)	pg	<13	13	500	N/A	0.000030	0.00039	N/A	4727482
33'44'55'-HexaCB-(169)	pg	<13	13	500	N/A	0.030	0.39	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	<27	27	500	N/A	0.000030	0.00081	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	4.1	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ193							
Sampling Date		U1-T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 1-5	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	170	70	500	N/A	0.00010	0.017	N/A	4727482
344'5-TetraCB-(81)	pg	<72	72	500	N/A	0.00030	0.022	N/A	4727482
233'44'-PentaCB-(105)	pg	1000	93	500	N/A	0.000030	0.030	N/A	4727482
2344'5-PentaCB-(114)	pg	<91	91	500	N/A	0.000030	0.0027	N/A	4727482
23'44'5-PentaCB-(118)	pg	3600	92	500	N/A	0.000030	0.11	N/A	4727482
23'44'5'-PentaCB-(123)	pg	<100	100	500	N/A	0.000030	0.0030	N/A	4727482
33'44'5-PentaCB-(126)	pg	<94	94	500	N/A	0.10	9.4	N/A	4727482
HexaCB-(156)+(157)	pg	130	77	1000	N/A	0.000030	0.0039	N/A	4727482
23'44'55'-HexaCB-(167)	pg	<84	84	500	N/A	0.000030	0.0025	N/A	4727482
33'44'55'-HexaCB-(169)	pg	<84	84	500	N/A	0.030	2.5	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	<38	38	500	N/A	0.000030	0.0011	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	123	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	61	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	64	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ194							
Sampling Date		U1-72				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 6-10	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<110	110	500	N/A	0.00010	0.011	N/A	4727482
344'5-TetraCB-(81)	pg	<110	110	500	N/A	0.00030	0.033	N/A	4727482
233'44'-PentaCB-(105)	pg	570	87	500	N/A	0.000030	0.017	N/A	4727482
2344'5-PentaCB-(114)	pg	<86	86	500	N/A	0.000030	0.0026	N/A	4727482
23'44'5-PentaCB-(118)	pg	1800	87	500	N/A	0.000030	0.054	N/A	4727482
23'44'5'-PentaCB-(123)	pg	<96	96	500	N/A	0.000030	0.0029	N/A	4727482
33'44'5-PentaCB-(126)	pg	<89	89	500	N/A	0.10	8.9	N/A	4727482
HexaCB-(156)+(157)	pg	<96	96	1000	N/A	0.000030	0.0029	N/A	4727482
23'44'55'-HexaCB-(167)	pg	<100	100	500	N/A	0.000030	0.0030	N/A	4727482
33'44'55'-HexaCB-(169)	pg	<100	100	500	N/A	0.030	3.0	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	<55	55	500	N/A	0.000030	0.0017	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	12	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	115	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	73	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	59	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ195							
Sampling Date		U1 - 73				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 11-15	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	92	91	500	N/A	0.00010	0.0092	N/A	4727482
344'5-TetraCB-(81)	pg	<94	94	500	N/A	0.00030	0.028	N/A	4727482
233'44'-PentaCB-(105)	pg	<340 (1)	340	500	N/A	0.000030	0.010	N/A	4727482
2344'5-PentaCB-(114)	pg	<78	78	500	N/A	0.000030	0.0023	N/A	4727482
23'44'5-PentaCB-(118)	pg	1200	79	500	N/A	0.000030	0.036	N/A	4727482
23'44'5'-PentaCB-(123)	pg	<87	87	500	N/A	0.000030	0.0026	N/A	4727482
33'44'5-PentaCB-(126)	pg	<80	80	500	N/A	0.10	8.0	N/A	4727482
HexaCB-(156)+(157)	pg	<71	71	1000	N/A	0.000030	0.0021	N/A	4727482
23'44'55'-HexaCB-(167)	pg	<76	76	500	N/A	0.000030	0.0023	N/A	4727482
33'44'55'-HexaCB-(169)	pg	<77	77	500	N/A	0.030	2.3	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	<43	43	500	N/A	0.000030	0.0013	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	10	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	128	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIZ192
Sample ID: 16-21698 -SVOC 16-20
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4727465	2016/11/01	2016/11/07	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4727477	2016/11/01	2016/11/10	Lidija Tomic
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/04	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4727478	2016/11/01	2016/11/09	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/06	Cathy Xu

Maxxam ID: DIZ193
Sample ID: 16-21698 -SVOC 1-5
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4727465	2016/11/01	2016/11/07	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4727477	2016/11/01	2016/11/10	Lidija Tomic
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/05	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4727478	2016/11/01	2016/11/09	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/07	Cathy Xu

Maxxam ID: DIZ194
Sample ID: 16-21698 -SVOC 6-10
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4727465	2016/11/01	2016/11/07	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4727477	2016/11/01	2016/11/10	Lidija Tomic
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/05	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4727478	2016/11/01	2016/11/09	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/07	Cathy Xu

Maxxam ID: DIZ195
Sample ID: 16-21698 -SVOC 11-15
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4727465	2016/11/01	2016/11/07	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4727477	2016/11/01	2016/11/10	Lidija Tomic
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/05	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4727478	2016/11/01	2016/11/09	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/07	Cathy Xu

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GENERAL COMMENTS

Reference methods for the analysis of dioxins/furans such as US EPA 23 and 1613B each has a comment that any positive result for the 2,3,7,8-TCDF isomer that was detected using the primary column should be confirmed using a secondary column.

Maxxam typically performs this confirmation when the primary column result is above the RDL (Reportable Detection Limit). The RDL represents the lowest calibration standard and hence any result above the RDL has reasonable certainty that the value is positive. During time sensitive projects, the primary column and secondary column analysis is performed concurrently and the secondary column confirmation result is reported for 2,3,7,8-TCDF isomer below the RDL.

PAHMM5-TR: Low recovery for Benzo(a)pyrene in Spike Dup
Revised report to include 2-methylnaphthalene.

Sample DIZ193 [16-21698 -SVOC 1-5] : CPMM5-TR:
Mdl was raised for 4-Chlorophenol due to sample matrix interference on a possible positive.
There was a peak found at the retention time of the 4-Chlorophenol, but confirmation ions weren't at expected abundance ratio

Sample DIZ194 [16-21698 -SVOC 6-10] : CPMM5-TR:
Mdl was raised for 4-Chlorophenol due to sample matrix interference on a possible positive.
There was a peak found at the retention time of the 4-Chlorophenol, but confirmation ions weren't at expected abundance ratio

Sample DIZ195 [16-21698 -SVOC 11-15] : CPMM5-TR:
Mdl was raised for 4-Chlorophenol due to sample matrix interference on a possible positive.
There was a peak found at the retention time of the 4-Chlorophenol, but confirmation ions weren't at expected abundance ratio

Results relate only to the items tested.

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Maxxam Job #: B6N5683
Report Date: 2016/11/23

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4727465	LTO	Spiked Blank	1,2,3,4-Tetrachlorobenzene	2016/11/07		80	%	40 - 130
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/07		81	%	40 - 130
			1,2,3-Trichlorobenzene	2016/11/07		80	%	40 - 130
			1,2,4-Trichlorobenzene	2016/11/07		77	%	40 - 130
			1,2-Dichlorobenzene	2016/11/07		68	%	40 - 130
			1,3,5-Trichlorobenzene	2016/11/07		90	%	40 - 130
			1,3-Dichlorobenzene	2016/11/07		76	%	40 - 130
			1,4-Dichlorobenzene	2016/11/07		113	%	40 - 130
			13C6-Hexachlorobenzene	2016/11/07		82	%	30 - 130
			2H3-1,2,4-Trichlorobenzene	2016/11/07		76	%	30 - 130
			2H4-1,3-Dichlorobenzene	2016/11/07		76	%	30 - 130
			Hexachlorobenzene	2016/11/07		79	%	40 - 130
			Pentachlorobenzene	2016/11/07		78	%	40 - 130
4727465	LTO	Spiked Blank DUP	1,2,3,4-Tetrachlorobenzene	2016/11/07		90	%	40 - 130
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/07		95	%	40 - 130
			1,2,3-Trichlorobenzene	2016/11/07		93	%	40 - 130
			1,2,4-Trichlorobenzene	2016/11/07		85	%	40 - 130
			1,2-Dichlorobenzene	2016/11/07		80	%	40 - 130
			1,3,5-Trichlorobenzene	2016/11/07		106	%	40 - 130
			1,3-Dichlorobenzene	2016/11/07		78	%	40 - 130
			1,4-Dichlorobenzene	2016/11/07		134 (1)	%	40 - 130
			13C6-Hexachlorobenzene	2016/11/07		96	%	30 - 130
			2H3-1,2,4-Trichlorobenzene	2016/11/07		90	%	30 - 130
			2H4-1,3-Dichlorobenzene	2016/11/07		85	%	30 - 130
			Hexachlorobenzene	2016/11/07		93	%	40 - 130
			Pentachlorobenzene	2016/11/07		94	%	40 - 130
4727465	LTO	RPD	1,2,3,4-Tetrachlorobenzene	2016/11/07	11		%	50
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/07	16		%	50
			1,2,3-Trichlorobenzene	2016/11/07	15		%	50
			1,2,4-Trichlorobenzene	2016/11/07	10		%	50
			1,2-Dichlorobenzene	2016/11/07	16		%	50
			1,3,5-Trichlorobenzene	2016/11/07	16		%	50
			1,3-Dichlorobenzene	2016/11/07	2.2		%	50
			1,4-Dichlorobenzene	2016/11/07	17		%	50
			Hexachlorobenzene	2016/11/07	16		%	50
			Pentachlorobenzene	2016/11/07	18		%	50
4727465	LTO	Method Blank	1,2,3,4-Tetrachlorobenzene	2016/11/07	<0.25		ug	
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/07	<0.25		ug	
			1,2,3-Trichlorobenzene	2016/11/07	<0.25		ug	
			1,2,4-Trichlorobenzene	2016/11/07	<0.25		ug	
			1,2-Dichlorobenzene	2016/11/07	<0.25		ug	
			1,3,5-Trichlorobenzene	2016/11/07	<0.25		ug	
			1,3-Dichlorobenzene	2016/11/07	<0.25		ug	
			1,4-Dichlorobenzene	2016/11/07	<0.25		ug	
			13C6-Hexachlorobenzene	2016/11/07		88	%	30 - 130
			2H3-1,2,4-Trichlorobenzene	2016/11/07		87	%	30 - 130
			2H4-1,3-Dichlorobenzene	2016/11/07		88	%	30 - 130
			Hexachlorobenzene	2016/11/07	<0.25		ug	
			Pentachlorobenzene	2016/11/07	<0.25		ug	
4727477	LTO	Spiked Blank	2,3,4,5-Tetrachlorophenol	2016/11/10		110	%	22 - 134
			2,3,4-Trichlorophenol	2016/11/10		108	%	22 - 134
			2,3,5-Trichlorophenol	2016/11/10		115	%	22 - 134

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ORTECH Environmental
Client Project #: 21698
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,4 + 2,5-Dichlorophenol	2016/11/10		99	%	22 - 134
			2,4,6-Trichlorophenol	2016/11/10		104	%	22 - 134
			2,6-Dichlorophenol	2016/11/10		98	%	22 - 134
			2-Chlorophenol	2016/11/10		97	%	22 - 134
			3,4,5-Trichlorophenol	2016/11/10		105	%	22 - 134
			3,4-Dichlorophenol	2016/11/10		102	%	22 - 134
			3,5-Dichlorophenol	2016/11/10		102	%	22 - 134
			4-Chlorophenol	2016/11/10		107	%	22 - 134
			D3-2,4-Dichlorophenol	2016/11/10		87	%	20 - 130
			D6-Pentachlorophenol	2016/11/10		95	%	20 - 130
			Pentachlorophenol	2016/11/10		105	%	22 - 134
			2,3,4,6-Tetrachlorophenol	2016/11/10		104	%	22 - 134
			2,3,5,6-Tetrachlorophenol	2016/11/10		115	%	22 - 134
			2,3,6-Trichlorophenol	2016/11/10		106	%	22 - 134
			2,3-Dichlorophenol	2016/11/10		98	%	22 - 134
			2,4,5-Trichlorophenol	2016/11/10		107	%	22 - 134
			3-Chlorophenol	2016/11/10		104	%	22 - 134
4727477	LTO	Spiked Blank DUP	2,3,4,5-Tetrachlorophenol	2016/11/10		107	%	22 - 134
			2,3,4-Trichlorophenol	2016/11/10		106	%	22 - 134
			2,3,5-Trichlorophenol	2016/11/10		103	%	22 - 134
			2,4 + 2,5-Dichlorophenol	2016/11/10		103	%	22 - 134
			2,4,6-Trichlorophenol	2016/11/10		104	%	22 - 134
			2,6-Dichlorophenol	2016/11/10		103	%	22 - 134
			2-Chlorophenol	2016/11/10		95	%	22 - 134
			3,4,5-Trichlorophenol	2016/11/10		107	%	22 - 134
			3,4-Dichlorophenol	2016/11/10		106	%	22 - 134
			3,5-Dichlorophenol	2016/11/10		109	%	22 - 134
			4-Chlorophenol	2016/11/10		120	%	22 - 134
			D3-2,4-Dichlorophenol	2016/11/10		60	%	20 - 130
			D6-Pentachlorophenol	2016/11/10		90	%	20 - 130
			Pentachlorophenol	2016/11/10		102	%	22 - 134
			2,3,4,6-Tetrachlorophenol	2016/11/10		100	%	22 - 134
			2,3,5,6-Tetrachlorophenol	2016/11/10		104	%	22 - 134
			2,3,6-Trichlorophenol	2016/11/10		103	%	22 - 134
			2,3-Dichlorophenol	2016/11/10		103	%	22 - 134
			2,4,5-Trichlorophenol	2016/11/10		104	%	22 - 134
			3-Chlorophenol	2016/11/10		107	%	22 - 134
4727477	LTO	RPD	2,3,4,5-Tetrachlorophenol	2016/11/10	2.2		%	50
			2,3,4-Trichlorophenol	2016/11/10	1.9		%	50
			2,3,5-Trichlorophenol	2016/11/10	10		%	50
			2,4 + 2,5-Dichlorophenol	2016/11/10	4.2		%	50
			2,4,6-Trichlorophenol	2016/11/10	0.25		%	50
			2,6-Dichlorophenol	2016/11/10	5.3		%	50
			2-Chlorophenol	2016/11/10	2.7		%	50
			3,4,5-Trichlorophenol	2016/11/10	1.6		%	50
			3,4-Dichlorophenol	2016/11/10	4.4		%	50
			3,5-Dichlorophenol	2016/11/10	6.3		%	50
			4-Chlorophenol	2016/11/10	12		%	50
			Pentachlorophenol	2016/11/10	3.5		%	50
			2,3,4,6-Tetrachlorophenol	2016/11/10	3.5		%	50
			2,3,5,6-Tetrachlorophenol	2016/11/10	9.8		%	50
			2,3,6-Trichlorophenol	2016/11/10	3.3		%	50

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Client Project #: 21698
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,3-Dichlorophenol	2016/11/10	4.6		%	50
			2,4,5-Trichlorophenol	2016/11/10	2.9		%	50
			3-Chlorophenol	2016/11/10	2.4		%	50
4727477	LTO	Method Blank	2,3,4,5-Tetrachlorophenol	2016/11/10	<0.25		ug	
			2,3,4-Trichlorophenol	2016/11/10	<0.25		ug	
			2,3,5-Trichlorophenol	2016/11/10	<0.25		ug	
			2,4 + 2,5-Dichlorophenol	2016/11/10	<0.25		ug	
			2,4,6-Trichlorophenol	2016/11/10	<0.25		ug	
			2,6-Dichlorophenol	2016/11/10	<0.25		ug	
			2-Chlorophenol	2016/11/10	<0.25		ug	
			3,4,5-Trichlorophenol	2016/11/10	<0.25		ug	
			3,4-Dichlorophenol	2016/11/10	<0.25		ug	
			3,5-Dichlorophenol	2016/11/10	<0.25		ug	
			4-Chlorophenol	2016/11/10	<0.25		ug	
			D3-2,4-Dichlorophenol	2016/11/10		97	%	20 - 130
			D6-Pentachlorophenol	2016/11/10		94	%	20 - 130
			Pentachlorophenol	2016/11/10	<0.25		ug	
			2,3,4,6-Tetrachlorophenol	2016/11/10	<0.25		ug	
			2,3,5,6-Tetrachlorophenol	2016/11/10	<0.25		ug	
			2,3,6-Trichlorophenol	2016/11/10	<0.25		ug	
			2,3-Dichlorophenol	2016/11/10	<0.25		ug	
			2,4,5-Trichlorophenol	2016/11/10	<0.25		ug	
			3-Chlorophenol	2016/11/10	<0.25		ug	
4727478	LTO	Spiked Blank	D10-2-Methylnaphthalene	2016/11/09		100	%	50 - 150
			D10-Fluoranthene	2016/11/09		100	%	50 - 150
			D10-Phenanthrene	2016/11/09		100	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		72	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/09		68	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		78	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		80	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		82	%	50 - 150
			D12-Chrysene	2016/11/09		100	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		76	%	50 - 150
			D12-Perylene	2016/11/09		66	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		76	%	50 - 150
			D8-Acenaphthylene	2016/11/09		74	%	50 - 150
			D8-Naphthalene	2016/11/09		76	%	50 - 150
			Acenaphthene	2016/11/09		93	%	60 - 130
			Acenaphthylene	2016/11/09		90	%	60 - 130
			Anthracene	2016/11/09		74	%	60 - 130
			Benzo(a)anthracene	2016/11/09		89	%	60 - 130
			Benzo(a)pyrene	2016/11/09		66	%	60 - 130
			Benzo(b)fluoranthene	2016/11/09		101	%	60 - 130
			Benzo(g,h,i)perylene	2016/11/09		93	%	60 - 130
			Benzo(k)fluoranthene	2016/11/09		101	%	60 - 130
			Chrysene	2016/11/09		101	%	60 - 130
			Dibenz(a,h)anthracene	2016/11/09		101	%	60 - 130
			Fluoranthene	2016/11/09		102	%	60 - 130
			Fluorene	2016/11/09		97	%	60 - 130
			Indeno(1,2,3-cd)pyrene	2016/11/09		96	%	60 - 130
			Naphthalene	2016/11/09		101	%	60 - 130
			Phenanthrene	2016/11/09		102	%	60 - 130

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Pyrene	2016/11/09		99	%	60 - 130
4727478	LTO	Spiked Blank DUP	D10-2-Methylnaphthalene	2016/11/09		92	%	50 - 150
			D10-Fluoranthene	2016/11/09		96	%	50 - 150
			D10-Phenanthrene	2016/11/09		94	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		66	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/09		60	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		74	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		78	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		78	%	50 - 150
			D12-Chrysene	2016/11/09		104	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		74	%	50 - 150
			D12-Perylene	2016/11/09		60	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		74	%	50 - 150
			D8-Acenaphthylene	2016/11/09		68	%	50 - 150
			D8-Naphthalene	2016/11/09		72	%	50 - 150
			Acenaphthene	2016/11/09		89	%	60 - 130
			Acenaphthylene	2016/11/09		83	%	60 - 130
			Anthracene	2016/11/09		68	%	60 - 130
			Benzo(a)anthracene	2016/11/09		84	%	60 - 130
			Benzo(a)pyrene	2016/11/09		59 (1)	%	60 - 130
			Benzo(b)fluoranthene	2016/11/09		108	%	60 - 130
			Benzo(g,h,i)perylene	2016/11/09		91	%	60 - 130
			Benzo(k)fluoranthene	2016/11/09		108	%	60 - 130
			Chrysene	2016/11/09		98	%	60 - 130
			Dibenz(a,h)anthracene	2016/11/09		94	%	60 - 130
			Fluoranthene	2016/11/09		98	%	60 - 130
			Fluorene	2016/11/09		92	%	60 - 130
			Indeno(1,2,3-cd)pyrene	2016/11/09		92	%	60 - 130
			Naphthalene	2016/11/09		95	%	60 - 130
			Phenanthrene	2016/11/09		97	%	60 - 130
			Pyrene	2016/11/09		95	%	60 - 130
4727478	LTO	Spiked Blank DUP 2	D10-2-Methylnaphthalene	2016/11/09		98	%	50 - 150
			D10-Fluoranthene	2016/11/09		98	%	50 - 150
			D10-Phenanthrene	2016/11/09		100	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		72	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/09		64	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		82	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		80	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		80	%	50 - 150
			D12-Chrysene	2016/11/09		94	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		76	%	50 - 150
			D12-Perylene	2016/11/09		60	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		78	%	50 - 150
			D8-Acenaphthylene	2016/11/09		76	%	50 - 150
			D8-Naphthalene	2016/11/09		76	%	50 - 150
			Dibenzo(a,c)anthracene	2016/11/09		101	%	60 - 130
			Picene	2016/11/09		90	%	60 - 130
			Triphenylene	2016/11/09		104	%	60 - 130
4727478	LTO	Spiked Blank DUP 3	D10-2-Methylnaphthalene	2016/11/09		96	%	50 - 150
			D10-Fluoranthene	2016/11/09		98	%	50 - 150
			D10-Phenanthrene	2016/11/09		94	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		68	%	50 - 150

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			D12-Benzo(a)pyrene	2016/11/09		68	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		80	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		78	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		80	%	50 - 150
			D12-Chrysene	2016/11/09		84	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		74	%	50 - 150
			D12-Perylene	2016/11/09		62	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		74	%	50 - 150
			D8-Acenaphthylene	2016/11/09		72	%	50 - 150
			D8-Naphthalene	2016/11/09		76	%	50 - 150
			Dibenzo(a,c)anthracene	2016/11/09		98	%	60 - 130
			Picene	2016/11/09		91	%	60 - 130
			Triphenylene	2016/11/09		109	%	60 - 130
4727478	LTO	RPD	Acenaphthene	2016/11/09	4.7		%	50
			Acenaphthylene	2016/11/09	8.1		%	50
			Anthracene	2016/11/09	8.8		%	50
			Benzo(a)anthracene	2016/11/09	6.4		%	50
			Benzo(a)pyrene	2016/11/09	12		%	50
			Benzo(b)fluoranthene	2016/11/09	7.2		%	50
			Benzo(g,h,i)perylene	2016/11/09	2.7		%	50
			Benzo(k)fluoranthene	2016/11/09	7.2		%	50
			Chrysene	2016/11/09	3.3		%	50
			Dibenz(a,h)anthracene	2016/11/09	6.9		%	50
			Fluoranthene	2016/11/09	4.3		%	50
			Fluorene	2016/11/09	5.3		%	50
			Indeno(1,2,3-cd)pyrene	2016/11/09	4.5		%	50
			Naphthalene	2016/11/09	6.9		%	50
			Phenanthrene	2016/11/09	4.8		%	50
			Pyrene	2016/11/09	4.9		%	50
4727478	LTO	Method Blank	D10-2-Methylnaphthalene	2016/11/09		96	%	50 - 150
			D10-Fluoranthene	2016/11/09		96	%	50 - 150
			D10-Phenanthrene	2016/11/09		94	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		66	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/09		78	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		78	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		76	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		80	%	50 - 150
			D12-Chrysene	2016/11/09		84	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		72	%	50 - 150
			D12-Perylene	2016/11/09		70	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		74	%	50 - 150
			D8-Acenaphthylene	2016/11/09		72	%	50 - 150
			D8-Naphthalene	2016/11/09		74	%	50 - 150
			1-Methylnaphthalene	2016/11/09	<0.50		ug	
			1-Methylphenanthrene	2016/11/09	<0.50		ug	
			2-Chloronaphthalene	2016/11/09	<0.50		ug	
			2-Methylanthracene	2016/11/09	<0.50		ug	
			2-Methylnaphthalene	2016/11/09	<0.25		ug	
			3-Methylcholanthrene	2016/11/09	<1.0		ug	
			7,12-Dimethylbenzo(a)anthracene	2016/11/09	<1.0		ug	
			9,10-Dimethylanthracene	2016/11/09	<1.0		ug	
			9-Methylphenanthrene	2016/11/09	<0.25		ug	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Acenaphthene	2016/11/09	<0.25		ug	
			Acenaphthylene	2016/11/09	<0.25		ug	
			Anthracene	2016/11/09	<0.25		ug	
			Benzo(a)anthracene	2016/11/09	<0.25		ug	
			Benzo(a)fluorene	2016/11/09	<1.0		ug	
			Benzo(a)pyrene	2016/11/09	<0.25		ug	
			Benzo(b)fluoranthene	2016/11/09	<0.25		ug	
			Benzo(b)fluorene	2016/11/09	<0.50		ug	
			Benzo(e)pyrene	2016/11/09	<0.50		ug	
			Benzo(g,h,i)perylene	2016/11/09	<0.25		ug	
			Benzo(k)fluoranthene	2016/11/09	<0.25		ug	
			Biphenyl	2016/11/09	<0.50		ug	
			Chrysene	2016/11/09	<0.25		ug	
			Coronene	2016/11/09	<1.0		ug	
			Dibenz(a,h)anthracene	2016/11/09	<0.25		ug	
			Dibenzo(a,c)anthracene	2016/11/09	<0.25		ug	
			Dibenzo(a,e)pyrene	2016/11/09	<1.0		ug	
			Fluoranthene	2016/11/09	<0.25		ug	
			Fluorene	2016/11/09	<0.25		ug	
			Indeno(1,2,3-cd)pyrene	2016/11/09	<0.25		ug	
			m-Terphenyl	2016/11/09	<0.50		ug	
			Naphthalene	2016/11/09	<0.50		ug	
			o-Terphenyl	2016/11/09	<0.50		ug	
			Perylene	2016/11/09	<1.0		ug	
			Phenanthrene	2016/11/09	<0.25		ug	
			Picene	2016/11/09	<0.25		ug	
			p-Terphenyl	2016/11/09	<0.50		ug	
			Pyrene	2016/11/09	<0.25		ug	
			Tetralin	2016/11/09	<0.50		ug	
			Triphenylene	2016/11/09	<0.25		ug	
4727482	CXU	Spiked Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/06		110	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/06		86	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/06		86	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/06		72	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/06		90	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/06		71	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/06		74	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/06		68	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/06		70	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/06		71	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/06		68	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/06		67	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/06		98	%	50 - 150
			344'5-TetraCB-(81)	2016/11/06		97	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/06		94	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/06		94	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/06		95	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/06		97	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/06		93	%	50 - 150
			HexaCB-(156)+(157)	2016/11/06		90	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/06		86	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/06		92	%	50 - 150

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			233'44'55'-HeptaCB-(189)	2016/11/06		86	%	50 - 150
4727482	CXU	Spiked Blank DUP	C13-233'44'55'-HeptaCB-(189)	2016/11/06		122	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/06		94	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/06		94	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/06		76	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/06		93	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/06		73	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/06		74	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/06		77	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/06		81	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/06		72	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/06		76	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/06		76	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/06		97	%	50 - 150
			344'5-TetraCB-(81)	2016/11/06		94	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/06		92	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/06		95	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/06		95	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/06		93	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/06		95	%	50 - 150
			HexaCB-(156)+(157)	2016/11/06		90	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/06		92	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/06		89	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/06		79	%	50 - 150
4727482	CXU	RPD	33'44'-TetraCB-(77)	2016/11/06	1.0		%	30
			344'5-TetraCB-(81)	2016/11/06	3.1		%	30
			233'44'-PentaCB-(105)	2016/11/06	2.2		%	30
			2344'5-PentaCB-(114)	2016/11/06	1.1		%	30
			23'44'5-PentaCB-(118)	2016/11/06	0		%	30
			23'44'5'-PentaCB-(123)	2016/11/06	4.2		%	30
			33'44'5-PentaCB-(126)	2016/11/06	2.1		%	30
			HexaCB-(156)+(157)	2016/11/06	0		%	30
			23'44'55'-HexaCB-(167)	2016/11/06	6.7		%	30
			33'44'55'-HexaCB-(169)	2016/11/06	3.3		%	30
			233'44'55'-HeptaCB-(189)	2016/11/06	8.5		%	30
4727482	CXU	Method Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/06		111	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/06		87	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/06		87	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/06		78	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/06		88	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/06		74	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/06		73	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/06		75	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/06		72	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/06		79	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/06		68	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/06		65	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/06	<40		pg	
			344'5-TetraCB-(81)	2016/11/06	<41		pg	
			233'44'-PentaCB-(105)	2016/11/06	<22		pg	
			2344'5-PentaCB-(114)	2016/11/06	<22		pg	
			23'44'5-PentaCB-(118)	2016/11/06	<22		pg	

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			23'44'5'-PentaCB-(123)	2016/11/06	<25		pg	
			33'44'5-PentaCB-(126)	2016/11/06	<23		pg	
			HexaCB-(156)+(157)	2016/11/06	<11		pg	
			23'44'55'-HexaCB-(167)	2016/11/06	<12		pg	
			33'44'55'-HexaCB-(169)	2016/11/06	<12		pg	
			233'44'55'-HeptaCB-(189)	2016/11/06	<22		pg	
4734800	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/04		89	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/04		56	%	25 - 130
			C13-123678 HexaCDD	2016/11/04		70	%	40 - 130
			C13-123678 HexaCDF	2016/11/04		55	%	40 - 130
			C13-12378 PentaCDD	2016/11/04		107	%	40 - 130
			C13-12378 PentaCDF	2016/11/04		76	%	40 - 130
			C13-123789 HexaCDF	2016/11/04		53	%	40 - 130
			C13-2378 TetraCDD	2016/11/04		94	%	40 - 130
			C13-2378 TetraCDF	2016/11/04		80	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/04		58	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/04		119	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/04		118	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/04		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/04		134	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04		101	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04		118	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/04		122	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/04		125	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/04		118	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/04		128	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/04		135	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04		129	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04		121	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04		117	%	80 - 140
4734800	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/04		71	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/04		51	%	25 - 130
			C13-123678 HexaCDD	2016/11/04		62	%	40 - 130
			C13-123678 HexaCDF	2016/11/04		49	%	40 - 130
			C13-12378 PentaCDD	2016/11/04		90	%	40 - 130
			C13-12378 PentaCDF	2016/11/04		65	%	40 - 130
			C13-123789 HexaCDF	2016/11/04		48	%	40 - 130
			C13-2378 TetraCDD	2016/11/04		82	%	40 - 130
			C13-2378 TetraCDF	2016/11/04		74	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/04		52	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/04		125	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/04		115	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/04		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/04		135	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04		118	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04		118	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/04		126	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/04		120	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/04		140	%	80 - 140

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			1,2,3,6,7,8-Hexa CDF	2016/11/04		117	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/04		128	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/04		138	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04		129	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04		123	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04		119	%	80 - 140
4734800	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/04	4.9		%	20
			1,2,3,7,8-Penta CDD	2016/11/04	2.6		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/04	0		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/04	0		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/04	0.74		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04	16		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04	0		%	20
			1,2,3,7,8-Penta CDF	2016/11/04	3.2		%	20
			2,3,4,7,8-Penta CDF	2016/11/04	4.1		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/04	0		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/04	0.85		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/04	0		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/04	2.2		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04	0		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04	1.6		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04	1.7		%	20
4734800	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/04		79	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/04		57	%	25 - 130
			C13-123678 HexaCDD	2016/11/04		74	%	40 - 130
			C13-123678 HexaCDF	2016/11/04		56	%	40 - 130
			C13-12378 PentaCDD	2016/11/04		95	%	40 - 130
			C13-12378 PentaCDF	2016/11/04		71	%	40 - 130
			C13-123789 HexaCDF	2016/11/04		55	%	40 - 130
			C13-2378 TetraCDD	2016/11/04		88	%	40 - 130
			C13-2378 TetraCDF	2016/11/04		81	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/04		58	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/04	<5.2, EDL=5.2		pg	
			1,2,3,7,8-Penta CDD	2016/11/04	<5.3, EDL=5.3		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/04	<4.7, EDL=4.7		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/04	<4.7, EDL=4.7		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/04	<4.3, EDL=4.3		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04	<3.9, EDL=3.9		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04	11.3, EDL=4.9		pg	
			Total Tetra CDD	2016/11/04	<11, EDL=11 (2)		pg	
			Total Penta CDD	2016/11/04	<6.8, EDL=6.8 (2)		pg	

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			Total Hexa CDD	2016/11/04	<21, EDL=21 (2)		pg	
			Total Hepta CDD	2016/11/04	<3.9, EDL=3.9		pg	
			1,2,3,7,8-Penta CDF	2016/11/04	<6.7, EDL=6.7		pg	
			2,3,4,7,8-Penta CDF	2016/11/04	<6.7, EDL=6.7		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/04	<4.6, EDL=4.6		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/04	<4.4, EDL=4.4		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/04	<4.9, EDL=4.9		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/04	<5.1, EDL=5.1		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04	4.9, EDL=3.8		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04	<4.5, EDL=4.5		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04	<5.9, EDL=5.9		pg	
			Total Tetra CDF	2016/11/04	<6.4, EDL=6.4		pg	
			Total Penta CDF	2016/11/04	<6.7, EDL=6.7		pg	
			Total Hexa CDF	2016/11/04	<4.7, EDL=4.7		pg	
			Total Hepta CDF	2016/11/04	4.9, EDL=4.2		pg	
4738268	VCI	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2016/11/07	<2.7, EDL=2.7		pg	
			Confirmation C13-2378 TetraCDF	2016/11/07		89	%	40 - 135

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Karen Nicol

Karen Nicol, Supervisor, Semi-Volatiles

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256190
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N9228
Received: 2016/11/03, 18:08

Sample Matrix: Stack Sampling Train
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Chlorobenzenes in MM5 Trains (EPA M0010)	4	2016/11/05	2016/11/08	BRL SOP-00202	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	4	2016/11/05	2016/11/10	BRL SOP-00204	In house (M0010)
Dioxins/Furans in Air (Method 23)	4	2016/11/05	2016/11/09	BRL SOP-00404	EPA M23/23A m
PAH's in MM5 SamplingTrains (CARB429mod)	1	2016/11/05	2016/11/10	BRL SOP-00201	CARB429(ARBM1,M2)mod
PAH's in MM5 SamplingTrains (CARB429mod)	3	2016/11/05	2016/11/11	BRL SOP-00201	CARB429(ARBM1,M2)mod
PCBs in a Sampling Train (1668Amod)	4	2016/11/05	2016/11/11	BRL SOP-00408	EPA 1668A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256190
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N9228
Received: 2016/11/03, 18:08

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
22 Nov 2016 18:39:18

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ069							
Sampling Date		U2-Blank				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 36-40	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<7.5	7.5	60	12	1.00	7.50	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	<6.3	6.3	60	12	1.00	6.30	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	<7.5	7.5	60	12	0.100	0.750	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	<7.6	7.6	60	12	0.100	0.760	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	<6.9	6.9	60	12	0.100	0.690	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	<7.2	7.2	60	18	0.0100	0.0720	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	27.5	5.9	600	18	0.000300	0.00825	N/A	4739366
Total Tetra CDD *	pg	<16 (1)	16	60	N/A	N/A	N/A	0	4739366
Total Penta CDD *	pg	<15 (1)	15	60	N/A	N/A	N/A	0	4739366
Total Hexa CDD *	pg	<45 (1)	45	60	N/A	N/A	N/A	0	4739366
Total Hepta CDD *	pg	<7.2	7.2	60	N/A	N/A	N/A	0	4739366
2,3,7,8-Tetra CDF **	pg	<7.8	7.8	60	12	0.100	0.780	N/A	4739366
1,2,3,7,8-Penta CDF **	pg	<6.7	6.7	60	12	0.0300	0.201	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	<6.7	6.7	60	12	0.300	2.01	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	<6.7	6.7	60	12	0.100	0.670	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	<6.4	6.4	60	12	0.100	0.640	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	<7.1	7.1	60	12	0.100	0.710	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	<7.4	7.4	60	12	0.100	0.740	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	19.2	6.8	60	18	0.0100	0.192	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	<8.0	8.0	60	12	0.0100	0.0800	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	<7.6	7.6	600	30	0.000300	0.00228	N/A	4739366
Total Tetra CDF **	pg	34.8	7.8	60	N/A	N/A	N/A	2	4739366
Total Penta CDF **	pg	<6.7	6.7	60	N/A	N/A	N/A	0	4739366
Total Hexa CDF **	pg	<6.9	6.9	60	N/A	N/A	N/A	0	4739366
Total Hepta CDF **	pg	19.2	7.4	60	N/A	N/A	N/A	1	4739366
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	22.1	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ069							
Sampling Date		U2-Blank				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 36-40	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	52	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	117	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	63	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	54	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	57	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ070							
Sampling Date		U2 - T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 21-25	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<6.3	6.3	60	12	1.00	6.30	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	8.0 (1)	7.6	60	12	1.00	8.00	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	25.1	6.7	60	12	0.100	2.51	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	63.1	6.8	60	12	0.100	6.31	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	59.7 (2)	6.2	60	12	0.100	5.97	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	319	6.9	60	18	0.0100	3.19	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	345	6.9	600	18	0.000300	0.104	N/A	4739366
Total Tetra CDD *	pg	144	6.3	60	N/A	N/A	N/A	3	4739366
Total Penta CDD *	pg	349	7.6	60	N/A	N/A	N/A	5	4739366
Total Hexa CDD *	pg	460	6.6	60	N/A	N/A	N/A	6	4739366
Total Hepta CDD *	pg	666	6.9	60	N/A	N/A	N/A	2	4739366
2,3,7,8-Tetra CDF **	pg	<43 (3)	43	60	12	0.100	4.30	N/A	4739366
1,2,3,7,8-Penta CDF **	pg	19.1	7.6	60	12	0.0300	0.573	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	23.5	7.6	60	12	0.300	7.05	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	66.8 (2)	6.7	60	12	0.100	6.68	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	35.2	6.4	60	12	0.100	3.52	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	37.7	7.1	60	12	0.100	3.77	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	<7.4	7.4	60	12	0.100	0.740	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	150	6.0	60	18	0.0100	1.50	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	30.3	7.0	60	12	0.0100	0.303	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	53.2	6.6	600	30	0.000300	0.0160	N/A	4739366
Total Tetra CDF **	pg	222	7.4	60	N/A	N/A	N/A	10	4739366
Total Penta CDF **	pg	250	7.6	60	N/A	N/A	N/A	7	4739366
Total Hexa CDF **	pg	341	6.9	60	N/A	N/A	N/A	10	4739366
Total Hepta CDF **	pg	268	6.5	60	N/A	N/A	N/A	4	4739366

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) RT > 3 seconds - PCDD/DF analysis - Peak detected exceeds expected retention time (from internal standard) by greater than 3 seconds.

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ070							
Sampling Date		U2-T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 21-25	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	60.8	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	116	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	58	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ071							
Sampling Date		U2 - T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 26-30	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<8.3	8.3	60	12	1.00	8.30	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	<7.5	7.5	60	12	1.00	7.50	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	23.0	5.7	60	12	0.100	2.30	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	60.6	5.8	60	12	0.100	6.06	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	58.7 (1)	5.3	60	12	0.100	5.87	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	303	7.0	60	18	0.0100	3.03	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	367	7.1	600	18	0.000300	0.110	N/A	4739366
Total Tetra CDD *	pg	135	8.3	60	N/A	N/A	N/A	3	4739366
Total Penta CDD *	pg	388	7.5	60	N/A	N/A	N/A	6	4739366
Total Hexa CDD *	pg	452	5.6	60	N/A	N/A	N/A	6	4739366
Total Hepta CDD *	pg	630	7.0	60	N/A	N/A	N/A	2	4739366
2,3,7,8-Tetra CDF **	pg	31.8	7.0	60	12	0.100	3.18	N/A	4739366
1,2,3,7,8-Penta CDF **	pg	<8.0	8.0	60	12	0.0300	0.240	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	19.7	8.0	60	12	0.300	5.91	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	61.8 (1)	5.8	60	12	0.100	6.18	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	29.1	5.6	60	12	0.100	2.91	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	36.9	6.1	60	12	0.100	3.69	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	<6.4	6.4	60	12	0.100	0.640	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	112	7.3	60	18	0.0100	1.12	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	17.5	8.6	60	12	0.0100	0.175	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	50.1	5.8	600	30	0.000300	0.0150	N/A	4739366
Total Tetra CDF **	pg	143	7.0	60	N/A	N/A	N/A	6	4739366
Total Penta CDF **	pg	133	8.0	60	N/A	N/A	N/A	5	4739366
Total Hexa CDF **	pg	282	6.0	60	N/A	N/A	N/A	7	4739366
Total Hepta CDF **	pg	193	7.9	60	N/A	N/A	N/A	4	4739366
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	57.2	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ071							
Sampling Date		42-72				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 26-30	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	119	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	112	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
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* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ072							
Sampling Date		U2 - T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 31-35	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<7.9	7.9	60	12	1.00	7.90	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	<7.4	7.4	60	12	1.00	7.40	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	20.1 (1)	7.8	60	12	0.100	2.01	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	56.9 (1)	8.0	60	12	0.100	5.69	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	58.5 (2)	7.3	60	12	0.100	5.85	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	319	5.6	60	18	0.0100	3.19	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	555	7.1	600	18	0.000300	0.167	N/A	4739366
Total Tetra CDD *	pg	140	7.9	60	N/A	N/A	N/A	4	4739366
Total Penta CDD *	pg	331	7.4	60	N/A	N/A	N/A	5	4739366
Total Hexa CDD *	pg	395	7.7	60	N/A	N/A	N/A	5	4739366
Total Hepta CDD *	pg	656	5.6	60	N/A	N/A	N/A	2	4739366
2,3,7,8-Tetra CDF **	pg	35.1	7.8	60	12	0.100	3.51	N/A	4739366
1,2,3,7,8-Penta CDF **	pg	8.4	8.4	60	12	0.0300	0.252	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	18.6	8.4	60	12	0.300	5.58	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	<59 (3)	59	60	12	0.100	5.90	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	28.3	6.1	60	12	0.100	2.83	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	30.8	6.7	60	12	0.100	3.08	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	<7.0	7.0	60	12	0.100	0.700	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	119	6.0	60	18	0.0100	1.19	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	18.4 (1)	7.0	60	12	0.0100	0.184	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	53.9 (1)	5.8	600	30	0.000300	0.0162	N/A	4739366
Total Tetra CDF **	pg	91.5	7.8	60	N/A	N/A	N/A	4	4739366
Total Penta CDF **	pg	122	8.4	60	N/A	N/A	N/A	6	4739366
Total Hexa CDF **	pg	218	6.5	60	N/A	N/A	N/A	8	4739366
Total Hepta CDF **	pg	191	6.5	60	N/A	N/A	N/A	3	4739366
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	55.4	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
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WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ072							
Sampling Date		U2 - T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 31-35	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	52	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	130	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	61	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	50	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	59	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
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TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
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ORTECH Environmental
Client Project #: 21698
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Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DJQ069	DJQ070	DJQ071			
Sampling Date		U2 - Blank	U2 - 71	U2 - 72			
	UNITS	16-21698 -SVOC 36-40	16-21698 -SVOC 21-25	16-21698 -SVOC 26-30	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
1-Methylphenanthrene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
2-Chloronaphthalene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
2-Methylanthracene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
2-Methylnaphthalene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
3-Methylcholanthrene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
7,12-Dimethylbenzo(a)anthracene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
9,10-Dimethylanthracene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
9-Methylphenanthrene	ug	<0.30	<0.30	<0.30	0.30	N/A	4735432
Acenaphthene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Acenaphthylene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Benzo(a)anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Benzo(a)fluorene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
Benzo(a)pyrene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Benzo(b)fluoranthene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Benzo(b)fluorene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Benzo(e)pyrene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Benzo(g,h,i)perylene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Benzo(k)fluoranthene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Biphenyl	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Chrysene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Coronene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
Dibenz(a,h)anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Dibenzo(a,c)anthracene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Dibenzo(a,e)pyrene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
Fluoranthene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Fluorene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Indeno(1,2,3-cd)pyrene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
m-Terphenyl	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Naphthalene	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
o-Terphenyl	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Perylene	ug	<1.2	<1.2	<1.2	1.2	0.30	4735432
Phenanthrene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432

RDL = Reportable Detection Limit
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N/A = Not Applicable

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DJQ069	DJQ070	DJQ071			
Sampling Date		U2- Blank	U2-T1	U2-T2			
	UNITS	16-21698 -SVOC 36-40	16-21698 -SVOC 21-25	16-21698 -SVOC 26-30	RDL	MDL	QC Batch
Picene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
p-Terphenyl	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Pyrene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
Tetralin	ug	<0.60	<0.60	<0.60	0.60	0.30	4735432
Triphenylene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735432
1,2,3,4-Tetrachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
1,2,3-Trichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
1,2,4-Trichlorobenzene	ug	<0.30	<0.30	0.47	0.30	0.060	4735427
1,2-Dichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
1,3,5-Trichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
1,3-Dichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
1,4-Dichlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
Hexachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
Pentachlorobenzene	ug	<0.30	<0.30	<0.30	0.30	0.060	4735427
2,3,4,5-Tetrachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,3,4,6-Tetrachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,3,4-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,3,5,6-Tetrachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,3,5-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,3,6-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,3-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,4 + 2,5-Dichlorophenol	ug	<0.30	2.44	<0.30	0.30	0.24	4735430
2,4,5-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,4,6-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2,6-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
2-Chlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
3,4,5-Trichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
3,4-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
3,5-Dichlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
3-Chlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
4-Chlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430
Pentachlorophenol	ug	<0.30	<0.30	<0.30	0.30	0.24	4735430

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DJQ069	DJQ070	DJQ071			
Sampling Date		U2-Blank	U2-T1	U2-T2			
	UNITS	16-21698 -SVOC 36-40	16-21698 -SVOC 21-25	16-21698 -SVOC 26-30	RDL	MDL	QC Batch
Surrogate Recovery (%)							
13C6-Hexachlorobenzene	%	101	90	95	N/A	N/A	4735427
2H3-1,2,3-Trichlorobenzene (FS)	%	93	83	82	N/A	N/A	4735427
2H3-1,2,4-Trichlorobenzene	%	100	84	96	N/A	N/A	4735427
2H4-1,3-Dichlorobenzene	%	86	81	79	N/A	N/A	4735427
2H4-1,4-Dichlorobenzene (FS)	%	90	72	77	N/A	N/A	4735427
2,6-Dibromo-4-fluorophenol (FS)	%	87	89	74	N/A	N/A	4735430
D3-2,4-Dichlorophenol	%	92	96	79	N/A	N/A	4735430
D6-Pentachlorophenol	%	87	100	85	N/A	N/A	4735430
D10-2-Methylnaphthalene	%	100	100	96	N/A	N/A	4735432
D10-Anthracene	%	104	100	88	N/A	N/A	4735432
D10-Fluoranthene	%	98	98	98	N/A	N/A	4735432
D10-Fluorene (FS)	%	100	97	97	N/A	N/A	4735432
D10-Phenanthrene	%	98	98	96	N/A	N/A	4735432
D12-Benzo(a)anthracene	%	74	76	78	N/A	N/A	4735432
D12-Benzo(a)pyrene	%	68	78	90	N/A	N/A	4735432
D12-Benzo(b)fluoranthene	%	80	80	82	N/A	N/A	4735432
D12-Benzo(ghi)perylene	%	78	78	80	N/A	N/A	4735432
D12-Benzo(k)fluoranthene	%	80	84	84	N/A	N/A	4735432
D12-Chrysene	%	98	100	102	N/A	N/A	4735432
D12-Indeno(1,2,3-cd)pyrene	%	78	80	78	N/A	N/A	4735432
D12-Perylene	%	64	70	76	N/A	N/A	4735432
D14-Dibenzo(a,h)anthracene	%	78	82	82	N/A	N/A	4735432
D14-Terphenyl (FS)	%	100	100	101	N/A	N/A	4735432
D8-Acenaphthylene	%	74	78	76	N/A	N/A	4735432
D8-Naphthalene	%	78	76	74	N/A	N/A	4735432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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ORTECH Environmental
Client Project #: 21698
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EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DJQ072			
Sampling Date		Q2 - T3			
	UNITS	16-21698 -SVOC 31-35	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.60	0.60	0.30	4735432
1-Methylphenanthrene	ug	<0.60	0.60	0.30	4735432
2-Chloronaphthalene	ug	<0.60	0.60	0.30	4735432
2-Methylanthracene	ug	<0.60	0.60	0.30	4735432
2-Methylnaphthalene	ug	<0.30	0.30	0.060	4735432
3-Methylcholanthrene	ug	<1.2	1.2	0.30	4735432
7,12-Dimethylbenzo(a)anthracene	ug	<1.2	1.2	0.30	4735432
9,10-Dimethylanthracene	ug	<1.2	1.2	0.30	4735432
9-Methylphenanthrene	ug	<0.30	0.30	N/A	4735432
Acenaphthene	ug	<0.30	0.30	0.060	4735432
Acenaphthylene	ug	<0.30	0.30	0.060	4735432
Anthracene	ug	<0.30	0.30	0.060	4735432
Benzo(a)anthracene	ug	<0.30	0.30	0.060	4735432
Benzo(a)fluorene	ug	<1.2	1.2	0.30	4735432
Benzo(a)pyrene	ug	<0.30	0.30	0.060	4735432
Benzo(b)fluoranthene	ug	<0.30	0.30	0.060	4735432
Benzo(b)fluorene	ug	<0.60	0.60	0.30	4735432
Benzo(e)pyrene	ug	<0.60	0.60	0.30	4735432
Benzo(g,h,i)perylene	ug	<0.30	0.30	0.060	4735432
Benzo(k)fluoranthene	ug	<0.30	0.30	0.060	4735432
Biphenyl	ug	<0.60	0.60	0.30	4735432
Chrysene	ug	<0.30	0.30	0.060	4735432
Coronene	ug	<1.2	1.2	0.30	4735432
Dibenz(a,h)anthracene	ug	<0.30	0.30	0.060	4735432
Dibenzo(a,c)anthracene	ug	<0.30	0.30	0.060	4735432
Dibenzo(a,e)pyrene	ug	<1.2	1.2	0.30	4735432
Fluoranthene	ug	<0.30	0.30	0.060	4735432
Fluorene	ug	<0.30	0.30	0.060	4735432
Indeno(1,2,3-cd)pyrene	ug	<0.30	0.30	0.060	4735432
m-Terphenyl	ug	<0.60	0.60	0.30	4735432
Naphthalene	ug	<0.60	0.60	0.30	4735432
o-Terphenyl	ug	<0.60	0.60	0.30	4735432
Perylene	ug	<1.2	1.2	0.30	4735432
Phenanthrene	ug	<0.30	0.30	0.060	4735432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DJQ072			
Sampling Date		U2 - T3			
	UNITS	16-21698 -SVOC 31-35	RDL	MDL	QC Batch
Picene	ug	<0.30	0.30	0.060	4735432
p-Terphenyl	ug	<0.60	0.60	0.30	4735432
Pyrene	ug	<0.30	0.30	0.060	4735432
Tetralin	ug	<0.60	0.60	0.30	4735432
Triphenylene	ug	<0.30	0.30	0.060	4735432
1,2,3,4-Tetrachlorobenzene	ug	<0.30	0.30	0.060	4735427
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.30	0.30	0.060	4735427
1,2,3-Trichlorobenzene	ug	<0.30	0.30	0.060	4735427
1,2,4-Trichlorobenzene	ug	<0.30	0.30	0.060	4735427
1,2-Dichlorobenzene	ug	<0.30	0.30	0.060	4735427
1,3,5-Trichlorobenzene	ug	<0.30	0.30	0.060	4735427
1,3-Dichlorobenzene	ug	<0.30	0.30	0.060	4735427
1,4-Dichlorobenzene	ug	<0.30	0.30	0.060	4735427
Hexachlorobenzene	ug	<0.30	0.30	0.060	4735427
Pentachlorobenzene	ug	<0.30	0.30	0.060	4735427
2,3,4,5-Tetrachlorophenol	ug	<0.30	0.30	0.24	4735430
2,3,4,6-Tetrachlorophenol	ug	<0.30	0.30	0.24	4735430
2,3,4-Trichlorophenol	ug	<0.30	0.30	0.24	4735430
2,3,5,6-Tetrachlorophenol	ug	<0.30	0.30	0.24	4735430
2,3,5-Trichlorophenol	ug	<0.30	0.30	0.24	4735430
2,3,6-Trichlorophenol	ug	<0.30	0.30	0.24	4735430
2,3-Dichlorophenol	ug	<0.30	0.30	0.24	4735430
2,4 + 2,5-Dichlorophenol	ug	<0.30	0.30	0.24	4735430
2,4,5-Trichlorophenol	ug	<0.30	0.30	0.24	4735430
2,4,6-Trichlorophenol	ug	<0.30	0.30	0.24	4735430
2,6-Dichlorophenol	ug	<0.30	0.30	0.24	4735430
2-Chlorophenol	ug	<0.30	0.30	0.24	4735430
3,4,5-Trichlorophenol	ug	<0.30	0.30	0.24	4735430
3,4-Dichlorophenol	ug	<0.30	0.30	0.24	4735430
3,5-Dichlorophenol	ug	<0.30	0.30	0.24	4735430
3-Chlorophenol	ug	<0.30	0.30	0.24	4735430
4-Chlorophenol	ug	<0.30	0.30	0.24	4735430
Pentachlorophenol	ug	<0.30	0.30	0.24	4735430

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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EPS 1/RM/2 SEMIVOLATILES (STACK SAMPLING TRAIN)

Maxxam ID		DJQ072			
Sampling Date		42-T3			
	UNITS	16-21698 -SVOC 31-35	RDL	MDL	QC Batch
Surrogate Recovery (%)					
13C6-Hexachlorobenzene	%	95	N/A	N/A	4735427
2H3-1,2,3-Trichlorobenzene (FS)	%	88	N/A	N/A	4735427
2H3-1,2,4-Trichlorobenzene	%	88	N/A	N/A	4735427
2H4-1,3-Dichlorobenzene	%	84	N/A	N/A	4735427
2H4-1,4-Dichlorobenzene (FS)	%	80	N/A	N/A	4735427
2,6-Dibromo-4-fluorophenol (FS)	%	108	N/A	N/A	4735430
D3-2,4-Dichlorophenol	%	102	N/A	N/A	4735430
D6-Pentachlorophenol	%	97	N/A	N/A	4735430
D10-2-Methylnaphthalene	%	98	N/A	N/A	4735432
D10-Anthracene	%	90	N/A	N/A	4735432
D10-Fluoranthene	%	96	N/A	N/A	4735432
D10-Fluorene (FS)	%	97	N/A	N/A	4735432
D10-Phenanthrene	%	96	N/A	N/A	4735432
D12-Benzo(a)anthracene	%	74	N/A	N/A	4735432
D12-Benzo(a)pyrene	%	62	N/A	N/A	4735432
D12-Benzo(b)fluoranthene	%	80	N/A	N/A	4735432
D12-Benzo(ghi)perylene	%	84	N/A	N/A	4735432
D12-Benzo(k)fluoranthene	%	82	N/A	N/A	4735432
D12-Chrysene	%	98	N/A	N/A	4735432
D12-Indeno(1,2,3-cd)pyrene	%	84	N/A	N/A	4735432
D12-Perylene	%	36 (1)	N/A	N/A	4735432
D14-Dibenzo(a,h)anthracene	%	86	N/A	N/A	4735432
D14-Terphenyl (FS)	%	99	N/A	N/A	4735432
D8-Acenaphthylene	%	70	N/A	N/A	4735432
D8-Naphthalene	%	76	N/A	N/A	4735432

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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ORTECH Environmental
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RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ069							
Sampling Date		U2-Blank				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 36-40	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<140	140	600	N/A	0.00010	0.014	N/A	4735424
344'5-TetraCB-(81)	pg	<140	140	600	N/A	0.00030	0.042	N/A	4735424
233'44'-PentaCB-(105)	pg	<89	89	600	N/A	0.000030	0.0027	N/A	4735424
2344'5-PentaCB-(114)	pg	<88	88	600	N/A	0.000030	0.0026	N/A	4735424
23'44'5-PentaCB-(118)	pg	<130 (1)	130	600	N/A	0.000030	0.0039	N/A	4735424
23'44'5'-PentaCB-(123)	pg	<98	98	600	N/A	0.000030	0.0029	N/A	4735424
33'44'5-PentaCB-(126)	pg	<91	91	600	N/A	0.10	9.1	N/A	4735424
HexaCB-(156)+(157)	pg	<29	29	1200	N/A	0.000030	0.00087	N/A	4735424
23'44'55'-HexaCB-(167)	pg	<32	32	600	N/A	0.000030	0.00096	N/A	4735424
33'44'55'-HexaCB-(169)	pg	<32	32	600	N/A	0.030	0.96	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	<28	28	600	N/A	0.000030	0.00084	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	10	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4735424

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Client Project #: 21698
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RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ070							
Sampling Date		U2 - T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 21-25	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<120	120	600	N/A	0.00010	0.012	N/A	4735424
344'5-TetraCB-(81)	pg	<120	120	600	N/A	0.00030	0.036	N/A	4735424
233'44'-PentaCB-(105)	pg	250	130	600	N/A	0.000030	0.0075	N/A	4735424
2344'5-PentaCB-(114)	pg	<130	130	600	N/A	0.000030	0.0039	N/A	4735424
23'44'5-PentaCB-(118)	pg	780	130	600	N/A	0.000030	0.023	N/A	4735424
23'44'5'-PentaCB-(123)	pg	<140	140	600	N/A	0.000030	0.0042	N/A	4735424
33'44'5-PentaCB-(126)	pg	<130	130	600	N/A	0.10	13	N/A	4735424
HexaCB-(156)+(157)	pg	<74	74	1200	N/A	0.000030	0.0022	N/A	4735424
23'44'55'-HexaCB-(167)	pg	<80	80	600	N/A	0.000030	0.0024	N/A	4735424
33'44'55'-HexaCB-(169)	pg	<81	81	600	N/A	0.030	2.4	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	<52	52	600	N/A	0.000030	0.0016	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	15	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	108	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	58	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4735424

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
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RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ071							
Sampling Date		U2 - T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 26-30	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<77	77	600	N/A	0.00010	0.0077	N/A	4735424
344'5-TetraCB-(81)	pg	<79	79	600	N/A	0.00030	0.024	N/A	4735424
233'44'-PentaCB-(105)	pg	<270 (1)	270	600	N/A	0.000030	0.0081	N/A	4735424
2344'5-PentaCB-(114)	pg	<82	82	600	N/A	0.000030	0.0025	N/A	4735424
23'44'5-PentaCB-(118)	pg	890	82	600	N/A	0.000030	0.027	N/A	4735424
23'44'5'-PentaCB-(123)	pg	<92	92	600	N/A	0.000030	0.0028	N/A	4735424
33'44'5-PentaCB-(126)	pg	<84	84	600	N/A	0.10	8.4	N/A	4735424
HexaCB-(156)+(157)	pg	110	82	1200	N/A	0.000030	0.0033	N/A	4735424
23'44'55'-HexaCB-(167)	pg	<88	88	600	N/A	0.000030	0.0026	N/A	4735424
33'44'55'-HexaCB-(169)	pg	<89	89	600	N/A	0.030	2.7	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	<47	47	600	N/A	0.000030	0.0014	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	11	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	64	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ072							
Sampling Date		U2 - T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 31-35	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<73	73	600	N/A	0.00010	0.0073	N/A	4735424
344'5-TetraCB-(81)	pg	<75	75	600	N/A	0.00030	0.023	N/A	4735424
233'44'-PentaCB-(105)	pg	<260 (1)	260	600	N/A	0.000030	0.0078	N/A	4735424
2344'5-PentaCB-(114)	pg	<80	80	600	N/A	0.000030	0.0024	N/A	4735424
23'44'5-PentaCB-(118)	pg	900	81	600	N/A	0.000030	0.027	N/A	4735424
23'44'5'-PentaCB-(123)	pg	<90	90	600	N/A	0.000030	0.0027	N/A	4735424
33'44'5-PentaCB-(126)	pg	<82	82	600	N/A	0.10	8.2	N/A	4735424
HexaCB-(156)+(157)	pg	<54	54	1200	N/A	0.000030	0.0016	N/A	4735424
23'44'55'-HexaCB-(167)	pg	<59	59	600	N/A	0.000030	0.0018	N/A	4735424
33'44'55'-HexaCB-(169)	pg	<59	59	600	N/A	0.030	1.8	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	<37	37	600	N/A	0.000030	0.0011	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	10	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	73	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	73	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	57	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	64	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4735424

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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ORTECH Environmental
Client Project #: 21698
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Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DJQ069
Sample ID: 16-21698 -SVOC 36-40
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4735427	2016/11/05	2016/11/08	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4735430	2016/11/05	2016/11/10	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4735432	2016/11/05	2016/11/10	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

Maxxam ID: DJQ070
Sample ID: 16-21698 -SVOC 21-25
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4735427	2016/11/05	2016/11/08	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4735430	2016/11/05	2016/11/10	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4735432	2016/11/05	2016/11/11	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

Maxxam ID: DJQ071
Sample ID: 16-21698 -SVOC 26-30
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4735427	2016/11/05	2016/11/08	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4735430	2016/11/05	2016/11/10	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4735432	2016/11/05	2016/11/11	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

Maxxam ID: DJQ072
Sample ID: 16-21698 -SVOC 31-35
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4735427	2016/11/05	2016/11/08	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4735430	2016/11/05	2016/11/10	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4735432	2016/11/05	2016/11/11	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

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GENERAL COMMENTS

Reference methods for the analysis of dioxins/furans such as US EPA 23 and 1613B each has a comment that any positive result for the 2,3,7,8-TCDF isomer that was detected using the primary column should be confirmed using a secondary column.

Maxxam typically performs this confirmation when the primary column result is above the RDL (Reportable Detection Limit). The RDL represents the lowest calibration standard and hence any result above the RDL has reasonable certainty that the value is positive. During time sensitive projects, the primary column and secondary column analysis is performed concurrently and the secondary column confirmation result is reported for 2,3,7,8-TCDF isomer below the RDL.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4735424	CXU	Spiked Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/10		103	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/10		89	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/10		89	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/10		86	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/10		91	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/10		84	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/10		83	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/10		83	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/10		74	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/10		88	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/10		90	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/10		91	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/10		107	%	50 - 150
			344'5-TetraCB-(81)	2016/11/10		105	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/10		105	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/10		106	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/10		105	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/10		106	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/10		103	%	50 - 150
			HexaCB-(156)+(157)	2016/11/10		102	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/10		101	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/10		102	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/10		101	%	50 - 150
4735424	CXU	Spiked Blank DUP	C13-233'44'55'-HeptaCB-(189)	2016/11/11		101	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/11		84	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/11		84	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/11		84	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/11		86	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/11		81	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/11		79	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/11		80	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/11		79	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/11		84	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/11		89	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/11		89	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/11		105	%	50 - 150
			344'5-TetraCB-(81)	2016/11/11		105	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/11		104	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/11		108	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/11		107	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/11		108	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/11		105	%	50 - 150
			HexaCB-(156)+(157)	2016/11/11		103	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/11		101	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/11		103	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/11		99	%	50 - 150
4735424	CXU	RPD	33'44'-TetraCB-(77)	2016/11/11	1.9		%	30
			344'5-TetraCB-(81)	2016/11/11	0		%	30
			233'44'-PentaCB-(105)	2016/11/11	0.96		%	30
			2344'5-PentaCB-(114)	2016/11/11	1.9		%	30
			23'44'5-PentaCB-(118)	2016/11/11	1.9		%	30
			23'44'5'-PentaCB-(123)	2016/11/11	1.9		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			33'44'5-PentaCB-(126)	2016/11/11	1.9		%	30
			HexaCB-(156)+(157)	2016/11/11	0.98		%	30
			23'44'55'-HexaCB-(167)	2016/11/11	0		%	30
			33'44'55'-HexaCB-(169)	2016/11/11	0.98		%	30
			233'44'55'-HeptaCB-(189)	2016/11/11	2.0		%	30
4735424	CXU	Method Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/11		91	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/11		77	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/11		77	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/11		72	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/11		79	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/11		68	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/11		70	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/11		68	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/11		62	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/11		70	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/11		73	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/11		72	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/11	<62		pg	
			344'5-TetraCB-(81)	2016/11/11	<64		pg	
			233'44'-PentaCB-(105)	2016/11/11	<34		pg	
			2344'5-PentaCB-(114)	2016/11/11	<33		pg	
			23'44'5-PentaCB-(118)	2016/11/11	<34		pg	
			23'44'5'-PentaCB-(123)	2016/11/11	<37		pg	
			33'44'5-PentaCB-(126)	2016/11/11	<34		pg	
			HexaCB-(156)+(157)	2016/11/11	<28		pg	
			23'44'55'-HexaCB-(167)	2016/11/11	<30		pg	
			33'44'55'-HexaCB-(169)	2016/11/11	<31		pg	
			233'44'55'-HeptaCB-(189)	2016/11/11	<40		pg	
4735427	LTO	Spiked Blank	1,2,3,4-Tetrachlorobenzene	2016/11/08		76	%	40 - 130
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/08		84	%	40 - 130
			1,2,3-Trichlorobenzene	2016/11/08		70	%	40 - 130
			1,2,4-Trichlorobenzene	2016/11/08		70	%	40 - 130
			1,2-Dichlorobenzene	2016/11/08		63	%	40 - 130
			1,3,5-Trichlorobenzene	2016/11/08		84	%	40 - 130
			1,3-Dichlorobenzene	2016/11/08		60	%	40 - 130
			1,4-Dichlorobenzene	2016/11/08		91	%	40 - 130
			13C6-Hexachlorobenzene	2016/11/08		89	%	30 - 130
			2H3-1,2,4-Trichlorobenzene	2016/11/08		78	%	30 - 130
			2H4-1,3-Dichlorobenzene	2016/11/08		74	%	30 - 130
			Hexachlorobenzene	2016/11/08		78	%	40 - 130
			Pentachlorobenzene	2016/11/08		76	%	40 - 130
4735427	LTO	Spiked Blank DUP	1,2,3,4-Tetrachlorobenzene	2016/11/08		72	%	40 - 130
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/08		70	%	40 - 130
			1,2,3-Trichlorobenzene	2016/11/08		66	%	40 - 130
			1,2,4-Trichlorobenzene	2016/11/08		59	%	40 - 130
			1,2-Dichlorobenzene	2016/11/08		54	%	40 - 130
			1,3,5-Trichlorobenzene	2016/11/08		69	%	40 - 130
			1,3-Dichlorobenzene	2016/11/08		47	%	40 - 130
			1,4-Dichlorobenzene	2016/11/08		91	%	40 - 130
			13C6-Hexachlorobenzene	2016/11/08		88	%	30 - 130
			2H3-1,2,4-Trichlorobenzene	2016/11/08		70	%	30 - 130
			2H4-1,3-Dichlorobenzene	2016/11/08		62	%	30 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Hexachlorobenzene	2016/11/08		82	%	40 - 130
			Pentachlorobenzene	2016/11/08		69	%	40 - 130
4735427	LTO	RPD	1,2,3,4-Tetrachlorobenzene	2016/11/08	5.3		%	50
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/08	18		%	50
			1,2,3-Trichlorobenzene	2016/11/08	6.4		%	50
			1,2,4-Trichlorobenzene	2016/11/08	17		%	50
			1,2-Dichlorobenzene	2016/11/08	16		%	50
			1,3,5-Trichlorobenzene	2016/11/08	20		%	50
			1,3-Dichlorobenzene	2016/11/08	25		%	50
			1,4-Dichlorobenzene	2016/11/08	0.42		%	50
			Hexachlorobenzene	2016/11/08	5.1		%	50
			Pentachlorobenzene	2016/11/08	10		%	50
4735427	LTO	Method Blank	1,2,3,4-Tetrachlorobenzene	2016/11/08	<0.30		ug	
			1,2,3,5+1,2,4,5-Tetrachlorobenzene	2016/11/08	<0.30		ug	
			1,2,3-Trichlorobenzene	2016/11/08	<0.30		ug	
			1,2,4-Trichlorobenzene	2016/11/08	<0.30		ug	
			1,2-Dichlorobenzene	2016/11/08	<0.30		ug	
			1,3,5-Trichlorobenzene	2016/11/08	<0.30		ug	
			1,3-Dichlorobenzene	2016/11/08	<0.30		ug	
			1,4-Dichlorobenzene	2016/11/08	<0.30		ug	
			13C6-Hexachlorobenzene	2016/11/08		96	%	30 - 130
			2H3-1,2,4-Trichlorobenzene	2016/11/08		87	%	30 - 130
			2H4-1,3-Dichlorobenzene	2016/11/08		80	%	30 - 130
			Hexachlorobenzene	2016/11/08	<0.30		ug	
			Pentachlorobenzene	2016/11/08	<0.30		ug	
4735430	LTO	Spiked Blank	2,3,4,5-Tetrachlorophenol	2016/11/10		102	%	22 - 134
			2,3,4-Trichlorophenol	2016/11/10		100	%	22 - 134
			2,3,5-Trichlorophenol	2016/11/10		102	%	22 - 134
			2,4 + 2,5-Dichlorophenol	2016/11/10		92	%	22 - 134
			2,4,6-Trichlorophenol	2016/11/10		113	%	22 - 134
			2,6-Dichlorophenol	2016/11/10		93	%	22 - 134
			2-Chlorophenol	2016/11/10		83	%	22 - 134
			3,4,5-Trichlorophenol	2016/11/10		102	%	22 - 134
			3,4-Dichlorophenol	2016/11/10		97	%	22 - 134
			3,5-Dichlorophenol	2016/11/10		95	%	22 - 134
			4-Chlorophenol	2016/11/10		90	%	22 - 134
			D3-2,4-Dichlorophenol	2016/11/10		98	%	20 - 130
			D6-Pentachlorophenol	2016/11/10		94	%	20 - 130
			Pentachlorophenol	2016/11/10		101	%	22 - 134
			2,3,4,6-Tetrachlorophenol	2016/11/10		99	%	22 - 134
			2,3,5,6-Tetrachlorophenol	2016/11/10		115	%	22 - 134
			2,3,6-Trichlorophenol	2016/11/10		91	%	22 - 134
			2,3-Dichlorophenol	2016/11/10		95	%	22 - 134
			2,4,5-Trichlorophenol	2016/11/10		100	%	22 - 134
			3-Chlorophenol	2016/11/10		86	%	22 - 134
4735430	LTO	Spiked Blank DUP	2,3,4,5-Tetrachlorophenol	2016/11/10		114	%	22 - 134
			2,3,4-Trichlorophenol	2016/11/10		111	%	22 - 134
			2,3,5-Trichlorophenol	2016/11/10		111	%	22 - 134
			2,4 + 2,5-Dichlorophenol	2016/11/10		110	%	22 - 134
			2,4,6-Trichlorophenol	2016/11/10		111	%	22 - 134
			2,6-Dichlorophenol	2016/11/10		107	%	22 - 134
			2-Chlorophenol	2016/11/10		109	%	22 - 134

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			3,4,5-Trichlorophenol	2016/11/10		117	%	22 - 134
			3,4-Dichlorophenol	2016/11/10		111	%	22 - 134
			3,5-Dichlorophenol	2016/11/10		105	%	22 - 134
			4-Chlorophenol	2016/11/10		106	%	22 - 134
			D3-2,4-Dichlorophenol	2016/11/10		116	%	20 - 130
			D6-Pentachlorophenol	2016/11/10		102	%	20 - 130
			Pentachlorophenol	2016/11/10		109	%	22 - 134
			2,3,4,6-Tetrachlorophenol	2016/11/10		106	%	22 - 134
			2,3,5,6-Tetrachlorophenol	2016/11/10		119	%	22 - 134
			2,3,6-Trichlorophenol	2016/11/10		113	%	22 - 134
			2,3-Dichlorophenol	2016/11/10		107	%	22 - 134
			2,4,5-Trichlorophenol	2016/11/10		115	%	22 - 134
			3-Chlorophenol	2016/11/10		101	%	22 - 134
4735430	LTO	RPD	2,3,4,5-Tetrachlorophenol	2016/11/10	11		%	50
			2,3,4-Trichlorophenol	2016/11/10	11		%	50
			2,3,5-Trichlorophenol	2016/11/10	8.5		%	50
			2,4 + 2,5-Dichlorophenol	2016/11/10	17		%	50
			2,4,6-Trichlorophenol	2016/11/10	2.2		%	50
			2,6-Dichlorophenol	2016/11/10	14		%	50
			2-Chlorophenol	2016/11/10	28		%	50
			3,4,5-Trichlorophenol	2016/11/10	14		%	50
			3,4-Dichlorophenol	2016/11/10	13		%	50
			3,5-Dichlorophenol	2016/11/10	9.6		%	50
			4-Chlorophenol	2016/11/10	16		%	50
			Pentachlorophenol	2016/11/10	8.4		%	50
			2,3,4,6-Tetrachlorophenol	2016/11/10	6.7		%	50
			2,3,5,6-Tetrachlorophenol	2016/11/10	3.6		%	50
			2,3,6-Trichlorophenol	2016/11/10	22		%	50
			2,3-Dichlorophenol	2016/11/10	12		%	50
			2,4,5-Trichlorophenol	2016/11/10	13		%	50
			3-Chlorophenol	2016/11/10	17		%	50
4735430	LTO	Method Blank	2,3,4,5-Tetrachlorophenol	2016/11/10	<0.30		ug	
			2,3,4-Trichlorophenol	2016/11/10	<0.30		ug	
			2,3,5-Trichlorophenol	2016/11/10	<0.30		ug	
			2,4 + 2,5-Dichlorophenol	2016/11/10	<0.30		ug	
			2,4,6-Trichlorophenol	2016/11/10	<0.30		ug	
			2,6-Dichlorophenol	2016/11/10	<0.30		ug	
			2-Chlorophenol	2016/11/10	<0.30		ug	
			3,4,5-Trichlorophenol	2016/11/10	<0.30		ug	
			3,4-Dichlorophenol	2016/11/10	<0.30		ug	
			3,5-Dichlorophenol	2016/11/10	<0.30		ug	
			4-Chlorophenol	2016/11/10	<0.30		ug	
			D3-2,4-Dichlorophenol	2016/11/10		95	%	20 - 130
			D6-Pentachlorophenol	2016/11/10		88	%	20 - 130
			Pentachlorophenol	2016/11/10	<0.30		ug	
			2,3,4,6-Tetrachlorophenol	2016/11/10	<0.30		ug	
			2,3,5,6-Tetrachlorophenol	2016/11/10	<0.30		ug	
			2,3,6-Trichlorophenol	2016/11/10	<0.30		ug	
			2,3-Dichlorophenol	2016/11/10	<0.30		ug	
			2,4,5-Trichlorophenol	2016/11/10	<0.30		ug	
			3-Chlorophenol	2016/11/10	<0.30		ug	
4735432	LTO	Spiked Blank	D10-2-Methylnaphthalene	2016/11/10		98	%	50 - 150

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			D10-Fluoranthene	2016/11/10		98	%	50 - 150
			D10-Phenanthrene	2016/11/10		98	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/10		78	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/10		88	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/10		80	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/10		78	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/10		82	%	50 - 150
			D12-Chrysene	2016/11/10		100	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/10		76	%	50 - 150
			D12-Perylene	2016/11/10		74	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/10		80	%	50 - 150
			D8-Acenaphthylene	2016/11/10		76	%	50 - 150
			D8-Naphthalene	2016/11/10		78	%	50 - 150
			Acenaphthene	2016/11/10		99	%	60 - 130
			Acenaphthylene	2016/11/10		93	%	60 - 130
			Anthracene	2016/11/10		91	%	60 - 130
			Benzo(a)anthracene	2016/11/10		101	%	60 - 130
			Benzo(a)pyrene	2016/11/10		88	%	60 - 130
			Benzo(b)fluoranthene	2016/11/10		100	%	60 - 130
			Benzo(g,h,i)perylene	2016/11/10		97	%	60 - 130
			Benzo(k)fluoranthene	2016/11/10		108	%	60 - 130
			Chrysene	2016/11/10		105	%	60 - 130
			Dibenz(a,h)anthracene	2016/11/10		102	%	60 - 130
			Fluoranthene	2016/11/10		104	%	60 - 130
			Fluorene	2016/11/10		101	%	60 - 130
			Indeno(1,2,3-cd)pyrene	2016/11/10		100	%	60 - 130
			Naphthalene	2016/11/10		104	%	60 - 130
			Phenanthrene	2016/11/10		104	%	60 - 130
			Pyrene	2016/11/10		100	%	60 - 130
4735432	LTO	Spiked Blank DUP	D10-2-Methylnaphthalene	2016/11/10		98	%	50 - 150
			D10-Fluoranthene	2016/11/10		96	%	50 - 150
			D10-Phenanthrene	2016/11/10		96	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/10		74	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/10		76	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/10		78	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/10		78	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/10		82	%	50 - 150
			D12-Chrysene	2016/11/10		96	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/10		76	%	50 - 150
			D12-Perylene	2016/11/10		60	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/10		76	%	50 - 150
			D8-Acenaphthylene	2016/11/10		70	%	50 - 150
			D8-Naphthalene	2016/11/10		76	%	50 - 150
			Acenaphthene	2016/11/10		98	%	60 - 130
			Acenaphthylene	2016/11/10		87	%	60 - 130
			Anthracene	2016/11/10		79	%	60 - 130
			Benzo(a)anthracene	2016/11/10		97	%	60 - 130
			Benzo(a)pyrene	2016/11/10		76	%	60 - 130
			Benzo(b)fluoranthene	2016/11/10		96	%	60 - 130
			Benzo(g,h,i)perylene	2016/11/10		95	%	60 - 130
			Benzo(k)fluoranthene	2016/11/10		109	%	60 - 130
			Chrysene	2016/11/10		102	%	60 - 130

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			Dibenz(a,h)anthracene	2016/11/10		101	%	60 - 130
			Fluoranthene	2016/11/10		101	%	60 - 130
			Fluorene	2016/11/10		99	%	60 - 130
			Indeno(1,2,3-cd)pyrene	2016/11/10		99	%	60 - 130
			Naphthalene	2016/11/10		104	%	60 - 130
			Phenanthrene	2016/11/10		103	%	60 - 130
			Pyrene	2016/11/10		98	%	60 - 130
4735432	LTO	Spiked Blank DUP 2	D10-2-Methylnaphthalene	2016/11/09		84	%	50 - 150
			D10-Fluoranthene	2016/11/09		96	%	50 - 150
			D10-Phenanthrene	2016/11/09		84	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		68	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/09		90	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		76	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		78	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		82	%	50 - 150
			D12-Chrysene	2016/11/09		98	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		74	%	50 - 150
			D12-Perylene	2016/11/09		74	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		76	%	50 - 150
			D8-Acenaphthylene	2016/11/09		66	%	50 - 150
			D8-Naphthalene	2016/11/09		68	%	50 - 150
			Dibenzo(a,c)anthracene	2016/11/09		98	%	60 - 130
			Picene	2016/11/09		87	%	60 - 130
			Triphenylene	2016/11/09		107	%	60 - 130
4735432	LTO	Spiked Blank DUP 3	D10-2-Methylnaphthalene	2016/11/09		90	%	50 - 150
			D10-Fluoranthene	2016/11/09		96	%	50 - 150
			D10-Phenanthrene	2016/11/09		90	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/09		74	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/09		90	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/09		84	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/09		80	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/09		84	%	50 - 150
			D12-Chrysene	2016/11/09		104	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/09		78	%	50 - 150
			D12-Perylene	2016/11/09		76	%	50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/09		80	%	50 - 150
			D8-Acenaphthylene	2016/11/09		70	%	50 - 150
			D8-Naphthalene	2016/11/09		70	%	50 - 150
			Dibenzo(a,c)anthracene	2016/11/09		105	%	60 - 130
			Picene	2016/11/09		89	%	60 - 130
			Triphenylene	2016/11/09		104	%	60 - 130
4735432	LTO	RPD	Acenaphthene	2016/11/10	1.0		%	50
			Acenaphthylene	2016/11/10	7.0		%	50
			Anthracene	2016/11/10	14		%	50
			Benzo(a)anthracene	2016/11/10	3.8		%	50
			Benzo(a)pyrene	2016/11/10	14		%	50
			Benzo(b)fluoranthene	2016/11/10	4.3		%	50
			Benzo(g,h,i)perylene	2016/11/10	2.1		%	50
			Benzo(k)fluoranthene	2016/11/10	1.4		%	50
			Chrysene	2016/11/10	2.2		%	50
			Dibenz(a,h)anthracene	2016/11/10	0.99		%	50
			Fluoranthene	2016/11/10	2.7		%	50

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			Fluorene	2016/11/10	2.0		%	50
			Indeno(1,2,3-cd)pyrene	2016/11/10	0.76		%	50
			Naphthalene	2016/11/10	0.48		%	50
			Phenanthrene	2016/11/10	1.5		%	50
			Pyrene	2016/11/10	2.0		%	50
4735432	LTO	Method Blank	D10-2-Methylnaphthalene	2016/11/10		96	%	50 - 150
			D10-Fluoranthene	2016/11/10		94	%	50 - 150
			D10-Phenanthrene	2016/11/10		94	%	50 - 150
			D12-Benzo(a)anthracene	2016/11/10		68	%	50 - 150
			D12-Benzo(a)pyrene	2016/11/10		54	%	50 - 150
			D12-Benzo(b)fluoranthene	2016/11/10		78	%	50 - 150
			D12-Benzo(ghi)perylene	2016/11/10		76	%	50 - 150
			D12-Benzo(k)fluoranthene	2016/11/10		76	%	50 - 150
			D12-Chrysene	2016/11/10		92	%	50 - 150
			D12-Indeno(1,2,3-cd)pyrene	2016/11/10		70	%	50 - 150
			D12-Perylene	2016/11/10		40 (1)		50 - 150
			D14-Dibenzo(a,h)anthracene	2016/11/10		76	%	50 - 150
			D8-Acenaphthylene	2016/11/10		64	%	50 - 150
			D8-Naphthalene	2016/11/10		76	%	50 - 150
			1-Methylnaphthalene	2016/11/10	<0.60		ug	
			1-Methylphenanthrene	2016/11/10	<0.60		ug	
			2-Chloronaphthalene	2016/11/10	<0.60		ug	
			2-Methylanthracene	2016/11/10	<0.60		ug	
			2-Methylnaphthalene	2016/11/10	<0.30		ug	
			3-Methylcholanthrene	2016/11/10	<1.2		ug	
			7,12-Dimethylbenzo(a)anthracene	2016/11/10	<1.2		ug	
			9,10-Dimethylanthracene	2016/11/10	<1.2		ug	
			9-Methylphenanthrene	2016/11/10	<0.30		ug	
			Acenaphthene	2016/11/10	<0.30		ug	
			Acenaphthylene	2016/11/10	<0.30		ug	
			Anthracene	2016/11/10	<0.30		ug	
			Benzo(a)anthracene	2016/11/10	<0.30		ug	
			Benzo(a)fluorene	2016/11/10	<1.2		ug	
			Benzo(a)pyrene	2016/11/10	<0.30		ug	
			Benzo(b)fluoranthene	2016/11/10	<0.30		ug	
			Benzo(b)fluorene	2016/11/10	<0.60		ug	
			Benzo(e)pyrene	2016/11/10	<0.60		ug	
			Benzo(g,h,i)perylene	2016/11/10	<0.30		ug	
			Benzo(k)fluoranthene	2016/11/10	<0.30		ug	
			Biphenyl	2016/11/10	<0.60		ug	
			Chrysene	2016/11/10	<0.30		ug	
			Coronene	2016/11/10	<1.2		ug	
			Dibenz(a,h)anthracene	2016/11/10	<0.30		ug	
			Dibenzo(a,c)anthracene	2016/11/10	<0.30		ug	
			Dibenzo(a,e)pyrene	2016/11/10	<1.2		ug	
			Fluoranthene	2016/11/10	<0.30		ug	
			Fluorene	2016/11/10	<0.30		ug	
			Indeno(1,2,3-cd)pyrene	2016/11/10	<0.30		ug	
			m-Terphenyl	2016/11/10	<0.60		ug	
			Naphthalene	2016/11/10	<0.60		ug	
			o-Terphenyl	2016/11/10	<0.60		ug	
			Perylene	2016/11/10	<1.2		ug	

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			Phenanthrene	2016/11/10	<0.30		ug	
			Picene	2016/11/10	<0.30		ug	
			p-Terphenyl	2016/11/10	<0.60		ug	
			Pyrene	2016/11/10	<0.30		ug	
			Tetralin	2016/11/10	<0.60		ug	
			Triphenylene	2016/11/10	<0.30		ug	
4739366	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/10		78	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/10		56	%	25 - 130
			C13-123678 HexaCDD	2016/11/10		80	%	40 - 130
			C13-123678 HexaCDF	2016/11/10		57	%	40 - 130
			C13-12378 PentaCDD	2016/11/10		83	%	40 - 130
			C13-12378 PentaCDF	2016/11/10		74	%	40 - 130
			C13-123789 HexaCDF	2016/11/10		112	%	40 - 130
			C13-2378 TetraCDD	2016/11/10		87	%	40 - 130
			C13-2378 TetraCDF	2016/11/10		80	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/10		58	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/10		114	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/10		112	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/10		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/10		110	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/10		120	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/10		118	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/10		108	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/10		100	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/10		108	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/10		106	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/10		132	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/10		114	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/10		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/10		134	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/10		106	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/10		122	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/10		108	%	80 - 140
4739366	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/10		79	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/10		56	%	25 - 130
			C13-123678 HexaCDD	2016/11/10		79	%	40 - 130
			C13-123678 HexaCDF	2016/11/10		57	%	40 - 130
			C13-12378 PentaCDD	2016/11/10		94	%	40 - 130
			C13-12378 PentaCDF	2016/11/10		83	%	40 - 130
			C13-123789 HexaCDF	2016/11/10		117	%	40 - 130
			C13-2378 TetraCDD	2016/11/10		83	%	40 - 130
			C13-2378 TetraCDF	2016/11/10		78	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/10		59	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/10		118	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/10		110	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/10		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/10		110	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/10		126	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/10		108	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/10		112	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/10		100	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/10		104	%	80 - 140

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,3,4,7,8-Penta CDF	2016/11/10		106	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/10		128	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/10		104	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/10		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/10		136	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/10		110	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/10		126	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/10		104	%	80 - 140
4739366	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/10	3.4		%	20
			1,2,3,7,8-Penta CDD	2016/11/10	1.8		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/10	0		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/10	0		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/10	4.9		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/10	8.8		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/10	3.6		%	20
			2,3,7,8-Tetra CDF	2016/11/10	0		%	20
			1,2,3,7,8-Penta CDF	2016/11/10	3.8		%	20
			2,3,4,7,8-Penta CDF	2016/11/10	0		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/10	3.1		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/10	9.2		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/10	0		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/10	1.5		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/10	3.7		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/10	3.2		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/10	3.8		%	20
4739366	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/09		76	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/09		59	%	25 - 130
			C13-123678 HexaCDD	2016/11/09		77	%	40 - 130
			C13-123678 HexaCDF	2016/11/09		54	%	40 - 130
			C13-12378 PentaCDD	2016/11/09		97	%	40 - 130
			C13-12378 PentaCDF	2016/11/09		78	%	40 - 130
			C13-123789 HexaCDF	2016/11/09		55	%	40 - 130
			C13-2378 TetraCDD	2016/11/09		94	%	40 - 130
			C13-2378 TetraCDF	2016/11/09		80	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/09		56	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/09	<6.0, EDL=6.0		pg	
			1,2,3,7,8-Penta CDD	2016/11/09	<8.5, EDL=8.5		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/09	<6.2, EDL=6.2		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/09	<6.3, EDL=6.3		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/09	<5.7, EDL=5.7		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/09	<7.0, EDL=7.0		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/09	36.2, EDL=5.5 (2)		pg	
			Total Tetra CDD	2016/11/09	<18, EDL=18 (3)		pg	

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Total Penta CDD	2016/11/09	<14, EDL=14 (3)		pg	
			Total Hexa CDD	2016/11/09	<36, EDL=36 (3)		pg	
			Total Hepta CDD	2016/11/09	<7.0, EDL=7.0		pg	
			2,3,7,8-Tetra CDF	2016/11/09	<6.9, EDL=6.9		pg	
			1,2,3,7,8-Penta CDF	2016/11/09	<5.9, EDL=5.9		pg	
			2,3,4,7,8-Penta CDF	2016/11/09	<5.9, EDL=5.9		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/09	11.3, EDL=7.5 (2)		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/09	8.1, EDL=7.2		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/09	11.2, EDL=7.9		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/09	13.3, EDL=8.3		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/09	26.3, EDL=6.9		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/09	<8.2, EDL=8.2		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/09	19.4, EDL=6.8		pg	
			Total Tetra CDF	2016/11/09	<6.9, EDL=6.9		pg	
			Total Penta CDF	2016/11/09	<5.9, EDL=5.9		pg	
			Total Hexa CDF	2016/11/09	44.0, EDL=7.7		pg	
			Total Hepta CDF	2016/11/09	26.3, EDL=7.5		pg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

(3) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Karen Nicol

Karen Nicol, Supervisor, Semi-Volatiles

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

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Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256177
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N9228
Received: 2016/11/03, 18:08

Sample Matrix: Stack Sampling Train
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
2,3,7,8-TCDF Confirmation (M23)	1	N/A	2016/11/10	BRL SOP-00404	EPA M23/23A m
2,3,7,8-TCDF Confirmation (M23)	2	N/A	2016/11/09	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	3	2016/11/05	2016/11/09	BRL SOP-00404	EPA M23/23A m
PCBs in a Sampling Train (1668Amod)	3	2016/11/05	2016/11/11	BRL SOP-00408	EPA 1668A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
22 Nov 2016 18:33:13

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ073							
Sampling Date		Q2 - T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 131-135	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	546	68	600	12	1.00	546	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	864	120	600	12	1.00	864	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	359	58	600	12	0.100	35.9	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	564	58	600	12	0.100	56.4	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	771 (1)	53	600	12	0.100	77.1	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	2240	70	600	18	0.0100	22.4	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	6070	92	6000	18	0.000300	1.82	N/A	4739366
Total Tetra CDD *	pg	7230	68	600	N/A	N/A	N/A	10	4739366
Total Penta CDD *	pg	7240	120	600	N/A	N/A	N/A	10	4739366
Total Hexa CDD *	pg	5820	56	600	N/A	N/A	N/A	6	4739366
Total Hepta CDD *	pg	4660	70	600	N/A	N/A	N/A	2	4739366
1,2,3,7,8-Penta CDF **	pg	5180	140	600	12	0.0300	155	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	3890	140	600	12	0.300	1170	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	5230 (1)	75	600	12	0.100	523	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	3510	71	600	12	0.100	351	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	1720	79	600	12	0.100	172	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	150	82	600	12	0.100	15.0	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	7900	71	600	18	0.0100	79.0	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	528	84	600	12	0.0100	5.28	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	1210	78	6000	30	0.000300	0.363	N/A	4739366
Total Tetra CDF **	pg	158000	110	600	N/A	N/A	N/A	14	4739366
Total Penta CDF **	pg	70700	140	600	N/A	N/A	N/A	13	4739366
Total Hexa CDF **	pg	26800	77	600	N/A	N/A	N/A	13	4739366
Total Hepta CDF **	pg	11100	77	600	N/A	N/A	N/A	4	4739366
Confirmation 2,3,7,8-Tetra CDF **	pg	7010	60	600	N/A	0.100	701	N/A	4742336
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	4780	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ073							
Sampling Date		Q2-71				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 131-135	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4742336
C13-1234678 HeptaCDD *	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	56	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	115	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ074							
Sampling Date		Q2 - T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 136-140	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	697	84	600	12	1.00	697	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	947	82	600	12	1.00	947	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	381	69	600	12	0.100	38.1	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	575	70	600	12	0.100	57.5	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	867 (1)	64	600	12	0.100	86.7	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	2070	65	600	18	0.0100	20.7	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	6630	100	6000	18	0.000300	1.99	N/A	4739366
Total Tetra CDD *	pg	8130	84	600	N/A	N/A	N/A	11	4739366
Total Penta CDD *	pg	6970	82	600	N/A	N/A	N/A	8	4739366
Total Hexa CDD *	pg	6510	68	600	N/A	N/A	N/A	7	4739366
Total Hepta CDD *	pg	4330	65	600	N/A	N/A	N/A	2	4739366
1,2,3,7,8-Penta CDF **	pg	5050	90	600	12	0.0300	152	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	4860	90	600	12	0.300	1460	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	5730 (1)	81	600	12	0.100	573	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	4180	77	600	12	0.100	418	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	1760	85	600	12	0.100	176	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	162	89	600	12	0.100	16.2	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	8650	69	600	18	0.0100	86.5	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	614	81	600	12	0.0100	6.14	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	1510	77	6000	30	0.000300	0.453	N/A	4739366
Total Tetra CDF **	pg	197000	95	600	N/A	N/A	N/A	14	4739366
Total Penta CDF **	pg	88300	90	600	N/A	N/A	N/A	13	4739366
Total Hexa CDF **	pg	30600	83	600	N/A	N/A	N/A	14	4739366
Total Hepta CDF **	pg	12300	75	600	N/A	N/A	N/A	4	4739366
Confirmation 2,3,7,8-Tetra CDF **	pg	7540	110	600	N/A	0.100	754	N/A	4742336
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	5490	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ074							
Sampling Date		Q2-T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 136-140	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4742336
C13-1234678 HeptaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	59	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	49	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	112	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
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TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
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WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
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** CDF = Chloro Dibenzo-p-Furan
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* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ075							
Sampling Date		Q2-T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 141-145	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	621	86	600	12	1.00	621	N/A	4739366
1,2,3,7,8-Penta CDD *	pg	991	83	600	12	1.00	991	N/A	4739366
1,2,3,4,7,8-Hexa CDD *	pg	369	66	600	12	0.100	36.9	N/A	4739366
1,2,3,6,7,8-Hexa CDD *	pg	628	67	600	12	0.100	62.8	N/A	4739366
1,2,3,7,8,9-Hexa CDD *	pg	825 (1)	61	600	12	0.100	82.5	N/A	4739366
1,2,3,4,6,7,8-Hepta CDD *	pg	2490	63	600	18	0.0100	24.9	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDD *	pg	7170	91	6000	18	0.000300	2.15	N/A	4739366
Total Tetra CDD *	pg	6340	86	600	N/A	N/A	N/A	7	4739366
Total Penta CDD *	pg	6730	83	600	N/A	N/A	N/A	7	4739366
Total Hexa CDD *	pg	6460	65	600	N/A	N/A	N/A	7	4739366
Total Hepta CDD *	pg	5120	63	600	N/A	N/A	N/A	2	4739366
1,2,3,7,8-Penta CDF **	pg	5080	140	600	12	0.0300	152	N/A	4739366
2,3,4,7,8-Penta CDF **	pg	4310	140	600	12	0.300	1290	N/A	4739366
1,2,3,4,7,8-Hexa CDF **	pg	7540 (1)	100	600	12	0.100	754	N/A	4739366
1,2,3,6,7,8-Hexa CDF **	pg	4740	99	600	12	0.100	474	N/A	4739366
2,3,4,6,7,8-Hexa CDF **	pg	2760	110	600	12	0.100	276	N/A	4739366
1,2,3,7,8,9-Hexa CDF **	pg	163	110	600	12	0.100	16.3	N/A	4739366
1,2,3,4,6,7,8-Hepta CDF **	pg	11600	68	600	18	0.0100	116	N/A	4739366
1,2,3,4,7,8,9-Hepta CDF **	pg	731	80	600	12	0.0100	7.31	N/A	4739366
1,2,3,4,6,7,8,9-Octa CDF **	pg	1990	75	6000	30	0.000300	0.597	N/A	4739366
Total Tetra CDF **	pg	171000	80	600	N/A	N/A	N/A	15	4739366
Total Penta CDF **	pg	81600	140	600	N/A	N/A	N/A	11	4739366
Total Hexa CDF **	pg	38100	110	600	N/A	N/A	N/A	14	4739366
Total Hepta CDF **	pg	16000	74	600	N/A	N/A	N/A	4	4739366
Confirmation 2,3,7,8-Tetra CDF **	pg	6720	60	600	N/A	0.100	672	N/A	4742336
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	5580	N/A	N/A

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WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
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(1) EMPC / Merged Peak

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DJQ075							
Sampling Date		Q2-T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 141-145	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4742336
C13-1234678 HeptaCDD *	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234678 HeptaCDF **	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDD *	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123478 HexaCDF **	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-1234789 HeptaCDF **	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDD *	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123678 HexaCDF **	%	64	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-12378 PentaCDF **	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-123789 HexaCDF **	%	52	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-23478 PentaCDF **	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDD *	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-2378 TetraCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4739366
C13-Octachlorodibenzo-p-Dioxin	%	62	N/A	N/A	N/A	N/A	N/A	N/A	4739366
Cl37-2378 TetraCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4739366

EDL = Estimated Detection Limit
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TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ073							
Sampling Date		Q2 - T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 131-135	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	1100	71	600	N/A	0.00010	0.11	N/A	4735424
344'5-TetraCB-(81)	pg	260	73	600	N/A	0.00030	0.078	N/A	4735424
233'44'-PentaCB-(105)	pg	520	79	600	N/A	0.000030	0.016	N/A	4735424
2344'5-PentaCB-(114)	pg	100	78	600	N/A	0.000030	0.0030	N/A	4735424
23'44'5-PentaCB-(118)	pg	1200	79	600	N/A	0.000030	0.036	N/A	4735424
23'44'5'-PentaCB-(123)	pg	200	88	600	N/A	0.000030	0.0060	N/A	4735424
33'44'5-PentaCB-(126)	pg	560	81	600	N/A	0.10	56	N/A	4735424
HexaCB-(156)+(157)	pg	400	77	1200	N/A	0.000030	0.012	N/A	4735424
23'44'55'-HexaCB-(167)	pg	240	83	600	N/A	0.000030	0.0072	N/A	4735424
33'44'55'-HexaCB-(169)	pg	<160 (1)	160	600	N/A	0.030	4.8	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	<160 (1)	160	600	N/A	0.000030	0.0048	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	61	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	66	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4735424

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
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QC Batch = Quality Control Batch
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6N9228
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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ074							
Sampling Date		Q2-T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 136-140	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	1000	46	600	N/A	0.00010	0.10	N/A	4735424
344'5-TetraCB-(81)	pg	250	47	600	N/A	0.00030	0.075	N/A	4735424
233'44'-PentaCB-(105)	pg	630	74	600	N/A	0.000030	0.019	N/A	4735424
2344'5-PentaCB-(114)	pg	<90 (1)	90	600	N/A	0.000030	0.0027	N/A	4735424
23'44'5-PentaCB-(118)	pg	1500	73	600	N/A	0.000030	0.045	N/A	4735424
23'44'5'-PentaCB-(123)	pg	220	82	600	N/A	0.000030	0.0066	N/A	4735424
33'44'5-PentaCB-(126)	pg	570	75	600	N/A	0.10	57	N/A	4735424
HexaCB-(156)+(157)	pg	430	77	1200	N/A	0.000030	0.013	N/A	4735424
23'44'55'-HexaCB-(167)	pg	230	84	600	N/A	0.000030	0.0069	N/A	4735424
33'44'55'-HexaCB-(169)	pg	150	84	600	N/A	0.030	4.5	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	200	79	600	N/A	0.000030	0.0060	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	62	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	115	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4735424

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RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DJQ075							
Sampling Date		Q2-T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 141-145	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	1000	44	600	N/A	0.00010	0.10	N/A	4735424
344'5-TetraCB-(81)	pg	240	45	600	N/A	0.00030	0.072	N/A	4735424
233'44'-PentaCB-(105)	pg	870	72	600	N/A	0.000030	0.026	N/A	4735424
2344'5-PentaCB-(114)	pg	<120 (1)	120	600	N/A	0.000030	0.0036	N/A	4735424
23'44'5-PentaCB-(118)	pg	2000	72	600	N/A	0.000030	0.060	N/A	4735424
23'44'5'-PentaCB-(123)	pg	160	80	600	N/A	0.000030	0.0048	N/A	4735424
33'44'5-PentaCB-(126)	pg	<550 (1)	550	600	N/A	0.10	55	N/A	4735424
HexaCB-(156)+(157)	pg	520	67	1200	N/A	0.000030	0.016	N/A	4735424
23'44'55'-HexaCB-(167)	pg	270	72	600	N/A	0.000030	0.0081	N/A	4735424
33'44'55'-HexaCB-(169)	pg	<150 (1)	150	600	N/A	0.030	4.5	N/A	4735424
233'44'55'-HeptaCB-(189)	pg	250	42	600	N/A	0.000030	0.0075	N/A	4735424
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	60	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5-HexaCB-(156)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'5'-HexaCB-(157)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-233'44'-PentaCB-(105)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'55'-HexaCB-(167)	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2344'5-PentaCB-(114)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-23'44'5-PentaCB-(118)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-2'344'5-PentaCB-(123)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'55'-HexaCB-(169)	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'5-PentaCB-(126)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-33'44'-TetraCB-(77)	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4735424
C13-344'5-TetraCB-(81)	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4735424

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DJQ073
Sample ID: 16-21698 -SVOC 131-135
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4742336	N/A	2016/11/09	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

Maxxam ID: DJQ074
Sample ID: 16-21698 -SVOC 136-140
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4742336	N/A	2016/11/09	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

Maxxam ID: DJQ075
Sample ID: 16-21698 -SVOC 141-145
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4742336	N/A	2016/11/10	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4739366	2016/11/05	2016/11/09	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4735424	2016/11/05	2016/11/11	Cathy Xu

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GENERAL COMMENTS

Sample DJQ073 [16-21698 -SVOC 131-135] : 10X DILUTION

Sample DJQ074 [16-21698 -SVOC 136-140] : 10X DILUTION
PAHMM5-TR: Low recovery for D14-Dibenzo(ah)anthracene. Rerun an archived portion. The result reported from rerun

Sample DJQ075 [16-21698 -SVOC 141-145] : 10X DILUTION

Results relate only to the items tested.

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4735424	CXU	Spiked Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/10		103	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/10		89	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/10		89	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/10		86	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/10		91	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/10		84	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/10		83	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/10		83	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/10		74	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/10		88	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/10		90	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/10		91	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/10		107	%	50 - 150
			344'5-TetraCB-(81)	2016/11/10		105	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/10		105	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/10		106	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/10		105	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/10		106	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/10		103	%	50 - 150
			HexaCB-(156)+(157)	2016/11/10		102	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/10		101	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/10		102	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/10		101	%	50 - 150
4735424	CXU	Spiked Blank DUP	C13-233'44'55'-HeptaCB-(189)	2016/11/11		101	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/11		84	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/11		84	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/11		84	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/11		86	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/11		81	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/11		79	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/11		80	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/11		79	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/11		84	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/11		89	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/11		89	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/11		105	%	50 - 150
			344'5-TetraCB-(81)	2016/11/11		105	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/11		104	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/11		108	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/11		107	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/11		108	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/11		105	%	50 - 150
			HexaCB-(156)+(157)	2016/11/11		103	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/11		101	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/11		103	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/11		99	%	50 - 150
4735424	CXU	RPD	33'44'-TetraCB-(77)	2016/11/11	1.9		%	30
			344'5-TetraCB-(81)	2016/11/11	0		%	30
			233'44'-PentaCB-(105)	2016/11/11	0.96		%	30
			2344'5-PentaCB-(114)	2016/11/11	1.9		%	30
			23'44'5-PentaCB-(118)	2016/11/11	1.9		%	30
			23'44'5'-PentaCB-(123)	2016/11/11	1.9		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			33'44'5-PentaCB-(126)	2016/11/11	1.9		%	30
			HexaCB-(156)+(157)	2016/11/11	0.98		%	30
			23'44'55'-HexaCB-(167)	2016/11/11	0		%	30
			33'44'55'-HexaCB-(169)	2016/11/11	0.98		%	30
			233'44'55'-HeptaCB-(189)	2016/11/11	2.0		%	30
4735424	CXU	Method Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/11		91	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/11		77	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/11		77	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/11		72	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/11		79	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/11		68	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/11		70	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/11		68	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/11		62	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/11		70	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/11		73	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/11		72	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/11	<62		pg	
			344'5-TetraCB-(81)	2016/11/11	<64		pg	
			233'44'-PentaCB-(105)	2016/11/11	<34		pg	
			2344'5-PentaCB-(114)	2016/11/11	<33		pg	
			23'44'5-PentaCB-(118)	2016/11/11	<34		pg	
			23'44'5'-PentaCB-(123)	2016/11/11	<37		pg	
			33'44'5-PentaCB-(126)	2016/11/11	<34		pg	
			HexaCB-(156)+(157)	2016/11/11	<28		pg	
			23'44'55'-HexaCB-(167)	2016/11/11	<30		pg	
			33'44'55'-HexaCB-(169)	2016/11/11	<31		pg	
			233'44'55'-HeptaCB-(189)	2016/11/11	<40		pg	
4739366	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/10		78	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/10		56	%	25 - 130
			C13-123678 HexaCDD	2016/11/10		80	%	40 - 130
			C13-123678 HexaCDF	2016/11/10		57	%	40 - 130
			C13-12378 PentaCDD	2016/11/10		83	%	40 - 130
			C13-12378 PentaCDF	2016/11/10		74	%	40 - 130
			C13-123789 HexaCDF	2016/11/10		112	%	40 - 130
			C13-2378 TetraCDD	2016/11/10		87	%	40 - 130
			C13-2378 TetraCDF	2016/11/10		80	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/10		58	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/10		114	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/10		112	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/10		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/10		110	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/10		120	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/10		118	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/10		108	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/10		100	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/10		108	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/10		106	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/10		132	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/10		114	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/10		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/10		134	%	80 - 140

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ORTECH Environmental
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			1,2,3,4,6,7,8-Hepta CDF	2016/11/10		106	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/10		122	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/10		108	%	80 - 140
4739366	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/10		79	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/10		56	%	25 - 130
			C13-123678 HexaCDD	2016/11/10		79	%	40 - 130
			C13-123678 HexaCDF	2016/11/10		57	%	40 - 130
			C13-12378 PentaCDD	2016/11/10		94	%	40 - 130
			C13-12378 PentaCDF	2016/11/10		83	%	40 - 130
			C13-123789 HexaCDF	2016/11/10		117	%	40 - 130
			C13-2378 TetraCDD	2016/11/10		83	%	40 - 130
			C13-2378 TetraCDF	2016/11/10		78	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/10		59	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/10		118	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/10		110	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/10		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/10		110	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/10		126	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/10		108	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/10		112	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/10		100	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/10		104	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/10		106	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/10		128	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/10		104	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/10		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/10		136	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/10		110	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/10		126	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/10		104	%	80 - 140
4739366	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/10	3.4		%	20
			1,2,3,7,8-Penta CDD	2016/11/10	1.8		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/10	0		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/10	0		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/10	4.9		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/10	8.8		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/10	3.6		%	20
			2,3,7,8-Tetra CDF	2016/11/10	0		%	20
			1,2,3,7,8-Penta CDF	2016/11/10	3.8		%	20
			2,3,4,7,8-Penta CDF	2016/11/10	0		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/10	3.1		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/10	9.2		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/10	0		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/10	1.5		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/10	3.7		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/10	3.2		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/10	3.8		%	20
4739366	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/09		76	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/09		59	%	25 - 130
			C13-123678 HexaCDD	2016/11/09		77	%	40 - 130
			C13-123678 HexaCDF	2016/11/09		54	%	40 - 130
			C13-12378 PentaCDD	2016/11/09		97	%	40 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			C13-12378 PentaCDF	2016/11/09		78	%	40 - 130
			C13-123789 HexaCDF	2016/11/09		55	%	40 - 130
			C13-2378 TetraCDD	2016/11/09		94	%	40 - 130
			C13-2378 TetraCDF	2016/11/09		80	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/09		56	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/09	<6.0, EDL=6.0		pg	
			1,2,3,7,8-Penta CDD	2016/11/09	<8.5, EDL=8.5		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/09	<6.2, EDL=6.2		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/09	<6.3, EDL=6.3		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/09	<5.7, EDL=5.7		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/09	<7.0, EDL=7.0		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/09	36.2, EDL=5.5 (1)		pg	
			Total Tetra CDD	2016/11/09	<18, EDL=18 (2)		pg	
			Total Penta CDD	2016/11/09	<14, EDL=14 (2)		pg	
			Total Hexa CDD	2016/11/09	<36, EDL=36 (2)		pg	
			Total Hepta CDD	2016/11/09	<7.0, EDL=7.0		pg	
			2,3,7,8-Tetra CDF	2016/11/09	<6.9, EDL=6.9		pg	
			1,2,3,7,8-Penta CDF	2016/11/09	<5.9, EDL=5.9		pg	
			2,3,4,7,8-Penta CDF	2016/11/09	<5.9, EDL=5.9		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/09	11.3, EDL=7.5 (1)		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/09	8.1, EDL=7.2		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/09	11.2, EDL=7.9		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/09	13.3, EDL=8.3		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/09	26.3, EDL=6.9		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/09	<8.2, EDL=8.2		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/09	19.4, EDL=6.8		pg	
			Total Tetra CDF	2016/11/09	<6.9, EDL=6.9		pg	

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Maxxam Job #: B6N9228
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Total Penta CDF	2016/11/09	<5.9, EDL=5.9		pg	
			Total Hexa CDF	2016/11/09	44.0, EDL=7.7		pg	
			Total Hepta CDF	2016/11/09	26.3, EDL=7.5		pg	
4742336	VCI	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2016/11/09	<3.2, EDL=3.2		pg	
			Confirmation C13-2378 TetraCDF	2016/11/09		118	%	40 - 135

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

(2) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256164
Version: 5 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6N5683
Received: 2016/10/31, 20:48

Sample Matrix: Stack Sampling Train
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
2,3,7,8-TCDF Confirmation (M23)	3	N/A	2016/11/07	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	3	2016/11/01	2016/11/05	BRL SOP-00404	EPA M23/23A m
PCBs in a Sampling Train (1668Amod)	3	2016/11/01	2016/11/07	BRL SOP-00408	EPA 1668A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
22 Nov 2016 18:31:51

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B6N5683
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ196							
Sampling Date		Q1 - T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 101-105	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	1180	64	500	10	1.00	1180	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	1190	66	500	10	1.00	1190	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	399	46	500	10	0.100	39.9	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	492	47	500	10	0.100	49.2	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	866 (1)	43	500	10	0.100	86.6	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	1990	68	500	15	0.0100	19.9	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	5990	57	5000	15	0.000300	1.80	N/A	4734800
Total Tetra CDD *	pg	13800	64	500	N/A	N/A	N/A	14	4734800
Total Penta CDD *	pg	8270	66	500	N/A	N/A	N/A	11	4734800
Total Hexa CDD *	pg	5820	45	500	N/A	N/A	N/A	7	4734800
Total Hepta CDD *	pg	4010	68	500	N/A	N/A	N/A	2	4734800
1,2,3,7,8-Penta CDF **	pg	8410	71	500	10	0.0300	252	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	6550	71	500	10	0.300	1970	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	6040 (1)	57	500	10	0.100	604	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	4150	55	500	10	0.100	415	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	2000	60	500	10	0.100	200	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	231	63	500	10	0.100	23.1	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	8030	51	500	15	0.0100	80.3	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	634 (2)	60	500	10	0.0100	6.34	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	1480	52	5000	25	0.000300	0.444	N/A	4734800
Total Tetra CDF **	pg	192000	63	500	N/A	N/A	N/A	15	4734800
Total Penta CDF **	pg	111000	71	500	N/A	N/A	N/A	14	4734800
Total Hexa CDF **	pg	30900	59	500	N/A	N/A	N/A	14	4734800
Total Hepta CDF **	pg	11300	55	500	N/A	N/A	N/A	4	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	7190	62	500	N/A	0.100	719	N/A	4738268
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	6840	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak
(2) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

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Maxxam Job #: B6N5683
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ196							
Sampling Date		Q1-T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 101-105	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	59	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	118	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	128	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6N5683
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ197							
Sampling Date		Q1-T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 106-110	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	594	57	500	10	1.00	594	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	877	57	500	10	1.00	877	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	376	73	500	10	0.100	37.6	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	547	74	500	10	0.100	54.7	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	852 (1)	68	500	10	0.100	85.2	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	1660	46	500	15	0.0100	16.6	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	4170	59	5000	15	0.000300	1.25	N/A	4734800
Total Tetra CDD *	pg	8360	57	500	N/A	N/A	N/A	15	4734800
Total Penta CDD *	pg	6300	57	500	N/A	N/A	N/A	10	4734800
Total Hexa CDD *	pg	5680	71	500	N/A	N/A	N/A	7	4734800
Total Hepta CDD *	pg	3220	46	500	N/A	N/A	N/A	2	4734800
1,2,3,7,8-Penta CDF **	pg	6050	68	500	10	0.0300	182	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	4880	68	500	10	0.300	1460	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	4440 (1)	66	500	10	0.100	444	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	3190	63	500	10	0.100	319	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	1330	69	500	10	0.100	133	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	177	72	500	10	0.100	17.7	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	5480	57	500	15	0.0100	54.8	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	478	67	500	10	0.0100	4.78	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	899	55	5000	25	0.000300	0.270	N/A	4734800
Total Tetra CDF **	pg	156000	50	500	N/A	N/A	N/A	16	4734800
Total Penta CDF **	pg	82300	68	500	N/A	N/A	N/A	13	4734800
Total Hexa CDF **	pg	22700	67	500	N/A	N/A	N/A	12	4734800
Total Hepta CDF **	pg	7730	62	500	N/A	N/A	N/A	4	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	4960	61	500	N/A	0.100	496	N/A	4738268
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	4780	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak

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Maxxam Job #: B6N5683
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ197							
Sampling Date		Q1 - T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 106-110	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	121	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	73	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	61	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	118	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6N5683
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ848							
Sampling Date		Q1 – T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 111-115	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	1090	53	500	10	1.00	1090	N/A	4734800
1,2,3,7,8-Penta CDD *	pg	1120	62	500	10	1.00	1120	N/A	4734800
1,2,3,4,7,8-Hexa CDD *	pg	436	61	500	10	0.100	43.6	N/A	4734800
1,2,3,6,7,8-Hexa CDD *	pg	629	62	500	10	0.100	62.9	N/A	4734800
1,2,3,7,8,9-Hexa CDD *	pg	960 (1)	57	500	10	0.100	96.0	N/A	4734800
1,2,3,4,6,7,8-Hepta CDD *	pg	1520	54	500	15	0.0100	15.2	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDD *	pg	3820	71	5000	15	0.000300	1.15	N/A	4734800
Total Tetra CDD *	pg	12700	53	500	N/A	N/A	N/A	14	4734800
Total Penta CDD *	pg	7770	62	500	N/A	N/A	N/A	11	4734800
Total Hexa CDD *	pg	6460	60	500	N/A	N/A	N/A	7	4734800
Total Hepta CDD *	pg	3080	54	500	N/A	N/A	N/A	2	4734800
1,2,3,7,8-Penta CDF **	pg	7330	59	500	10	0.0300	220	N/A	4734800
2,3,4,7,8-Penta CDF **	pg	6140	60	500	10	0.300	1840	N/A	4734800
1,2,3,4,7,8-Hexa CDF **	pg	5370 (1)	52	500	10	0.100	537	N/A	4734800
1,2,3,6,7,8-Hexa CDF **	pg	3810	50	500	10	0.100	381	N/A	4734800
2,3,4,6,7,8-Hexa CDF **	pg	1550	55	500	10	0.100	155	N/A	4734800
1,2,3,7,8,9-Hexa CDF **	pg	192	57	500	10	0.100	19.2	N/A	4734800
1,2,3,4,6,7,8-Hepta CDF **	pg	6310	47	500	15	0.0100	63.1	N/A	4734800
1,2,3,4,7,8,9-Hepta CDF **	pg	464	56	500	10	0.0100	4.64	N/A	4734800
1,2,3,4,6,7,8,9-Octa CDF **	pg	871	66	5000	25	0.000300	0.261	N/A	4734800
Total Tetra CDF **	pg	174000	73	500	N/A	N/A	N/A	16	4734800
Total Penta CDF **	pg	97100	59	500	N/A	N/A	N/A	12	4734800
Total Hexa CDF **	pg	27600	53	500	N/A	N/A	N/A	13	4734800
Total Hepta CDF **	pg	8580	51	500	N/A	N/A	N/A	4	4734800
Confirmation 2,3,7,8-Tetra CDF **	pg	5880	66	500	N/A	0.100	588	N/A	4738268
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	6240	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
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The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

EPS 1/RM/19 DIOXINS, FURANS AND PCBS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ848							
Sampling Date		Q1-T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 111-115	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4738268
C13-1234678 HeptaCDD *	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234678 HeptaCDF **	%	61	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDD *	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123478 HexaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-1234789 HeptaCDF **	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDD *	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123678 HexaCDF **	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDD *	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-12378 PentaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-123789 HexaCDF **	%	54	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-23478 PentaCDF **	%	118	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDD *	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-2378 TetraCDF **	%	73	N/A	N/A	N/A	N/A	N/A	N/A	4734800
C13-Octachlorodibenzo-p-Dioxin	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4734800
Cl37-2378 TetraCDD *	%	123	N/A	N/A	N/A	N/A	N/A	N/A	4734800

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ196							
Sampling Date		Q1-T1				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 101-105	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	1300	88	500	N/A	0.00010	0.13	N/A	4727482
344'5-TetraCB-(81)	pg	210	90	500	N/A	0.00030	0.063	N/A	4727482
233'44'-PentaCB-(105)	pg	1600	75	500	N/A	0.000030	0.048	N/A	4727482
2344'5-PentaCB-(114)	pg	200	73	500	N/A	0.000030	0.0060	N/A	4727482
23'44'5-PentaCB-(118)	pg	4500	74	500	N/A	0.000030	0.14	N/A	4727482
23'44'5'-PentaCB-(123)	pg	230	82	500	N/A	0.000030	0.0069	N/A	4727482
33'44'5-PentaCB-(126)	pg	530	76	500	N/A	0.10	53	N/A	4727482
HexaCB-(156)+(157)	pg	<530 (1)	530	1000	N/A	0.000030	0.016	N/A	4727482
23'44'55'-HexaCB-(167)	pg	290	100	500	N/A	0.000030	0.0087	N/A	4727482
33'44'55'-HexaCB-(169)	pg	170	100	500	N/A	0.030	5.1	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	<190 (1)	190	500	N/A	0.000030	0.0057	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	59	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	131	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ197							
Sampling Date		Q1-T2				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 106-110	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	820	69	500	N/A	0.00010	0.082	N/A	4727482
344'5-TetraCB-(81)	pg	<170 (1)	170	500	N/A	0.00030	0.051	N/A	4727482
233'44'-PentaCB-(105)	pg	820	50	500	N/A	0.000030	0.025	N/A	4727482
2344'5-PentaCB-(114)	pg	130	49	500	N/A	0.000030	0.0039	N/A	4727482
23'44'5-PentaCB-(118)	pg	2200	49	500	N/A	0.000030	0.066	N/A	4727482
23'44'5'-PentaCB-(123)	pg	210	55	500	N/A	0.000030	0.0063	N/A	4727482
33'44'5-PentaCB-(126)	pg	<450 (1)	450	500	N/A	0.10	45	N/A	4727482
HexaCB-(156)+(157)	pg	370	100	1000	N/A	0.000030	0.011	N/A	4727482
23'44'55'-HexaCB-(167)	pg	190	110	500	N/A	0.000030	0.0057	N/A	4727482
33'44'55'-HexaCB-(169)	pg	<130 (1)	130	500	N/A	0.030	3.9	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	<150 (1)	150	500	N/A	0.000030	0.0045	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	49	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF STACK SAMPLING TRAIN

Maxxam ID		DIZ848							
Sampling Date		Q1-T3				TOXIC EQUIVALENCY		# of	
	UNITS	16-21698 -SVOC 111-115	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	1000	66	500	N/A	0.00010	0.10	N/A	4727482
344'5-TetraCB-(81)	pg	190	68	500	N/A	0.00030	0.057	N/A	4727482
233'44'-PentaCB-(105)	pg	1500	80	500	N/A	0.000030	0.045	N/A	4727482
2344'5-PentaCB-(114)	pg	170	79	500	N/A	0.000030	0.0051	N/A	4727482
23'44'5-PentaCB-(118)	pg	4500	79	500	N/A	0.000030	0.14	N/A	4727482
23'44'5'-PentaCB-(123)	pg	190	88	500	N/A	0.000030	0.0057	N/A	4727482
33'44'5-PentaCB-(126)	pg	480	81	500	N/A	0.10	48	N/A	4727482
HexaCB-(156)+(157)	pg	460	140	1000	N/A	0.000030	0.014	N/A	4727482
23'44'55'-HexaCB-(167)	pg	<210 (1)	210	500	N/A	0.000030	0.0063	N/A	4727482
33'44'55'-HexaCB-(169)	pg	<150	150	500	N/A	0.030	4.5	N/A	4727482
233'44'55'-HeptaCB-(189)	pg	170	67	500	N/A	0.000030	0.0051	N/A	4727482
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	53	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	135	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5-HexaCB-(156)	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'5'-HexaCB-(157)	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-233'44'-PentaCB-(105)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'55'-HexaCB-(167)	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2344'5-PentaCB-(114)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-23'44'5-PentaCB-(118)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-2'344'5-PentaCB-(123)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'55'-HexaCB-(169)	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'5-PentaCB-(126)	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-33'44'-TetraCB-(77)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4727482
C13-344'5-TetraCB-(81)	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4727482

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
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QC Batch = Quality Control Batch
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(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Client Project #: 21698
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Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIZ196
Sample ID: 16-21698 -SVOC 101-105
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/05	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/07	Cathy Xu

Maxxam ID: DIZ197
Sample ID: 16-21698 -SVOC 106-110
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/05	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/07	Cathy Xu

Maxxam ID: DIZ848
Sample ID: 16-21698 -SVOC 111-115
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4738268	N/A	2016/11/07	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4734800	2016/11/01	2016/11/05	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4727482	2016/11/01	2016/11/07	Cathy Xu

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GENERAL COMMENTS

Reference methods for the analysis of dioxins/furans such as US EPA 23 and 1613B each has a comment that any positive result for the 2,3,7,8-TCDF isomer that was detected using the primary column should be confirmed using a secondary column.

Maxxam typically performs this confirmation when the primary column result is above the RDL (Reportable Detection Limit). The RDL represents the lowest calibration standard and hence any result above the RDL has reasonable certainty that the value is positive. During time sensitive projects, the primary column and secondary column analysis is performed concurrently and the secondary column confirmation result is reported for 2,3,7,8-TCDF isomer below the RDL.

PAHMM5-TR: Low recovery for Benzo(a)pyrene in Spike Dup
Revised report to include 2-methylnaphthalene.

Sample DIZ196 [16-21698 -SVOC 101-105] : 10X DILUTION

PAHMM5-TR:
Low recoveries for D12-Indeno(1,2,3-cd)pyreen and D14-Dibenzo(a,h)anthracene. Re-run an arcived portion. The results reported from rerun

CPMM5-TR:
Mdl was raised for 4-Chlorophenol and 2,5+2,4 - Dichlorophenol due to sample matrix interference on a possible positive.
There was a peak found at the retention time of the 4-Chlorophenol and 2,5+2,4-Dichlorophenol , but confirmation ions weren't at expected abundance ratio

Sample DIZ197 [16-21698 -SVOC 106-110] : 10X DILUTION

CPMM5-TR:
Mdl was raised for 4-Chlorophenol and 2,5+2,4 - Dichlorophenol due to sample matrix interference on a possible positive.
There was a peak found at the retention time of the 4-Chlorophenol and 2,5+2,4-Dichlorophenol , but confirmation ions weren't at expected abundance ratio

Sample DIZ848 [16-21698 -SVOC 111-115] : 10X DILUTION
CPMM5-TR:
Mdl was raised for 4-Chlorophenol due to sample matrix interference on a possible positive.
There was a peak found at the retention time of the 4-Chlorophenol , but confirmation ions weren't at expected abundance ratio

Results relate only to the items tested.

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Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4727482	CXU	Spiked Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/06		110	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/06		86	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/06		86	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/06		72	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/06		90	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/06		71	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/06		74	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/06		68	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/06		70	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/06		71	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/06		68	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/06		67	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/06		98	%	50 - 150
			344'5-TetraCB-(81)	2016/11/06		97	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/06		94	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/06		94	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/06		95	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/06		97	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/06		93	%	50 - 150
			HexaCB-(156)+(157)	2016/11/06		90	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/06		86	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/06		92	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/06		86	%	50 - 150
4727482	CXU	Spiked Blank DUP	C13-233'44'55'-HeptaCB-(189)	2016/11/06		122	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/06		94	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/06		94	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/06		76	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/06		93	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/06		73	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/06		74	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/06		77	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/06		81	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/06		72	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/06		76	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/06		76	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/06		97	%	50 - 150
			344'5-TetraCB-(81)	2016/11/06		94	%	50 - 150
			233'44'-PentaCB-(105)	2016/11/06		92	%	50 - 150
			2344'5-PentaCB-(114)	2016/11/06		95	%	50 - 150
			23'44'5-PentaCB-(118)	2016/11/06		95	%	50 - 150
			23'44'5'-PentaCB-(123)	2016/11/06		93	%	50 - 150
			33'44'5-PentaCB-(126)	2016/11/06		95	%	50 - 150
			HexaCB-(156)+(157)	2016/11/06		90	%	N/A
			23'44'55'-HexaCB-(167)	2016/11/06		92	%	50 - 150
			33'44'55'-HexaCB-(169)	2016/11/06		89	%	50 - 150
			233'44'55'-HeptaCB-(189)	2016/11/06		79	%	50 - 150
4727482	CXU	RPD	33'44'-TetraCB-(77)	2016/11/06	1.0		%	30
			344'5-TetraCB-(81)	2016/11/06	3.1		%	30
			233'44'-PentaCB-(105)	2016/11/06	2.2		%	30
			2344'5-PentaCB-(114)	2016/11/06	1.1		%	30
			23'44'5-PentaCB-(118)	2016/11/06	0		%	30
			23'44'5'-PentaCB-(123)	2016/11/06	4.2		%	30

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Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			33'44'5-PentaCB-(126)	2016/11/06	2.1		%	30
			HexaCB-(156)+(157)	2016/11/06	0		%	30
			23'44'55'-HexaCB-(167)	2016/11/06	6.7		%	30
			33'44'55'-HexaCB-(169)	2016/11/06	3.3		%	30
			233'44'55'-HeptaCB-(189)	2016/11/06	8.5		%	30
4727482	CXU	Method Blank	C13-233'44'55'-HeptaCB-(189)	2016/11/06		111	%	30 - 140
			C13-233'44'5-HexaCB-(156)	2016/11/06		87	%	30 - 140
			C13-233'44'5'-HexaCB-(157)	2016/11/06		87	%	30 - 140
			C13-233'44'-PentaCB-(105)	2016/11/06		78	%	30 - 140
			C13-23'44'55'-HexaCB-(167)	2016/11/06		88	%	30 - 140
			C13-2344'5-PentaCB-(114)	2016/11/06		74	%	30 - 140
			C13-23'44'5-PentaCB-(118)	2016/11/06		73	%	30 - 140
			C13-2'344'5-PentaCB-(123)	2016/11/06		75	%	30 - 140
			C13-33'44'55'-HexaCB-(169)	2016/11/06		72	%	30 - 140
			C13-33'44'5-PentaCB-(126)	2016/11/06		79	%	30 - 140
			C13-33'44'-TetraCB-(77)	2016/11/06		68	%	30 - 140
			C13-344'5-TetraCB-(81)	2016/11/06		65	%	30 - 140
			33'44'-TetraCB-(77)	2016/11/06	<40		pg	
			344'5-TetraCB-(81)	2016/11/06	<41		pg	
			233'44'-PentaCB-(105)	2016/11/06	<22		pg	
			2344'5-PentaCB-(114)	2016/11/06	<22		pg	
			23'44'5-PentaCB-(118)	2016/11/06	<22		pg	
			23'44'5'-PentaCB-(123)	2016/11/06	<25		pg	
			33'44'5-PentaCB-(126)	2016/11/06	<23		pg	
			HexaCB-(156)+(157)	2016/11/06	<11		pg	
			23'44'55'-HexaCB-(167)	2016/11/06	<12		pg	
			33'44'55'-HexaCB-(169)	2016/11/06	<12		pg	
			233'44'55'-HeptaCB-(189)	2016/11/06	<22		pg	
4734800	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/04		89	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/04		56	%	25 - 130
			C13-123678 HexaCDD	2016/11/04		70	%	40 - 130
			C13-123678 HexaCDF	2016/11/04		55	%	40 - 130
			C13-12378 PentaCDD	2016/11/04		107	%	40 - 130
			C13-12378 PentaCDF	2016/11/04		76	%	40 - 130
			C13-123789 HexaCDF	2016/11/04		53	%	40 - 130
			C13-2378 TetraCDD	2016/11/04		94	%	40 - 130
			C13-2378 TetraCDF	2016/11/04		80	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/04		58	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/04		119	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/04		118	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/04		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/04		134	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04		101	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04		118	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/04		122	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/04		125	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/04		118	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/04		128	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/04		135	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04		129	%	80 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04		121	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04		117	%	80 - 140
4734800	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/04		71	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/04		51	%	25 - 130
			C13-123678 HexaCDD	2016/11/04		62	%	40 - 130
			C13-123678 HexaCDF	2016/11/04		49	%	40 - 130
			C13-12378 PentaCDD	2016/11/04		90	%	40 - 130
			C13-12378 PentaCDF	2016/11/04		65	%	40 - 130
			C13-123789 HexaCDF	2016/11/04		48	%	40 - 130
			C13-2378 TetraCDD	2016/11/04		82	%	40 - 130
			C13-2378 TetraCDF	2016/11/04		74	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/04		52	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/04		125	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/04		115	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/04		122	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/04		135	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04		118	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04		118	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/04		126	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/04		120	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/04		140	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/04		117	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/04		128	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/04		138	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04		129	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04		123	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04		119	%	80 - 140
4734800	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/04	4.9		%	20
			1,2,3,7,8-Penta CDD	2016/11/04	2.6		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/04	0		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/04	0		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/04	0.74		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04	16		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04	0		%	20
			1,2,3,7,8-Penta CDF	2016/11/04	3.2		%	20
			2,3,4,7,8-Penta CDF	2016/11/04	4.1		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/04	0		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/04	0.85		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/04	0		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/04	2.2		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04	0		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04	1.6		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04	1.7		%	20
4734800	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/04		79	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/04		57	%	25 - 130
			C13-123678 HexaCDD	2016/11/04		74	%	40 - 130
			C13-123678 HexaCDF	2016/11/04		56	%	40 - 130
			C13-12378 PentaCDD	2016/11/04		95	%	40 - 130
			C13-12378 PentaCDF	2016/11/04		71	%	40 - 130
			C13-123789 HexaCDF	2016/11/04		55	%	40 - 130
			C13-2378 TetraCDD	2016/11/04		88	%	40 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			C13-2378 TetraCDF	2016/11/04		81	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/04		58	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/04	<5.2, EDL=5.2		pg	
			1,2,3,7,8-Penta CDD	2016/11/04	<5.3, EDL=5.3		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/04	<4.7, EDL=4.7		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/04	<4.7, EDL=4.7		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/04	<4.3, EDL=4.3		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/04	<3.9, EDL=3.9		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/04	11.3, EDL=4.9		pg	
			Total Tetra CDD	2016/11/04	<11, EDL=11 (1)		pg	
			Total Penta CDD	2016/11/04	<6.8, EDL=6.8 (1)		pg	
			Total Hexa CDD	2016/11/04	<21, EDL=21 (1)		pg	
			Total Hepta CDD	2016/11/04	<3.9, EDL=3.9		pg	
			1,2,3,7,8-Penta CDF	2016/11/04	<6.7, EDL=6.7		pg	
			2,3,4,7,8-Penta CDF	2016/11/04	<6.7, EDL=6.7		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/04	<4.6, EDL=4.6		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/04	<4.4, EDL=4.4		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/04	<4.9, EDL=4.9		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/04	<5.1, EDL=5.1		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/04	4.9, EDL=3.8		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/04	<4.5, EDL=4.5		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/04	<5.9, EDL=5.9		pg	
			Total Tetra CDF	2016/11/04	<6.4, EDL=6.4		pg	
			Total Penta CDF	2016/11/04	<6.7, EDL=6.7		pg	
			Total Hexa CDF	2016/11/04	<4.7, EDL=4.7		pg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Total Hepta CDF	2016/11/04	4.9, EDL=4.2		pg	
4738268	VCI	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2016/11/07	<2.7, EDL=2.7		pg	
			Confirmation C13-2378 TetraCDF	2016/11/07		89	%	40 - 135

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

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APPENDIX 18

Acid Gas Recovery Data Sheets
(8 page)

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21698
Date: Oct 25, 16
Test No.: 1
Test Location: UNIT 1 outlet

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing	Filter	Impingers 1, 2, 3	Impinger 4
CONTAINER TS1	Filter ID: / CONTAINER TS2	CONTAINER TS3	

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	669.9
	Initial Wt:	772.8
	Final Wt:	873.0
1	Gain:	100.2 ✓
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	527.3
	Initial Wt:	628.7
	Final Wt:	670.9
2	Gain:	42.2 ✓
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	617.4
	Final Wt:	621.7
3	Gain:	4.3 ✓
	Colour:	CLEAR

	Impinger #4 Silica Gel	
	Initial Wt:	934.3
	Final Wt:	949.4
4	Gain:	15.1 ✓

CONTAINER TS3 WEIGHTS	
Empty Wt:	~~338.8~~ 383.8 Oct 16
With Imp. 1,2,3 Soln:	625.7
Imp. 1,2,3 Volume:	341.9 ✓
After Rinse:	724.8
Total TS3:	441.0 ✓

SAMPLE IDENTIFICATION	16-21698-M26A
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	1

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By: —
Date: Oct 25, 16

CWTR = 1+2+3:	146.7 ✓
WCBDA= 4:	15.1 ✓

Revision: Jan 16, 2006

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VAN

Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21698
Date: OCT 25, 16
Test No.: T2
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing
CONTAINER TS1

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter
Filter ID:
CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3
CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	664.2
	Initial Wt:	767.0
	Final Wt:	794.7
1	Gain:	27.7 ✓
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	664.5
	Initial Wt:	760.6
	Final Wt:	891.3
2	Gain:	130.7 ✓
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	468.8
	Final Wt:	473.2
3	Gain:	4.4 ✓
	Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.0
With Imp. 1,2,3 Soln:	634.3
Imp. 1,2,3 Volume:	353.3 ✓
After Rinse:	753.8
Total TS3:	472.8 ✓

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	930.4
	Final Wt:	941.1
4	Gain:	10.7 ✓

SAMPLE IDENTIFICATION	16-21698-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	2

Train Loaded By: DT
Train Recovered By: DT
Recovery Witnessed By: —
Date: OCT 25, 16

CWTR = 1+2+3:	162.8 ✓
WCBDA= 4:	10.7 ✓

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Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21698
Date: Oct 25, 16
Test No.: 3
Test Location: UNIT 1

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing
CONTAINER TS1

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter
Filter ID:
CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3
CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	674.8
	Initial Wt:	775.9
	Final Wt:	913.2
1	Gain:	137.3 ✓
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	529.8
	Initial Wt:	627.6
	Final Wt:	653.2
2	Gain:	25.6 ✓
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	619.0
	Final Wt:	621.6
3	Gain:	2.6 ✓
	Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.9
With Imp. 1,2,3 Soln:	648.5 ✓
Imp. 1,2,3 Volume:	366.6 ✓
After Rinse:	757.0
Total TS3:	475.1 ✓

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	949.3
	Final Wt:	960.3
4	Gain:	11.0 ✓

SAMPLE IDENTIFICATION	16-21698-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	3

Train Loaded By: ST
Train Recovered By: ST
Recovery Witnessed By: —
Date: Oct 25, 16

CWTR = 1+2+3:	165.5 ✓
WCBDA= 4:	11.0 ✓

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Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21698
Date:	Oct 26, 16
Test No.:	1
Test Location:	U2

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a Probe Rinse Residue	
Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter

Filter ID:

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3

CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	667.1
	Initial Wt:	768.8
	Final Wt:	896.8
1	Gain:	128.0 ✓
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	666.2
	Initial Wt:	761.8
	Final Wt:	780.0
2	Gain:	18.2 ✓
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	471.4
	Final Wt:	473.9
3	Gain:	2.5 ✓
	Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	281.1
With Imp. 1,2,3 Soln:	627.6
Imp. 1,2,3 Volume:	346.5 ✓
After Rinse:	701.4
Total TS3:	420.3 ✓

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	941.0
	Final Wt:	951.5
4	Gain:	10.5 ✓

SAMPLE IDENTIFICATION	16-21698-M26A -
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	4

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	Oct 26, 16

CWTR = 1+2+3:	148.7 ✓
WCBDA= 4:	10.5 ✓

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Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21698
Date:	OCT 26, 16
Test No.:	2
Test Location:	42

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter

Filter ID:

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3

CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	676.2
	Initial Wt:	776.0
	Final Wt:	904.5
1	Gain:	128.5 ✓
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	529.0
	Initial Wt:	628.0
	Final Wt:	651.7
2	Gain:	23.7 ✓
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	619.5
	Final Wt:	622.3
3	Gain:	2.8 ✓
	Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	286.7
With Imp. 1,2,3 Soln:	642.2
Imp. 1,2,3 Volume:	355.5 ✓
After Rinse:	747.5
Total TS3:	460.8 ✓

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	964.6
	Final Wt:	974.3
4	Gain:	9.7 ✓

SAMPLE IDENTIFICATION	16-21698-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	5

Train Loaded By:	BT
Train Recovered By:	BT
Recovery Witnessed By:	
Date:	OCT 26, 16

CWTR = 1+2+3:	155.0 ✓
WCBDA= 4:	9.7 ✓

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Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21698
Date:	OCT 26, 16
Test No.:	3
Test Location:	42

Nozzle, Probe Liner, Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter

Filter ID:

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3

CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	665.4
	Initial Wt:	768.6
	Final Wt:	878.7
1	Gain:	110.1 ✓
	Colour:	CLEAR

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	666.0
	Initial Wt:	757.0
	Final Wt:	772.8
2	Gain:	15.8 ✓
	Colour:	CLEAR

	Impinger #3 EMPTY	
	Empty Wt:	470.3
	Final Wt:	474.0
3	Gain:	3.7 ✓
	Colour:	CLEAR

CONTAINER TS3 WEIGHTS	
Empty Wt:	287.9
With Imp. 1,2,3 Soln:	608.7
Imp. 1,2,3 Volume:	320.8 ✓
After Rinse:	695.4
Total TS3:	407.5 ✓

Impinger 4

	Impinger #4 Silica Gel	
	Initial Wt:	951.5
	Final Wt:	958.9
4	Gain:	7.4 ✓

SAMPLE IDENTIFICATION	16-21698-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	6

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	OCT 26, 16

CWTR = 1+2+3:	129.6 ✓
WCBDA= 4:	7.4 ✓

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Method 26A Recovery Sheet

Client : Covanta DYEC
Project No.: 21698
Date: OCT 26, 16
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 TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a
Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

CONTAINER TS3

	Impinger #1 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
1	Gain:	
	Colour:	

	Impinger #2 0.1 N H_2SO4	
	Empty Wt:	
	Initial Wt:	
	Final Wt:	
2	Gain:	
	Colour:	

	Impinger #3 EMPTY	
	Empty Wt:	
	Final Wt:	
3	Gain:	
	Colour:	

	Impinger #4 Silica Gel	
	Initial Wt:	
	Final Wt:	
4	Gain:	

SAMPLE IDENTIFICATION	16-21698-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	BLANK 1

CONTAINER TS3 WEIGHTS	
Empty Wt:	286.6
With Imp. 1,2,3 Soln:	487.2
Imp. 1,2,3 Volume:	200.6 ✓
After Rinse:	735.1
Total TS3:	448.5 ✓

Train Loaded By: ST
Train Recovered By: ST
Recovery Witnessed By: —
Date: OCT 26, 16

CWTR = 1+2+3:	
WCBDA= 4:	

Revision: Jan 16, 2006

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Method 26A Recovery Sheet

Client :	Covanta DYEC
Project No.:	21698
Date:	OCT 26, 16
Test No.:	BLANK 2
Test Location:	—

Nozzle, Probe Liner Cyclone Bypass & F.H. Filter Housing

CONTAINER TS1

Container TS1 Weights	
Empty Wt:	
After Acetone Rinse:	
Total TS1:	

MARK FLUID LEVEL

Seal and label container TS1

CONTAINER TS1a

Probe Rinse Residue

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

Filter

Filter ID:

CONTAINER TS2

Initial Wt:	
Post-Test Wt (1):	
Post-Test Wt (2):	
Post-Test Wt (3):	
Final Wt:	
Gain:	
Colour:	

SEAL CONTAINER TS2

Impingers 1, 2, 3

CONTAINER TS3

Impinger #1 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
1 Gain:	
Colour:	

Impinger #2 0.1 N H_2SO4	
Empty Wt:	
Initial Wt:	
Final Wt:	
2 Gain:	
Colour:	

Impinger #3 EMPTY	
Empty Wt:	
Final Wt:	
3 Gain:	
Colour:	

CONTAINER TS3 WEIGHTS	
Empty Wt:	282.5
With Imp. 1,2,3 Soln:	482.5
Imp. 1,2,3 Volume:	200.0 ✓
After Rinse:	736.3
Total TS3:	453.8 ✓

Impinger 4

Impinger #4 Silica Gel	
Initial Wt:	
Final Wt:	
4 Gain:	

SAMPLE IDENTIFICATION	16-21698-M26A-
TS1(Probe Rinse-Acetone)	—
TS2(Filter)	—
TS3(Impinger 1,2,3 Sol'n)	BLANK 2

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	OCT 26, 16

CWTR = 1+2+3:	
WCBDA= 4:	

Revision: Jan 16, 2006

ORTECH Environmental

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APPENDIX 19

VOST Analytical Reports
(45 pages)

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698

Attention:Chris Belore
ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/08
Report #: R4239177
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N5827
Received: 2016/10/31, 21:48

Sample Matrix: Stack Sampling Train
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
VOST EPA5041A, 8260C for 0030, 0031	10	N/A	2016/11/01	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
08 Nov 2016 15:21:07 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5827
Report Date: 2016/11/08

ORTECH Environmental
Client Project #: 21698
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ996	DIZ997	DIZ998			
Sampling Date		2016/10/28	2016/10/28	2016/10/28			
	UNITS	16-21698- VOST-FB-#30 A/B	16-21698- VOST-T1-1#1 A/B	16-21698- VOST-T1-2#2 A/B	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	<0.020	<0.020	0.020	0.020	4727579
Vinyl Chloride	ug	<0.013	<0.013	<0.013	0.013	0.013	4727579
Bromomethane	ug	<0.015	0.046	0.029	0.015	0.015	4727579
Trichlorofluoromethane (FREON 11)	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Acetone (2-Propanone)	ug	<0.045	0.202	<0.045	0.045	0.025	4727579
1,1-Dichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Methylene Chloride(Dichloromethane)	ug	<0.019	<0.019	<0.019	0.019	0.020	4727579
trans-1,2-Dichloroethylene	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Chloroform	ug	<0.011	0.014	0.012	0.011	0.011	4727579
1,2-Dichloroethane	ug	<0.0070	<0.0070	<0.0070	0.0070	0.0070	4727579
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	<0.036	<0.036	0.036	0.036	4727579
1,1,1-Trichloroethane	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
Carbon Tetrachloride	ug	<0.016	<0.016	<0.016	0.016	0.016	4727579
Benzene	ug	<0.0090	0.0256	0.0203	0.0090	0.0090	4727579
1,1,2-Trichloroethane	ug	<0.016	<0.016	<0.016	0.016	0.016	4727579
1,2-Dichloropropane	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Trichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Bromodichloromethane	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Dibromochloromethane	ug	<0.0090	<0.0090	<0.0090	0.0090	0.0090	4727579
Toluene	ug	<0.014	0.718	0.283	0.014	0.014	4727579
Ethylene Dibromide	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Tetrachloroethylene	ug	<0.018	0.054	<0.018	0.018	0.018	4727579
Chlorobenzene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Ethylbenzene	ug	<0.014	0.034	<0.014	0.014	0.014	4727579
m / p-Xylene	ug	<0.015	0.034	<0.015	0.015	0.015	4727579
Styrene	ug	<0.012	0.030	<0.012	0.012	0.012	4727579
o-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4727579
Bromoform	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
Surrogate Recovery (%)							
Bromofluorobenzene	%	100	100	100	N/A	N/A	4727579
D10-Ethylbenzene (FS)	%	121	105	116	N/A	N/A	4727579
D4-1,2-Dichloroethane	%	107	105	106	N/A	N/A	4727579
D8-Toluene	%	102	100	101	N/A	N/A	4727579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5827
Report Date: 2016/11/08

ORTECH Environmental
Client Project #: 21698
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DIZ999	DJA000	DJA001			
Sampling Date		2016/10/28	2016/10/28	2016/10/28			
	UNITS	16-21698- VOST-T1-3#3 A/B	16-21698- VOST-T2-1#5 A/B	16-21698- VOST-T2-2#6 A/B	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	<0.020	<0.020	0.020	0.020	4727579
Vinyl Chloride	ug	<0.013	<0.013	<0.013	0.013	0.013	4727579
Bromomethane	ug	0.022	<0.015	<0.015	0.015	0.015	4727579
Trichlorofluoromethane (FREON 11)	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Acetone (2-Propanone)	ug	0.089	<0.045	<0.045	0.045	0.025	4727579
1,1-Dichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Methylene Chloride(Dichloromethane)	ug	<0.019	<0.019	<0.019	0.019	0.020	4727579
trans-1,2-Dichloroethylene	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Chloroform	ug	0.013	0.014	0.013	0.011	0.011	4727579
1,2-Dichloroethane	ug	<0.0070	<0.0070	<0.0070	0.0070	0.0070	4727579
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	<0.036	<0.036	0.036	0.036	4727579
1,1,1-Trichloroethane	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
Carbon Tetrachloride	ug	<0.016	<0.016	<0.016	0.016	0.016	4727579
Benzene	ug	0.0234	0.0286	0.0268	0.0090	0.0090	4727579
1,1,2-Trichloroethane	ug	<0.016	<0.016	<0.016	0.016	0.016	4727579
1,2-Dichloropropane	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Trichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Bromodichloromethane	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Dibromochloromethane	ug	<0.0090	<0.0090	<0.0090	0.0090	0.0090	4727579
Toluene	ug	0.294	0.088	0.049	0.014	0.014	4727579
Ethylene Dibromide	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Tetrachloroethylene	ug	<0.018	<0.018	<0.018	0.018	0.018	4727579
Chlorobenzene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Ethylbenzene	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
m / p-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4727579
Styrene	ug	<0.012	<0.012	<0.012	0.012	0.012	4727579
o-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4727579
Bromoform	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
Surrogate Recovery (%)							
Bromofluorobenzene	%	99	100	99	N/A	N/A	4727579
D10-Ethylbenzene (FS)	%	124	108	105	N/A	N/A	4727579
D4-1,2-Dichloroethane	%	107	107	107	N/A	N/A	4727579
D8-Toluene	%	103	99	101	N/A	N/A	4727579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N5827
Report Date: 2016/11/08

ORTECH Environmental
Client Project #: 21698
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DJA002	DJA003	DJA004			
Sampling Date		2016/10/28	2016/10/31	2016/10/31			
	UNITS	16-21698- VOST-T2-4#8 A/B	16-21698- VOST-T3-1#9 A/B	16-21698- VOST-T3-2#10 A/B	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	<0.020	<0.020	0.020	0.020	4727579
Vinyl Chloride	ug	<0.013	<0.013	<0.013	0.013	0.013	4727579
Bromomethane	ug	<0.015	<0.015	0.016	0.015	0.015	4727579
Trichlorofluoromethane (FREON 11)	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Acetone (2-Propanone)	ug	0.069	0.078	0.055	0.045	0.025	4727579
1,1-Dichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Methylene Chloride(Dichloromethane)	ug	<0.019	<0.019	<0.019	0.019	0.020	4727579
trans-1,2-Dichloroethylene	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Chloroform	ug	0.014	0.013	0.013	0.011	0.011	4727579
1,2-Dichloroethane	ug	<0.0070	<0.0070	<0.0070	0.0070	0.0070	4727579
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	<0.036	<0.036	0.036	0.036	4727579
1,1,1-Trichloroethane	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
Carbon Tetrachloride	ug	<0.016	<0.016	<0.016	0.016	0.016	4727579
Benzene	ug	0.0287	0.0356	0.0326	0.0090	0.0090	4727579
1,1,2-Trichloroethane	ug	<0.016	<0.016	<0.016	0.016	0.016	4727579
1,2-Dichloropropane	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Trichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Bromodichloromethane	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Dibromochloromethane	ug	<0.0090	<0.0090	<0.0090	0.0090	0.0090	4727579
Toluene	ug	0.046	0.169	0.170	0.014	0.014	4727579
Ethylene Dibromide	ug	<0.010	<0.010	<0.010	0.010	0.010	4727579
Tetrachloroethylene	ug	<0.018	<0.018	<0.018	0.018	0.018	4727579
Chlorobenzene	ug	<0.011	<0.011	<0.011	0.011	0.011	4727579
Ethylbenzene	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
m / p-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4727579
Styrene	ug	<0.012	<0.012	<0.012	0.012	0.012	4727579
o-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4727579
Bromoform	ug	<0.014	<0.014	<0.014	0.014	0.014	4727579
Surrogate Recovery (%)							
Bromofluorobenzene	%	98	98	100	N/A	N/A	4727579
D10-Ethylbenzene (FS)	%	110	111	112	N/A	N/A	4727579
D4-1,2-Dichloroethane	%	108	108	108	N/A	N/A	4727579
D8-Toluene	%	100	101	102	N/A	N/A	4727579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Report Date: 2016/11/08

ORTECH Environmental
Client Project #: 21698
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DJA005			
Sampling Date		2016/10/31			
	UNITS	16-21698- VOST-T3-4#12 A/B	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	0.020	0.020	4727579
Vinyl Chloride	ug	<0.013	0.013	0.013	4727579
Bromomethane	ug	<0.015	0.015	0.015	4727579
Trichlorofluoromethane (FREON 11)	ug	<0.010	0.010	0.010	4727579
Acetone (2-Propanone)	ug	<0.045	0.045	0.025	4727579
1,1-Dichloroethylene	ug	<0.011	0.011	0.011	4727579
Methylene Chloride(Dichloromethane)	ug	<0.019	0.019	0.020	4727579
trans-1,2-Dichloroethylene	ug	<0.010	0.010	0.010	4727579
Chloroform	ug	0.015	0.011	0.011	4727579
1,2-Dichloroethane	ug	<0.0070	0.0070	0.0070	4727579
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	0.036	0.036	4727579
1,1,1-Trichloroethane	ug	<0.014	0.014	0.014	4727579
Carbon Tetrachloride	ug	<0.016	0.016	0.016	4727579
Benzene	ug	0.0291	0.0090	0.0090	4727579
1,1,2-Trichloroethane	ug	<0.016	0.016	0.016	4727579
1,2-Dichloropropane	ug	<0.011	0.011	0.011	4727579
Trichloroethylene	ug	<0.011	0.011	0.011	4727579
Bromodichloromethane	ug	<0.011	0.011	0.011	4727579
Dibromochloromethane	ug	<0.0090	0.0090	0.0090	4727579
Toluene	ug	0.209	0.014	0.014	4727579
Ethylene Dibromide	ug	<0.010	0.010	0.010	4727579
Tetrachloroethylene	ug	<0.018	0.018	0.018	4727579
Chlorobenzene	ug	<0.011	0.011	0.011	4727579
Ethylbenzene	ug	<0.014	0.014	0.014	4727579
m / p-Xylene	ug	<0.015	0.015	0.015	4727579
Styrene	ug	<0.012	0.012	0.012	4727579
o-Xylene	ug	<0.015	0.015	0.015	4727579
Bromoform	ug	<0.014	0.014	0.014	4727579
Surrogate Recovery (%)					
Bromofluorobenzene	%	100	N/A	N/A	4727579
D10-Ethylbenzene (FS)	%	111	N/A	N/A	4727579
D4-1,2-Dichloroethane	%	108	N/A	N/A	4727579
D8-Toluene	%	101	N/A	N/A	4727579

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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ORTECH Environmental
Client Project #: 21698
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIZ996
Sample ID: 16-21698- VOST-FB- #30 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DIZ997
Sample ID: 16-21698- VOST-T1- 1#1 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DIZ998
Sample ID: 16-21698- VOST-T1- 2#2 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DIZ999
Sample ID: 16-21698- VOST-T1- 3#3 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DJA000
Sample ID: 16-21698- VOST-T2- 1#5 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DJA001
Sample ID: 16-21698- VOST-T2- 2#6 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DJA002
Sample ID: 16-21698- VOST-T2- 4#8 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

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ORTECH Environmental
Client Project #: 21698
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TEST SUMMARY

Maxxam ID: DJA003
Sample ID: 16-21698- VOST-T3- 1#9 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DJA004
Sample ID: 16-21698- VOST-T3- 2#10 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

Maxxam ID: DJA005
Sample ID: 16-21698- VOST-T3- 4#12 A/B
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4727579	N/A	2016/11/01	Yujie Yan

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ORTECH Environmental
Client Project #: 21698
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GENERAL COMMENTS

Results relate only to the items tested.

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ORTECH Environmental
Client Project #: 21698
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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4727579	YYA	Spiked Blank	Bromofluorobenzene	2016/11/01		99	%	43 - 131
			D10-Ethylbenzene (FS)	2016/11/01		105	%	47 - 157
			D4-1,2-Dichloroethane	2016/11/01		101	%	64 - 133
			D8-Toluene	2016/11/01		100	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2016/11/01		75	%	50 - 150
			Vinyl Chloride	2016/11/01		96	%	50 - 150
			Bromomethane	2016/11/01		95	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2016/11/01		101	%	50 - 150
			Acetone (2-Propanone)	2016/11/01		56	%	50 - 150
			1,1-Dichloroethylene	2016/11/01		106	%	50 - 150
			Methylene Chloride(Dichloromethane)	2016/11/01		101	%	50 - 150
			trans-1,2-Dichloroethylene	2016/11/01		114	%	50 - 150
			Chloroform	2016/11/01		104	%	50 - 150
			1,2-Dichloroethane	2016/11/01		104	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2016/11/01		67	%	50 - 150
			1,1,1-Trichloroethane	2016/11/01		104	%	50 - 150
			Carbon Tetrachloride	2016/11/01		103	%	50 - 150
			Benzene	2016/11/01		103	%	50 - 150
			1,1,2-Trichloroethane	2016/11/01		105	%	50 - 150
			1,2-Dichloropropane	2016/11/01		104	%	50 - 150
			Trichloroethylene	2016/11/01		104	%	50 - 150
			Bromodichloromethane	2016/11/01		105	%	50 - 150
			Dibromochloromethane	2016/11/01		103	%	50 - 150
			Toluene	2016/11/01		103	%	50 - 150
			Ethylene Dibromide	2016/11/01		105	%	50 - 150
			Tetrachloroethylene	2016/11/01		104	%	50 - 150
			Chlorobenzene	2016/11/01		106	%	50 - 150
			Ethylbenzene	2016/11/01		105	%	50 - 150
			m / p-Xylene	2016/11/01		106	%	50 - 150
			Styrene	2016/11/01		106	%	50 - 150
			o-Xylene	2016/11/01		105	%	50 - 150
			Bromoform	2016/11/01		106	%	50 - 150
4727579	YYA	Method Blank	Bromofluorobenzene	2016/11/01		100	%	43 - 131
			D10-Ethylbenzene (FS)	2016/11/01		105	%	47 - 157
			D4-1,2-Dichloroethane	2016/11/01		108	%	64 - 133
			D8-Toluene	2016/11/01		101	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2016/11/01	<0.020		ug	
			Vinyl Chloride	2016/11/01	<0.013		ug	
			Bromomethane	2016/11/01	<0.015		ug	
			Trichlorofluoromethane (FREON 11)	2016/11/01	<0.010		ug	
			Acetone (2-Propanone)	2016/11/01	<0.045		ug	
			1,1-Dichloroethylene	2016/11/01	<0.011		ug	
			Methylene Chloride(Dichloromethane)	2016/11/01	<0.019		ug	
			trans-1,2-Dichloroethylene	2016/11/01	<0.010		ug	
			Chloroform	2016/11/01	<0.011		ug	
			1,2-Dichloroethane	2016/11/01	<0.0070		ug	
			Methyl Ethyl Ketone (2-Butanone)	2016/11/01	<0.036		ug	
			1,1,1-Trichloroethane	2016/11/01	<0.014		ug	
			Carbon Tetrachloride	2016/11/01	<0.016		ug	
			Benzene	2016/11/01	<0.0090		ug	
			1,1,2-Trichloroethane	2016/11/01	<0.016		ug	
			1,2-Dichloropropane	2016/11/01	<0.011		ug	
			Trichloroethylene	2016/11/01	<0.011		ug	

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ORTECH Environmental
Client Project #: 21698
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Bromodichloromethane	2016/11/01	<0.011		ug	
			Dibromochloromethane	2016/11/01	<0.0090		ug	
			Toluene	2016/11/01	<0.014		ug	
			Ethylene Dibromide	2016/11/01	<0.010		ug	
			Tetrachloroethylene	2016/11/01	<0.018		ug	
			Chlorobenzene	2016/11/01	<0.011		ug	
			Ethylbenzene	2016/11/01	<0.014		ug	
			m / p-Xylene	2016/11/01	<0.015		ug	
			Styrene	2016/11/01	<0.012		ug	
			o-Xylene	2016/11/01	<0.015		ug	
			Bromoform	2016/11/01	<0.014		ug	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Angel Guerrero, Team Leader, VOC Air

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: Method Blank

Field ID#: Method Blank

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DIZ996

Field ID#: 16-21698-VOST-FB #30A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

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Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DIZ997

Field ID#: 16-21698-VOST-T1-1 #1A/B

Concentration Units
ug

Number of TICs found:_____0_____

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DIZ998

Field ID#: 16-21698-VOST-T1-2 #2A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DIZ999

Field ID#: 16-21698-VOST-T1-3 #3A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJA000

Field ID#: 16-21698-VOST-T2-1 #5A/B

Concentration Units
ug

Number of TICs found:_____0_____

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJA001

Field ID#: 16-21698-VOST-T2-2 #6A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJA002

Field ID#: 16-21698-VOST-T2-4 #8A/B

Concentration Units
ug

Number of TICs found:_____0_____

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJA003

Field ID#: 16-21698-VOST-T3-1 #9A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJA004

Field ID#: 16-21698-VOST-T3-2#10A/B

Concentration Units
ug

Number of TICs found:_____0_____

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJA005

Field ID#: 16-21698-VOST-T3-4 #12A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Maxxam Analytical

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:Chris Belore

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/10
Report #: R4242870
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N9201
Received: 2016/11/03, 18:08

Sample Matrix: Stack Sampling Train
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
VOST EPA5041A, 8260C for 0030, 0031	6	N/A	2016/11/08	BRL SOP-00302	EPA5041A, 8260C
VOST EPA5041A, 8260C for 0030, 0031	4	N/A	2016/11/09	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
10 Nov 2016 17:49:58 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
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Maxxam
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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DJP969	DJP970	DJP971			
Sampling Date							
	UNITS	16-21698- VOST-FB-#29 A/	16-21698- VOST-T1-1#13 A/	16-21698- VOST-T1-2#14 A/	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	<0.020	<0.020	0.020	0.020	4738989
Vinyl Chloride	ug	<0.013	<0.013	<0.013	0.013	0.013	4738989
Bromomethane	ug	<0.015	<0.015	<0.015	0.015	0.015	4738989
Trichlorofluoromethane (FREON 11)	ug	<0.010	<0.010	<0.010	0.010	0.010	4738989
Acetone (2-Propanone)	ug	<0.045	0.071	0.071	0.045	0.025	4738989
1,1-Dichloroethylene	ug	<0.011	<0.011	0.011	0.011	0.011	4738989
Methylene Chloride(Dichloromethane)	ug	<0.019	<0.019	<0.019	0.019	0.020	4738989
trans-1,2-Dichloroethylene	ug	<0.010	<0.010	<0.010	0.010	0.010	4738989
Chloroform	ug	<0.011	0.017	0.017	0.011	0.011	4738989
1,2-Dichloroethane	ug	<0.0070	<0.0070	<0.0070	0.0070	0.0070	4738989
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	<0.036	<0.036	0.036	0.036	4738989
1,1,1-Trichloroethane	ug	<0.014	<0.014	<0.014	0.014	0.014	4738989
Carbon Tetrachloride	ug	<0.016	<0.016	<0.016	0.016	0.016	4738989
Benzene	ug	<0.0090	0.0280	0.0229	0.0090	0.0090	4738989
1,1,2-Trichloroethane	ug	<0.016	<0.016	<0.016	0.016	0.016	4738989
1,2-Dichloropropane	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Trichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Bromodichloromethane	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Dibromochloromethane	ug	<0.0090	<0.0090	<0.0090	0.0090	0.0090	4738989
Toluene	ug	<0.014	0.398	0.221	0.014	0.014	4738989
Ethylene Dibromide	ug	<0.010	<0.010	<0.010	0.010	0.010	4738989
Tetrachloroethylene	ug	<0.018	<0.018	<0.018	0.018	0.018	4738989
Chlorobenzene	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Ethylbenzene	ug	<0.014	<0.014	<0.014	0.014	0.014	4738989
m / p-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4738989
Styrene	ug	<0.012	<0.012	<0.012	0.012	0.012	4738989
o-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4738989
Bromoform	ug	<0.014	<0.014	<0.014	0.014	0.014	4738989
Surrogate Recovery (%)							
Bromofluorobenzene	%	102	99	99	N/A	N/A	4738989
D10-Ethylbenzene (FS)	%	114	120	115	N/A	N/A	4738989
D4-1,2-Dichloroethane	%	107	106	106	N/A	N/A	4738989
D8-Toluene	%	101	99	100	N/A	N/A	4738989

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DJP972	DJP973	DJP974			
Sampling Date							
	UNITS	16-21698- VOST-T1-3#15 A/	16-21698- VOST-T2-1#17 A/	16-21698- VOST-T2-2#18 A/	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	<0.020	0.057	0.020	0.020	4738989
Vinyl Chloride	ug	<0.013	<0.013	<0.013	0.013	0.013	4738989
Bromomethane	ug	<0.015	<0.015	<0.015	0.015	0.015	4738989
Trichlorofluoromethane (FREON 11)	ug	<0.010	0.011	0.068	0.010	0.010	4738989
Acetone (2-Propanone)	ug	0.049	<0.045	0.072	0.045	0.025	4738989
1,1-Dichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Methylene Chloride(Dichloromethane)	ug	0.019	<0.019	<0.019	0.019	0.020	4738989
trans-1,2-Dichloroethylene	ug	<0.010	<0.010	<0.010	0.010	0.010	4738989
Chloroform	ug	0.016	0.018	0.019	0.011	0.011	4738989
1,2-Dichloroethane	ug	<0.0070	<0.0070	<0.0070	0.0070	0.0070	4738989
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	<0.036	<0.036	0.036	0.036	4738989
1,1,1-Trichloroethane	ug	<0.014	<0.014	<0.014	0.014	0.014	4738989
Carbon Tetrachloride	ug	<0.016	<0.016	<0.016	0.016	0.016	4738989
Benzene	ug	0.0245	0.0253	0.0294	0.0090	0.0090	4738989
1,1,2-Trichloroethane	ug	<0.016	<0.016	<0.016	0.016	0.016	4738989
1,2-Dichloropropane	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Trichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Bromodichloromethane	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Dibromochloromethane	ug	<0.0090	<0.0090	<0.0090	0.0090	0.0090	4738989
Toluene	ug	0.197	0.243	0.187	0.014	0.014	4738989
Ethylene Dibromide	ug	<0.010	<0.010	<0.010	0.010	0.010	4738989
Tetrachloroethylene	ug	<0.018	0.024	0.020	0.018	0.018	4738989
Chlorobenzene	ug	<0.011	<0.011	<0.011	0.011	0.011	4738989
Ethylbenzene	ug	<0.014	<0.014	<0.014	0.014	0.014	4738989
m / p-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4738989
Styrene	ug	<0.012	<0.012	<0.012	0.012	0.012	4738989
o-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4738989
Bromoform	ug	<0.014	<0.014	<0.014	0.014	0.014	4738989
Surrogate Recovery (%)							
Bromofluorobenzene	%	100	101	100	N/A	N/A	4738989
D10-Ethylbenzene (FS)	%	116	112	104	N/A	N/A	4738989
D4-1,2-Dichloroethane	%	107	109	109	N/A	N/A	4738989
D8-Toluene	%	99	100	100	N/A	N/A	4738989

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DJP975	DJP976	DJP978			
Sampling Date							
	UNITS	16-21698- VOST-T2-3#19 A/	16-21698- VOST-T3-1#21 A/	16-21698- VOST-T3-2#22 A	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	0.047	<0.020	<0.020	0.020	0.020	4740507
Vinyl Chloride	ug	<0.013	<0.013	<0.013	0.013	0.013	4740507
Bromomethane	ug	0.017	<0.015	<0.015	0.015	0.015	4740507
Trichlorofluoromethane (FREON 11)	ug	0.033	<0.010	<0.010	0.010	0.010	4740507
Acetone (2-Propanone)	ug	0.058	0.063	0.047	0.045	0.025	4740507
1,1-Dichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4740507
Methylene Chloride(Dichloromethane)	ug	<0.019	0.034	0.029	0.019	0.020	4740507
trans-1,2-Dichloroethylene	ug	<0.010	<0.010	<0.010	0.010	0.010	4740507
Chloroform	ug	0.017	0.016	0.017	0.011	0.011	4740507
1,2-Dichloroethane	ug	<0.0070	<0.0070	<0.0070	0.0070	0.0070	4740507
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	<0.036	<0.036	0.036	0.036	4740507
1,1,1-Trichloroethane	ug	<0.014	<0.014	<0.014	0.014	0.014	4740507
Carbon Tetrachloride	ug	<0.016	<0.016	<0.016	0.016	0.016	4740507
Benzene	ug	0.0290	0.0239	0.0269	0.0090	0.0090	4740507
1,1,2-Trichloroethane	ug	<0.016	<0.016	<0.016	0.016	0.016	4740507
1,2-Dichloropropane	ug	<0.011	<0.011	<0.011	0.011	0.011	4740507
Trichloroethylene	ug	<0.011	<0.011	<0.011	0.011	0.011	4740507
Bromodichloromethane	ug	<0.011	<0.011	<0.011	0.011	0.011	4740507
Dibromochloromethane	ug	<0.0090	<0.0090	<0.0090	0.0090	0.0090	4740507
Toluene	ug	0.181	0.180	0.131	0.014	0.014	4740507
Ethylene Dibromide	ug	<0.010	<0.010	<0.010	0.010	0.010	4740507
Tetrachloroethylene	ug	<0.018	<0.018	<0.018	0.018	0.018	4740507
Chlorobenzene	ug	<0.011	<0.011	<0.011	0.011	0.011	4740507
Ethylbenzene	ug	<0.014	<0.014	<0.014	0.014	0.014	4740507
m / p-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4740507
Styrene	ug	<0.012	<0.012	<0.012	0.012	0.012	4740507
o-Xylene	ug	<0.015	<0.015	<0.015	0.015	0.015	4740507
Bromoform	ug	<0.014	<0.014	<0.014	0.014	0.014	4740507
Surrogate Recovery (%)							
Bromofluorobenzene	%	99	99	101	N/A	N/A	4740507
D10-Ethylbenzene (FS)	%	122	90	99	N/A	N/A	4740507
D4-1,2-Dichloroethane	%	106	107	109	N/A	N/A	4740507
D8-Toluene	%	101	98	99	N/A	N/A	4740507

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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VOLATILE ORGANICS BY GC/MS (STACK SAMPLING TRAIN)

Maxxam ID		DJP979			
Sampling Date					
	UNITS	16-21698- VOST-T3-3#23 A	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	0.020	0.020	4740507
Vinyl Chloride	ug	<0.013	0.013	0.013	4740507
Bromomethane	ug	<0.015	0.015	0.015	4740507
Trichlorofluoromethane (FREON 11)	ug	<0.010	0.010	0.010	4740507
Acetone (2-Propanone)	ug	<0.045	0.045	0.025	4740507
1,1-Dichloroethylene	ug	<0.011	0.011	0.011	4740507
Methylene Chloride(Dichloromethane)	ug	0.046	0.019	0.020	4740507
trans-1,2-Dichloroethylene	ug	<0.010	0.010	0.010	4740507
Chloroform	ug	0.016	0.011	0.011	4740507
1,2-Dichloroethane	ug	<0.0070	0.0070	0.0070	4740507
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	0.036	0.036	4740507
1,1,1-Trichloroethane	ug	<0.014	0.014	0.014	4740507
Carbon Tetrachloride	ug	<0.016	0.016	0.016	4740507
Benzene	ug	0.0285	0.0090	0.0090	4740507
1,1,2-Trichloroethane	ug	<0.016	0.016	0.016	4740507
1,2-Dichloropropane	ug	<0.011	0.011	0.011	4740507
Trichloroethylene	ug	<0.011	0.011	0.011	4740507
Bromodichloromethane	ug	<0.011	0.011	0.011	4740507
Dibromochloromethane	ug	<0.0090	0.0090	0.0090	4740507
Toluene	ug	0.114	0.014	0.014	4740507
Ethylene Dibromide	ug	<0.010	0.010	0.010	4740507
Tetrachloroethylene	ug	<0.018	0.018	0.018	4740507
Chlorobenzene	ug	<0.011	0.011	0.011	4740507
Ethylbenzene	ug	<0.014	0.014	0.014	4740507
m / p-Xylene	ug	<0.015	0.015	0.015	4740507
Styrene	ug	<0.012	0.012	0.012	4740507
o-Xylene	ug	<0.015	0.015	0.015	4740507
Bromoform	ug	<0.014	0.014	0.014	4740507
Surrogate Recovery (%)					
Bromofluorobenzene	%	100	N/A	N/A	4740507
D10-Ethylbenzene (FS)	%	105	N/A	N/A	4740507
D4-1,2-Dichloroethane	%	109	N/A	N/A	4740507
D8-Toluene	%	100	N/A	N/A	4740507

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DJP969
Sample ID: 16-21698- VOST-FB- #29 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4738989	N/A	2016/11/08	Yujie Yan

Maxxam ID: DJP970
Sample ID: 16-21698- VOST-T1- 1#13 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4738989	N/A	2016/11/08	Yujie Yan

Maxxam ID: DJP971
Sample ID: 16-21698- VOST-T1- 2#14 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4738989	N/A	2016/11/08	Yujie Yan

Maxxam ID: DJP972
Sample ID: 16-21698- VOST-T1- 3#15 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4738989	N/A	2016/11/08	Yujie Yan

Maxxam ID: DJP973
Sample ID: 16-21698- VOST-T2- 1#17 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4738989	N/A	2016/11/08	Yujie Yan

Maxxam ID: DJP974
Sample ID: 16-21698- VOST-T2- 2#18 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4738989	N/A	2016/11/08	Yujie Yan

Maxxam ID: DJP975
Sample ID: 16-21698- VOST-T2- 3#19 A/
Matrix: Stack Sampling Train
Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4740507	N/A	2016/11/09	Yujie Yan

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DJP976
Sample ID: 16-21698- VOST-T3- 1#21 A/
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4740507	N/A	2016/11/09	Yujie Yan

Maxxam ID: DJP978
Sample ID: 16-21698- VOST-T3- 2#22 A
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4740507	N/A	2016/11/09	Yujie Yan

Maxxam ID: DJP979
Sample ID: 16-21698- VOST-T3- 3#23 A
Matrix: Stack Sampling Train

Collected:
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4740507	N/A	2016/11/09	Yujie Yan

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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4738989	YYA	Spiked Blank	Bromofluorobenzene	2016/11/08		100	%	43 - 131
			D10-Ethylbenzene (FS)	2016/11/08		107	%	47 - 157
			D4-1,2-Dichloroethane	2016/11/08		99	%	64 - 133
			D8-Toluene	2016/11/08		97	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2016/11/08		127	%	50 - 150
			Vinyl Chloride	2016/11/08		108	%	50 - 150
			Bromomethane	2016/11/08		100	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2016/11/08		107	%	50 - 150
			Acetone (2-Propanone)	2016/11/08		78	%	50 - 150
			1,1-Dichloroethylene	2016/11/08		107	%	50 - 150
			Methylene Chloride(Dichloromethane)	2016/11/08		103	%	50 - 150
			trans-1,2-Dichloroethylene	2016/11/08		116	%	50 - 150
			Chloroform	2016/11/08		107	%	50 - 150
			1,2-Dichloroethane	2016/11/08		107	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2016/11/08		91	%	50 - 150
			1,1,1-Trichloroethane	2016/11/08		106	%	50 - 150
			Carbon Tetrachloride	2016/11/08		107	%	50 - 150
			Benzene	2016/11/08		106	%	50 - 150
			1,1,2-Trichloroethane	2016/11/08		106	%	50 - 150
			1,2-Dichloropropane	2016/11/08		107	%	50 - 150
			Trichloroethylene	2016/11/08		106	%	50 - 150
			Bromodichloromethane	2016/11/08		108	%	50 - 150
			Dibromochloromethane	2016/11/08		107	%	50 - 150
			Toluene	2016/11/08		104	%	50 - 150
			Ethylene Dibromide	2016/11/08		106	%	50 - 150
			Tetrachloroethylene	2016/11/08		106	%	50 - 150
			Chlorobenzene	2016/11/08		106	%	50 - 150
			Ethylbenzene	2016/11/08		106	%	50 - 150
			m / p-Xylene	2016/11/08		107	%	50 - 150
			Styrene	2016/11/08		107	%	50 - 150
			o-Xylene	2016/11/08		107	%	50 - 150
			Bromoform	2016/11/08		110	%	50 - 150
4738989	YYA	Method Blank	Bromofluorobenzene	2016/11/08		100	%	43 - 131
			D10-Ethylbenzene (FS)	2016/11/08		105	%	47 - 157
			D4-1,2-Dichloroethane	2016/11/08		107	%	64 - 133
			D8-Toluene	2016/11/08		101	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2016/11/08	<0.020		ug	
			Vinyl Chloride	2016/11/08	<0.013		ug	
			Bromomethane	2016/11/08	<0.015		ug	
			Trichlorofluoromethane (FREON 11)	2016/11/08	<0.010		ug	
			Acetone (2-Propanone)	2016/11/08	<0.045		ug	
			1,1-Dichloroethylene	2016/11/08	<0.011		ug	
			Methylene Chloride(Dichloromethane)	2016/11/08	<0.019		ug	
			trans-1,2-Dichloroethylene	2016/11/08	<0.010		ug	
			Chloroform	2016/11/08	<0.011		ug	
			1,2-Dichloroethane	2016/11/08	<0.0070		ug	
			Methyl Ethyl Ketone (2-Butanone)	2016/11/08	<0.036		ug	
			1,1,1-Trichloroethane	2016/11/08	<0.014		ug	
			Carbon Tetrachloride	2016/11/08	<0.016		ug	
			Benzene	2016/11/08	<0.0090		ug	
			1,1,2-Trichloroethane	2016/11/08	<0.016		ug	
			1,2-Dichloropropane	2016/11/08	<0.011		ug	

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Trichloroethylene	2016/11/08	<0.011		ug	
			Bromodichloromethane	2016/11/08	<0.011		ug	
			Dibromochloromethane	2016/11/08	<0.0090		ug	
			Toluene	2016/11/08	<0.014		ug	
			Ethylene Dibromide	2016/11/08	<0.010		ug	
			Tetrachloroethylene	2016/11/08	<0.018		ug	
			Chlorobenzene	2016/11/08	<0.011		ug	
			Ethylbenzene	2016/11/08	<0.014		ug	
			m / p-Xylene	2016/11/08	<0.015		ug	
			Styrene	2016/11/08	<0.012		ug	
			o-Xylene	2016/11/08	<0.015		ug	
			Bromoform	2016/11/08	<0.014		ug	
4740507	YYA	Spiked Blank	Bromofluorobenzene	2016/11/09		100	%	43 - 131
			D10-Ethylbenzene (FS)	2016/11/09		115	%	47 - 157
			D4-1,2-Dichloroethane	2016/11/09		100	%	64 - 133
			D8-Toluene	2016/11/09		99	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2016/11/09		125	%	50 - 150
			Vinyl Chloride	2016/11/09		108	%	50 - 150
			Bromomethane	2016/11/09		102	%	50 - 150
			Trichlorofluoromethane (FREON 11)	2016/11/09		107	%	50 - 150
			Acetone (2-Propanone)	2016/11/09		69	%	50 - 150
			1,1-Dichloroethylene	2016/11/09		107	%	50 - 150
			Methylene Chloride(Dichloromethane)	2016/11/09		106	%	50 - 150
			trans-1,2-Dichloroethylene	2016/11/09		116	%	50 - 150
			Chloroform	2016/11/09		107	%	50 - 150
			1,2-Dichloroethane	2016/11/09		108	%	50 - 150
			Methyl Ethyl Ketone (2-Butanone)	2016/11/09		77	%	50 - 150
			1,1,1-Trichloroethane	2016/11/09		106	%	50 - 150
			Carbon Tetrachloride	2016/11/09		107	%	50 - 150
			Benzene	2016/11/09		106	%	50 - 150
			1,1,2-Trichloroethane	2016/11/09		108	%	50 - 150
			1,2-Dichloropropane	2016/11/09		107	%	50 - 150
			Trichloroethylene	2016/11/09		106	%	50 - 150
			Bromodichloromethane	2016/11/09		109	%	50 - 150
			Dibromochloromethane	2016/11/09		108	%	50 - 150
			Toluene	2016/11/09		106	%	50 - 150
			Ethylene Dibromide	2016/11/09		108	%	50 - 150
			Tetrachloroethylene	2016/11/09		109	%	50 - 150
			Chlorobenzene	2016/11/09		108	%	50 - 150
			Ethylbenzene	2016/11/09		107	%	50 - 150
			m / p-Xylene	2016/11/09		108	%	50 - 150
			Styrene	2016/11/09		109	%	50 - 150
			o-Xylene	2016/11/09		109	%	50 - 150
			Bromoform	2016/11/09		109	%	50 - 150
4740507	YYA	Method Blank	Bromofluorobenzene	2016/11/09		99	%	43 - 131
			D10-Ethylbenzene (FS)	2016/11/09		107	%	47 - 157
			D4-1,2-Dichloroethane	2016/11/09		108	%	64 - 133
			D8-Toluene	2016/11/09		101	%	68 - 121
			Dichlorodifluoromethane (FREON 12)	2016/11/09	<0.020		ug	
			Vinyl Chloride	2016/11/09	<0.013		ug	
			Bromomethane	2016/11/09	<0.015		ug	
			Trichlorofluoromethane (FREON 11)	2016/11/09	<0.010		ug	

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Maxxam Job #: B6N9201
Report Date: 2016/11/10

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Acetone (2-Propanone)	2016/11/09	<0.045		ug	
			1,1-Dichloroethylene	2016/11/09	<0.011		ug	
			Methylene Chloride(Dichloromethane)	2016/11/09	<0.019		ug	
			trans-1,2-Dichloroethylene	2016/11/09	<0.010		ug	
			Chloroform	2016/11/09	<0.011		ug	
			1,2-Dichloroethane	2016/11/09	<0.0070		ug	
			Methyl Ethyl Ketone (2-Butanone)	2016/11/09	<0.036		ug	
			1,1,1-Trichloroethane	2016/11/09	<0.014		ug	
			Carbon Tetrachloride	2016/11/09	<0.016		ug	
			Benzene	2016/11/09	<0.0090		ug	
			1,1,2-Trichloroethane	2016/11/09	<0.016		ug	
			1,2-Dichloropropane	2016/11/09	<0.011		ug	
			Trichloroethylene	2016/11/09	<0.011		ug	
			Bromodichloromethane	2016/11/09	<0.011		ug	
			Dibromochloromethane	2016/11/09	<0.0090		ug	
			Toluene	2016/11/09	<0.014		ug	
			Ethylene Dibromide	2016/11/09	<0.010		ug	
			Tetrachloroethylene	2016/11/09	<0.018		ug	
			Chlorobenzene	2016/11/09	<0.011		ug	
			Ethylbenzene	2016/11/09	<0.014		ug	
			m / p-Xylene	2016/11/09	<0.015		ug	
			Styrene	2016/11/09	<0.012		ug	
			o-Xylene	2016/11/09	<0.015		ug	
			Bromoform	2016/11/09	<0.014		ug	

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Maureen Smith

Maureen Smith, Supervisor, Volatiles

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: Method Blank

Field ID#: Method Blank

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP969

Field ID#: 16-21698-VOST-FB #29A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP970

Field ID#: 16-21698-VOST-T1-1 #13A/B

Concentration Units
ug

Number of TICs found:_____0_____

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP971

Field ID#: 16-21698-VOST-T1-2 #14A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP972

Field ID#: 16-21698-VOST-T1-3 #15/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP973

Field ID#: 16-21698-VOST-T2-1 #17A/B

Concentration Units
ug

Number of TICs found:_____0_____

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

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Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP974

Field ID#: 16-21698-VOST-T2-2 #18A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP975

Field ID#: 16-21698-VOST-T2-3 #19A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP976

Field ID#: 16-21698-VOST-T3-1 #21A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP978

Field ID#: 16-21698-VOST-T3-2#22A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

Maxxam Analytical

Volatile Organics Analysis Data Sheets
Tentatively Identified Compounds

SAMPLE#: DJP979

Field ID#: 16-21698-VOST-T3-3 #23A/B

Number of TICs found:_____0_____

Concentration Units
ug

	CAS #	Compound Name	RT	Est. Conc.	Match %
1.		1,3-Butadiene < 0.025ug			
2.		Cumene < 0.025ug			
3.		1,3,5-Trimethylbenzene < 0.025 ug			
4.		Trichlorotrifluoroethane < 0.025ug			

APPENDIX 20

Aldehydes Recovery Data Sheets
(8 page)

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	1
Test Location:	UNIT 1 OUTLET
Test Date:	OCT28,16

Sample ID: 16 - 21698 - M430 - 1

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	89.6
Initial Mass:	104.7
with Toluene:	106.5
Final Mass:	108.9
Gain:	2.4 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	76.2
Mass with impingers:	127.3
With Toluene rinse:	131.7
Total sample:	55.5 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	102.3
Initial Mass:	117.2
with Toluene:	119.1
Final Mass:	118.9
Gain:	-0.2 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	122.5
Final Mass:	124.3
Gain:	1.8 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	88.1
Initial Mass:	103.2
with Toluene:	105.1
Final Mass:	104.9
Gain:	-0.2 ✓

Impinger 4 (Empty)	
Initial Mass:	98.9
Final Mass:	98.9
Gain:	0.0 ✓

Total Moisture Gain: 3.8 ✓

Tray: D

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	
Date:	OCT28,16

VAN

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	2
Test Location:	UNIT 1 OUTLET
Test Date:	Oct 28, 16

Sample ID: 16 - 21698 - M430 - 2

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	100.0
Initial Mass:	115.0
with Toluene:	117.0
Final Mass:	119.0
Gain:	2.0 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	78.3
Mass with impingers:	129.5
With Toluene rinse:	133.8
Total sample:	55.5 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	88.1
Initial Mass:	103.1
with Toluene:	105.1
Final Mass:	105.0
Gain:	-0.1 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	104.9
Final Mass:	106.6
Gain:	1.7 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	87.2
Initial Mass:	102.1
with Toluene:	103.9
Final Mass:	101.8
Gain:	-2.1 ✓

Impinger 4 (Empty)	
Initial Mass:	104.2
Final Mass:	106.0
Gain:	1.8 ✓

Total Moisture Gain: 3.3 ✓

Tray: C

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	Oct 28, 16

AN

Method 430 Train Recovery Data Sheet

Client:	**Covanta DYEC**
Project No.:	**21698**
Test No.:	3
Test Location:	UNIT 1 OUTLET
Test Date:	OCT 31, 16

Sample ID: 16 - 21698 - M430 - 3

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	89.5
Initial Mass:	104.7
with Toluene:	106.7
Final Mass:	108.7
Gain:	2.0 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	102.7
Initial Mass:	117.6
with Toluene:	119.6
Final Mass:	~~119.7~~ 119.0
Gain:	~~3.9~~ -0.6 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	88.2
Initial Mass:	103.3
with Toluene:	105.3
Final Mass:	2.0 ✓
Gain:	

Impinger 4 (Empty)	
Initial Mass:	98.8
Final Mass:	98.8
Gain:	0.0 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	76.0
Mass with impingers:	127.8
With Toluene rinse:	132.0
Total sample:	56.0 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	124.2
Final Mass:	125.8
Gain:	1.6 ✓

Total Moisture Gain:	5.0 ✓

Tray: D

Train Loaded By:	BY
Train Recovered By:	BY
Recovery Witnessed By:	
Date:	Oct 31, 16

VAN

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	BLANK 1
Test Location:	—
Test Date:	OCT 31, 16

Sample ID: 16 - 21698 - M430 -

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	89.6
Initial Mass:	104.5
with Toluene:	106.2
Final Mass:	106.2
Gain:	0.0 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	115.7
Mass with impingers:	167.4
With Toluene rinse:	173.1
Total sample:	57.4 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	102.4
Initial Mass:	117.3
with Toluene:	119.4
Final Mass:	119.4
Gain:	0.0 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	125.6
Final Mass:	125.6
Gain:	0.0 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	88.1
Initial Mass:	103.0
with Toluene:	105.0
Final Mass:	105.0
Gain:	0.0 ✓

Impinger 4 (Empty)	
Initial Mass:	99.3
Final Mass:	99.3
Gain:	0.0 ✓

Total Moisture Gain: 0.0 ✓

Tray: D

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	OCT 31, 16

VAN

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	1
Test Location:	UNIT 2
Test Date:	NOV 1, 16

Sample ID: 16 - 21698 - M430 - 4

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	100.0
Initial Mass:	115.4
with Toluene:	117.4
Final Mass:	117.9
Gain:	0.5 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	116.4
Mass with impingers:	167.6
With Toluene rinse:	172.3
Total sample:	55.9 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	88.1
Initial Mass:	103.0
with Toluene:	105.0
Final Mass:	106.0
Gain:	1.0 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	106.6
Final Mass:	108.4
Gain:	1.8 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	86.9
Initial Mass:	101.8
with Toluene:	103.8
Final Mass:	102.0
Gain:	-1.8 ✓

Impinger 4 (Empty)	
Initial Mass:	104.1
Final Mass:	105.8
Gain:	1.7 ✓

Total Moisture Gain: 3.2 ✓

Tray: C

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	NOV 1, 16

VAN

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	2
Test Location:	UNIT 2
Test Date:	NOV 2, 16

Sample ID: 16 - 21698 - M430 - 5

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	100.1
Initial Mass:	115.2
with Toluene:	117.2
Final Mass:	119.6
Gain:	2.4 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	115.8
Mass with impingers:	168.0
With Toluene rinse:	174.4
Total sample:	58.6 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	88.2
Initial Mass:	103.1
with Toluene:	105.1
Final Mass:	105.2
Gain:	0.1 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	103.8
Final Mass:	105.7
Gain:	1.9 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	86.9
Initial Mass:	101.9
with Toluene:	103.9
Final Mass:	103.6
Gain:	-0.3 ✓

Impinger 4 (Empty)	
Initial Mass:	104.2
Final Mass:	104.6
Gain:	0.4 ✓

Total Moisture Gain: ~~4.5~~ 4.5 ✓

Tray: C

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	NOV 2, 16

VAN

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	3
Test Location:	UNIT 2
Test Date:	Nov 3, 16

Sample ID: 16 - 21698 - M430 - 6

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	100.0
Initial Mass:	115.0
with Toluene:	117.0
Final Mass:	118.9
Gain:	1.9 ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	116.9
Mass with impingers:	167.9
With Toluene rinse:	172.9
Total sample:	56.0 ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	88.1
Initial Mass:	103.1
with Toluene:	105.0
Final Mass:	105.2
Gain:	0.2 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	105.6
Final Mass:	107.1
Gain:	1.5 ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	86.9
Initial Mass:	101.8
with Toluene:	103.8
Final Mass:	103.4
Gain:	-0.4 ✓

Impinger 4 (Empty)	
Initial Mass:	104.2
Final Mass:	104.4
Gain:	0.2 ✓

Total Moisture Gain: 3.4 ✓

Tray: C

Train Loaded By:	BT
Train Recovered By:	BT
Recovery Witnessed By:	
Date:	NOV 3, 16

VAN

Method 430 Train Recovery Data Sheet

Client:	Covanta DYEC
Project No.:	21698
Test No.:	BLANK 2
Test Location:	—
Test Date:	NOV 2, 16

Sample ID: 16 - 21698 - M430 - BLANK 2

Impingers 1, 2, 3, 4

Impinger 1 (15 ml DNPH)	
Empty Mass:	100.4
Initial Mass:	115.0
with Toluene:	117.0
Final Mass:	117.0
Gain:	— ✓

Impinger 2 (15 ml DNPH)	
Empty Mass:	88.2
Initial Mass:	103.2
with Toluene:	105.1
Final Mass:	105.1
Gain:	— ✓

Impinger 3 (15 ml DNPH)	
Empty Mass:	87.0
Initial Mass:	102.1
with Toluene:	104.2
Final Mass:	104.2
Gain:	— ✓

Impinger 4 (Empty)	
Initial Mass:	104.1
Final Mass:	104.1
Gain:	— ✓

Imp. 1 - 4 plus rinsings	
Colour:	YELLOW
Bottle empty:	116.5
Mass with impingers:	168.9
With Toluene rinse:	172.1
Total sample:	55.6 ✓

Impinger 5 (Silica Gel)	
Initial Mass:	116.5
Final Mass:	116.5
Gain:	— ✓

Total Moisture Gain: — ✓

Tray:

Train Loaded By:	DT
Train Recovered By:	DT
Recovery Witnessed By:	—
Date:	NOV 2, 16

JAN

APPENDIX 21

Aldehydes Analytical Reports
(12 pages)

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:Chris Belore

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/09
Report #: R4240353
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N5815
Received: 2016/10/31, 21:48

Sample Matrix: Stack Sampling Train
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Aldehydes + Ketones in Air	4	2016/11/03	2016/11/04	BRL SOP-00229	EPA 8315/M0011 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
09 Nov 2016 17:59:14 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5815
Report Date: 2016/11/09

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

CARBONYL COMPOUNDS BY HPLC (STACK SAMPLING TRAIN)

Maxxam ID		DIZ924	DIZ925	DIZ926	DIZ927			
Sampling Date		2016/10/31	2016/10/28	2016/10/28	2016/10/31			
	UNITS	16-21698-M430 BLANK	16-21698-M430 -1	16-21698-M430 -2	16-21698-M430 -3	RDL	MDL	QC Batch
Formaldehyde (Methanal)	ug/Tot.	2.8	3.3	1.9	3.0	0.2	0.1	4731481
Acetaldehyde (Ethanal)	ug/Tot.	<2	<2	<2	<2	2	0.4	4731481
Acrolein	ug/Tot.	<2	<2	<2	<2	2	0.4	4731481

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5815
Report Date: 2016/11/09

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DIZ924
Sample ID: 16-21698-M430 BLANK
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4731481	2016/11/03	2016/11/04	Dennis Boodram

Maxxam ID: DIZ925
Sample ID: 16-21698-M430 -1
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4731481	2016/11/03	2016/11/04	Dennis Boodram

Maxxam ID: DIZ926
Sample ID: 16-21698-M430 -2
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4731481	2016/11/03	2016/11/04	Dennis Boodram

Maxxam ID: DIZ927
Sample ID: 16-21698-M430 -3
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4731481	2016/11/03	2016/11/04	Dennis Boodram

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5815
Report Date: 2016/11/09

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

GENERAL COMMENTS

Samples have been corrected for desorption efficiencies if average percent recoveries are less than 80% (does not apply to gravimetric and inorganic analysis).

Results relate only to the items tested.

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N5815
Report Date: 2016/11/09

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4731481	DEO	Spiked Blank	Formaldehyde (Methanal)	2016/11/04		95	%	N/A
			Acetaldehyde (Ethanal)	2016/11/04		89	%	N/A
			Acrolein	2016/11/04		76	%	N/A
4731481	DEO	Spiked Blank DUP	Formaldehyde (Methanal)	2016/11/04		99	%	N/A
			Acetaldehyde (Ethanal)	2016/11/04		93	%	N/A
			Acrolein	2016/11/04		75	%	N/A
4731481	DEO	RPD	Formaldehyde (Methanal)	2016/11/04	4.0		%	30
			Acetaldehyde (Ethanal)	2016/11/04	4.0		%	30
			Acrolein	2016/11/04	0.40		%	30
4731481	DEO	Method Blank	Formaldehyde (Methanal)	2016/11/04	<0.2		ug/Tot.	
			Acetaldehyde (Ethanal)	2016/11/04	<2		ug/Tot.	
			Acrolein	2016/11/04	<2		ug/Tot.	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Karen Nicol

Karen Nicol, Supervisor, Semi-Volatiles

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site Location: COVANTA

Attention:Chris Belore

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/11
Report #: R4244002
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6N9188
Received: 2016/11/03, 18:08

Sample Matrix: Stack Sampling Train
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Aldehydes + Ketones in Air	5	2016/11/04	2016/11/08	BRL SOP-00229	EPA 8315/M0011 m

Remarks:

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Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
11 Nov 2016 17:57:14 -05:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N9188
Report Date: 2016/11/11

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

CARBONYL COMPOUNDS BY HPLC (STACK SAMPLING TRAIN)

Maxxam ID		DJP923	DJP924	DJP925	DJP926			
Sampling Date		2016/11/03	2016/11/01	2016/11/02	2016/11/03			
	UNITS	16-21698-M430 BLANK2	16-21698-M430 -4	16-21698-M430 -5	16-21698-M430 -6	RDL	MDL	QC Batch
Formaldehyde (Methanal)	ug/Tot.	2.3	2.1	2.5	2.3	0.2	0.1	4734120
Acetaldehyde (Ethanal)	ug/Tot.	<2	<2	<2	<2	2	0.4	4734120
Acrolein	ug/Tot.	<2	<2	<2	<2	2	0.4	4734120

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		DJP951			
Sampling Date		2016/11/03			
	UNITS	16-21698-M430 -9 TRIP SPIKE	RDL	MDL	QC Batch
Formaldehyde (Methanal)	ug/Tot.	7.4	0.2	0.1	4734120
Acetaldehyde (Ethanal)	ug/Tot.	7	2	0.4	4734120
Acrolein	ug/Tot.	<2	2	0.4	4734120

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam
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Maxxam Job #: B6N9188
Report Date: 2016/11/11

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DJP923
Sample ID: 16-21698-M430 BLANK2
Matrix: Stack Sampling Train

Collected: 2016/11/03
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4734120	2016/11/04	2016/11/08	Dennis Boodram

Maxxam ID: DJP924
Sample ID: 16-21698-M430 -4
Matrix: Stack Sampling Train

Collected: 2016/11/01
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4734120	2016/11/04	2016/11/08	Dennis Boodram

Maxxam ID: DJP925
Sample ID: 16-21698-M430 -5
Matrix: Stack Sampling Train

Collected: 2016/11/02
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4734120	2016/11/04	2016/11/08	Dennis Boodram

Maxxam ID: DJP926
Sample ID: 16-21698-M430 -6
Matrix: Stack Sampling Train

Collected: 2016/11/03
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4734120	2016/11/04	2016/11/08	Dennis Boodram

Maxxam ID: DJP951
Sample ID: 16-21698-M430 -9 TRIP SPIKE
Matrix: Stack Sampling Train

Collected: 2016/11/03
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Aldehydes + Ketones in Air	LC/UV	4734120	2016/11/04	2016/11/08	Dennis Boodram

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GENERAL COMMENTS

Samples have been corrected for desorption efficiencies if average percent recoveries are less than 80% (does not apply to gravimetric and inorganic analysis).

Results relate only to the items tested.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6N9188
Report Date: 2016/11/11

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4734120	DEO	Spiked Blank	Formaldehyde (Methanal)	2016/11/08		98	%	N/A
			Acetaldehyde (Ethanal)	2016/11/08		92	%	N/A
			Acrolein	2016/11/08		78	%	N/A
4734120	DEO	Spiked Blank DUP	Formaldehyde (Methanal)	2016/11/08		100	%	N/A
			Acetaldehyde (Ethanal)	2016/11/08		93	%	N/A
			Acrolein	2016/11/08		70	%	N/A
4734120	DEO	RPD	Formaldehyde (Methanal)	2016/11/08	1.5		%	30
			Acetaldehyde (Ethanal)	2016/11/08	1.2		%	30
			Acrolein	2016/11/08	10		%	30
4734120	DEO	Method Blank	Formaldehyde (Methanal)	2016/11/08	<0.2		ug/Tot.	
			Acetaldehyde (Ethanal)	2016/11/08	<2		ug/Tot.	
			Acrolein	2016/11/08	<2		ug/Tot.	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Maxxam
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Maxxam Job #: B6N9188
Report Date: 2016/11/11

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA
Your P.O. #: 21698-J2290

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Karen Nicol

Karen Nicol, Supervisor, Semi-Volatiles

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APPENDIX 22

SVOC and VOST Proof Data
(52 pages)

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site#: MEDIA PREP
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE

Attention:Dan Turton

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256150
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6L7921
Received: 2016/10/11, 12:38

Sample Matrix: Air Sampling Media
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Chlorobenzenes in MM5 Trains (EPA M0010)	5	2016/10/13	2016/10/29	BRL SOP-00202	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	1	2016/10/13	2016/10/17	BRL SOP-00204	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	4	2016/10/14	2016/10/17	BRL SOP-00204	In house (M0010)
Dioxins/Furans in Air (Method 23)	4	2016/10/12	2016/10/16	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	1	2016/10/13	2016/10/21	BRL SOP-00404	EPA M23/23A m
Hydrogen Halides in H2SO4 Imp.	1	2016/10/17	2016/10/17	BRL SOP-00108	EPA 26A m
PAH's in MM5 SamplingTrains (CARB429mod)	5	2016/10/13	2016/10/14	BRL SOP-00201	CARB429(ARBM1,M2)mod
PCBs in a Sampling Train (1668Amod)	4	2016/10/12	2016/10/16	BRL SOP-00408	EPA 1668A m
PCBs in a Sampling Train (1668Amod)	1	2016/10/13	2016/10/17	BRL SOP-00408	EPA 1668A m
VOST EPA5041A, 8260C for 0030, 0031	1	N/A	2016/10/18	BRL SOP-00302	EPA5041A, 8260C

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 21698-J2290
Your Project #: 21698
Site#: MEDIA PREP
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE

Attention:Dan Turton

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256150
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6L7921
Received: 2016/10/11, 12:38

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
22 Nov 2016 18:11:59

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DFH882							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF G-J	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<6.3	6.3	100	N/A	0.00010	0.00063	N/A	4699889
344'5-TetraCB-(81)	pg	<6.4	6.4	100	N/A	0.00030	0.0019	N/A	4699889
233'44'-PentaCB-(105)	pg	<6.9	6.9	100	N/A	0.000030	0.00021	N/A	4699889
2344'5-PentaCB-(114)	pg	<6.6	6.6	100	N/A	0.000030	0.00020	N/A	4699889
23'44'5-PentaCB-(118)	pg	10	6.8	100	N/A	0.000030	0.00030	N/A	4699889
23'44'5'-PentaCB-(123)	pg	<7.6	7.6	100	N/A	0.000030	0.00023	N/A	4699889
33'44'5-PentaCB-(126)	pg	<6.9	6.9	100	N/A	0.10	0.69	N/A	4699889
HexaCB-(156)+(157)	pg	<1.5	1.5	200	N/A	0.000030	0.000045	N/A	4699889
23'44'55'-HexaCB-(167)	pg	<1.6	1.6	100	N/A	0.000030	0.000048	N/A	4699889
33'44'55'-HexaCB-(169)	pg	<1.6	1.6	100	N/A	0.030	0.048	N/A	4699889
233'44'55'-HeptaCB-(189)	pg	<3.3	3.3	100	N/A	0.000030	0.000099	N/A	4699889
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	0.74	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5-HexaCB-(156)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5'-HexaCB-(157)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'-PentaCB-(105)	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'55'-HexaCB-(167)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2344'5-PentaCB-(114)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'5-PentaCB-(118)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2'344'5-PentaCB-(123)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'55'-HexaCB-(169)	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'5-PentaCB-(126)	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'-TetraCB-(77)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-344'5-TetraCB-(81)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4699889

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DFH883							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF K-N	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<7.7	7.7	100	N/A	0.00010	0.00077	N/A	4699889
344'5-TetraCB-(81)	pg	<7.9	7.9	100	N/A	0.00030	0.0024	N/A	4699889
233'44'-PentaCB-(105)	pg	<9.7	9.7	100	N/A	0.000030	0.00029	N/A	4699889
2344'5-PentaCB-(114)	pg	<9.3	9.3	100	N/A	0.000030	0.00028	N/A	4699889
23'44'5-PentaCB-(118)	pg	<9.6	9.6	100	N/A	0.000030	0.00029	N/A	4699889
23'44'5'-PentaCB-(123)	pg	<11	11	100	N/A	0.000030	0.00033	N/A	4699889
33'44'5-PentaCB-(126)	pg	<9.8	9.8	100	N/A	0.10	0.98	N/A	4699889
HexaCB-(156)+(157)	pg	<2.4	2.4	200	N/A	0.000030	0.000072	N/A	4699889
23'44'55'-HexaCB-(167)	pg	<2.5	2.5	100	N/A	0.000030	0.000075	N/A	4699889
33'44'55'-HexaCB-(169)	pg	<2.5	2.5	100	N/A	0.030	0.075	N/A	4699889
233'44'55'-HeptaCB-(189)	pg	<2.9	2.9	100	N/A	0.000030	0.000087	N/A	4699889
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1.1	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5-HexaCB-(156)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5'-HexaCB-(157)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'-PentaCB-(105)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'55'-HexaCB-(167)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2344'5-PentaCB-(114)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'5-PentaCB-(118)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2'344'5-PentaCB-(123)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'55'-HexaCB-(169)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'5-PentaCB-(126)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'-TetraCB-(77)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-344'5-TetraCB-(81)	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4699889

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

Maxxam
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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DFH884							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF O-R	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<6.0	6.0	100	N/A	0.00010	0.00060	N/A	4699889
344'5-TetraCB-(81)	pg	<6.1	6.1	100	N/A	0.00030	0.0018	N/A	4699889
233'44'-PentaCB-(105)	pg	<6.2	6.2	100	N/A	0.000030	0.00019	N/A	4699889
2344'5-PentaCB-(114)	pg	<5.9	5.9	100	N/A	0.000030	0.00018	N/A	4699889
23'44'5-PentaCB-(118)	pg	<6.1	6.1	100	N/A	0.000030	0.00018	N/A	4699889
23'44'5'-PentaCB-(123)	pg	<6.8	6.8	100	N/A	0.000030	0.00020	N/A	4699889
33'44'5-PentaCB-(126)	pg	<6.2	6.2	100	N/A	0.10	0.62	N/A	4699889
HexaCB-(156)+(157)	pg	<1.4	1.4	200	N/A	0.000030	0.000042	N/A	4699889
23'44'55'-HexaCB-(167)	pg	<1.5	1.5	100	N/A	0.000030	0.000045	N/A	4699889
33'44'55'-HexaCB-(169)	pg	<1.4	1.4	100	N/A	0.030	0.042	N/A	4699889
233'44'55'-HeptaCB-(189)	pg	<2.6	2.6	100	N/A	0.000030	0.000078	N/A	4699889
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	0.67	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5-HexaCB-(156)	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5'-HexaCB-(157)	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'-PentaCB-(105)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'55'-HexaCB-(167)	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2344'5-PentaCB-(114)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'5-PentaCB-(118)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2'344'5-PentaCB-(123)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'55'-HexaCB-(169)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'5-PentaCB-(126)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'-TetraCB-(77)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-344'5-TetraCB-(81)	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4699889

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DFH885							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF S-V	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<8.0	8.0	100	N/A	0.00010	0.00080	N/A	4699889
344'5-TetraCB-(81)	pg	<8.1	8.1	100	N/A	0.00030	0.0024	N/A	4699889
233'44'-PentaCB-(105)	pg	<8.7	8.7	100	N/A	0.000030	0.00026	N/A	4699889
2344'5-PentaCB-(114)	pg	<8.4	8.4	100	N/A	0.000030	0.00025	N/A	4699889
23'44'5-PentaCB-(118)	pg	8.8	8.6	100	N/A	0.000030	0.00026	N/A	4699889
23'44'5'-PentaCB-(123)	pg	<9.6	9.6	100	N/A	0.000030	0.00029	N/A	4699889
33'44'5-PentaCB-(126)	pg	<8.8	8.8	100	N/A	0.10	0.88	N/A	4699889
HexaCB-(156)+(157)	pg	<2.3	2.3	200	N/A	0.000030	0.000069	N/A	4699889
23'44'55'-HexaCB-(167)	pg	<2.4	2.4	100	N/A	0.000030	0.000072	N/A	4699889
33'44'55'-HexaCB-(169)	pg	<2.4	2.4	100	N/A	0.030	0.072	N/A	4699889
233'44'55'-HeptaCB-(189)	pg	<5.3	5.3	100	N/A	0.000030	0.00016	N/A	4699889
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	0.96	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5-HexaCB-(156)	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'5'-HexaCB-(157)	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-233'44'-PentaCB-(105)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'55'-HexaCB-(167)	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2344'5-PentaCB-(114)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-23'44'5-PentaCB-(118)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-2'344'5-PentaCB-(123)	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'55'-HexaCB-(169)	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'5-PentaCB-(126)	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-33'44'-TetraCB-(77)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699889
C13-344'5-TetraCB-(81)	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4699889

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DFH886							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	RESIN PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<4.4	4.4	200	N/A	0.00010	0.00044	N/A	4700568
344'5-TetraCB-(81)	pg	<4.5	4.5	200	N/A	0.00030	0.0014	N/A	4700568
233'44'-PentaCB-(105)	pg	<2.0	2.0	200	N/A	0.000030	0.000060	N/A	4700568
2344'5-PentaCB-(114)	pg	<1.9	1.9	200	N/A	0.000030	0.000057	N/A	4700568
23'44'5-PentaCB-(118)	pg	<2.0	2.0	200	N/A	0.000030	0.000060	N/A	4700568
23'44'5'-PentaCB-(123)	pg	<2.2	2.2	200	N/A	0.000030	0.000066	N/A	4700568
33'44'5-PentaCB-(126)	pg	<2.0	2.0	200	N/A	0.10	0.20	N/A	4700568
HexaCB-(156)+(157)	pg	<2.4	2.4	400	N/A	0.000030	0.000072	N/A	4700568
23'44'55'-HexaCB-(167)	pg	<2.6	2.6	200	N/A	0.000030	0.000078	N/A	4700568
33'44'55'-HexaCB-(169)	pg	<2.6	2.6	200	N/A	0.030	0.078	N/A	4700568
233'44'55'-HeptaCB-(189)	pg	<2.3	2.3	200	N/A	0.000030	0.000069	N/A	4700568
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	0.28	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	116	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-233'44'5-HexaCB-(156)	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-233'44'5'-HexaCB-(157)	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-233'44'-PentaCB-(105)	%	125	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-23'44'55'-HexaCB-(167)	%	121	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-2344'5-PentaCB-(114)	%	123	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-23'44'5-PentaCB-(118)	%	121	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-2'344'5-PentaCB-(123)	%	124	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-33'44'55'-HexaCB-(169)	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-33'44'5-PentaCB-(126)	%	126	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-33'44'-TetraCB-(77)	%	123	N/A	N/A	N/A	N/A	N/A	N/A	4700568
C13-344'5-TetraCB-(81)	%	119	N/A	N/A	N/A	N/A	N/A	N/A	4700568

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DFI668						
Sampling Date		2016/10/11 13:08			TOXIC EQUIVALENCY		# of	
	UNITS	3L - 0.1N H2SO4 PROOFED	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Hydrochloric Acid	ug	<200	200	60	N/A	N/A	N/A	4704929
Hydrofluoric Acid	ug	<200	200	110	N/A	N/A	N/A	4704929
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	0	N/A	N/A

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH882	DFH883	DFH884	DFH885			
Sampling Date		2016/10/11 13:08	2016/10/11 13:08	2016/10/11 13:08	2016/10/11 13:08			
	UNITS	TRAIN PROOF G-J	TRAIN PROOF K-N	TRAIN PROOF O-R	TRAIN PROOF S-V	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
1-Methylphenanthrene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
2-Chloronaphthalene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
2-Methylanthracene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
2-Methylnaphthalene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
3-Methylcholanthrene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
7,12-Dimethylbenzo(a)anthracene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
9,10-Dimethylanthracene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
Acenaphthene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Acenaphthylene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Anthracene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Benzo(a)anthracene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Benzo(a)fluorene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
Benzo(a)pyrene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Benzo(b)Anthracene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699298
Benzo(b)fluoranthene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Benzo(b)fluorene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Benzo(e)pyrene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Benzo(g,h,i)perylene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699298
Benzo(k)fluoranthene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Biphenyl	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Chrysene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Coronene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
Dibenz(a,h)anthracene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Dibenzo(a,c)anthracene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699298
Dibenzo(a,e)pyrene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
Fluoranthene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Fluorene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Indeno(1,2,3-cd)pyrene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
m-Terphenyl	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Naphthalene	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
o-Terphenyl	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Perylene	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
Phenanthrene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH882	DFH883	DFH884	DFH885			
Sampling Date		2016/10/11 13:08	2016/10/11 13:08	2016/10/11 13:08	2016/10/11 13:08			
	UNITS	TRAIN PROOF G-J	TRAIN PROOF K-N	TRAIN PROOF O-R	TRAIN PROOF S-V	RDL	MDL	QC Batch
Picene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699298
p-Terphenyl	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Pyrene	ug	<0.30	<0.30	<0.30	<0.30	0.30	0.060	4699298
Quinoline	ug	<1.2	<1.2	<1.2	<1.2	1.2	0.30	4699298
Tetralin	ug	<0.60	<0.60	<0.60	<0.60	0.60	0.30	4699298
Triphenylene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699298
1,2,3,4-Tetrachlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,2,3-Trichlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,2,4-Trichlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,2-Dichlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,3,5-Trichlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,3-Dichlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
1,4-Dichlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
Hexachlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
Pentachlorobenzene	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.010	4699302
2,3,4,5-Tetrachlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,3,4,6-Tetrachlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,3,4-Trichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,3,5,6-Tetrachlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,3,5-Trichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,3,6-Trichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,3-Dichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,4 + 2,5-Dichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,4,5-Trichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,4,6-Trichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2,6-Dichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
2-Chlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
3,4,5-Trichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
3,4-Dichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
3,5-Dichlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
3-Chlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
4-Chlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371
Pentachlorophenol	ug	<0.050	<0.050	<0.050	<0.050	0.050	0.040	4701371

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH882	DFH883	DFH884	DFH885			
Sampling Date		2016/10/11 13:08	2016/10/11 13:08	2016/10/11 13:08	2016/10/11 13:08			
	UNITS	TRAIN PROOF G-J	TRAIN PROOF K-N	TRAIN PROOF O-R	TRAIN PROOF S-V	RDL	MDL	QC Batch
Surrogate Recovery (%)								
13C6-Hexachlorobenzene	%	98	89	94	82	N/A	N/A	4699302
2H3-1,2,4-Trichlorobenzene	%	95	87	92	78	N/A	N/A	4699302
2H4-1,3-Dichlorobenzene	%	97	92	99	82	N/A	N/A	4699302
D3-2,4-Dichlorophenol	%	174 (1)	163 (1)	153 (1)	157 (1)	N/A	N/A	4701371
D6-Pentachlorophenol	%	99	98	92	120	N/A	N/A	4701371
D10-2-Methylnaphthalene	%	86	82	82	86	N/A	N/A	4699298
D10-Fluoranthene	%	86	88	88	88	N/A	N/A	4699298
D10-Phenanthrene	%	84	84	84	86	N/A	N/A	4699298
D12-Benzo(a)anthracene	%	68	70	68	70	N/A	N/A	4699298
D12-Benzo(a)pyrene	%	86	88	88	90	N/A	N/A	4699298
D12-Benzo(b)fluoranthene	%	66	68	68	70	N/A	N/A	4699298
D12-Benzo(ghi)perylene	%	68	70	70	72	N/A	N/A	4699298
D12-Benzo(k)fluoranthene	%	70	72	72	72	N/A	N/A	4699298
D12-Chrysene	%	84	88	88	86	N/A	N/A	4699298
D12-Indeno(1,2,3-cd)pyrene	%	66	70	70	70	N/A	N/A	4699298
D12-Perylene	%	66	70	68	70	N/A	N/A	4699298
D14-Dibenzo(a,h)anthracene	%	68	72	72	74	N/A	N/A	4699298
D8-Acenaphthylene	%	68	64	64	68	N/A	N/A	4699298
D8-Naphthalene	%	68	66	66	68	N/A	N/A	4699298

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH886			
Sampling Date		2016/10/11 13:08			
	UNITS	RESIN PROOF	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.10	0.10	0.050	4699821
1-Methylphenanthrene	ug	<0.10	0.10	0.050	4699821
2-Chloronaphthalene	ug	<0.10	0.10	0.050	4699821
2-Methylanthracene	ug	<0.10	0.10	0.050	4699821
2-Methylnaphthalene	ug	<0.050	0.050	0.010	4699821
3-Methylcholanthrene	ug	<0.20	0.20	0.050	4699821
7,12-Dimethylbenzo(a)anthracene	ug	<0.20	0.20	0.050	4699821
9,10-Dimethylanthracene	ug	<0.20	0.20	0.050	4699821
Acenaphthene	ug	<0.050	0.050	0.010	4699821
Acenaphthylene	ug	<0.050	0.050	0.010	4699821
Anthracene	ug	<0.050	0.050	0.010	4699821
Benzo(a)anthracene	ug	<0.050	0.050	0.010	4699821
Benzo(a)fluorene	ug	<0.20	0.20	0.050	4699821
Benzo(a)pyrene	ug	<0.050	0.050	0.010	4699821
Benzo(b)Anthracene	ug	<0.050	0.050	0.010	4699821
Benzo(b)fluoranthene	ug	<0.050	0.050	0.010	4699821
Benzo(b)fluorene	ug	<0.10	0.10	0.050	4699821
Benzo(e)pyrene	ug	<0.10	0.10	0.050	4699821
Benzo(g,h,i)perylene	ug	<0.050	0.050	0.010	4699821
Benzo(k)fluoranthene	ug	<0.050	0.050	0.010	4699821
Biphenyl	ug	<0.10	0.10	0.050	4699821
Chrysene	ug	<0.050	0.050	0.010	4699821
Coronene	ug	<0.20	0.20	0.050	4699821
Dibenz(a,h)anthracene	ug	<0.050	0.050	0.010	4699821
Dibenzo(a,c)anthracene	ug	<0.050	0.050	0.010	4699821
Dibenzo(a,e)pyrene	ug	<0.20	0.20	0.050	4699821
Fluoranthene	ug	<0.050	0.050	0.010	4699821
Fluorene	ug	<0.050	0.050	0.010	4699821
Indeno(1,2,3-cd)pyrene	ug	<0.050	0.050	0.010	4699821
m-Terphenyl	ug	<0.10	0.10	0.050	4699821
Naphthalene	ug	<0.10	0.10	0.050	4699821
o-Terphenyl	ug	<0.10	0.10	0.050	4699821
Perylene	ug	<0.20	0.20	0.050	4699821
Phenanthrene	ug	<0.050	0.050	0.010	4699821

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH886			
Sampling Date		2016/10/11 13:08			
	UNITS	RESIN PROOF	RDL	MDL	QC Batch
Picene	ug	<0.050	0.050	0.010	4699821
p-Terphenyl	ug	<0.10	0.10	0.050	4699821
Pyrene	ug	<0.050	0.050	0.010	4699821
Quinoline	ug	<0.20	0.20	0.050	4699821
Tetralin	ug	<0.10	0.10	0.050	4699821
Triphenylene	ug	<0.050	0.050	0.010	4699821
1,2,3,4-Tetrachlorobenzene	ug	<0.050	0.050	0.010	4699824
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.050	0.050	0.010	4699824
1,2,3-Trichlorobenzene	ug	<0.050	0.050	0.010	4699824
1,2,4-Trichlorobenzene	ug	<0.050	0.050	0.010	4699824
1,2-Dichlorobenzene	ug	<0.050	0.050	0.010	4699824
1,3,5-Trichlorobenzene	ug	<0.050	0.050	0.010	4699824
1,3-Dichlorobenzene	ug	<0.050	0.050	0.010	4699824
1,4-Dichlorobenzene	ug	<0.050	0.050	0.010	4699824
Hexachlorobenzene	ug	<0.050	0.050	0.010	4699824
Pentachlorobenzene	ug	<0.050	0.050	0.010	4699824
2,3,4,5-Tetrachlorophenol	ug	<0.050	0.050	0.040	4699898
2,3,4,6-Tetrachlorophenol	ug	<0.050	0.050	0.040	4699898
2,3,4-Trichlorophenol	ug	<0.050	0.050	0.040	4699898
2,3,5,6-Tetrachlorophenol	ug	<0.050	0.050	0.040	4699898
2,3,5-Trichlorophenol	ug	<0.050	0.050	0.040	4699898
2,3,6-Trichlorophenol	ug	<0.050	0.050	0.040	4699898
2,3-Dichlorophenol	ug	<0.050	0.050	0.040	4699898
2,4 + 2,5-Dichlorophenol	ug	<0.050	0.050	0.040	4699898
2,4,5-Trichlorophenol	ug	<0.050	0.050	0.040	4699898
2,4,6-Trichlorophenol	ug	<0.050	0.050	0.040	4699898
2,6-Dichlorophenol	ug	<0.050	0.050	0.040	4699898
2-Chlorophenol	ug	<0.050	0.050	0.040	4699898
3,4,5-Trichlorophenol	ug	<0.050	0.050	0.040	4699898
3,4-Dichlorophenol	ug	<0.050	0.050	0.040	4699898
3,5-Dichlorophenol	ug	<0.050	0.050	0.040	4699898
3-Chlorophenol	ug	<0.050	0.050	0.040	4699898
4-Chlorophenol	ug	<0.050	0.050	0.040	4699898
Pentachlorophenol	ug	<0.050	0.050	0.040	4699898

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH886			
Sampling Date		2016/10/11 13:08			
	UNITS	RESIN PROOF	RDL	MDL	QC Batch
Surrogate Recovery (%)					
13C6-Hexachlorobenzene	%	113	N/A	N/A	4699824
2H3-1,2,4-Trichlorobenzene	%	105	N/A	N/A	4699824
2H4-1,3-Dichlorobenzene	%	113	N/A	N/A	4699824
D3-2,4-Dichlorophenol	%	172 (1)	N/A	N/A	4699898
D6-Pentachlorophenol	%	142 (1)	N/A	N/A	4699898
D10-2-Methylnaphthalene	%	86	N/A	N/A	4699821
D10-Fluoranthene	%	88	N/A	N/A	4699821
D10-Phenanthrene	%	86	N/A	N/A	4699821
D12-Benzo(a)anthracene	%	66	N/A	N/A	4699821
D12-Benzo(a)pyrene	%	76	N/A	N/A	4699821
D12-Benzo(b)fluoranthene	%	70	N/A	N/A	4699821
D12-Benzo(ghi)perylene	%	74	N/A	N/A	4699821
D12-Benzo(k)fluoranthene	%	72	N/A	N/A	4699821
D12-Chrysene	%	82	N/A	N/A	4699821
D12-Indeno(1,2,3-cd)pyrene	%	74	N/A	N/A	4699821
D12-Perylene	%	66	N/A	N/A	4699821
D14-Dibenzo(a,h)anthracene	%	76	N/A	N/A	4699821
D8-Acenaphthylene	%	66	N/A	N/A	4699821
D8-Naphthalene	%	68	N/A	N/A	4699821

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH947			
Sampling Date		2016/10/11 13:08			
	UNITS	VOST PROOF 1-30	RDL	MDL	QC Batch
Dichlorodifluoromethane (FREON 12)	ug	<0.020	0.020	0.020	4705657
Chloromethane	ug	<0.015	0.015	0.015	4705657
Vinyl Chloride	ug	<0.013	0.013	0.013	4705657
Bromomethane	ug	<0.015	0.015	0.015	4705657
Chloroethane	ug	<0.0090	0.0090	0.0090	4705657
Trichlorofluoromethane (FREON 11)	ug	<0.010	0.010	0.010	4705657
Acetone (2-Propanone)	ug	<0.045	0.045	0.025	4705657
1,1-Dichloroethylene	ug	<0.011	0.011	0.011	4705657
Iodomethane	ug	<0.015	0.015	0.015	4705657
Carbon Disulfide	ug	<0.026	0.026	0.026	4705657
Methylene Chloride(Dichloromethane)	ug	<0.019	0.019	0.020	4705657
1,1-Dichloroethane	ug	<0.012	0.012	0.012	4705657
trans-1,2-Dichloroethylene	ug	<0.010	0.010	0.010	4705657
cis-1,2-Dichloroethylene	ug	<0.010	0.010	0.010	4705657
Chloroform	ug	<0.011	0.011	0.011	4705657
1,2-Dichloroethane	ug	<0.0070	0.0070	0.0070	4705657
Methyl Ethyl Ketone (2-Butanone)	ug	<0.036	0.036	0.036	4705657
1,1,1-Trichloroethane	ug	<0.014	0.014	0.014	4705657
Carbon Tetrachloride	ug	<0.016	0.016	0.016	4705657
Benzene	ug	<0.0090	0.0090	0.0090	4705657
1,1,2-Trichloroethane	ug	<0.016	0.016	0.016	4705657
1,2-Dichloropropane	ug	<0.011	0.011	0.011	4705657
Trichloroethylene	ug	<0.011	0.011	0.011	4705657
Dibromomethane	ug	<0.010	0.010	0.010	4705657
Bromodichloromethane	ug	<0.011	0.011	0.011	4705657
cis-1,3-Dichloropropene	ug	<0.010	0.010	0.010	4705657
trans-1,3-Dichloropropene	ug	<0.0070	0.0070	0.0070	4705657
Dibromochloromethane	ug	<0.0090	0.0090	0.0090	4705657
Methyl Isobutyl Ketone	ug	<0.019	0.019	0.019	4705657
Methyl Butyl Ketone (2-Hexanone)	ug	<0.031	0.031	0.031	4705657
Toluene	ug	<0.014	0.014	0.014	4705657
Ethylene Dibromide	ug	<0.010	0.010	0.010	4705657
Tetrachloroethylene	ug	<0.018	0.018	0.018	4705657
Chlorobenzene	ug	<0.011	0.011	0.011	4705657

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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VOLATILE ORGANICS BY GC/MS (AIR SAMPLING MEDIA)

Maxxam ID		DFH947			
Sampling Date		2016/10/11 13:08			
	UNITS	**VOST PROOF 1-30**	**RDL**	**MDL**	**QC Batch**
1,1,1,2-Tetrachloroethane	ug	<0.010	0.010	0.010	4705657
Ethylbenzene	ug	<0.014	0.014	0.014	4705657
m / p-Xylene	ug	<0.015	0.015	0.015	4705657
Styrene	ug	<0.012	0.012	0.012	4705657
o-Xylene	ug	<0.015	0.015	0.015	4705657
Bromoform	ug	<0.014	0.014	0.014	4705657
1,1,2,2-Tetrachloroethane	ug	<0.014	0.014	0.014	4705657
1,2,3-Trichloropropane	ug	<0.015	0.015	0.015	4705657
1,3-Dichlorobenzene	ug	<0.020	0.020	0.020	4705657
1,4-Dichlorobenzene	ug	<0.020	0.020	0.020	4705657
1,2-Dichlorobenzene	ug	<0.020	0.020	0.020	4705657
Surrogate Recovery (%)					
Bromofluorobenzene	%	102	N/A	N/A	4705657
D10-Ethylbenzene (FS)	%	96	N/A	N/A	4705657
D4-1,2-Dichloroethane	%	118	N/A	N/A	4705657
D8-Toluene	%	100	N/A	N/A	4705657

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH882							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF G-J	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.3	1.3	10	2.0	1.00	1.30	N/A	4698521
1,2,3,7,8-Penta CDD *	pg	<0.87	0.87	10	2.0	1.00	0.870	N/A	4698521
1,2,3,4,7,8-Hexa CDD *	pg	<0.72	0.72	10	2.0	0.100	0.0720	N/A	4698521
1,2,3,6,7,8-Hexa CDD *	pg	<0.73	0.73	10	2.0	0.100	0.0730	N/A	4698521
1,2,3,7,8,9-Hexa CDD *	pg	<0.67	0.67	10	2.0	0.100	0.0670	N/A	4698521
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.4	1.4	10	3.0	0.0100	0.0140	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDD *	pg	5.3	1.3	100	3.0	0.000300	0.00159	N/A	4698521
Total Tetra CDD *	pg	<1.4 (1)	1.4	10	N/A	N/A	N/A	0	4698521
Total Penta CDD *	pg	<0.87	0.87	10	N/A	N/A	N/A	0	4698521
Total Hexa CDD *	pg	<2.8 (1)	2.8	10	N/A	N/A	N/A	0	4698521
Total Hepta CDD *	pg	<1.4	1.4	10	N/A	N/A	N/A	0	4698521
2,3,7,8-Tetra CDF **	pg	<0.82	0.82	10	2.0	0.100	0.0820	N/A	4698521
1,2,3,7,8-Penta CDF **	pg	<0.81	0.81	10	2.0	0.0300	0.0243	N/A	4698521
2,3,4,7,8-Penta CDF **	pg	<0.81	0.81	10	2.0	0.300	0.243	N/A	4698521
1,2,3,4,7,8-Hexa CDF **	pg	<0.69	0.69	10	2.0	0.100	0.0690	N/A	4698521
1,2,3,6,7,8-Hexa CDF **	pg	<0.66	0.66	10	2.0	0.100	0.0660	N/A	4698521
2,3,4,6,7,8-Hexa CDF **	pg	<0.73	0.73	10	2.0	0.100	0.0730	N/A	4698521
1,2,3,7,8,9-Hexa CDF **	pg	<0.76	0.76	10	2.0	0.100	0.0760	N/A	4698521
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.59	0.59	10	3.0	0.0100	0.00590	N/A	4698521
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.69	0.69	10	2.0	0.0100	0.00690	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1.6	1.6	100	5.0	0.000300	0.000480	N/A	4698521
Total Tetra CDF **	pg	<0.82	0.82	10	N/A	N/A	N/A	N/A	4698521
Total Penta CDF **	pg	<0.81	0.81	10	N/A	N/A	N/A	0	4698521
Total Hexa CDF **	pg	<0.71	0.71	10	N/A	N/A	N/A	0	4698521
Total Hepta CDF **	pg	<0.64	0.64	10	N/A	N/A	N/A	0	4698521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

Maxxam
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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH882							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF G-J	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.04	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	112	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-1234678 HeptaCDF **	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDD *	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDD *	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDF **	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123789 HexaCDF **	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDD *	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-Octachlorodibenzo-p-Dioxin	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH883							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF K-N	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4698521
1,2,3,7,8-Penta CDD *	pg	<1.0	1.0	10	2.0	1.00	1.00	N/A	4698521
1,2,3,4,7,8-Hexa CDD *	pg	<0.54	0.54	10	2.0	0.100	0.0540	N/A	4698521
1,2,3,6,7,8-Hexa CDD *	pg	<0.54	0.54	10	2.0	0.100	0.0540	N/A	4698521
1,2,3,7,8,9-Hexa CDD *	pg	<0.50	0.50	10	2.0	0.100	0.0500	N/A	4698521
1,2,3,4,6,7,8-Hepta CDD *	pg	<0.87	0.87	10	3.0	0.0100	0.00870	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDD *	pg	3.8	1.5	100	3.0	0.000300	0.00114	N/A	4698521
Total Tetra CDD *	pg	<1.6 (1)	1.6	10	N/A	N/A	N/A	0	4698521
Total Penta CDD *	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4698521
Total Hexa CDD *	pg	<2.8 (1)	2.8	10	N/A	N/A	N/A	0	4698521
Total Hepta CDD *	pg	<0.87	0.87	10	N/A	N/A	N/A	0	4698521
2,3,7,8-Tetra CDF **	pg	<0.80	0.80	10	2.0	0.100	0.0800	N/A	4698521
1,2,3,7,8-Penta CDF **	pg	<0.56	0.56	10	2.0	0.0300	0.0168	N/A	4698521
2,3,4,7,8-Penta CDF **	pg	<0.56	0.56	10	2.0	0.300	0.168	N/A	4698521
1,2,3,4,7,8-Hexa CDF **	pg	<0.65	0.65	10	2.0	0.100	0.0650	N/A	4698521
1,2,3,6,7,8-Hexa CDF **	pg	<0.62	0.62	10	2.0	0.100	0.0620	N/A	4698521
2,3,4,6,7,8-Hexa CDF **	pg	<0.68	0.68	10	2.0	0.100	0.0680	N/A	4698521
1,2,3,7,8,9-Hexa CDF **	pg	<0.71	0.71	10	2.0	0.100	0.0710	N/A	4698521
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.50	0.50	10	3.0	0.0100	0.00500	N/A	4698521
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.59	0.59	10	2.0	0.0100	0.00590	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1.3	1.3	100	5.0	0.000300	0.000390	N/A	4698521
Total Tetra CDF **	pg	<0.80	0.80	10	N/A	N/A	N/A	N/A	4698521
Total Penta CDF **	pg	<0.56	0.56	10	N/A	N/A	N/A	0	4698521
Total Hexa CDF **	pg	<0.66	0.66	10	N/A	N/A	N/A	0	4698521
Total Hepta CDF **	pg	<0.55	0.55	10	N/A	N/A	N/A	0	4698521

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH883							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF K-N	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	2.81	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-1234678 HeptaCDF **	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDD *	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDD *	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123789 HexaCDF **	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDD *	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-Octachlorodibenzo-p-Dioxin	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
** CDF = Chloro Dibenzo-p-Furan

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Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH884							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF O-R	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.2	1.2	10	2.0	1.00	1.20	N/A	4698521
1,2,3,7,8-Penta CDD *	pg	<0.85	0.85	10	2.0	1.00	0.850	N/A	4698521
1,2,3,4,7,8-Hexa CDD *	pg	<0.69	0.69	10	2.0	0.100	0.0690	N/A	4698521
1,2,3,6,7,8-Hexa CDD *	pg	<0.70	0.70	10	2.0	0.100	0.0700	N/A	4698521
1,2,3,7,8,9-Hexa CDD *	pg	<0.65	0.65	10	2.0	0.100	0.0650	N/A	4698521
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.4	1.4	10	3.0	0.0100	0.0140	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDD *	pg	3.3	1.3	100	3.0	0.000300	0.000990	N/A	4698521
Total Tetra CDD *	pg	<1.4 (1)	1.4	10	N/A	N/A	N/A	0	4698521
Total Penta CDD *	pg	<0.85	0.85	10	N/A	N/A	N/A	0	4698521
Total Hexa CDD *	pg	<2.7 (1)	2.7	10	N/A	N/A	N/A	0	4698521
Total Hepta CDD *	pg	<1.4	1.4	10	N/A	N/A	N/A	0	4698521
2,3,7,8-Tetra CDF **	pg	<0.61	0.61	10	2.0	0.100	0.0610	N/A	4698521
1,2,3,7,8-Penta CDF **	pg	<0.67	0.67	10	2.0	0.0300	0.0201	N/A	4698521
2,3,4,7,8-Penta CDF **	pg	<0.67	0.67	10	2.0	0.300	0.201	N/A	4698521
1,2,3,4,7,8-Hexa CDF **	pg	<0.60	0.60	10	2.0	0.100	0.0600	N/A	4698521
1,2,3,6,7,8-Hexa CDF **	pg	<0.57	0.57	10	2.0	0.100	0.0570	N/A	4698521
2,3,4,6,7,8-Hexa CDF **	pg	<0.63	0.63	10	2.0	0.100	0.0630	N/A	4698521
1,2,3,7,8,9-Hexa CDF **	pg	<0.66	0.66	10	2.0	0.100	0.0660	N/A	4698521
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.68	0.68	10	3.0	0.0100	0.00680	N/A	4698521
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.80	0.80	10	2.0	0.0100	0.00800	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1.3	1.3	100	5.0	0.000300	0.000390	N/A	4698521
Total Tetra CDF **	pg	<0.61	0.61	10	N/A	N/A	N/A	N/A	4698521
Total Penta CDF **	pg	<0.67	0.67	10	N/A	N/A	N/A	0	4698521
Total Hexa CDF **	pg	<0.61	0.61	10	N/A	N/A	N/A	0	4698521
Total Hepta CDF **	pg	<0.74	0.74	10	N/A	N/A	N/A	0	4698521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH884							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF O-R	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	2.81	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-1234678 HeptaCDF **	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDD *	%	104	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDF **	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDD *	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123789 HexaCDF **	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDD *	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDF **	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-Octachlorodibenzo-p-Dioxin	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH885							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF S-V	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4698521
1,2,3,7,8-Penta CDD *	pg	<1.2	1.2	10	2.0	1.00	1.20	N/A	4698521
1,2,3,4,7,8-Hexa CDD *	pg	<0.60	0.60	10	2.0	0.100	0.0600	N/A	4698521
1,2,3,6,7,8-Hexa CDD *	pg	<0.61	0.61	10	2.0	0.100	0.0610	N/A	4698521
1,2,3,7,8,9-Hexa CDD *	pg	<0.55	0.55	10	2.0	0.100	0.0550	N/A	4698521
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.5	1.5	10	3.0	0.0100	0.0150	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDD *	pg	3.1	1.6	100	3.0	0.000300	0.000930	N/A	4698521
Total Tetra CDD *	pg	<1.1	1.1	10	N/A	N/A	N/A	0	4698521
Total Penta CDD *	pg	<1.2	1.2	10	N/A	N/A	N/A	0	4698521
Total Hexa CDD *	pg	<2.3 (1)	2.3	10	N/A	N/A	N/A	0	4698521
Total Hepta CDD *	pg	<1.5	1.5	10	N/A	N/A	N/A	0	4698521
2,3,7,8-Tetra CDF **	pg	<0.68	0.68	10	2.0	0.100	0.0680	N/A	4698521
1,2,3,7,8-Penta CDF **	pg	<0.57	0.57	10	2.0	0.0300	0.0171	N/A	4698521
2,3,4,7,8-Penta CDF **	pg	<0.57	0.57	10	2.0	0.300	0.171	N/A	4698521
1,2,3,4,7,8-Hexa CDF **	pg	<0.62	0.62	10	2.0	0.100	0.0620	N/A	4698521
1,2,3,6,7,8-Hexa CDF **	pg	<0.60	0.60	10	2.0	0.100	0.0600	N/A	4698521
2,3,4,6,7,8-Hexa CDF **	pg	<0.66	0.66	10	2.0	0.100	0.0660	N/A	4698521
1,2,3,7,8,9-Hexa CDF **	pg	<0.69	0.69	10	2.0	0.100	0.0690	N/A	4698521
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.63	0.63	10	3.0	0.0100	0.00630	N/A	4698521
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.74	0.74	10	2.0	0.0100	0.00740	N/A	4698521
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1.3	1.3	100	5.0	0.000300	0.000390	N/A	4698521
Total Tetra CDF **	pg	<0.68	0.68	10	N/A	N/A	N/A	N/A	4698521
Total Penta CDF **	pg	<0.57	0.57	10	N/A	N/A	N/A	0	4698521
Total Hexa CDF **	pg	<0.64	0.64	10	N/A	N/A	N/A	0	4698521
Total Hepta CDF **	pg	<0.68	0.68	10	N/A	N/A	N/A	0	4698521

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH885							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF S-V	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.02	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-1234678 HeptaCDF **	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123678 HexaCDF **	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDD *	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-12378 PentaCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-123789 HexaCDF **	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDD *	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-2378 TetraCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4698521
C13-Octachlorodibenzo-p-Dioxin	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4698521

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
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* CDD = Chloro Dibenzo-p-Dioxin
** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6L7921
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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH886							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	RESIN PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.2	1.2	10	2.0	1.00	1.20	N/A	4699826
1,2,3,7,8-Penta CDD *	pg	<1.0	1.0	10	2.0	1.00	1.00	N/A	4699826
1,2,3,4,7,8-Hexa CDD *	pg	<1.2	1.2	10	2.0	0.100	0.120	N/A	4699826
1,2,3,6,7,8-Hexa CDD *	pg	<1.2	1.2	10	2.0	0.100	0.120	N/A	4699826
1,2,3,7,8,9-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4699826
1,2,3,4,6,7,8-Hepta CDD *	pg	<0.98	0.98	10	3.0	0.0100	0.00980	N/A	4699826
1,2,3,4,6,7,8,9-Octa CDD *	pg	3.6	1.4	100	3.0	0.000300	0.00108	N/A	4699826
Total Tetra CDD *	pg	<1.9 (1)	1.9	10	N/A	N/A	N/A	0	4699826
Total Penta CDD *	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4699826
Total Hexa CDD *	pg	<2.6 (1)	2.6	10	N/A	N/A	N/A	0	4699826
Total Hepta CDD *	pg	<0.98	0.98	10	N/A	N/A	N/A	0	4699826
2,3,7,8-Tetra CDF **	pg	<0.94	0.94	10	2.0	0.100	0.0940	N/A	4699826
1,2,3,7,8-Penta CDF **	pg	<0.92	0.92	10	2.0	0.0300	0.0276	N/A	4699826
2,3,4,7,8-Penta CDF **	pg	<0.92	0.92	10	2.0	0.300	0.276	N/A	4699826
1,2,3,4,7,8-Hexa CDF **	pg	<0.73	0.73	10	2.0	0.100	0.0730	N/A	4699826
1,2,3,6,7,8-Hexa CDF **	pg	<0.70	0.70	10	2.0	0.100	0.0700	N/A	4699826
2,3,4,6,7,8-Hexa CDF **	pg	<0.77	0.77	10	2.0	0.100	0.0770	N/A	4699826
1,2,3,7,8,9-Hexa CDF **	pg	<0.80	0.80	10	2.0	0.100	0.0800	N/A	4699826
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.98	0.98	10	3.0	0.0100	0.00980	N/A	4699826
1,2,3,4,7,8,9-Hepta CDF **	pg	<1.2	1.2	10	2.0	0.0100	0.0120	N/A	4699826
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1.2	1.2	100	5.0	0.000300	0.000360	N/A	4699826
Total Tetra CDF **	pg	<0.94	0.94	10	N/A	N/A	N/A	0	4699826
Total Penta CDF **	pg	<0.92	0.92	10	N/A	N/A	N/A	0	4699826
Total Hexa CDF **	pg	<0.75	0.75	10	N/A	N/A	N/A	0	4699826
Total Hepta CDF **	pg	<1.1	1.1	10	N/A	N/A	N/A	0	4699826

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DFH886							
Sampling Date		2016/10/11 13:08				TOXIC EQUIVALENCY		# of	
	UNITS	RESIN PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.28	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-1234678 HeptaCDF **	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-123678 HexaCDD *	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-123678 HexaCDF **	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-12378 PentaCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-12378 PentaCDF **	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-123789 HexaCDF **	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-2378 TetraCDD *	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-2378 TetraCDF **	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4699826
C13-Octachlorodibenzo-p-Dioxin	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4699826

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DFH882
Sample ID: TRAIN PROOF G-J
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4699302	2016/10/13	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4701371	2016/10/14	2016/10/17	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4698521	2016/10/12	2016/10/16	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4699298	2016/10/13	2016/10/14	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4699889	2016/10/12	2016/10/16	Branko Vrzic

Maxxam ID: DFH883
Sample ID: TRAIN PROOF K-N
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4699302	2016/10/13	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4701371	2016/10/14	2016/10/17	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4698521	2016/10/12	2016/10/16	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4699298	2016/10/13	2016/10/14	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4699889	2016/10/12	2016/10/16	Branko Vrzic

Maxxam ID: DFH884
Sample ID: TRAIN PROOF O-R
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4699302	2016/10/13	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4701371	2016/10/14	2016/10/17	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4698521	2016/10/12	2016/10/16	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4699298	2016/10/13	2016/10/14	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4699889	2016/10/12	2016/10/16	Branko Vrzic

Maxxam ID: DFH885
Sample ID: TRAIN PROOF S-V
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4699302	2016/10/13	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4701371	2016/10/14	2016/10/17	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4698521	2016/10/12	2016/10/16	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4699298	2016/10/13	2016/10/14	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4699889	2016/10/12	2016/10/16	Branko Vrzic

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Maxxam Job #: B6L7921
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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

TEST SUMMARY

Maxxam ID: DFH886
Sample ID: RESIN PROOF
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4699824	2016/10/13	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4699898	2016/10/13	2016/10/17	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4699826	2016/10/13	2016/10/21	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4699821	2016/10/13	2016/10/14	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4700568	2016/10/13	2016/10/17	Cathy Xu

Maxxam ID: DFH947
Sample ID: VOST PROOF 1-30
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOST EPA5041A, 8260C for 0030, 0031	GC/MS	4705657	N/A	2016/10/18	Yujie Yan

Maxxam ID: DFI668
Sample ID: 3L - 0.1N H2SO4 PROOFED
Matrix: Air Sampling Media

Collected: 2016/10/11
Shipped:
Received: 2016/10/11

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hydrogen Halides in H2SO4 Imp.	IC/SPEC	4704929	2016/10/17	2016/10/17	Ann-Marie Stern

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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam
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Maxxam Job #: B6L7921
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4704929	A_S	Matrix Spike	Hydrochloric Acid	2016/10/17		96	%	80 - 120
4704929	A_S	Spiked Blank	Hydrochloric Acid	2016/10/17		102	%	90 - 110
4704929	A_S	Method Blank	Hydrochloric Acid	2016/10/17	<200		ug	
4704929	A_S	RPD - Sample/Sample Dup	Hydrochloric Acid	2016/10/17	3.3		%	20

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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Maxxam Job #: B6L7921
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ORTECH Environmental
Client Project #: 21698
Site Location: COVANTA, DURHAM-YORK ENERGY CENTRE, COURTICE
Your P.O. #: 21698-J2290

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Branko Vrzic, A.SC.T., Senior Analyst, HRMS Services

Frank Mo, B.Sc., Inorganic Lab. Manager

Karen Nicol

Karen Nicol, Supervisor, Semi-Volatiles

Maureen Smith

Maureen Smith, Supervisor, Volatiles

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam
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Your P.O. #: 21672-J2298
Your Project #: 21672
Site#: MEDIA PREP
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM

Attention:Chris Belore
ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256197
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M7989
Received: 2016/10/21, 15:50

Sample Matrix: Air Sampling Media
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Chlorobenzenes in MM5 Trains (EPA M0010)	1	2016/10/27	2016/10/29	BRL SOP-00202	In house (M0010)
Chlorobenzenes in MM5 Trains (EPA M0010)	1	2016/10/28	2016/10/29	BRL SOP-00202	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	1	2016/10/27	2016/11/02	BRL SOP-00204	In house (M0010)
Chlorophenols in MM5 Trains (EPA M0010)	1	2016/10/28	2016/11/01	BRL SOP-00204	In house (M0010)
Dioxins/Furans in Air (Method 23)	1	2016/10/28	2016/10/31	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	1	2016/10/30	2016/11/02	BRL SOP-00404	EPA M23/23A m
PAH's in MM5 SamplingTrains (CARB429mod)	1	2016/10/27	2016/10/28	BRL SOP-00201	CARB429(ARBM1,M2)mod
PAH's in MM5 SamplingTrains (CARB429mod)	1	2016/10/28	2016/10/28	BRL SOP-00201	CARB429(ARBM1,M2)mod
PCBs in a Sampling Train (1668Amod)	1	2016/10/28	2016/11/02	BRL SOP-00408	EPA 1668A m
PCBs in a Sampling Train (1668Amod)	1	2016/10/29	2016/11/08	BRL SOP-00408	EPA 1668A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

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Your P.O. #: 21672-J2298
Your Project #: 21672
Site#: MEDIA PREP
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM

Attention:Chris Belore

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/11/22
Report #: R4256197
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6M7989
Received: 2016/10/21, 15:50

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
22 Nov 2016 19:02:44

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769

==

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<20	20	100	N/A	0.00010	0.0020	N/A	4724938
344'5-TetraCB-(81)	pg	<20	20	100	N/A	0.00030	0.0060	N/A	4724938
233'44'-PentaCB-(105)	pg	<14	14	100	N/A	0.000030	0.00042	N/A	4724938
2344'5-PentaCB-(114)	pg	<14	14	100	N/A	0.000030	0.00042	N/A	4724938
23'44'5-PentaCB-(118)	pg	24	14	100	N/A	0.000030	0.00072	N/A	4724938
23'44'5'-PentaCB-(123)	pg	<16	16	100	N/A	0.000030	0.00048	N/A	4724938
33'44'5-PentaCB-(126)	pg	<14	14	100	N/A	0.10	1.4	N/A	4724938
HexaCB-(156)+(157)	pg	<5.8	5.8	200	N/A	0.000030	0.00017	N/A	4724938
23'44'55'-HexaCB-(167)	pg	<6.3	6.3	100	N/A	0.000030	0.00019	N/A	4724938
33'44'55'-HexaCB-(169)	pg	<6.3	6.3	100	N/A	0.030	0.19	N/A	4724938
233'44'55'-HeptaCB-(189)	pg	<13	13	100	N/A	0.000030	0.00039	N/A	4724938
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1.6	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	149 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'5-HexaCB-(156)	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'5'-HexaCB-(157)	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'-PentaCB-(105)	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-23'44'55'-HexaCB-(167)	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-2344'5-PentaCB-(114)	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-23'44'5-PentaCB-(118)	%	108	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-2'344'5-PentaCB-(123)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'55'-HexaCB-(169)	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'5-PentaCB-(126)	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'-TetraCB-(77)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-344'5-TetraCB-(81)	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4724938

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12 Lab-Dup	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<9.3	9.3	100	N/A	0.00010	0.00093	N/A	4724938
344'5-TetraCB-(81)	pg	<9.6	9.6	100	N/A	0.00030	0.0029	N/A	4724938
233'44'-PentaCB-(105)	pg	<9.9	9.9	100	N/A	0.000030	0.00030	N/A	4724938
2344'5-PentaCB-(114)	pg	<9.8	9.8	100	N/A	0.000030	0.00029	N/A	4724938
23'44'5-PentaCB-(118)	pg	<27 (1)	27	100	N/A	0.000030	0.00081	N/A	4724938
23'44'5'-PentaCB-(123)	pg	<11	11	100	N/A	0.000030	0.00033	N/A	4724938
33'44'5-PentaCB-(126)	pg	<10	10	100	N/A	0.10	1.0	N/A	4724938
HexaCB-(156)+(157)	pg	<9.2	9.2	200	N/A	0.000030	0.00028	N/A	4724938
23'44'55'-HexaCB-(167)	pg	<9.9	9.9	100	N/A	0.000030	0.00030	N/A	4724938
33'44'55'-HexaCB-(169)	pg	<10	10	100	N/A	0.030	0.30	N/A	4724938
233'44'55'-HeptaCB-(189)	pg	<13	13	100	N/A	0.000030	0.00039	N/A	4724938
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1.3	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	138	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'5-HexaCB-(156)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'5'-HexaCB-(157)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'-PentaCB-(105)	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-23'44'55'-HexaCB-(167)	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-2344'5-PentaCB-(114)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-23'44'5-PentaCB-(118)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-2'344'5-PentaCB-(123)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'55'-HexaCB-(169)	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'5-PentaCB-(126)	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'-TetraCB-(77)	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-344'5-TetraCB-(81)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4724938

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12 Lab-Dup 2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<27	27	100	N/A	0.00010	0.0027	N/A	4724938
344'5-TetraCB-(81)	pg	<28	28	100	N/A	0.00030	0.0084	N/A	4724938
233'44'-PentaCB-(105)	pg	<13	13	100	N/A	0.000030	0.00039	N/A	4724938
2344'5-PentaCB-(114)	pg	<13	13	100	N/A	0.000030	0.00039	N/A	4724938
23'44'5-PentaCB-(118)	pg	58	13	100	N/A	0.000030	0.0017	N/A	4724938
23'44'5'-PentaCB-(123)	pg	<14	14	100	N/A	0.000030	0.00042	N/A	4724938
33'44'5-PentaCB-(126)	pg	<13	13	100	N/A	0.10	1.3	N/A	4724938
HexaCB-(156)+(157)	pg	<6.1	6.1	200	N/A	0.000030	0.00018	N/A	4724938
23'44'55'-HexaCB-(167)	pg	<6.6	6.6	100	N/A	0.000030	0.00020	N/A	4724938
33'44'55'-HexaCB-(169)	pg	<6.6	6.6	100	N/A	0.030	0.20	N/A	4724938
233'44'55'-HeptaCB-(189)	pg	<12	12	100	N/A	0.000030	0.00036	N/A	4724938
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1.5	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	152 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'5-HexaCB-(156)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'5'-HexaCB-(157)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-233'44'-PentaCB-(105)	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-23'44'55'-HexaCB-(167)	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-2344'5-PentaCB-(114)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-23'44'5-PentaCB-(118)	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-2'344'5-PentaCB-(123)	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'55'-HexaCB-(169)	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'5-PentaCB-(126)	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-33'44'-TetraCB-(77)	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4724938
C13-344'5-TetraCB-(81)	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4724938

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

RESULTS OF ANALYSES OF AIR SAMPLING MEDIA

Maxxam ID		DHH244							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	RESIN PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
33'44'-TetraCB-(77)	pg	<11	11	100	N/A	0.00010	0.0011	N/A	4722533
344'5-TetraCB-(81)	pg	<11	11	100	N/A	0.00030	0.0033	N/A	4722533
233'44'-PentaCB-(105)	pg	<9.8	9.8	100	N/A	0.000030	0.00029	N/A	4722533
2344'5-PentaCB-(114)	pg	<9.7	9.7	100	N/A	0.000030	0.00029	N/A	4722533
23'44'5-PentaCB-(118)	pg	<9.7	9.7	100	N/A	0.000030	0.00029	N/A	4722533
23'44'5'-PentaCB-(123)	pg	<11	11	100	N/A	0.000030	0.00033	N/A	4722533
33'44'5-PentaCB-(126)	pg	<9.9	9.9	100	N/A	0.10	0.99	N/A	4722533
HexaCB-(156)+(157)	pg	<3.7	3.7	200	N/A	0.000030	0.00011	N/A	4722533
23'44'55'-HexaCB-(167)	pg	<4.0	4.0	100	N/A	0.000030	0.00012	N/A	4722533
33'44'55'-HexaCB-(169)	pg	<4.0	4.0	100	N/A	0.030	0.12	N/A	4722533
233'44'55'-HeptaCB-(189)	pg	<4.8	4.8	100	N/A	0.000030	0.00014	N/A	4722533
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1.1	N/A	N/A
Surrogate Recovery (%)									
C13-233'44'55'-HeptaCB-(189)	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-233'44'5-HexaCB-(156)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-233'44'5'-HexaCB-(157)	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-233'44'-PentaCB-(105)	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-23'44'55'-HexaCB-(167)	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-2344'5-PentaCB-(114)	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-23'44'5-PentaCB-(118)	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-2'344'5-PentaCB-(123)	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-33'44'55'-HexaCB-(169)	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-33'44'5-PentaCB-(126)	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-33'44'-TetraCB-(77)	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4722533
C13-344'5-TetraCB-(81)	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4722533

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243		DHH244			
Sampling Date		2016/10/21 15:57		2016/10/21 15:57			
	UNITS	TRAIN PROOF #1-12	QC Batch	RESIN PROOF	RDL	MDL	QC Batch
1-Methylnaphthalene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
1-Methylphenanthrene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
2-Chloronaphthalene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
2-Methylanthracene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
2-Methylnaphthalene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
3-Methylcholanthrene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
7,12-Dimethylbenzo(a)anthracene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
9,10-Dimethylanthracene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
Acenaphthene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Acenaphthylene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Anthracene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Benzo(a)anthracene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Benzo(a)fluorene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
Benzo(a)pyrene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Benzo(b)Anthracene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Benzo(b)fluoranthene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Benzo(b)fluorene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Benzo(e)pyrene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Benzo(g,h,i)perylene	ug	N/A	N/A	<0.050	0.050	0.010	4720795
Benzo(k)fluoranthene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Biphenyl	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Chrysene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Coronene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
Dibenz(a,h)anthracene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Dibenzo(a,c) anthracene + Picene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Dibenzo(a,e)pyrene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
Fluoranthene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Fluorene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Indeno(1,2,3-cd)pyrene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
m-Terphenyl	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Naphthalene	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
o-Terphenyl	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Perylene	ug	<0.20	4722506	<0.20	0.20	0.050	4720795

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243		DHH244			
Sampling Date		2016/10/21 15:57		2016/10/21 15:57			
	UNITS	TRAIN PROOF #1-12	QC Batch	RESIN PROOF	RDL	MDL	QC Batch
Phenanthrene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
p-Terphenyl	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Pyrene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
Quinoline	ug	<0.20	4722506	<0.20	0.20	0.050	4720795
Tetralin	ug	<0.10	4722506	<0.10	0.10	0.050	4720795
Triphenylene	ug	<0.050	4722506	<0.050	0.050	0.010	4720795
1,2,3,4-Tetrachlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,2,3,5+1,2,4,5-Tetrachlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,2,3-Trichlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,2,4-Trichlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,2-Dichlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,3,5-Trichlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,3-Dichlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
1,4-Dichlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
Hexachlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
Pentachlorobenzene	ug	<0.050	4722513	<0.050	0.050	0.010	4720796
2,3,4,5-Tetrachlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,3,4,6-Tetrachlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,3,4-Trichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,3,5,6-Tetrachlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,3,5-Trichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,3,6-Trichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,3-Dichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,4 + 2,5-Dichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,4,5-Trichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,4,6-Trichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2,6-Dichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
2-Chlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
3,4,5-Trichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
3,4-Dichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
3,5-Dichlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
3-Chlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
4-Chlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347
Pentachlorophenol	ug	<0.050	4722840	<0.050	0.050	0.040	4722347

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ORTECH Environmental
Client Project #: 21672
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Your P.O. #: 21672-J2298

SEMI-VOLATILE ORGANICS BY GC-MS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243		DHH244			
Sampling Date		2016/10/21 15:57		2016/10/21 15:57			
	UNITS	TRAIN PROOF #1-12	QC Batch	RESIN PROOF	RDL	MDL	QC Batch
Surrogate Recovery (%)							
13C6-Hexachlorobenzene	%	112	4722513	97	N/A	N/A	4720796
2H3-1,2,4-Trichlorobenzene	%	111	4722513	97	N/A	N/A	4720796
2H4-1,3-Dichlorobenzene	%	117	4722513	104	N/A	N/A	4720796
D3-2,4-Dichlorophenol	%	89	4722840	196 (1)	N/A	N/A	4722347
D6-Pentachlorophenol	%	97	4722840	195 (1)	N/A	N/A	4722347
D10-2-Methylnaphthalene	%	94	4722506	94	N/A	N/A	4720795
D10-Fluoranthene	%	92	4722506	94	N/A	N/A	4720795
D10-Phenanthrene	%	94	4722506	94	N/A	N/A	4720795
D12-Benzo(a)anthracene	%	76	4722506	76	N/A	N/A	4720795
D12-Benzo(a)pyrene	%	100	4722506	88	N/A	N/A	4720795
D12-Benzo(b)fluoranthene	%	78	4722506	82	N/A	N/A	4720795
D12-Benzo(ghi)perylene	%	74	4722506	78	N/A	N/A	4720795
D12-Benzo(k)fluoranthene	%	78	4722506	80	N/A	N/A	4720795
D12-Chrysene	%	94	4722506	96	N/A	N/A	4720795
D12-Indeno(1,2,3-cd)pyrene	%	76	4722506	78	N/A	N/A	4720795
D12-Perylene	%	80	4722506	72	N/A	N/A	4720795
D14-Dibenzo(a,h)anthracene	%	76	4722506	80	N/A	N/A	4720795
D8-Acenaphthylene	%	74	4722506	72	N/A	N/A	4720795
D8-Naphthalene	%	74	4722506	76	N/A	N/A	4720795

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4725253
1,2,3,7,8-Penta CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4725253
1,2,3,4,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,6,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,7,8,9-Hexa CDD *	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.0	1.0	10	3.0	0.0100	0.0100	N/A	4725253
1,2,3,4,6,7,8,9-Octa CDD *	pg	<1.1	1.1	100	3.0	0.000300	0.000330	N/A	4725253
Total Tetra CDD *	pg	<2.4 (1)	2.4	10	N/A	N/A	N/A	0	4725253
Total Penta CDD *	pg	<1.2 (1)	1.2	10	N/A	N/A	N/A	0	4725253
Total Hexa CDD *	pg	<4.3 (1)	4.3	10	N/A	N/A	N/A	0	4725253
Total Hepta CDD *	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253
2,3,7,8-Tetra CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,7,8-Penta CDF **	pg	<1.1	1.1	10	2.0	0.0300	0.0330	N/A	4725253
2,3,4,7,8-Penta CDF **	pg	<1.1	1.1	10	2.0	0.300	0.330	N/A	4725253
1,2,3,4,7,8-Hexa CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,6,7,8-Hexa CDF **	pg	<0.95	0.95	10	2.0	0.100	0.0950	N/A	4725253
2,3,4,6,7,8-Hexa CDF **	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,7,8,9-Hexa CDF **	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.84	0.84	10	3.0	0.0100	0.00840	N/A	4725253
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.99	0.99	10	2.0	0.0100	0.00990	N/A	4725253
1,2,3,4,6,7,8,9-Octa CDF **	pg	<0.60	0.60	100	5.0	0.000300	0.000180	N/A	4725253
Total Tetra CDF **	pg	<1.4 (1)	1.4	10	N/A	N/A	N/A	0	4725253
Total Penta CDF **	pg	<1.1	1.1	10	N/A	N/A	N/A	0	4725253
Total Hexa CDF **	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253
Total Hepta CDF **	pg	<0.91	0.91	10	N/A	N/A	N/A	0	4725253

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6M7989
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ORTECH Environmental
Client Project #: 21672
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Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.43	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-1234678 HeptaCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123678 HexaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123678 HexaCDF **	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-12378 PentaCDD *	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-12378 PentaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123789 HexaCDF **	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-2378 TetraCDD *	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-2378 TetraCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-Octachlorodibenzo-p-Dioxin	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4725253

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

N/A = Not Applicable

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan

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Client Project #: 21672
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Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12 Lab-Dup	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.0	1.0	10	2.0	1.00	1.00	N/A	4725253
1,2,3,7,8-Penta CDD *	pg	<1.0	1.0	10	2.0	1.00	1.00	N/A	4725253
1,2,3,4,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,6,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,7,8,9-Hexa CDD *	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.0	1.0	10	3.0	0.0100	0.0100	N/A	4725253
1,2,3,4,6,7,8,9-Octa CDD *	pg	<1.1	1.1	100	3.0	0.000300	0.000330	N/A	4725253
Total Tetra CDD *	pg	<1.9 (1)	1.9	10	N/A	N/A	N/A	0	4725253
Total Penta CDD *	pg	<1.2 (1)	1.2	10	N/A	N/A	N/A	0	4725253
Total Hexa CDD *	pg	<4.0 (1)	4.0	10	N/A	N/A	N/A	0	4725253
Total Hepta CDD *	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253
2,3,7,8-Tetra CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,7,8-Penta CDF **	pg	<1.1	1.1	10	2.0	0.0300	0.0330	N/A	4725253
2,3,4,7,8-Penta CDF **	pg	<1.1	1.1	10	2.0	0.300	0.330	N/A	4725253
1,2,3,4,7,8-Hexa CDF **	pg	<0.85	0.85	10	2.0	0.100	0.0850	N/A	4725253
1,2,3,6,7,8-Hexa CDF **	pg	<0.81	0.81	10	2.0	0.100	0.0810	N/A	4725253
2,3,4,6,7,8-Hexa CDF **	pg	<0.90	0.90	10	2.0	0.100	0.0900	N/A	4725253
1,2,3,7,8,9-Hexa CDF **	pg	<0.93	0.93	10	2.0	0.100	0.0930	N/A	4725253
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.80	0.80	10	3.0	0.0100	0.00800	N/A	4725253
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.94	0.94	10	2.0	0.0100	0.00940	N/A	4725253
1,2,3,4,6,7,8,9-Octa CDF **	pg	<0.58	0.58	100	5.0	0.000300	0.000174	N/A	4725253
Total Tetra CDF **	pg	<1.1 (1)	1.1	10	N/A	N/A	N/A	0	4725253
Total Penta CDF **	pg	<1.1	1.1	10	N/A	N/A	N/A	0	4725253
Total Hexa CDF **	pg	<0.87	0.87	10	N/A	N/A	N/A	0	4725253

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12 Lab-Dup	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	<0.86	0.86	10	N/A	N/A	N/A	0	4725253
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.16	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	127	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-1234678 HeptaCDF **	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123678 HexaCDD *	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123678 HexaCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-12378 PentaCDD *	%	108	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-12378 PentaCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123789 HexaCDF **	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-2378 TetraCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-2378 TetraCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-Octachlorodibenzo-p-Dioxin	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4725253

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
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QC Batch = Quality Control Batch
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** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12 Lab-Dup 2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4725253
1,2,3,7,8-Penta CDD *	pg	<1.0	1.0	10	2.0	1.00	1.00	N/A	4725253
1,2,3,4,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,6,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,7,8,9-Hexa CDD *	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.0	1.0	10	3.0	0.0100	0.0100	N/A	4725253
1,2,3,4,6,7,8,9-Octa CDD *	pg	<0.84	0.84	100	3.0	0.000300	0.000252	N/A	4725253
Total Tetra CDD *	pg	<2.3 (1)	2.3	10	N/A	N/A	N/A	0	4725253
Total Penta CDD *	pg	<1.5 (1)	1.5	10	N/A	N/A	N/A	0	4725253
Total Hexa CDD *	pg	<4.5 (1)	4.5	10	N/A	N/A	N/A	0	4725253
Total Hepta CDD *	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253
2,3,7,8-Tetra CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,7,8-Penta CDF **	pg	<1.0	1.0	10	2.0	0.0300	0.0300	N/A	4725253
2,3,4,7,8-Penta CDF **	pg	<1.0	1.0	10	2.0	0.300	0.300	N/A	4725253
1,2,3,4,7,8-Hexa CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4725253
1,2,3,6,7,8-Hexa CDF **	pg	<0.96	0.96	10	2.0	0.100	0.0960	N/A	4725253
2,3,4,6,7,8-Hexa CDF **	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,7,8,9-Hexa CDF **	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4725253
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.95	0.95	10	3.0	0.0100	0.00950	N/A	4725253
1,2,3,4,7,8,9-Hepta CDF **	pg	<1.1	1.1	10	2.0	0.0100	0.0110	N/A	4725253
1,2,3,4,6,7,8,9-Octa CDF **	pg	<0.42	0.42	100	5.0	0.000300	0.000126	N/A	4725253
Total Tetra CDF **	pg	<1.3 (1)	1.3	10	N/A	N/A	N/A	0	4725253
Total Penta CDF **	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253
Total Hexa CDF **	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH243							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	TRAIN PROOF #1-12 Lab-Dup 2	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4725253
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.30	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	117	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-1234678 HeptaCDF **	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123678 HexaCDD *	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123678 HexaCDF **	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-12378 PentaCDD *	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-12378 PentaCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-123789 HexaCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-2378 TetraCDD *	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-2378 TetraCDF **	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4725253
C13-Octachlorodibenzo-p-Dioxin	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4725253

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Your P.O. #: 21672-J2298

DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH244							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	RESIN PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4722317
1,2,3,7,8-Penta CDD *	pg	<1.1	1.1	10	2.0	1.00	1.10	N/A	4722317
1,2,3,4,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4722317
1,2,3,6,7,8-Hexa CDD *	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4722317
1,2,3,7,8,9-Hexa CDD *	pg	<0.99	0.99	10	2.0	0.100	0.0990	N/A	4722317
1,2,3,4,6,7,8-Hepta CDD *	pg	<1.1	1.1	10	3.0	0.0100	0.0110	N/A	4722317
1,2,3,4,6,7,8,9-Octa CDD *	pg	<1.1	1.1	100	3.0	0.000300	0.000330	N/A	4722317
Total Tetra CDD *	pg	<3.3 (1)	3.3	10	N/A	N/A	N/A	0	4722317
Total Penta CDD *	pg	<1.5 (1)	1.5	10	N/A	N/A	N/A	0	4722317
Total Hexa CDD *	pg	<3.8 (1)	3.8	10	N/A	N/A	N/A	0	4722317
Total Hepta CDD *	pg	<1.1	1.1	10	N/A	N/A	N/A	0	4722317
2,3,7,8-Tetra CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4722317
1,2,3,7,8-Penta CDF **	pg	<1.0	1.0	10	2.0	0.0300	0.0300	N/A	4722317
2,3,4,7,8-Penta CDF **	pg	<1.0	1.0	10	2.0	0.300	0.300	N/A	4722317
1,2,3,4,7,8-Hexa CDF **	pg	<1.0	1.0	10	2.0	0.100	0.100	N/A	4722317
1,2,3,6,7,8-Hexa CDF **	pg	<0.97	0.97	10	2.0	0.100	0.0970	N/A	4722317
2,3,4,6,7,8-Hexa CDF **	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4722317
1,2,3,7,8,9-Hexa CDF **	pg	<1.1	1.1	10	2.0	0.100	0.110	N/A	4722317
1,2,3,4,6,7,8-Hepta CDF **	pg	<0.68	0.68	10	3.0	0.0100	0.00680	N/A	4722317
1,2,3,4,7,8,9-Hepta CDF **	pg	<0.80	0.80	10	2.0	0.0100	0.00800	N/A	4722317
1,2,3,4,6,7,8,9-Octa CDF **	pg	<0.44	0.44	100	5.0	0.000300	0.000132	N/A	4722317
Total Tetra CDF **	pg	<1.1 (1)	1.1	10	N/A	N/A	N/A	0	4722317
Total Penta CDF **	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4722317
Total Hexa CDF **	pg	<1.0	1.0	10	N/A	N/A	N/A	0	4722317
Total Hepta CDF **	pg	<0.73	0.73	10	N/A	N/A	N/A	0	4722317

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
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QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
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DIOXINS AND FURANS BY HRMS (AIR SAMPLING MEDIA)

Maxxam ID		DHH244							
Sampling Date		2016/10/21 15:57				TOXIC EQUIVALENCY		# of	
	UNITS	RESIN PROOF	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	3.39	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	118	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-1234678 HeptaCDF **	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-123678 HexaCDD *	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-123678 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-12378 PentaCDD *	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-12378 PentaCDF **	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-123789 HexaCDF **	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-2378 TetraCDD *	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-2378 TetraCDF **	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4722317
C13-Octachlorodibenzo-p-Dioxin	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4722317

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QC Batch = Quality Control Batch
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
** CDF = Chloro Dibenzo-p-Furan

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Your P.O. #: 21672-J2298

TEST SUMMARY

Maxxam ID: DHH243 **Collected:** 2016/10/21
Sample ID: TRAIN PROOF #1-12 **Shipped:**
Matrix: Air Sampling Media **Received:** 2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4722513	2016/10/28	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4722840	2016/10/28	2016/11/01	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4725253	2016/10/30	2016/11/02	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4722506	2016/10/28	2016/10/28	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4724938	2016/10/29	2016/11/08	Cathy Xu

Maxxam ID: DHH243 Dup **Collected:** 2016/10/21
Sample ID: TRAIN PROOF #1-12 **Shipped:**
Matrix: Air Sampling Media **Received:** 2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	4725253	2016/11/02	2016/11/02	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4724938	2016/10/29	2016/11/08	Cathy Xu

Maxxam ID: DHH243 Dup2 **Collected:** 2016/10/21
Sample ID: TRAIN PROOF #1-12 **Shipped:**
Matrix: Air Sampling Media **Received:** 2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	4725253	2016/11/02	2016/11/02	Owen Cosby
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4724938	2016/11/08	2016/11/08	Cathy Xu

Maxxam ID: DHH244 **Collected:** 2016/10/21
Sample ID: RESIN PROOF **Shipped:**
Matrix: Air Sampling Media **Received:** 2016/10/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chlorobenzenes in MM5 Trains (EPA M0010)	GC/MS	4720796	2016/10/27	2016/10/29	Lidija Tomic
Chlorophenols in MM5 Trains (EPA M0010)	GC/MS	4722347	2016/10/27	2016/11/02	Lidija Tomic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4722317	2016/10/28	2016/10/31	Owen Cosby
PAH's in MM5 SamplingTrains (CARB429mod)	GC/MS	4720795	2016/10/27	2016/10/28	Lidija Tomic
PCBs in a Sampling Train (1668Amod)	HRMS/MS	4722533	2016/10/28	2016/11/02	Cathy Xu

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

GENERAL COMMENTS

9-methylphenanthrene was not found in the sample - estimated DL 0.05

Results relate only to the items tested.

Maxxam
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Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4724938	CXU	RPD - Sample/Sample Dup	33'44'-TetraCB-(77)	2016/11/08	NC		%	30
			344'5-TetraCB-(81)	2016/11/08	NC		%	30
			233'44'-PentaCB-(105)	2016/11/08	NC		%	30
			2344'5-PentaCB-(114)	2016/11/08	NC		%	30
			23'44'5-PentaCB-(118)	2016/11/08	NC (1)		%	30
			23'44'5'-PentaCB-(123)	2016/11/08	NC		%	30
			33'44'5-PentaCB-(126)	2016/11/08	NC		%	30
			HexaCB-(156)+(157)	2016/11/08	NC		%	30
			23'44'55'-HexaCB-(167)	2016/11/08	NC		%	30
			33'44'55'-HexaCB-(169)	2016/11/08	NC		%	30
			233'44'55'-HeptaCB-(189)	2016/11/08	NC		%	30
4725253	OBC	RPD - Sample/Sample Dup	2,3,7,8-Tetra CDD	2016/11/02	NC		%	20
			1,2,3,7,8-Penta CDD	2016/11/02	NC		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/02	NC		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/02	NC		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/02	NC		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/02	NC		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/02	NC		%	20
			Total Tetra CDD	2016/11/02	NC (1)		%	20
			Total Penta CDD	2016/11/02	NC (1)		%	20
			Total Hexa CDD	2016/11/02	NC (1)		%	20
			Total Hepta CDD	2016/11/02	NC		%	20
			2,3,7,8-Tetra CDF	2016/11/02	NC		%	20
			1,2,3,7,8-Penta CDF	2016/11/02	NC		%	20
			2,3,4,7,8-Penta CDF	2016/11/02	NC		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/02	NC		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/02	NC		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/02	NC		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/02	NC		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/02	NC		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/02	NC		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/02	NC		%	20
			Total Tetra CDF	2016/11/02	NC (1)		%	20
			Total Penta CDF	2016/11/02	NC		%	20
			Total Hexa CDF	2016/11/02	NC		%	20
			Total Hepta CDF	2016/11/02	NC		%	20

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6M7989
Report Date: 2016/11/22

ORTECH Environmental
Client Project #: 21672
Site Location: 2016 LAFARGE ST CONSTANT EMISSION TESTING PROGRAM
Your P.O. #: 21672-J2298

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Branko Vrzic, A.SC.T., Senior Analyst, HRMS Services

Cathy Xu, Senior Analyst, HRMS Services, Senior Analyst, HRMS Services

Karen Nicol, Supervisor, Semi-Volatiles

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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APPENDIX 23

ORTECH Equipment Calibration Data
(36 pages)

ORTECH Environmental
Pitot Tube Calibration

Date	February 9, 2016
Probe/Pitot ID	S7
MII Number	B03768
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
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	7.74	0.145	0.205	0.841	0.0001
(0.25")	9.54	0.220	0.315	0.835	0.0052
	11.59	0.325	0.460	0.840	0.0004
	14.01	0.475	0.665	0.845	0.0042
	15.88	0.610	0.860	0.842	0.0013
			Mean	0.840	0.0022

Without Nozzle	7.33	0.130	0.180	0.849	0.0007
	9.32	0.210	0.290	0.851	0.0005
	11.41	0.315	0.437	0.849	0.0015
	13.79	0.460	0.630	0.854	0.0040
	15.62	0.590	0.820	0.848	0.0023
			Mean	0.850	0.0018

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Pitot Tube Calibration

Date	February 9, 2016
Probe/Pitot ID	S7A
MII Number	COE20112
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
Calibrated By	Dan Turton
Signature	
Reviewed/Accepted By	

$$Cp = Cpstd * \sqrt{\frac{Pstd}{Ps}}$$

Configuration	Wind Tunnel Velocity m/s	Velocity Head Standard Pitot in. H_2O **Pstd**	Velocity Head S-Type Pitot in. H_2O **Ps**	S-Type Pitot Coefficient **Cp_s**	Deviation From The Mean
With Nozzle	7.88	0.150	0.210	0.845	0.0042
(0.25")	10.07	0.245	0.350	0.836	0.0043
	12.12	0.355	0.500	0.842	0.0017
	14.52	0.510	0.720	0.841	0.0007
	16.27	0.640	0.910	0.838	0.0023
			Mean	0.840	0.0026

Without Nozzle	7.47	0.135	0.190	0.842	0.0017
	9.32	0.210	0.300	0.836	0.0079
	11.50	0.320	0.445	0.848	0.0034
	13.87	0.465	0.650	0.845	0.0012
	15.88	0.610	0.845	0.849	0.0050
			Mean	0.844	0.0038

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Pitot Tube Calibration

Date	February 9, 2016
Probe/Pitot ID	15A
MII Number	B03775
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
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	7.61	0.140	0.195	0.847	0.0010
(0.25")	9.54	0.220	0.310	0.842	0.0039
	11.68	0.330	0.460	0.847	0.0007
	13.79	0.460	0.640	0.847	0.0015
	15.88	0.610	0.850	0.847	0.0008
			Mean	0.846	0.0016

Without Nozzle	7.47	0.135	0.190	0.842	0.0025
	9.32	0.210	0.290	0.851	0.0055
	11.41	0.315	0.440	0.846	0.0007
	14.23	0.490	0.685	0.845	0.0003
	16.14	0.630	0.890	0.841	0.0041
			Mean	0.845	0.0026

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Pitot Tube Calibration

Date	February 9, 2016
Probe/Pitot ID	15D
MII Number	B03778
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
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	7.61	0.140	0.195	0.847	0.0003
(0.25")	9.32	0.210	0.295	0.843	0.0033
	11.50	0.320	0.450	0.843	0.0037
	14.23	0.490	0.680	0.848	0.0019
	15.69	0.595	0.820	0.851	0.0048
			Mean	0.847	0.0028

Without Nozzle	7.33	0.130	0.185	0.838	0.0055
	9.32	0.210	0.294	0.845	0.0014
	11.41	0.315	0.440	0.846	0.0023
	14.23	0.490	0.682	0.847	0.0039
	15.75	0.600	0.847	0.841	0.0021
			Mean	0.843	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 MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Pitot Tube Calibration

Date	February 9, 2016
Probe/Pitot ID	SP4
MII Number	B04011
Calibrated Against	B02911
Cp standard	0.99948
Calibration Procedure	93-T62-SP-012

Calibration Facility	ORTECH Environmental
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	7.53	0.137	0.192	0.844	0.0039
(0.25")	9.58	0.222	0.310	0.846	0.0024
	11.50	0.320	0.450	0.843	0.0054
	14.01	0.475	0.650	0.854	0.0062
	16.01	0.620	0.850	0.854	0.0054
			Mean	0.848	0.0047

Without Nozzle	7.61	0.140	0.195	0.847	0.0011
	9.54	0.220	0.307	0.846	0.0019
	11.86	0.340	0.475	0.846	0.0024
	14.59	0.515	0.710	0.851	0.0032
	15.95	0.615	0.850	0.850	0.0022
			Mean	0.848	0.0022

Note: Pitots must always be used in the orientation that they are calibrated in (marked F for front and B for back).

Acceptance Criteria:
The Cp of Standard Pitots must be in the range of 0.99 ±0.01.
For Stausscheibe (S-Type) Pitots refer to the measurement criteria as specified in Method 2 of the MOE Source Testing Code. If the pitot meets these measurement requirements it is assigned a Cp of 0.84. Otherwise, calculate the absolute differences between the average pitot tube coefficient and the coefficient obtained for each of the wind tunnel settings. The average of these differences must not exceed 0.01. Otherwise, the calibration must be repeated. (Environment Canada Reference Method EPS 1/RM/8, Section 6).

ORTECH Environmental
Dry Gas Meter Calibration Data

Calibration Procedure	03 - J004
Meter Number	Team 2
Date	October 12, 2016
Barometric Pressure	29.80
System Leak Check	< 0.002 cfm @ 23 "Hg

MII NUMBERS	
DGM	COE 20092
Gasometer	A01463
Barometer	COE20028

Calibrated By	T. Timar
Signature	
Reviewed and Accepted By	

ft^3 = cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{V_{std}\ ft^3}{V_{dgm}\ ft^3} \quad \frac{T_{dgm}\ ^{o}F+460}{T_{std}\ ^{o}F+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg + DGMPressure/13.6)}$$

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	^{o}C	Initial	Final	ft^3	^{o}F	in. H_2O	^{o}F	Factor	min.
87.10	22.80	64.30	3.025	20.0	234.440	237.510	3.070	73	0.75	73	0.993	6.3
88.60	24.20	64.40	3.029	20.0	228.220	231.310	3.090	77	0.75	77	0.995	6.3
86.80	21.40	65.40	3.076	20.0	231.310	234.440	3.130	77	0.75	77	0.998	6.4
87.20	18.30	68.90	3.241	20.0	238.550	241.840	3.290	72.5	1.9	72	0.989	4.3
88.10	23.90	64.20	3.020	20.5	241.840	244.915	3.075	72.5	1.9	72	0.984	4
87.40	23.40	64.00	3.011	20.5	244.915	247.970	3.055	72.5	1.9	72	0.988	4
89.40	25.40	64.00	3.011	21.0	249.270	252.320	3.050	72.5	3.4	72	0.984	3
88.70	24.40	64.30	3.025	21.0	252.320	255.385	3.065	72.5	3.4	72	0.984	3
80.30	15.80	64.50	3.034	21.0	258.435	261.495	3.060	72.5	3.4	72	0.988	3

DGMCF AVERAGE 0.989

BEFORE 0.976

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)

ORTECH Environmental
Manometer Calibration Data

Date	October 12, 2016	Calibrated By	T. Timar
Manometer Number	Team 2	Signature	
Manometer MII Number	COE 20092	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.410	NA	0.410	0.0
0-1.0	0.710	↓	0.700	-1.4
	0.935	↓	0.920	-1.6
	1.58	NA	1.60	1.3
1.0-10.0	4.20	↓	4.13	-1.7
	8.80	↓	8.62	-2.1

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer} - \text{Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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	Team 2
MII	COE 20092
Date	October 12, 2016
Calibrated By	T. Timar
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	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	699		0.1
800	799		0.1
900	897		0.3
1000	998		0.2
1100	1098		0.2
1200	1198		0.2
1250	1247		0.2

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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	Control Box # 7
Date	September 1, 2016
Barometric Pressure	29.65
System Leak Check	0.002 cfm @ 22 "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

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg+DGMPressure/13.6)}$$

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.
80.90	21.00	59.90	2.818	23.5	863.370	866.256	2.886	76	0.8	75	0.977	6
79.50	19.90	59.60	2.804	23.5	866.256	869.169	2.913	77.5	0.8	76	0.966	6
81.00	20.50	60.50	2.846	23.0	869.169	872.115	2.946	78	0.8	77	0.972	6
79.50	16.00	63.50	2.987	23.0	872.115	875.195	3.080	79	1.8	78	0.976	4
80.90	16.50	64.40	3.029	23.0	875.195	878.313	3.118	80	1.8	78	0.979	4
79.90	15.80	64.10	3.015	23.0	878.313	881.419	3.106	80	1.8	78	0.978	4
79.90	17.00	62.90	2.959	23.0	881.419	884.450	3.031	81	3	79	0.983	3
79.80	16.80	63.00	2.963	23.0	884.450	887.493	3.043	81.5	3	79	0.981	3
80.00	16.50	63.50	2.987	23.0	887.493	890.556	3.063	82.5	3	80	0.984	3

DGMCF AVERAGE 0.978

BEFORE 0.99

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)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Omega DP116
MII	A09072
Date	September 1, 2016
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	251		-0.4
300	301		-0.3
400	400		0.0
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	1101		-0.1
1200	1201		-0.1
1250	1251		-0.1

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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	Control Box #4
Date	August 17, 2016
Barometric Pressure	29.71
System Leak Check	0.001 cfm @ 22 "Hg

MII NUMBERS	
DGM	A04713
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

$$DGMCF = \frac{Vstd\ ft^3}{Vdgm\ ft^3} \quad \frac{Tdgm\ ^oF+460}{Tstd\ ^oF+460} \quad \frac{Pbar\ (in.\ Hg)}{(Pbar\ in.\ Hg + DGMPressure/13.6)}$$

Gasometer Reading cm			Gasometer Volume	Gasometer Temperature	DGM Reading ft^3		DGM Volume	DGM Average Temperature	DGM Pressure	DGM Outlet	DGM Calibration Factor	Time
Initial	Final	cm	ft^3	^oC	Initial	Final	ft^3	^oF	in. H_2O	^oF	Factor	min.
81.50	17.60	63.90	3.006	23.0	804.005	806.981	2.976	78.5	0.5	76	1.018	6
82.00	16.30	65.70	3.090	23.0	806.981	810.037	3.056	80.5	0.5	78	1.023	6
81.30	15.60	65.70	3.090	23.0	810.037	813.120	3.083	83.5	0.5	79	1.020	6
80.80	14.60	66.20	3.114	23.5	813.120	816.255	3.135	89.5	1.1	82	1.019	4
81.50	18.60	62.90	2.959	23.5	816.255	819.250	2.995	91	1	83	1.016	4
80.90	17.90	63.00	2.963	23.5	819.250	822.255	3.005	92	1	85	1.016	4
81.80	16.80	65.00	3.058	23.5	822.255	825.350	3.095	94	1.8	87	1.020	3
81.80	16.00	65.80	3.095	23.5	825.350	828.488	3.138	95.5	1.8	88	1.021	3
80.80	16.30	64.50	3.034	23.5	828.488	831.573	3.085	96.5	1.7	89	1.020	3

DGMCF AVERAGE 1.019

BEFORE 1.024

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)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	OMEGA DP116
MII	A04713
Date	August 17, 2016
Calibrated By	Andrew Saikaley
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Trendicator 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	301		-0.3
400	400		0.0
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	1101		-0.1
1200	1201		-0.1
1250	1250		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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	September 6, 2016
Barometric Pressure	29.74
System Leak Check	< .001 cfm @ 23 "Hg

MII NUMBERS	
DGM	COE 20094
Gasometer	A01463
Barometer	COE 20028

Calibrated By	Thomas Timar
Signature	
Reviewed and Accepted By	

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

DGMCF= $\frac{\text{Vstd ft}^3}{\text{Vdgm ft}^3}$ $\frac{\text{Tdgm °F+460}}{\text{Tstd °F+460}}$ $\frac{\text{Pbar (in. Hg)}}{\text{(Pbar in. Hg+DGMPressure/13.6)}}$

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 Factor	Time
Initial	Final	cm	ft^3	°C	Initial	Final	ft^3	°F	in. H_2O	°F		min.
80.10	17.80	62.30	2.931	24.0	42.380	45.330	2.950	76	0.75	75	0.993	6
78.90	11.30	67.60	3.180	24.0	45.330	48.530	3.200	75.5	0.75	75	0.992	6
81.90	19.20	62.70	2.949	24.0	48.530	51.480	2.950	75.5	0.75	75	0.998	6
82.10	19.70	62.40	2.935	24.0	57.655	60.600	2.945	75.5	1.8	75	0.993	4
82.10	19.90	62.20	2.926	24.0	60.600	63.540	2.940	75.5	1.8	75	0.991	4
80.10	18.20	61.90	2.912	24.0	63.540	66.450	2.910	75.5	1.8	75	0.997	4
81.30	17.20	64.10	3.015	24.0	71.945	74.965	3.020	75	3.4	75	0.990	3
82.10	17.70	64.40	3.029	24.0	74.965	77.990	3.025	75	3.4	75	0.993	3
80.10	15.90	64.20	3.020	24.0	77.990	81.010	3.020	75	3.4	75	0.991	3

DGMCF AVERAGE 0.993

BEFORE 0.983

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)

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03 - J005
Trendicator Type	Team 1
MII	COE 20094
Date	SEPT 6/16
Calibrated By	Thomas Timar
Signature	
Reviewed and Accepted By	

Fluke Calibrator Output (COE 20024) (°F)	Tredicator Display Value		Percent Difference (%)
	Before Adjustment (°F)	After Adjustment (°F)	
32	32		0.0
70	69		1.4
100	100		0.0
200	200		0.0
250	251		-0.4
300	301		-0.3
400	400		0.0
500	499		0.2
600	600		0.0
700	700		0.0
800	799		0.1
900	899		0.1
1000	999		0.1
1100	1099		0.1
1200	1199		0.1
1250	1248		0.2

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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	September 6, 2016	Calibrated By	Thomas Timar
Manometer Number	Team 1	Signature	
Manometer MII Number	COE 20094	Reviewed/Accepted By	
Calibrated Against	Omega HHP		
MII Number	B02679		
Calibration Procedure	03 - J010		

Front Leg

Manometer Scale "H_20	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.300		0.295	-1.7
0-1.0	0.610		0.605	-0.8
	0.950		0.940	-1.1
	2.55		2.51	-1.6
1.0-10.0	5.40		5.40	0.0
	9.20		9.30	1.1

$$\text{Percent Difference} = \frac{\text{(Ref. Manometer - Instrument Reading)}}{\text{Ref. Manometer}} \times 100$$

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	Team 4
Date	July 29, 2016
Barometric Pressure	29.59
System Leak Check	< 0.001 cfm @ 25 "Hg

MII NUMBERS	
DGM	COE 20090
Gasometer	A01463
Barometer	COE20028

Calibrated By	Andrew Saikaley
signature	ASai
Reviewed and Accepted By	D D lg

ft^3= cm* 1.332 litres per cm/28.3168 litres per ft^3

$$DGMCF = \frac{V_{std}\ ft^3}{V_{dgm}\ ft^3} \quad \frac{T_{dgm}\ ^{o}F+460}{T_{std}\ ^{o}F+460} \quad \frac{P_{bar}\ (in.\ Hg)}{(P_{bar}\ in.\ Hg + DGM Pressure/13.6)}$$

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	^{o}C	Initial	Final	ft^3	^{o}F	in. H_2O	^{o}F	Factor	min.
83.30	19.10	64.20	3.020	24.0	651.527	654.612	3.085	76	0.8	75	0.978	6
82.70	18.20	64.50	3.034	24.0	654.612	657.690	3.078	76	0.8	75	0.985	6
81.90	18.30	63.60	2.992	24.0	657.690	660.733	3.043	77.5	0.8	75	0.985	6
80.90	26.10	54.80	2.578	24.0	660.733	663.349	2.616	78	1.8	75	0.986	4
82.00	27.00	55.00	2.587	24.0	663.349	665.968	2.619	79	1.8	76	0.990	4
81.50	26.50	55.00	2.587	24.0	665.968	668.588	2.620	79	1.8	76	0.990	4
80.90	16.90	64.00	3.011	24.0	668.588	671.624	3.036	79.5	3.4	76	0.991	3
82.80	16.60	66.20	3.114	24.0	671.624	674.752	3.128	79.5	3.4	76	0.995	3
80.90	15.70	65.20	3.067	24.0	674.752	677.847	3.095	80	3.4	77	0.991	3

DGMCF AVERAGE 0.988

BEFORE 0.984

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)

ORTECH Environmental
Manometer Calibration Data

Date	July 29, 2016	Calibrated By	Andrew Saikaley
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_2O	Manometer Reading "H_2O		Reference Manometer Reading "H_2O	Percent Difference %
	Before Adjustment	After Adjustment		
	0.218		0.213	-2.3
0-1.0	0.493		0.494	0.2
	0.879		0.865	-1.6
	1.52		1.510	-0.7
1.0-10.0	3.21		3.200	-0.3
	6.80		6.770	-0.4

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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	July 29, 2016
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	28	32	0.0
70		69	1.4
100		99	1.0
200		200	0.0
250		251	-0.4
300		301	-0.3
400		400	0.0
500		499	0.2
600		600	0.0
700		701	-0.1
800		800	0.0
900		901	-0.1
1000		1001	-0.1
1100		1101	-0.1
1200		1201	-0.1
1250		1251	-0.1

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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	Vost 4
Date	October 21, 2016
Barometric Pressure	29.56
System Leak Check	NDL @ 22 "Hg

MII NUMBERS	
DGM	A11542
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

$$DGMCF = \frac{V_{std}\ ft^3}{V_{dgm}\ ft^3} \quad \frac{T_{dgm}\ ^{o}F+460}{T_{std}\ ^{o}F+460} \quad \frac{P_{bar}\ (in.\ Hg)}{(P_{bar}\ in.\ Hg + DGMPressure/13.6)}$$

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
52.90	40.00	12.90	0.607	21.0	1258.02	1275.06	0.602	27.0	1.0	27.0	1.026	16	1.1
40.00	27.80	12.20	0.574	21.0	1275.06	1291.26	0.572	27.0	1.0	27.0	1.021	15	1.1
64.90	52.90	12.00	0.564	21.0	1242.00	1258.02	0.566	27.0	1.0	27.0	1.016	15	1.1
82.50	74.80	7.70	0.362	21.0	1343.50	1354.03	0.372	28.0	0.5	28.0	0.996	20	0.5
70.70	56.60	14.10	0.663	21.0	1315.00	1334.21	0.678	28.0	0.5	28.0	1.000	30	0.6
89.20	82.50	6.70	0.315	21.0	1334.21	1343.50	0.328	28.0	0.5	28.0	0.982	18	0.5

Acceptance Criteria:

Individual values of DGM calibration factor must be within ± 1.5% of the average value.
If not the calibration must be repeated. Also, the DGMCF average value must be 1.00 ± 0.05, otherwise the meter must be repaired and/or adjusted as necessary and recalibrated prior to use.
(Environment Canada Reference Method EPS 1/RM/8, Section 6)

DGMCF AVERAGE

1Lpm	1.021
0.5Lpm	0.993

ORTECH Environmental
Trendicator Calibration

Calibration Procedure	03-J005
Trendicator Type	Nutech
MII	A11542
Date	October 21, 2016
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		0.0
20	20		0.0
50	50		0.0
100	101		-1.0
150	150		0.0
200	200		0.0
300	300		0.0
400	400		0.0
500	500		0.0
600	600		0.0

$$\% \text{ Difference} = \frac{(\text{micromite - after adjustment reading})}{\text{micromite}} \times 100$$

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 4, 2016	Calibrated By	Mike Traynor
Manometer Number	8	Signature	
Manometer MII Number	A11630	Reviewed/Accepted By	
Calibrated Against	HHP-100A		
MII Number	B02679		
Calibration Procedure	03 - J010		

Manometer Scale "H_2O	Manometer Reading "H_2O Before Adjustment	Manometer Reading "H_2O After Adjustment	Reference Manometer Reading "H_2O	Percent Difference %
	0.110	NA	0.113	2.7
0-0.5	0.260		0.270	3.7
	0.470		0.484	2.9
	0.220		0.227	3.1
0-1.0	0.510		0.524	2.7
	0.945		0.957	1.3
	0.38		0.38	0.0
0-2.0	1.00		1.02	2.0
	1.93		1.95	1.0
	1.95		1.95	0.0
0-10.0	4.85		4.86	0.2
	9.70		9.68	-0.2

$$\text{Percent Difference} = \frac{\text{(Ref. Manometer - Instrument Reading)}}{\text{Ref. Manometer}} \times 100$$

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
Manometer Calibration Data

Date	February 4, 2016	Calibrated By	Mike Traynor
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		
	0.090	NA	0.091	1.1
0-0.5	0.260		0.261	0.4
	0.464		0.464	0.0
	0.170		0.166	-2.4
0-1.0	0.520		0.516	-0.8
	0.939		0.936	-0.3
	0.40		0.39	-2.6
0-2.0	0.95		0.98	3.1
	1.86		1.86	0.0
	1.20		1.19	-0.8
0-10.0	4.75		4.75	0.0
	9.30		9.27	-0.3

$$\text{Percent Difference} = \frac{(\text{Ref. Manometer - Instrument Reading})}{\text{Ref. Manometer}} \times 100$$

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)

SUPPLEMENTAL REPORT

TRANSCAT CANADA
Trust in every measure

CALIBRATION LAB DATA AS FOUND / AS LEFT

Customer: ORTECH ENVIRONMENTAL
PO Number: 20000-J2219

Certificate/SO Number: 9-Q0C9H-20-1

Manufacturer:	Mitutoyo	Service Type:	R5
Model Number:	500-351		
Description:	Digital Caliper		
Serial Number:	7197127	Calibration Date:	Feb 08, 2016
ID:	B02103	Due Date:	Feb 08, 2017
		Calibration Procedure:	1-AC13090-2

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	TUR
Function Check							
Parallelism			P	P	P		
Length Measure							
Outside Length (Ref)	0.0000in	±(0.001 in)	-0.0010	0.0010	0.0000 in		
	1.5000in	±(0.001 in)	1.4990	1.5010	1.5000 in		
	3.0000in	±(0.001 in)	2.9990	3.0010	3.0000 in		
	4.5000in	±(0.001 in)	4.4990	4.5010	4.5000 in		
	6.0000in	±(0.001 in)	5.9990	6.0010	6.0000 in		
Inside Length	1.0000in	±(0.001 in)	0.9990	1.0010	1.0010 in		
Step	1.0000in	±(0.001 in)	0.9990	1.0010	1.0010 in		
Depth	1.0000in	±(0.001 in)	0.9990	1.0010	1.0000 in		
Function Check							
Inch to mm Conversion			P	P	P		

As Found and As Left Data recorded on February 08, 2016

Temperature 68.8°F / 20.4°C Relative Humidity: 34% Temp/RH Asset LEM-0003

Asset	Manufacturer	Model	Description	Cal Date	Due Date	Traceability Numbers
M004	Coventry Gauge Ltd	C-84	Gage Block Set, 84 pcs.	Aug 27, 2015	Aug 27, 2016	9-&M004-3-1
M457	Starrett Tru-Stone Tech. Div.	80942	Granite Surface Plate	Dec 30, 2015	Dec 31, 2016	9-&M457-4-1

Field not applicable. (P = Pass, F = Fail)

TRANSCAT CANADA
Trust in every measure

SUPPLEMENTAL REPORT

CALIBRATION LAB DATA AS FOUND / AS LEFT

Customer: ORTECH ENVIRONMENTAL
PO Number: 20000-J2219

Certificate/SO Number: 9-Q0C9H-60-1

Manufacturer:	Mitutoyo	Service Type:	R5
Model Number:	500-196		
Description:	Digital Caliper		
Serial Number:	0242066	Calibration Date:	Feb 08, 2016
ID:	B03922	Due Date:	Feb 08, 2017
		Calibration Procedure:	1-AC12178-5

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	TUR
Function Check							
Parallelism Check			P	P	P		
Length Measure							
Scale Linearity	0.0000in	±(0.001 in)	-0.0010	0.0010	0.0000 in		
	1.5000in	±(0.001 in)	1.4990	1.5010	1.5000 in		
	3.0000in	±(0.001 in)	2.9990	3.0010	3.0000 in		
	4.5000in	±(0.001 in)	4.4990	4.5010	4.5000 in		
	6.0000in	±(0.001 in)	5.9990	6.0010	6.0000 in		
Length Measure I.D.	1.0000in	±(0.001 in)	0.9990	1.0010	1.0005 in		
Length Measure Depth	1.0000in	±(0.001 in)	0.9990	1.0010	0.9990 in		
Length Measure Step	1.0000in	±(0.001 in)	0.9990	1.0010	0.9990 in		
Function Check							
Inch to mm conversion			P	P	P		

As Found and As Left Data recorded on February 08, 2016

Temperature 68.8°F / 20.4°C Relative Humidity: 34% Temp/RH Asset LEM-0003

Asset	Manufacturer	Model	Description	Cal Date	Due Date	Traceability Numbers
M004	Coventry Gauge Ltd	C-84	Gage Block Set, 84 pcs.	Aug 27, 2015	Aug 27, 2016	9-&M004-3-1
M457	Starrett Tru-Stone Tech. Div.	80942	Granite Surface Plate	Dec 30, 2015	Dec 31, 2016	9-&M457-4-1

Field not applicable. (P = Pass, F = Fail)

Total Hydrocarbon Reference Method 25A Calibration Data Sheet
Method 25A:SOP Number 95-T62-SP001

Project Number:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 - Quench Inlet	Test No. :	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	1.027 C		
High	90 A2	92.4 B2			
Mid	51.6 A4	50.97 B4		53.0 D4	-3.9 E4
Low	30.3 A3	30.03 B3		31.1 D3	-3.6 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	30.03	30.1	-0.1

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 - Quench Inlet	Test No. :	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	1.027 C		
High	90 A2	92.4 B2			
Mid	51.6 A4	50.97 B4		53.0 D4	-3.9 E4
Low	30.3 A3	30.03 B3		31.1 D3	-3.6 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	30.1	31.7	-1.6

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 - Quench Inlet	Test No. :	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.027 C		
High	90 A2	92.4 B2			
Mid	51.6 A4	50.97 B4		53.0 D4	-3.9 E4
Low	30.3 A3	30.03 B3		31.1 D3	-3.6 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	31.7	30.3	1.5

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:	21698	Date:	October 26, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 - Outlet	Test No. :	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	0.3 B1	0.991 C		
High	90 A2	89.5 B2			
Mid	51.6 A4	51.05 B4		51.1 D4	-0.2 E4
Low	30.3 A3	29.95 B3		30.0 D3	-0.3 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.3	0.09	0.21
Mid	31	31.0	0.0

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:	21698	Date:	October 26, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 - Outlet	Test No. :	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	0.3 B1	0.991 C		
High	90 A2	89.5 B2			
Mid	51.6 A4	51.05 B4		51.1 D4	-0.2 E4
Low	30.3 A3	29.95 B3		30.0 D3	-0.3 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0.09	0	0.09
Mid	31	30.4	0.6

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:	21698	Date:	October 26, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #1 - Outlet	Test No. :	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0.3 B1	0.991 C		
High	90 A2	89.5 B2			
Mid	51.6 A4	51.05 B4		51.1 D4	-0.2 E4
Low	30.3 A3	29.95 B3		30.0 D3	-0.3 E3

Criteria +/-5%

Note: If the calibration Error (E3 and E4) are greater than 5%, repeat the procedure until values are acceptable.

Perform test. At the completion of the test or hourly; Calculate the calibration drift as a percent of full scale value.
Introduce the zero and mid level gases at the probe and record data as the system final response.

	System Initial Response (F)	System Final Response (G)	Calibration Drift (G-F)/span*100
Zero	0	0	0
Mid	30.4	29.4	1.0

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #2 - Quench Inlet	Test No. :	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 C		
High	90 A2	90.68 B2			
Mid	51.6 A4	51.58 B4		52.0 D4	-0.8 E4
Low	30.3 A3	30.5 B3		30.5 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	30.5	31.1	-0.6

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #2 - Quench Inlet	Test No. :	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	1.008 C		
High	90 A2	90.68 B2			
Mid	51.6 A4	51.58 B4		52.0 D4	-0.8 E4
Low	30.3 A3	30.5 B3		30.5 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	31.05	29.2	1.8

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #2 - Quench Inlet	Test No. :	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.008 C		
High	90 A2	90.68 B2			
Mid	51.6 A4	51.58 B4		52.0 D4	-0.8 E4
Low	30.3 A3	30.5 B3		30.5 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	30.5	31.5	-1.0

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #2 - Outlet	Test No. :	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	1.006 C		
High	90 A2	90.5 B2			
Mid	51.6 A4	50.8 B4		51.9 D4	-2.1 E4
Low	30.3 A3	30.4 B3		30.5 D3	-0.2 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	0.2	-0.2
Mid	30.4	30.8	-0.4

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:	21698	Date:	October 25, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #2 - Outlet	Test No. :	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	1.006 C		
High	90 A2	90.5 B2			
Mid	51.6 A4	50.8 B4		51.9 D4	-2.1 E4
Low	30.3 A3	30.4 B3		30.5 D3	-0.2 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	0.2	0	0.2
Mid	30.8	30.0	0.8

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:	21698	Date:	October 26, 2016
Company:	Covanta	Operator:	J. Grollman
Location:	Courtice	Analyzer ID	Ratfish RS55
Test Location:	Unit #2 - Outlet	Test No. :	3

THC Full Scale Setting	**100**
Zero Gas (ppm)	<0.1 ppm
Low Gas Value (ppm)	20-35 % full scale setting
Mid Gas Value (ppm)	45-55 % full scale setting
High Gas Value (ppm)	80-90 % full scale setting

Perform analyzer calibration as per manufacturers instructions.
Calculate the linearity factor "C" based on the zero and high gas values. Based on the calculated linearity, predict the analyzer response for low and mid values (D3 and D4). Calculate calibration error with the low and mid (B3 and B4) gasses.

	Cal.Gas Value (A)	Initial Analyzer Response (B)	Linearity (B2-B1)/(A2-A1)	Predicted Response (A X C)	Calibration Error % ((B)-(D)/AX100
Zero	0 A1	0 B1	1.006 C		
High	90 A2	90.5 B2			
Mid	51.6 A4	50.8 B4		51.9 D4	-2.1 E4
Low	30.3 A3	30.4 B3		30.5 D3	-0.2 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	0.2	-0.2
Mid	30	30.4	-0.4

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
at Boiler No. 1
(12 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet Unit 1
Test No.:	1 - Metals and Particulate
Date:	October 25, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.988
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.013 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	143.7 °C
AVERAGE GAS MOISTURE BY VOLUME	15.3 %
AVERAGE GAS VELOCITY	19.45 m/s
BAROMETRIC PRESSURE (Station)	100.982 Kpa
STATIC PRESSURE	-2.801 Kpa
ABSOLUTE GAS PRESSURE	98.181 Kpa
OXYGEN CONCENTRATION	9.18 %
CARBON DIOXIDE CONCENTRATION	10.28 %
CARBON MONOXIDE CONCENTRATION	15.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.74 m^3/s
DRY REF GAS FLOWRATE	16.87 Rm^3/s
DRY ADJ GAS FLOWRATE	19.97 Rm^3/s
WET REF GAS FLOWRATE	19.92 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.4 mg
	-FILTER	2.2 mg
	-TOTAL	4.6 mg
DRY REF GAS VOLUME SAMPLED		4.013 m^3
PARTICULATE CONC. - ACTUAL		0.673 mg/m^3
PARTICULATE CONC. - DRY REF		1.146 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.968 mg/m^3
PARTICULATE CONC. - WET REF		0.971 mg/m^3
PARTICULATE EMISSION RATE		0.019333 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 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 25, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.2
DGMCF	0.988	**Probe (mg)**	2.4
Barometric Pressure	29.82 "Hg	**CWTR (g)**	510.7
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	22.2
Nozzle	0.2542 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%	9.18
CO2%	10.28
COppm	15.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	33.09	1	340	48	66	67	2.3	7.0		21.74	
	2.5	35.20	1.1	290	42	66	67	2.65	7.0		22.08	**102.6**
	5	37.25	1.1	291	41	67	68	2.7	7.0		22.09	**92.1**
2	7.5	39.49	1.1	290	41	67	68	2.7	7.0		22.08	**100.6**
	10	41.74	1.1	291	42	67	69	2.65	7.0		22.09	**100.9**
	12.5	43.97	1.1	291	42	67	69	2.6	7.0		22.09	**100.0**
3	15	46.18	1	290	44	67	69	2.4	7.0		21.05	**99.1**
	17.5	48.31	1	290	44	67	70	2.4	7.0		21.05	**100.0**
	20	50.44	0.98	289	45	67	70	2.3	6.5		20.82	**100.0**
4	22.5	52.54	0.93	289	45	67	71	2.2	6.5		20.28	**99.5**
	25	54.58	0.9	289	46	67	71	2.1	6.5		19.96	**99.1**
	27.5	56.58	0.9	289	46	68	72	2.15	6.5		19.96	**98.7**
5	30	58.60	0.84	289	46	68	72	2	6.5		19.28	**99.5**
	32.5	60.55	0.81	289	46	68	73	2.05	6.5		18.93	**99.4**
	35	62.51	0.81	288	46	68	73	2	6.0		18.92	**101.7**
6	37.5	64.43	0.72	288	46	68	73	1.7	6.0		17.84	**99.5**
	40	66.22	0.71	289	46	68	74	1.7	6.0		17.72	**98.3**
	42.5	67.99	0.7	288	46	68	74	1.65	6.0		17.59	**97.9**
7	45	69.74	0.72	288	46	68	74	1.7	6.0		17.84	**97.4**
	47.5	71.52	0.72	288	45	68	75	1.7	6.0		17.84	**97.7**
	50	73.32	0.71	288	45	69	75	1.7	6.0		17.71	**98.7**
8	52.5	75.12	0.76	288	45	69	75	1.8	6.0		18.33	**99.3**
	55	76.96	0.77	289	44	69	75	1.85	6.0		18.46	**98.1**
	57.5	78.82	0.77	288	44	69	75	1.85	6.0		18.45	**98.6**
9	60	80.68	0.77	288	44	69	75	1.9	6.0		18.45	**98.5**
	62.5	82.58	0.75	288	44	69	75	1.85	6.0		18.20	**100.7**
	65	84.45	0.77	288	44	69	75	1.95	6.0		18.45	**100.4**
10	67.5	86.35	0.78	288	44	70	75	1.95	6.0		18.56	**100.7**
	70	88.23	0.76	288	44	70	75	1.95	6.0		18.33	**98.9**
	72.5	90.17	0.76	288	44	70	75	1.95	6.0		18.33	**103.4**
11	75	92.08	0.76	288	44	70	75	1.95	6.0		18.33	**101.8**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 25, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.2
DGMCF	0.988	**Probe (mg)**	2.4
Barometric Pressure	29.82 "Hg	**CWTR (g)**	510.7
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	22.2
Nozzle	0.2542 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%	9.18
CO2%	10.28
COppm	15.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	93.92	0.76	288	44	70	75	1.95	6.0		18.33	98.1
	80	95.76	0.75	289	44	70	75	1.8	6.0		18.22	98.1
12	82.5	97.74	0.76	289	44	70	76	1.8	6.0		18.34	106.3
	85	99.59	0.76	289	44	70	76	1.8	6.0		18.34	98.5
	87.5	101.43	0.75	289	44	70	76	1.8	6.0		18.22	98.0
	90	103.28								0.46		99.2
1	0	103.74	0.95	289	56	70	71	2.25	7.0		20.50	
	2.5	105.64	0.95	290	48	70	72	2.3	7.0		20.52	91.0
	5	107.73	0.95	290	45	70	72	2.3	7.0		20.52	100.1
2	7.5	109.83	0.98	290	43	70	72	2.4	7.0		20.84	100.6
	10	111.96	0.97	290	43	70	73	2.4	7.0		20.73	100.5
	12.5	114.09	1	290	43	70	73	2.5	7.5		21.05	100.9
3	15	116.24	0.93	291	43	70	73	2.3	7.0		20.31	100.3
	17.5	118.34	0.97	291	43	70	73	2.4	7.0		20.74	101.7
	20	120.47	0.97	291	43	70	73	2.4	7.0		20.74	101.0
4	22.5	122.59	0.91	291	43	70	73	2.2	7.0		20.09	100.5
	25	124.65	0.88	291	44	70	73	2.1	7.0		19.76	100.8
	27.5	126.64	0.9	290	43	70	74	2.15	7.0		19.97	99.0
5	30	128.65	0.85	290	43	70	74	2.05	7.0		19.41	98.7
	32.5	130.62	0.84	290	43	70	74	2.05	7.0		19.29	99.5
	35	132.57	0.84	291	42	70	75	2.05	7.0		19.30	99.1
6	37.5	134.53	0.75	291	41	70	75	1.8	6.5		18.24	99.6
	40	136.37	0.75	290	41	70	75	1.8	6.5		18.23	98.9
	42.5	138.19	0.77	291	42	70	75	1.85	6.5		18.48	97.7
7	45	140.05	0.82	291	41	70	76	1.95	7.0		19.07	98.7
	47.5	141.96	0.83	291	42	70	76	2	7.0		19.19	98.1
	50	143.88	0.83	291	42	70	76	2	7.0		19.19	98.0
8	52.5	145.82	0.86	291	42	70	76	2.1	7.0		19.53	99.1
	55	147.80	0.84	292	42	70	76	2.05	7.0		19.32	99.3
	57.5	149.77	0.87	291	42	70	76	2.1	7.0		19.65	100.1
9	60	151.75	0.87	292	42	71	76	2.1	7.0		19.66	98.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 25, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.2
DGMCF	0.988	**Probe (mg)**	2.4
Barometric Pressure	29.82 "Hg	**CWTR (g)**	510.7
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	22.2
Nozzle	0.2542 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%	9.18
CO2%	10.28
COppm	15.0

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	153.75	0.87	292	43	71	76	2.1	7.0		19.66	99.7
	65	155.74	0.87	292	44	71	75	2.1	7.0		19.66	99.2
10	67.5	157.74	0.89	292	44	71	75	2.1	7.0		19.88	99.8
	70	159.74	0.89	292	44	71	75	2.1	7.0		19.88	98.7
	72.5	161.74	0.89	292	44	71	75	2.1	7.0		19.88	98.7
11	75	163.75	0.81	292	44	71	75	1.95	7.0		18.97	99.2
	77.5	165.66	0.8	292	44	71	75	1.95	7.0		18.85	98.8
	80	167.57	0.8	292	45	71	76	1.95	7.0		18.85	99.4
12	82.5	169.51	0.8	292	45	71	76	1.95	7.0		18.85	100.9
	85	171.41	0.77	292	45	71	76	1.85	7.0		18.49	98.8
	87.5	173.28	0.79	292	45	71	76	1.95	7.0		18.73	99.1
	90	175.18										99.4

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet Unit 1
Test No.:	2 - Metals and Particulate
Date:	October 25, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.988
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.063 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	143.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.3 %
AVERAGE GAS VELOCITY	19.66 m/s
BAROMETRIC PRESSURE (Station)	101.016 Kpa
STATIC PRESSURE	-2.801 Kpa
ABSOLUTE GAS PRESSURE	98.215 Kpa
OXYGEN CONCENTRATION	9.35 %
CARBON DIOXIDE CONCENTRATION	10.11 %
CARBON MONOXIDE CONCENTRATION	11.1 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.04 m^3/s
DRY REF GAS FLOWRATE	17.06 Rm^3/s
DRY ADJ GAS FLOWRATE	19.90 Rm^3/s
WET REF GAS FLOWRATE	20.14 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.6 mg
	-FILTER	1.1 mg
	-TOTAL	3.7 mg
DRY REF GAS VOLUME SAMPLED		4.063 m^3
PARTICULATE CONC. - ACTUAL		0.535 mg/m^3
PARTICULATE CONC. - DRY REF		0.911 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.781 mg/m^3
PARTICULATE CONC. - WET REF		0.772 mg/m^3
PARTICULATE EMISSION RATE		0.015537 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
Test No.: 2 - Metals and Particulate
Date: October 25, 2016

Plant Location: Courtice, ON
Test Location: APC Outlet Unit 1
Operator: TT

Pitot Factor	0.846	**Filter (mg)**	1.1
DGMCF	0.988	**Probe (mg)**	2.6
Barometric Pressure	29.83 "Hg	**CWTR (g)**	514.5
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.35
CO2%	10.11
COppm	11.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	76.05	0.95	289	55	69	69	2.3	7.0		20.50	
	2.5	78.12	1	290	52	69	70	2.35	7.0		21.05	99.4
	5	80.24	1	290	49	69	70	2.35	7.0		21.05	99.2
2	7.5	82.36	1.05	291	48	69	71	2.5	7.0		21.58	99.2
	10	84.54	1.05	291	48	70	71	2.5	7.0		21.58	99.6
	12.5	86.71	0.99	291	48	70	72	2.35	7.0		20.96	99.1
3	15	88.84	0.99	291	48	69	72	2.35	7.0		20.96	100.0
	17.5	90.98	0.99	291	48	69	72	2.3	7.0		20.96	100.6
	20	93.04	0.98	291	48	69	73	2.3	7.0		20.85	96.8
4	22.5	95.13	0.91	290	48	69	73	2.2	7.0		20.08	98.6
	25	97.17	0.91	291	48	69	73	2.2	7.0		20.09	99.8
	27.5	99.20	0.92	291	48	69	74	2.2	7.0		20.20	99.4
5	30	101.25	0.86	291	48	70	74	2.05	6.5		19.53	99.7
	32.5	103.23	0.86	291	48	70	74	2.05	6.5		19.53	99.5
	35	105.18	0.87	291	47	70	74	2.05	6.5		19.65	98.0
6	37.5	107.15	0.81	291	46	70	75	2	6.5		18.96	98.4
	40	109.10	0.81	291	46	70	75	2	6.5		18.96	100.8
	42.5	111.02	0.86	291	46	70	75	2.05	6.5		19.53	99.3
7	45	112.98	0.9	290	45	70	76	2.2	7.0		19.97	98.4
	47.5	114.99	0.9	291	45	70	76	2.2	7.0		19.98	98.5
	50	117.07	0.91	292	45	70	75	2.2	7.0		20.11	102.0
8	52.5	119.11	0.9	292	45	70	75	2.2	7.0		20.00	99.6
	55	121.15	0.89	292	45	70	75	2.15	7.0		19.89	100.2
	57.5	123.17	0.89	292	46	71	75	2.15	7.0		19.89	99.8
9	60	125.19	0.93	292	46	71	75	2.2	7.0		20.33	99.7
	62.5	127.25	0.91	292	45	71	75	2.2	7.0		20.11	99.4
	65	129.31	0.91	291	45	71	75	2.2	7.0		20.09	100.5
10	67.5	131.37	0.91	292	45	71	75	2.2	7.0		20.11	100.5
	70	133.43	0.88	292	45	71	75	2.15	7.0		19.77	100.5
	72.5	135.47	0.88	292	45	71	75	2.15	7.0		19.77	101.2
11	75	137.50	0.88	291	45	71	76	2.15	7.0		19.76	100.7

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 25, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	1.1
DGMCF	0.988	**Probe (mg)**	2.6
Barometric Pressure	29.83 "Hg	**CWTR (g)**	514.5
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.35
CO2%	10.11
COppm	11.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	139.54	0.87	290	45	71	76	2.15	7.0		19.63	**101.1**
	80	141.54	0.87	291	46	71	76	2.1	7.0		19.65	**99.6**
12	82.5	143.53	0.92	290	46	71	76	2.2	7.0		20.19	**99.1**
	85	145.59	0.92	290	46	71	76	2.2	7.0		20.19	**99.7**
	87.5	147.66	0.86	290	46	71	76	2.05	7.0		19.52	**100.2**
	90	149.63								0.59		**98.6**
1	0	150.22	1.1	290	55	71	72	2.55	8.0		22.08	
	2.5	152.44	1.1	290	55	71	72	2.55	8.0		22.08	**98.8**
	5	154.68	1.1	293	46	71	73	2.55	8.0		22.12	**99.7**
2	7.5	156.94	1.1	294	45	71	73	2.55	8.0		22.14	**100.6**
	10	159.18	1.2	294	45	71	74	2.75	8.0		23.12	**99.8**
	12.5	161.46	1.1	294	45	71	74	2.55	8.0		22.14	**97.2**
3	15	163.68	1	294	45	71	74	2.35	7.5		21.11	**98.8**
	17.5	165.82	1.1	293	46	71	75	2.55	8.0		22.12	**99.9**
	20	168.04	0.98	293	45	71	75	2.35	7.5		20.88	**98.7**
4	22.5	170.16	0.89	291	45	71	76	2.15	7.0		19.87	**99.8**
	25	172.20	0.89	292	46	71	76	2.1	7.0		19.89	**100.5**
	27.5	174.19	0.92	291	46	71	76	2.1	7.0		20.20	**98.1**
5	30	176.20	0.82	291	47	71	77	2	7.0		19.07	**97.4**
	32.5	178.13	0.76	291	47	71	77	1.8	6.5		18.36	**98.9**
	35	179.98	0.81	290	47	72	77	2	7.0		18.95	**98.4**
6	37.5	181.90	0.71	290	47	72	78	1.7	6.5		17.74	**98.8**
	40	183.70	0.69	290	48	72	78	1.7	6.5		17.49	**98.8**
	42.5	185.48	0.75	290	48	72	78	1.8	6.5		18.23	**99.1**
7	45	187.32	0.74	290	48	72	78	1.8	6.5		18.11	**98.3**
	47.5	189.18	0.74	290	47	72	79	1.8	6.5		18.11	**100.0**
	50	191.04	0.79	290	47	72	79	1.95	7.0		18.71	**99.9**
8	52.5	192.95	0.79	290	46	73	79	1.95	7.0		18.71	**99.4**
	55	194.85	0.76	290	47	73	79	1.95	7.0		18.35	**98.8**
	57.5	196.76	0.76	290	46	73	79	1.9	7.0		18.35	**101.2**
9	60	198.65	0.76	289	46	73	79	1.9	7.0		18.34	**100.1**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 25, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	1.1
DGMCF	0.988	**Probe (mg)**	2.6
Barometric Pressure	29.83 "Hg	**CWTR (g)**	514.5
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.59 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.35
CO2%	10.11
COppm	11.1

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	200.59	0.76	289	46	73	79	1.9	7.0		18.34	**102.7**
	65	202.42	0.76	289	46	73	79	1.95	7.0		18.34	**96.9**
10	67.5	204.29	0.76	289	46	73	79	1.95	7.0		18.34	**99.0**
	70	206.24	0.71	288	46	73	79	1.7	6.5		17.71	**103.3**
	72.5	208.03	0.7	288	47	73	79	1.65	6.5		17.59	**98.0**
11	75	209.79	0.68	287	47	73	79	1.7	7.0		17.32	**97.0**
	77.5	211.56	0.68	287	47	73	78	1.7	6.5		17.32	**98.9**
	80	213.32	0.66	287	47	73	79	1.7	6.5		17.07	**98.4**
12	82.5	215.07	0.66	287	47	73	80	1.7	6.5		17.07	**99.3**
	85	216.86	0.69	287	47	73	80	1.7	6.5		17.45	**101.4**
	87.5	218.64	0.69	287	47	73	80	1.7	6.5		17.45	**98.6**
	90	220.46										**100.9**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet Unit 1
Test No.:	3 - Metals and Particulate
Date:	October 27, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.988
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	4.071 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	142.4 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	19.90 m/s
BAROMETRIC PRESSURE (Station)	100.102 Kpa
STATIC PRESSURE	-2.814 Kpa
ABSOLUTE GAS PRESSURE	97.288 Kpa
OXYGEN CONCENTRATION	9.05 %
CARBON DIOXIDE CONCENTRATION	10.21 %
CARBON MONOXIDE CONCENTRATION	13.4 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	29.40 m^3/s
DRY REF GAS FLOWRATE	17.12 Rm^3/s
DRY ADJ GAS FLOWRATE	20.49 Rm^3/s
WET REF GAS FLOWRATE	20.26 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.4 mg
	-FILTER	2.9 mg
	-TOTAL	5.3 mg
DRY REF GAS VOLUME SAMPLED		4.071 m^3
PARTICULATE CONC. - ACTUAL		0.758 mg/m^3
PARTICULATE CONC. - DRY REF		1.302 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.088 mg/m^3
PARTICULATE CONC. - WET REF		1.100 mg/m^3
PARTICULATE EMISSION RATE		0.022280 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 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 27, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.9
DGMCF	0.988	**Probe (mg)**	2.4
Barometric Pressure	29.56 "Hg	**CWTR (g)**	527.1
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	21.5
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.5 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.05
CO2%	10.21
COppm	13.4

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	93.47	1.05	280	53	63	63	2.6	6.0		21.54	
	2.5	95.62	1	284	42	63	64	2.4	6.0		21.07	98.6
	5	97.76	1	283	41	63	65	2.4	6.0		21.06	100.7
2	7.5	99.89	1.05	283	40	63	66	2.5	6.0		21.58	100.1
	10	102.05	1.05	284	41	63	67	2.5	6.0		21.59	99.0
	12.5	104.31	1	284	41	64	68	2.4	6.0		21.07	103.5
3	15	106.36	1	284	40	64	68	2.4	6.0		21.07	96.0
	17.5	108.49	1.05	284	40	64	69	2.5	6.0		21.59	99.8
	20	110.68	1	284	41	64	70	2.4	6.0		21.07	100.0
4	22.5	112.82	0.91	284	40	64	70	2.2	6.0		20.10	100.1
	25	114.86	0.92	285	41	65	70	2.2	6.0		20.23	99.9
	27.5	116.90	0.92	285	41	65	71	2.2	6.0		20.23	99.4
5	30	118.93	0.86	285	41	65	71	2.1	5.5		19.56	98.8
	32.5	120.91	0.86	285	41	65	72	2.1	5.5		19.56	99.6
	35	122.91	0.86	285	42	65	72	2.1	5.5		19.56	100.5
6	37.5	124.86	0.85	285	42	65	72	2.1	5.5		19.44	98.0
	40	126.87	0.81	285	42	65	72	2	5.5		18.98	101.6
	42.5	128.79	0.82	286	43	66	73	2	5.5		19.11	99.4
7	45	130.70	0.84	287	43	66	73	2.05	5.5		19.35	98.2
	47.5	132.64	0.79	288	43	66	73	1.95	5.5		18.78	98.6
	50	134.55	0.81	288	42	66	73	2	5.5		19.02	100.2
8	52.5	136.48	0.82	289	42	66	74	2	5.5		19.15	100.0
	55	138.41	0.82	289	43	66	74	2	5.5		19.15	99.3
	57.5	140.35	0.82	289	43	67	74	2	5.5		19.15	99.8
9	60	142.26	0.76	289	43	67	74	1.9	5.5		18.43	98.2
	62.5	144.13	0.76	289	43	67	74	1.9	5.5		18.43	99.8
	65	145.99	0.76	289	42	67	74	1.9	5.5		18.43	99.3
10	67.5	147.86	0.76	290	42	67	74	1.85	5.5		18.45	99.8
	70	149.72	0.75	290	42	67	74	1.85	5.5		18.32	99.4
	72.5	151.57	0.76	290	42	67	74	1.85	5.5		18.45	99.5
11	75	153.46	0.76	290	42	67	74	1.85	5.5		18.45	101.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 27, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.9
DGMCF	0.988	**Probe (mg)**	2.4
Barometric Pressure	29.56 "Hg	**CWTR (g)**	527.1
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	21.5
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.5 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.05
CO2%	10.21
COppm	13.4

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	155.30	0.67	290	42	67	74	1.65	5.5		17.32	98.3
	80	157.05	0.67	290	42	67	74	1.65	5.5		17.32	99.5
12	82.5	158.79	0.67	290	42	67	74	1.65	5.5		17.32	98.9
	85	160.55	0.67	290	42	67	74	1.65	5.5		17.32	100.1
	87.5	162.31	0.71	290	42	67	74	1.8	6.0		17.83	100.1
	90	164.12								0.5		100.0
1	0	164.62	1.1	288	62	64	64	2.6	6.5		22.16	
	2.5	166.77	1.15	291	43	64	65	2.7	6.5		22.71	96.7
	5	169.04	1.1	290	41	64	65	2.6	6.5		22.19	100.0
2	7.5	171.25	1.1	290	39	65	66	2.55	6.5		22.19	99.4
	10	173.46	1.1	289	39	64	67	2.55	6.5		22.18	99.2
	12.5	175.66	1.1	290	39	64	68	2.55	6.5		22.19	98.7
3	15	177.86	1.1	291	39	64	68	2.55	6.5		22.21	98.7
	17.5	180.06	1.1	291	39	64	69	2.55	6.5		22.21	98.8
	20	182.26	1.1	292	40	65	69	2.55	6.5		22.22	98.7
4	22.5	184.45	1.05	291	40	65	70	2.5	6.5		21.70	98.2
	25	186.62	1	291	40	65	70	2.35	6.5		21.17	99.4
	27.5	188.74	1	291	39	65	70	2.35	6.5		21.17	99.5
5	30	190.87	0.92	290	39	65	71	2.2	6.0		20.29	99.9
	32.5	192.92	0.95	291	40	65	71	2.2	6.0		20.64	100.1
	35	194.97	0.95	291	40	65	71	2.2	6.0		20.64	98.6
6	37.5	197.01	0.84	291	40	65	71	2.1	6.0		19.41	98.1
	40	198.96	0.84	291	40	66	72	2.1	6.0		19.41	99.7
	42.5	200.96	0.84	291	40	66	72	2	6.0		19.41	102.0
7	45	202.92	0.88	290	40	66	72	2.05	6.0		19.85	100.0
	47.5	204.91	0.89	290	40	66	72	2.05	6.0		19.96	99.1
	50	206.88	0.89	289	40	66	72	2.05	6.0		19.95	97.6
8	52.5	208.88	0.87	289	40	66	72	2.05	6.0		19.72	99.0
	55	210.83	0.87	289	40	66	73	2.1	6.0		19.72	97.6
	57.5	212.80	0.87	289	40	66	73	2.1	6.0		19.72	98.5
9	60	214.78	0.87	290	41	66	73	2.05	6.0		19.74	99.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals and Particulate	**Test Location:**	APC Outlet Unit 1
Date:	October 27, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.9
DGMCF	0.988	**Probe (mg)**	2.4
Barometric Pressure	29.56 "Hg	**CWTR (g)**	527.1
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	21.5
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.5 ft^3
Length	0.000 ft	**Reading Interval**	2.5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	9.05
CO2%	10.21
COppm	13.4

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	216.75	0.91	290	41	66	73	2.2	6.0		20.18	**98.6**
	65	218.80	0.87	289	41	67	73	2.1	6.0		19.72	**100.3**
10	67.5	220.79	0.86	289	41	67	73	2.05	6.0		19.61	**99.4**
	70	222.74	0.86	289	41	67	73	2.05	6.0		19.61	**98.0**
	72.5	224.71	0.86	290	41	67	73	2.05	6.0		19.62	**99.0**
11	75	226.67	0.78	289	42	67	73	1.9	6.0		18.67	**98.6**
	77.5	228.57	0.79	289	42	67	73	1.95	6.0		18.79	**100.2**
	80	230.49	0.78	289	42	67	73	1.9	6.0		18.67	**100.6**
12	82.5	232.38	0.78	290	42	67	74	1.9	6.0		18.69	**99.7**
	85	234.27	0.78	289	42	67	74	1.9	6.0		18.67	**99.7**
	87.5	236.17	0.78	289	42	67	74	1.9	6.0		18.67	**100.1**
	90	238.03										**98.0**

APPENDIX 25

Particle Size Distribution Test Emission Calculations at Boiler No. 1 (6 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	October-26-16
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	Unit 1 Outlet

Project No.: 21698
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.47
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.989
Pitot Factor	0.846
Barometric Pressure (" Hg)	29.71
Static Pressure ("H_2O)	-11.25
Oxygen Content (%)	9.8
Carbon Dioxide Content (%)	9.9
Carbon Monoxide Content (PPM)	20
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft^3/min*	10.2 l/min*
Cyclone Qs_{actual}	0.61 ft^3/min	17.2 l/min
Stack Gas Sampling Parameters		
V_{ms}	43.5 Rft^3*	1.231 Rm^3*
Average Cyclone I Cut Diameter		10.13 µm
Average Cyclone IV Cut Diameter		2.31 µm
Average Isokineticity		96.2 %
Stack Gas Physical Parameters		
B_{ws}	14.0 % v/v	
Average m	223.2 (dimensionless)	
M_d	29.97 lbs/lbs mole	
M_w	28.30 lbs/lbs mole	
Average T_s	287 °F	142 °C
Average U_s	61.6 ft/s	18.8 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	58648 ACFM	27.7 m^3/s
Wet Reference Q_s	40681 SCFM*	19.2 Rm^3/s*
Dry Reference Q_s	34997 SCFM*	16.5 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.62 mg/Rm^3*	0.027 g/s
Total Part. (b)	1.62 mg/Rm^3*	0.027 g/s
PM_{10} Part.	1.22 mg/Rm^3*	0.020 g/s
$PM_{2.5}$ Part.	0.81 mg/Rm^3*	0.013 g/s
Cond. Part.	0.00 mg/Rm^3*	0.000 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)	492.3	657.6	767.3	893.4	0.0
final volume or weight (ml or mg)	630.8	657.6	767.0	902.3	0.0
gain in volume or weight (ml or mg)	138.5	0.0	-0.3	8.9	0.0
				TOTAL	147.1

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.5	0.5	0.50	

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: October-26-16	**Plant:** DYEC	**Test No.:** 1	**Project No.:** 21698
Client: Covanta	**Location:** Courtice, Ontario	**Test location:** Unit 1 Outlet	**Operator:** DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	DR ("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	10.30	42.48	1.00	0.35	290	64	64	0.40	2.5	69.2	9.92	2.24	88.1
	2	10.30	10.10	46.29	0.91	0.35	289	64	64	0.40	2.5	65.9	10.06	2.29	90.4
	3	20.40	9.70	49.95	0.82	0.35	287	64	64	0.40	2.5	62.5	10.09	2.30	94.7
	4	30.10	9.20	53.45	0.68	0.35	285	64	64	0.40	2.5	56.8	10.11	2.31	103.5
	5	39.30	9.10	56.76	0.63	0.35	284	64	64	0.40	2.5	54.7	10.18	2.33	106.4
	6	48.40	9.10	60.00	0.62	0.35	282	66	66	0.40	2.5	54.2	9.92	2.23	111.0
		57.50		63.37											
2	1	0.00	10.90	63.37	0.88	0.35	284	67	67	0.40	2.5	64.6	10.11	2.31	90.9
	2	10.90	10.80	67.31	0.87	0.35	287	67	67	0.40	2.5	64.4	10.24	2.36	90.1
	3	21.70	10.80	71.15	0.86	0.35	289	67	69	0.40	2.5	64.1	10.24	2.36	90.8
	4	32.50	10.10	75.00	0.83	0.35	291	70	68	0.40	2.5	63.1	10.25	2.37	92.3
	5	42.60	9.80	78.60	0.71	0.35	291	70	68	0.40	2.5	58.3	10.22	2.36	100.3
	6	52.40	10.30	82.11	0.79	0.35	289	70	68	0.40	2.5	61.4	10.21	2.35	95.0
		62.70		85.80											
Averages					**0.80**		**287**	**66**		**0.40**		**61.6**	**10.13**	**2.31**	**96.2**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	October-26-16
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	Unit 1 Outlet

Project No.: 21698
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.47
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.989
Pitot Factor	0.846
Barometric Pressure (" Hg)	29.70
Static Pressure ("H_2O)	-11.25
Oxygen Content (%)	9.3
Carbon Dioxide Content (%)	10.3
Carbon Monoxide Content (PPM)	13.1
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}	0.57 ft^3/min	16.0 l/min
Stack Gas Sampling Parameters		
V_{ms}	40.2 Rft^3*	1.139 Rm^3*
Average Cyclone I Cut Diameter		10.61 µm
Average Cyclone IV Cut Diameter		2.53 µm
Average Isokineticity		86.2 %
Stack Gas Physical Parameters		
B_{ws}	14.6 % v/v	
Average m	222.8 (dimensionless)	
M_d	30.02 lbs/lbs mole	
M_w	28.27 lbs/lbs mole	
Average T_s	288 °F	142 °C
Average U_s	63.4 ft/s	19.3 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	60372 ACFM	28.5 m^3/s
Wet Reference Q_s	41825 SCFM*	19.7 Rm^3/s*
Dry Reference Q_s	35739 SCFM*	16.9 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.8 mg/Rm^3*	0.030 g/s
Total Part. (b)	1.8 mg/Rm^3*	0.03 g/s
PM_{10} Part.	1.3 mg/Rm^3*	0.022 g/s
$PM_{2.5}$ Part.	0.9 mg/Rm^3*	0.015 g/s
Cond. Part.	0.0 mg/Rm^3*	0.000 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)	475.6	631.3	744.6	897.9	0.0
final volume or weight (ml or mg)	612.1	630.7	744.1	905.2	0.0
gain in volume or weight (ml or mg)	136.5	-0.6	-0.5	7.3	0.0
				TOTAL	142.7

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.5	0.5	0.50	0.0

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: October-26-16	Plant: DYEC	Test No.: 2	Project No.: 21698
Client: Covanta	Location: Courtice, Ontario	Test location: Unit 1 Outlet	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	DR ("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	86.12	0.91	0.33	290	69	68	0.35	2.5	66.0	10.74	2.57	82.3
	2	10.50	10.50	89.59	0.91	0.33	290	69	69	0.35	2.5	66.0	10.45	2.45	85.5
	3	21.00	10.40	93.20	0.88	0.33	290	70	69	0.35	2.5	64.9	10.66	2.54	84.6
	4	31.40	10.20	96.68	0.83	0.33	290	70	69	0.35	2.5	63.1	10.73	2.57	86.2
	5	41.60	9.40	100.06	0.79	0.33	288	71	69	0.35	2.5	61.4	10.72	2.56	88.3
	6	51.00	10.00	103.18	0.80	0.33	288	71	69	0.35	2.5	61.8	10.67	2.54	88.3
		61.00		106.52											
2	1	0.00	11.20	106.52	1.00	0.33	280	72	71	0.35	2.5	68.8	10.66	2.53	78.5
	2	11.20	10.70	110.27	0.96	0.33	289	73	71	0.35	2.5	67.8	10.59	2.51	81.6
	3	21.90	10.20	113.90	0.88	0.33	289	73	71	0.35	2.5	64.9	10.88	2.63	82.1
	4	32.10	9.20	117.23	0.77	0.33	288	73	71	0.35	2.5	60.7	10.52	2.48	91.9
	5	41.30	8.90	120.38	0.68	0.33	287	73	71	0.35	2.5	57.0	10.44	2.44	98.8
	6	50.20	8.80	123.46	0.72	0.33	287	73	72	0.35	2.5	58.6	10.31	2.39	97.7
		59.00		126.56											
Averages					**0.84**		**288**	**71**		**0.35**		**63.4**	**10.61**	**2.53**	**86.2**

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	October-26-16
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	Unit 1 Outlet

Project No.: 21698
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.47
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.989
Pitot Factor	0.846
Barometric Pressure (" Hg)	29.93
Static Pressure ("H_2O)	-11.25
Oxygen Content (%)	9.0
Carbon Dioxide Content (%)	10.5
Carbon Monoxide Content (PPM)	16
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	16.9 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.5 Rft^3*	1.204 Rm^3*
Average Cyclone I Cut Diameter		10.19 µm
Average Cyclone IV Cut Diameter		2.34 µm
Average Isokineticity		95.7 %
Stack Gas Physical Parameters		
B_{ws}	15.2 % v/v	
Average m	222.2 (dimensionless)	
M_d	30.04 lbs/lbs mole	
M_w	28.21 lbs/lbs mole	
Average T_s	289 °F	143 °C
Average U_s	61.0 ft/s	18.6 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	58106 ACFM	27.4 m^3/s
Wet Reference Q_s	40548 SCFM*	19.1 Rm^3/s*
Dry Reference Q_s	34399 SCFM*	16.2 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.41 mg/Rm^3*	0.0229 g/s
Total Part. (b)	1.41 mg/Rm^3*	0.0229 g/s
PM_{10} Part.	1.00 mg/Rm^3*	0.0162 g/s
$PM_{2.5}$ Part.	0.58 mg/Rm^3*	0.0094 g/s
Cond. Part.	0.00 mg/Rm^3*	0.0000 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)	491.8	657.6	766.9	902.2	0.0
final volume or weight (ml or mg)	640.0	657.6	769.0	910.2	0.0
gain in volume or weight (ml or mg)	148.2	0.0	2.1	8.0	0.0
				TOTAL	158.3

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.5	0.5	0.20	0.0

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: October-26-16	Plant: DYEC	Test No.: 3	Project No.: 21698
Client: Covanta	Location: Courtice, Ontario	Test location: Unit 1 Outlet	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	DR ("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	27.51	0.91	0.34	288	72	72	0.38	2.5	65.7	10.07	2.29	89.7
	2	10.90	10.70	31.43	0.85	0.34	289	72	72	0.38	2.5	63.6	10.17	2.33	91.7
	3	21.60	10.20	35.23	0.71	0.34	288	73	72	0.38	2.5	58.1	10.08	2.30	101.5
	4	31.80	9.60	38.90	0.66	0.34	287	74	73	0.38	2.5	56.0	10.38	2.41	101.0
	5	41.40	9.00	42.22	0.62	0.34	286	73	72	0.38	2.5	54.2	10.09	2.30	108.2
	6	50.40	9.30	45.45	0.70	0.34	283	73	73	0.38	2.5	57.5	10.04	2.28	102.2
		59.70		48.81											
2	1	0.00	10.40	48.81	0.91	0.34	282	75	73	0.38	2.5	65.5	10.15	2.32	88.3
	2	10.40	10.40	52.52	0.88	0.34	290	75	73	0.38	2.5	64.7	10.24	2.36	89.3
	3	20.80	10.20	56.19	0.88	0.34	291	75	74	0.38	2.5	64.8	10.25	2.37	89.3
	4	31.00	9.90	59.79	0.80	0.34	292	76	74	0.38	2.5	61.8	10.27	2.37	93.5
	5	40.90	9.70	63.28	0.73	0.34	293	76	74	0.38	2.5	59.1	10.29	2.38	97.7
	6	50.60	9.80	66.69	0.79	0.34	293	76	75	0.38	2.5	61.5	10.26	2.37	94.2
		60.40		70.15											
Averages					0.79		289	73		0.38		61.0	10.19	2.34	95.7

APPENDIX 26

Acid Gases Test Emission Calculations
at Boiler No. 1
(6 pages)

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 1 Outlet
Test No.:	Test 1 Method 26A
Date:	October 25, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	1.287 m^3
AVGERGE ISOKINETICITY	97.2 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	141.8 °C
AVERAGE GAS MOISTURE BY VOLUME	14.6 %
AVERAGE GAS VELOCITY	18.77 m/s
BAROMETRIC PRESSURE (Station)	100.948 Kpa
STATIC PRESSURE	-2.801 Kpa
ABSOLUTE GAS PRESSURE	98.147 Kpa
OXYGEN CONCENTRATION	9.42 %
CARBON DIOXIDE CONCENTRATION	10.08 %
CARBON MONOXIDE CONCENTRATION	12.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.74 m^3/s
DRY REF GAS FLOWRATE	16.49 Rm^3/s
DRY ADJ GAS FLOWRATE	19.12 Rm^3/s
WET REF GAS FLOWRATE	19.31 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.287 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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 1 Method 26A	**Test Location:**	Unit No. 1 Outlet
Date:	October 25, 2016	**Operator:**	CB

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.81 "Hg	**CWTR (g)**	146.7
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	15.1
Nozzle	0.255 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%	9.42
CO2%	10.08
COppm	12.8

Measured H2O
14.6 %

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 %
5	0	57.95	0.8	289	64	68	68	1.95	2.5		18.84	
	5	61.80	0.86	289	52	68	68	1.95	2.5		19.53	99.8
	10	65.52	0.82	289	50	68	68	1.95	2.5		19.07	93.0
	15	69.25	0.82	288	53	68	68	1.95	2.5		19.06	95.5
	20	72.96	0.81	287	55	68	68	1.95	2.5		18.93	95.0
	25	76.66	0.81	287	57	68	68	1.95	2.5		18.93	95.2
	30	80.44	0.8	287	56	69	68	1.95	2.5		18.81	97.3
	35	84.17	0.79	286	56	69	68	1.95	2.5		18.68	96.5
	40	87.94	0.76	286	53	69	68	1.95	2.5		18.33	98.1
	45	91.70	0.76	286	52	69	68	1.95	2.5		18.33	99.7
	50	95.45	0.77	286	51	70	68	1.95	2.5		18.45	99.5
	55	99.24	0.76	286	50	70	68	1.95	2.5		18.33	99.8
	60	102.91										97.3

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 1 Outlet
Test No.:	Test 2 Method 26A
Date:	October 25, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.48	mm
DRY REF GAS VOLUME SAMPLED	1.219	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	142.8	°C
AVERAGE GAS MOISTURE BY VOLUME	16.2	%
AVERAGE GAS VELOCITY	17.80	m/s
BAROMETRIC PRESSURE (Station)	101.016	Kpa
STATIC PRESSURE	-2.801	Kpa
ABSOLUTE GAS PRESSURE	98.215	Kpa
OXYGEN CONCENTRATION	8.97	%
CARBON DIOXIDE CONCENTRATION	10.44	%
CARBON MONOXIDE CONCENTRATION	16.4	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.31	m^3/s
DRY REF GAS FLOWRATE	15.31	Rm^3/s
DRY ADJ GAS FLOWRATE	18.45	Rm^3/s
WET REF GAS FLOWRATE	18.28	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.219	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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 2 Method 26A	**Test Location:**	Unit No. 1 Outlet
Date:	October 25, 2016	**Operator:**	CB

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.83 "Hg	**CWTR (g)**	162.8
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	10.7
Nozzle	0.255 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%	8.97
CO2%	10.44
COppm	16.4

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 %
5	0	3.50	0.72	286	66	68	70	1.75	3.5		17.88	
	5	7.10	0.72	289	54	69	70	1.75	3.5		17.92	99.6
	10	10.71	0.72	288	52	69	69	1.75	3.5		17.91	100.0
	15	14.30	0.7	292	55	72	70	1.75	3.5		17.70	99.5
	20	17.87	0.71	288	49	70	69	1.75	3.5		17.78	100.2
	25	21.42	0.7	290	50	71	70	1.75	3.5		17.68	99.0
	30	24.95	0.7	289	48	70	70	1.75	3.5		17.67	99.0
	35	28.48	0.7	289	48	70	69	1.75	3.5		17.67	99.1
	40	32.04	0.71	289	48	70	70	1.75	3.5		17.79	100.0
	45	35.55	0.72	289	48	70	70	1.75	3.5		17.92	97.8
	50	39.07	0.72	290	49	71	70	1.75	3.5		17.93	97.4
	55	42.63	0.71	290	49	71	70	1.75	3.5		17.81	98.5
	60	46.18										98.9

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 1 Outlet
Test No.:	Test 3 Method 26A
Date:	October 25, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	1.243 m^3
AVGERGE ISOKINETICITY	100.1 %
STACK DIAMETER	1.37 m
LENGTH	0.00 m
WIDTH	0.00 m
AREA OF STACK or DUCT	1.48 m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	142.2 °C
AVERAGE GAS MOISTURE BY VOLUME	16.2 %
AVERAGE GAS VELOCITY	17.95 m/s
BAROMETRIC PRESSURE (Station)	101.016 Kpa
STATIC PRESSURE	-2.801 Kpa
ABSOLUTE GAS PRESSURE	98.215 Kpa
OXYGEN CONCENTRATION	9.03 %
CARBON DIOXIDE CONCENTRATION	10.42 %
CARBON MONOXIDE CONCENTRATION	8.0 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.53 m^3/s
DRY REF GAS FLOWRATE	15.47 Rm^3/s
DRY ADJ GAS FLOWRATE	18.55 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		1.243 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: DYEC
Test No.: Test 3 Method 26A
Date: October 25, 2016

Plant Location: Courtice, ON
Test Location: Unit No. 1 Outlet
Operator: CB

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.83 "Hg	**CWTR (g)**	165.5
Static Pressure	-11.250 "H_2O	**WCBDA (g)**	11
Nozzle	0.255 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%	9.03
CO2%	10.42
COppm	8.0

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 %
5	0	47.00	0.76	285	68	71	70	1.8	2.5		18.36	
	5	50.54	0.72	288	52	71	70	1.9	2.5		17.91	95.0
	10	54.24	0.7	288	52	70	70	1.8	2.2		17.65	102.2
	15	57.88	0.71	288	55	71	70	1.8	2.2		17.78	102.1
	20	61.52	0.71	288	56	70	70	1.8	2.2		17.78	101.2
	25	65.05	0.71	289	58	70	70	1.8	2.2		17.79	98.3
	30	68.63	0.69	288	59	71	70	1.8	2.2		17.53	99.7
	35	72.22	0.71	288	57	71	70	1.8	2.2		17.78	101.3
	40	75.78	0.75	288	54	71	70	1.9	2.7		18.27	99.0
	45	79.43	0.74	288	53	71	70	1.9	2.7		18.15	98.8
	50	83.16	0.74	289	52	72	70	1.9	2.7		18.16	101.6
	55	86.84	0.75	289	52	72	70	1.9	2.7		18.29	100.3
	60	90.58										101.2

APPENDIX 27

SVOC Test Emission Calculations
at Boiler No. 1
(24 pages)

ORTECH Environmental

Plant:	DYEC Outlet 1
Plant Location:	Courtice, ON
Test Location:	Unit No. 1 Outlet
Test No.:	Test 1 SVOC
Date:	October 27, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	7.583 m^3
AVGERGE ISOKINETICITY	98.9 %
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	141.1 °C
AVERAGE GAS MOISTURE BY VOLUME	15.4 %
AVERAGE GAS VELOCITY	18.47 m/s
BAROMETRIC PRESSURE (Station)	100.000 Kpa
STATIC PRESSURE	-2.814 Kpa
ABSOLUTE GAS PRESSURE	97.186 Kpa
OXYGEN CONCENTRATION	9.11 %
CARBON DIOXIDE CONCENTRATION	10.12 %
CARBON MONOXIDE CONCENTRATION	12.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.30 m^3/s
DRY REF GAS FLOWRATE	15.95 Rm^3/s
DRY ADJ GAS FLOWRATE	18.99 Rm^3/s
WET REF GAS FLOWRATE	18.85 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		7.583 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:	DYEC Outlet 1	**Plant Location:**	Courtice, ON
Test No.:	Test 1 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 27, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.53 "Hg	**CWTR (g)**	983.7
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	28.3
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.47 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%	9.11
CO2%	10.12
COppm	12.9

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	111.58	0.71	280	52	64	63	1.75	4.0		17.76	
	5	115.08	0.69	280	51	64	64	1.7	5.0		17.51	97.1
	10	118.54	0.7	281	49	64	64	1.75	5.0		17.65	97.3
2	15	122.06	0.73	281	49	64	64	1.85	5.0		18.02	98.3
	20	125.67	0.73	279	48	65	64	1.83	5.0		18.00	98.8
	25	129.28	0.74	279	47	65	64	1.85	5.0		18.12	98.5
3	30	132.92	0.74	279	47	65	64	1.85	5.0		18.12	98.7
	35	136.54	0.75	283	47	65	64	1.9	5.0		18.29	98.1
	40	140.18	0.74	284	47	65	64	1.87	5.0		18.18	98.3
4	45	143.82	0.73	285	47	65	65	1.85	5.0		18.07	99.0
	50	147.45	0.73	287	47	66	64	1.83	5.0		18.09	99.4
	55	151.06	0.77	287	47	66	64	1.93	5.0		18.58	99.0
5	60	154.76	0.74	288	48	66	65	1.87	6.0		18.23	98.8
	65	158.42	0.73	288	47	66	65	1.82	6.0		18.10	99.6
	70	162.05	0.75	288	47	65	65	1.87	6.0		18.35	99.5
6	75	165.70	0.75	289	46	67	65	1.87	6.0		18.36	98.8
	80	169.37	0.75	289	46	67	65	1.87	6.0		18.36	99.2
	85	173.02	0.76	290	47	67	66	1.87	6.0		18.50	98.7
7	90	176.65	0.7	290	47	67	66	1.8	6.0		17.75	97.5
	95	180.20	0.71	291	48	68	66	1.75	6.0		17.89	99.3
	100	183.76	0.71	291	48	67	67	1.75	6.0		17.89	98.8
8	105	187.30	0.76	291	48	67	67	1.9	6.0		18.51	98.3
	110	190.99	0.74	291	48	68	67	1.85	6.0		18.26	99.1
	115	194.65	0.74	290	48	68	67	1.85	6.0		18.25	99.5
9	120	198.31	0.81	290	48	68	67	2.05	6.0		19.10	99.4
	125	202.14	0.8	290	48	68	67	2.03	6.0		18.98	99.5
	130	205.95	0.79	290	48	68	67	2	6.0		18.86	99.6
10	135	209.74	0.85	289	48	68	67	2.12	7.0		19.55	99.7
	140	213.66	0.83	289	49	68	67	2.1	7.0		19.32	99.3
	145	217.55	0.83	289	49	68	67	2.05	7.0		19.32	99.7
11	150	221.40	0.84	289	49	67	67	2.05	7.0		19.43	98.7

ORTECH Environmental

Plant:	DYEC Outlet 1	**Plant Location:**	Courtice, ON
Test No.:	Test 1 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 27, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.53 "Hg	**CWTR (g)**	983.7
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	28.3
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.47 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%	9.11
CO2%	10.12
COppm	12.9

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 %
	155	225.25	0.84	289	50	68	67	2.05	7.0		19.43	**98.2**
	160	229.08	0.85	288	50	67	67	2.07	7.0		19.54	**97.6**
12	165	232.94	0.87	289	50	67	67	2.2	7.0		19.78	**97.8**
	170	236.92	0.87	290	50	67	67	2.16	7.0		19.79	**99.8**
	175	240.89	0.88	290	51	67	67	2.16	7.0		19.90	**99.6**
	180	244.97								0.47		**101.7**
1	0	245.44	0.77	280	60	68	67	1.9	6.0		18.49	
	5	249.18	0.77	280	50	67	67	1.85	6.0		18.49	**99.0**
	10	252.83	0.77	279	49	67	67	1.9	6.0		18.48	**96.6**
2	15	256.51	0.77	279	48	67	67	1.95	6.0		18.48	**97.4**
	20	260.24	0.76	279	48	67	67	1.93	6.0		18.36	**98.7**
	25	263.97	0.75	279	47	67	67	1.93	6.0		18.24	**99.3**
3	30	267.70	0.78	286	47	67	67	1.96	6.0		18.69	**100.0**
	35	271.45	0.78	287	47	68	67	1.96	6.0		18.70	**99.1**
	40	275.18	0.78	287	47	68	67	1.96	6.0		18.70	**98.5**
4	45	278.95	0.75	287	47	68	67	1.88	6.0		18.34	**99.6**
	50	282.64	0.74	287	48	68	67	1.88	6.0		18.22	**99.3**
	55	286.30	0.74	287	47	67	67	1.85	6.0		18.22	**99.2**
5	60	289.97	0.73	287	47	68	67	1.8	6.0		18.09	**99.6**
	65	293.58	0.71	287	47	68	67	1.76	6.0		17.84	**98.5**
	70	297.16	0.7	287	47	68	67	1.75	6.0		17.72	**99.0**
6	75	300.72	0.7	288	47	68	67	1.75	6.0		17.73	**99.2**
	80	304.29	0.69	289	47	69	67	1.72	6.0		17.61	**99.5**
	85	307.83	0.67	288	47	69	67	1.68	6.0		17.34	**99.4**
7	90	311.33	0.62	288	47	68	67	1.52	6.0		16.68	**99.6**
	95	314.67	0.63	288	48	68	67	1.5	6.0		16.82	**98.9**
	100	318.00	0.62	288	50	69	67	1.5	6.0		16.68	**97.8**
8	105	321.31	0.62	289	52	58	67	1.53	6.0		16.70	**97.9**
	110	324.66	0.7	288	53	69	68	1.75	6.0		17.73	**100.2**
	115	328.18	0.68	287	52	69	68	1.73	6.0		17.46	**97.9**
9	120	331.76	0.8	286	56	69	68	2	6.0		18.93	**101.0**

ORTECH Environmental

Plant:	DYEC Outlet 1	**Plant Location:**	Courtice, ON
Test No.:	Test 1 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 27, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.53 "Hg	**CWTR (g)**	983.7
Static Pressure	-11.300 "H_2O	**WCBDA (g)**	28.3
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.47 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%	9.11
CO2%	10.12
COppm	12.9

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 %
	125	335.54	0.81	286	52	69	68	2.05	7.0		19.05	98.3
	130	339.39	0.81	285	55	69	68	2	7.0		19.03	99.5
10	135	343.22	0.87	285	57	69	68	2.1	7.0		19.72	98.9
	140	347.15	0.87	285	54	69	68	2.1	7.0		19.72	98.0
	145	351.06	0.85	284	56	69	68	2.1	7.0		19.48	97.5
11	150	354.97	0.87	283	57	69	68	2.2	7.0		19.70	98.6
	155	358.98	0.85	283	53	69	68	2.17	7.0		19.47	99.9
	160	362.98	0.84	282	57	69	68	2.17	7.0		19.34	100.8
12	165	366.89	0.86	282	57	70	69	2.15	7.0		19.57	99.0
	170	370.83	0.84	281	55	69	69	2.15	7.0		19.33	98.4
	175	374.79	0.82	281	57	69	68	2.08	7.0		19.10	100.1
	180	378.69										99.9

ORTECH Environmental

Plant:	DYEC Outlet 1
Plant Location:	Courtice, ON
Test Location:	Unit No. 1 Outlet
Test No.:	Test 2 SVOC
Date:	October 28, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.47	mm
DRY REF GAS VOLUME SAMPLED	7.575	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	138.8	^oC
AVERAGE GAS MOISTURE BY VOLUME	15.9	%
AVERAGE GAS VELOCITY	18.26	m/s
BAROMETRIC PRESSURE (Station)	100.779	Kpa
STATIC PRESSURE	-2.938	Kpa
ABSOLUTE GAS PRESSURE	97.841	Kpa
OXYGEN CONCENTRATION	8.96	%
CARBON DIOXIDE CONCENTRATION	10.44	%
CARBON MONOXIDE CONCENTRATION	9.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.98	m^3/s
DRY REF GAS FLOWRATE	15.85	Rm^3/s
DRY ADJ GAS FLOWRATE	19.12	Rm^3/s
WET REF GAS FLOWRATE	18.86	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		7.575	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: DYEC Outlet 1
Test No.: Test 2 SVOC
Date: October 28, 2016

Plant Location: Courtice, ON
Test Location: Unit No. 1 Outlet
Operator: AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.76 "Hg	**CWTR (g)**	1022.6
Static Pressure	-11.800 "H_2O	**WCBDA (g)**	30.7
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.415 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%	8.96
CO2%	10.44
COppm	9.7

Measured H2O
15.9 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	381.43	0.82	280	61	62	61	2.01	6.0		19.03	
	5	385.16	0.84	282	42	62	61	2.1	7.0		19.29	97.8
	10	388.98	0.81	282	40	61	61	2.03	7.0		18.94	99.0
2	15	392.76	0.82	282	40	62	61	2.03	7.0		19.06	99.9
	20	396.52	0.85	282	40	61	61	2.1	7.0		19.40	98.6
	25	400.30	0.86	283	40	62	61	2.12	7.0		19.53	97.5
3	30	404.17	0.84	284	40	62	61	2.12	7.0		19.31	99.2
	35	408.04	0.89	283	47	63	62	2.2	8.0		19.87	100.5
	40	412.01	0.84	283	41	63	62	2.08	8.0		19.30	99.9
4	45	415.84	0.82	283	42	63	62	2.03	8.0		19.07	99.2
	50	419.63	0.8	282	42	63	62	1.98	7.0		18.82	99.3
	55	423.36	0.78	282	43	63	62	1.93	7.0		18.59	98.9
5	60	427.06	0.72	282	43	63	62	1.8	7.0		17.86	99.3
	65	430.65	0.73	282	43	63	62	1.8	7.0		17.98	100.3
	70	434.18	0.73	282	44	63	62	1.8	7.0		17.98	97.9
6	75	437.74	0.68	282	44	64	63	1.68	7.0		17.35	98.7
	80	441.18	0.7	283	44	64	63	1.72	7.0		17.62	98.6
	85	444.66	0.7	283	45	64	62	1.75	7.0		17.62	98.4
7	90	448.19	0.72	283	45	64	63	1.8	7.0		17.87	99.9
	95	451.77	0.75	283	45	64	63	1.88	7.0		18.24	99.9
	100	455.41	0.71	283	45	65	63	1.8	7.0		17.74	99.5
8	105	458.97	0.72	283	45	65	64	1.8	7.0		17.87	99.9
	110	462.55	0.77	283	45	65	64	1.95	8.0		18.48	99.7
	115	466.26	0.76	287	47	66	64	1.94	8.0		18.41	99.9
9	120	469.97	0.72	282	47	65	64	1.8	7.5		17.86	100.7
	125	473.57	0.74	282	47	66	64	1.85	7.5		18.10	100.2
	130	477.21	0.75	283	48	66	65	1.85	7.5		18.24	99.8
10	135	480.86	0.75	282	49	66	65	1.85	7.5		18.22	99.4
	140	484.50	0.76	282	48	66	65	1.87	7.5		18.35	99.1
	145	488.14	0.77	282	46	66	65	1.9	8.0		18.47	98.4
11	150	491.83	0.74	279	45	66	65	1.85	8.0		18.07	99.1

ORTECH Environmental

Plant:	DYEC Outlet 1	**Plant Location:**	Courtice, ON
Test No.:	Test 2 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 28, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.76 "Hg	**CWTR (g)**	1022.6
Static Pressure	-11.800 "H_2O	**WCBDA (g)**	30.7
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.415 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%	8.96
CO2%	10.44
COppm	9.7

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 %
	155	495.50	0.76	279	46	66	65	1.85	8.0		18.31	**100.3**
	160	499.16	0.73	279	45	67	66	1.83	8.0		17.94	**98.7**
12	165	502.79	0.72	279	45	67	66	1.82	8.0		17.82	**99.7**
	170	506.40	0.77	279	46	67	66	1.95	8.0		18.43	**99.9**
	175	510.12	0.75	279	46	67	66	1.93	8.0		18.19	**99.5**
	180	513.77								0.415		**98.8**
1	0	514.18	0.84	279	58	68	67	2.12	8.0		19.25	
	5	518.06	0.85	283	45	67	67	2.15	8.0		19.41	**99.3**
	10	521.96	0.86	284	47	67	67	2.15	8.0		19.54	**99.5**
2	15	525.91	0.88	283	48	67	67	2.2	8.0		19.75	**100.3**
	20	529.98	0.91	284	47	67	67	2.25	8.5		20.10	**102.1**
	25	533.99	0.91	284	49	67	67	2.35	9.0		20.10	**99.0**
3	30	538.09	0.9	285	46	67	67	2.3	9.0		20.00	**101.3**
	35	542.16	0.88	284	48	67	67	2.22	9.0		19.77	**101.1**
	40	546.17	0.87	285	46	67	67	2.2	9.0		19.67	**100.7**
4	45	550.08	0.85	285	49	68	67	2.1	9.0		19.44	**98.8**
	50	554.08	0.84	285	46	68	67	2	8.8		19.33	**102.1**
	55	557.92	0.84	285	46	68	67	2	8.8		19.33	**98.6**
5	60	561.77	0.73	285	47	68	67	1.8	8.0		18.02	**98.9**
	65	565.41	0.69	284	47	68	68	1.7	8.0		17.50	**100.2**
	70	568.95	0.68	284	49	68	67	1.65	7.5		17.38	**100.1**
6	75	572.41	0.63	283	47	69	68	1.5	6.5		16.71	**98.6**
	80	575.67	0.64	282	48	69	68	1.55	7.0		16.84	**96.2**
	85	579.04	0.64	282	47	69	68	1.55	7.0		16.84	**98.6**
7	90	582.31	0.68	282	47	69	68	1.7	7.0		17.35	**95.7**
	95	585.71	0.68	282	46	69	68	1.75	7.0		17.35	**96.6**
	100	589.27	0.68	282	45	69	68	1.7	7.0		17.35	**101.1**
8	105	592.81	0.68	282	45	69	68	1.7	7.0		17.35	**100.6**
	110	596.31	0.7	282	44	69	68	1.75	7.5		17.61	**99.4**
	115	599.85	0.7	282	44	69	68	1.75	7.5		17.61	**99.1**
9	120	603.42	0.71	282	44	69	69	1.75	7.5		17.73	**100.0**

ORTECH Environmental

Plant:	DYEC Outlet 1	**Plant Location:**	Courtice, ON
Test No.:	Test 2 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 28, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.76 "Hg	**CWTR (g)**	1022.6
Static Pressure	-11.800 "H_2O	**WCBDA (g)**	30.7
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.415 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%	8.96
CO2%	10.44
COppm	9.7

Measured H2O
15.9 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	125	606.97	0.69	282	44	70	69	1.75	7.5		17.48	**98.6**
	130	610.54	0.69	281	44	70	69	1.75	7.5		17.47	**100.5**
10	135	614.08	0.68	279	44	70	69	1.75	7.5		17.32	**99.6**
	140	617.65	0.69	278	44	70	69	1.75	7.5		17.43	**101.0**
	145	621.18	0.69	278	44	70	69	1.75	7.5		17.43	**99.1**
11	150	624.74	0.67	278	44	70	69	1.75	7.5		17.18	**99.9**
	155	628.26	0.66	278	45	71	70	1.68	7.8		17.05	**100.3**
	160	631.76	0.66	278	45	71	70	1.68	7.8		17.05	**100.3**
12	165	635.28	0.67	278	45	70	71	1.68	7.8		17.18	**100.8**
	170	638.76	0.66	278	45	71	70	1.68	7.8		17.05	**98.9**
	175	642.26	0.69	278	45	71	70	1.73	8.0		17.43	**100.3**
	180	645.76										**98.0**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 1 Outlet
Test No.:	Test 3 SVOC
Date:	October 31, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.47	mm
DRY REF GAS VOLUME SAMPLED	7.538	m^3
AVGERGE ISOKINETICITY	99.3	%
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	139.9	°C
AVERAGE GAS MOISTURE BY VOLUME	15.4	%
AVERAGE GAS VELOCITY	18.06	m/s
BAROMETRIC PRESSURE (Station)	100.914	Kpa
STATIC PRESSURE	-2.614	Kpa
ABSOLUTE GAS PRESSURE	98.300	Kpa
OXYGEN CONCENTRATION	9.2	%
CARBON DIOXIDE CONCENTRATION	10.19	%
CARBON MONOXIDE CONCENTRATION	10.4	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.68	m^3/s
DRY REF GAS FLOWRATE	15.81	Rm^3/s
DRY ADJ GAS FLOWRATE	18.68	Rm^3/s
WET REF GAS FLOWRATE	18.69	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		7.538	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.:	Test 3 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 31, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	983.9
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	23.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.422 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%	9.2
CO2%	10.19
COppm	10.4

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	646.28	0.81	287	64	64	63	2	7.0		18.95	
	5	650.10	0.81	287	52	64	64	2	6.5		18.95	100.0
	10	653.83	0.83	287	48	64	63	2.03	6.5		19.18	97.7
2	15	657.62	0.86	288	47	64	64	2.1	7.0		19.54	98.1
	20	661.45	0.87	288	46	64	64	2.15	7.0		19.65	97.4
	25	665.36	0.88	288	45	64	65	2.15	7.0		19.76	98.9
3	30	669.26	0.86	289	45	65	64	2.15	7.0		19.55	98.0
	35	673.16	0.86	290	48	65	64	2.15	7.0		19.56	99.2
	40	677.07	0.88	290	43	65	65	2.17	7.0		19.79	99.5
4	45	680.99	0.82	291	44	66	65	2.03	7.0		19.11	98.5
	50	684.81	0.82	290	47	66	65	2.03	7.0		19.10	99.4
	55	688.63	0.85	290	45	66	65	2.1	7.0		19.45	99.3
5	60	692.47	0.73	290	46	66	65	1.85	7.0		18.02	98.1
	65	696.04	0.72	290	49	67	65	1.85	7.0		17.90	98.4
	70	699.72	0.76	290	46	67	66	1.9	7.0		18.39	102.0
6	75	703.39	0.64	289	46	67	66	1.6	6.0		16.86	98.9
	80	706.82	0.63	287	47	67	66	1.57	6.0		16.71	100.6
	85	710.21	0.63	285	46	68	66	1.55	6.0		16.69	100.1
7	90	713.57	0.61	285	46	68	66	1.5	6.0		16.42	99.0
	95	716.91	0.67	284	46	68	66	1.7	6.0		17.20	100.0
	100	720.36	0.69	283	45	68	67	1.75	6.0		17.44	98.5
8	105	723.91	0.68	283	45	69	67	1.75	6.0		17.31	99.7
	110	727.44	0.7	282	46	69	67	1.75	6.0		17.55	99.8
	115	730.98	0.72	282	46	69	67	1.85	6.5		17.80	98.6
9	120	734.59	0.7	282	46	70	68	1.8	6.5		17.55	99.1
	125	738.21	0.7	282	46	69	68	1.8	6.5		17.55	100.6
	130	741.79	0.73	282	47	70	68	1.85	7.0		17.93	99.6
10	135	745.42	0.69	280	47	70	68	1.77	7.0		17.40	98.8
	140	749.02	0.67	279	48	70	68	1.7	6.5		17.14	100.6
	145	752.55	0.67	279	49	70	69	1.7	6.5		17.14	100.1
11	150	756.05	0.66	279	50	70	69	1.7	6.5		17.01	99.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 3 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 31, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	983.9
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	23.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.422 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%	9.2
CO2%	10.19
COppm	10.4

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 %
	155	759.57	0.67	279	50	70	69	1.7	6.5		17.14	100.4
	160	763.11	0.68	279	51	70	69	1.7	6.5		17.27	100.2
12	165	766.63	0.6	279	51	71	70	1.5	6.0		16.22	98.9
	170	770.00	0.6	279	50	71	70	1.5	6.0		16.22	100.6
	175	773.30	0.63	279	51	71	70	1.6	6.0		16.62	98.5
	180	776.66								0.422		97.9
1	0	777.08	0.81	282	62	71	70	2.05	7.0		18.88	
	5	780.87	0.79	282	50	71	70	2	7.0		18.65	97.7
	10	784.69	0.78	282	50	71	70	2	7.0		18.53	99.7
2	15	788.48	0.78	282	51	71	71	2	7.0		18.53	99.6
	20	792.27	0.79	282	52	71	71	2	7.0		18.65	99.5
	25	796.04	0.8	282	53	71	71	2.05	7.0		18.77	98.3
3	30	799.84	0.8	282	51	72	71	2	7.0		18.77	98.5
	35	803.66	0.8	282	49	71	71	2	7.0		18.77	98.9
	40	807.46	0.82	283	49	71	71	2.1	7.0		19.01	98.5
4	45	811.30	0.78	283	48	72	71	2	7.0		18.54	98.4
	50	815.11	0.8	284	47	72	71	2	7.0		18.79	100.0
	55	818.92	0.8	284	48	72	71	2	7.0		18.79	98.8
5	60	822.70	0.8	285	47	72	71	2	7.0		18.80	98.0
	65	826.51	0.77	284	48	73	72	1.95	7.0		18.44	98.8
	70	830.26	0.73	285	48	72	71	1.9	7.0		17.96	98.9
6	75	833.99	0.69	285	49	73	72	1.8	7.0		17.46	101.3
	80	837.59	0.67	284	49	73	72	1.7	7.0		17.20	100.3
	85	841.12	0.67	284	50	73	72	1.7	7.0		17.20	99.7
7	90	844.63	0.72	284	50	73	72	1.85	7.0		17.83	99.2
	95	848.28	0.72	284	48	74	72	1.85	7.0		17.83	99.5
	100	851.99	0.72	284	46	74	73	1.85	7.0		17.83	101.1
8	105	855.68	0.71	283	46	74	73	1.83	7.0		17.69	100.4
	110	859.30	0.72	284	46	74	73	1.85	7.0		17.83	99.1
	115	863.03	0.72	284	46	74	73	1.83	7.0		17.83	101.5
9	120	866.68	0.74	284	47	74	73	1.9	7.0		18.07	99.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 3 SVOC	**Test Location:**	Unit No. 1 Outlet
Date:	October 31, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	983.9
Static Pressure	-10.500 "H_2O	**WCBDA (g)**	23.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.422 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%	9.2
CO2%	10.19
COppm	10.4

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 %
	125	870.40	0.75	284	47	74	73	1.9	7.0		18.19	99.9
	130	874.10	0.75	284	47	74	73	1.9	7.0		18.19	98.7
10	135	877.80	0.73	284	48	75	73	1.85	7.0		17.95	98.7
	140	881.51	0.73	284	48	75	73	1.83	7.0		17.95	100.2
	145	885.17	0.73	283	49	74	74	1.83	7.0		17.94	98.8
11	150	888.83	0.74	281	48	75	74	1.83	7.0		18.04	98.8
	155	892.48	0.73	280	49	75	74	1.83	7.0		17.90	97.6
	160	896.16	0.73	280	49	75	74	1.83	7.0		17.90	99.0
12	165	899.86	0.73	280	49	75	74	1.83	7.0		17.90	99.5
	170	903.54	0.74	280	50	75	74	1.83	7.0		18.02	99.0
	175	907.22	0.71	279	50	75	74	1.8	7.0		17.64	98.3
	180	910.84										98.8

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 1
Test No.:	1 - SVOC
Date:	October 27, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.84	
DGM CORRECTION FACTOR	1.019	
NOZZLE DIAMETER	6.61	mm
DRY REF GAS VOLUME SAMPLED	6.142	m^3
AVGERGE ISOKINETICITY	96.5	%
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	167.1	°C
AVERAGE GAS MOISTURE BY VOLUME	14.8	%
AVERAGE GAS VELOCITY	18.92	m/s
BAROMETRIC PRESSURE (Station)	100.000	Kpa
STATIC PRESSURE	-0.498	Kpa
ABSOLUTE GAS PRESSURE	99.502	Kpa
OXYGEN CONCENTRATION	8.51	%
CARBON DIOXIDE CONCENTRATION	10.12	%
CARBON MONOXIDE CONCENTRATION	15.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.96	m^3/s
DRY REF GAS FLOWRATE	15.84	Rm^3/s
DRY ADJ GAS FLOWRATE	19.83	Rm^3/s
WET REF GAS FLOWRATE	18.60	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		6.142	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

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 1
Date:	October 27, 2016	**Operator:**	JG

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.53 "Hg	**CWTR (g)**	759.6
Static Pressure	-2.000 "H_2O	**WCBDA (g)**	24
Nozzle	0.2602 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.12 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.51
CO2%	10.12
COppm	15.2

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	561.28	0.54	326	68	72	72	0.75	3.0		15.61	
	4	563.60	0.54	334	53	71	79	0.85	4.0		15.69	90.9
	8	566.02	0.56	334	52	71	83	0.9	5.0		15.98	94.8
2	12	568.62	0.72	334	48	74	88	1.1	7.0		18.12	99.7
	16	571.53	0.7	335	47	74	92	1.1	7.0		17.88	97.7
	20	574.48	0.7	334	46	77	96	1.1	7.5		17.87	100.2
3	24	577.40	0.77	333	46	78	98	1.1	9.0		18.73	98.4
	28	580.41	0.77	334	45	80	100	1.1	9.0		18.74	96.4
	32	583.40	0.71	334	47	82	102	1	9.0		17.99	95.5
4	36	586.30	0.71	334	45	85	104	1.05	9.5		17.99	96.1
	40	589.26	0.71	334	46	85	106	1.05	10.0		17.99	97.6
	44	592.21	0.71	334	45	90	107	1.05	10.0		17.99	97.1
5	48	595.16	0.72	334	46	88	108	1.05	11.0		18.12	96.6
	52	598.17	0.72	334	46	91	109	1.05	11.0		18.12	98.0
	56	601.13	0.73	335	46	90	110	1.1	12.0		18.26	96.0
6	60	604.16	0.75	335	46	91	111	1.1	13.0		18.50	97.7
	64	607.21	0.75	335	46	92	112	1.1	13.0		18.50	96.8
	68	610.27	0.77	335	46	93	113	1.1	14.0		18.75	97.0
	72	613.32								0.27		95.2
1	0	613.59	0.87	328	43	91	96	1.2	7.0		19.84	
	4	616.79	0.94	337	50	90	103	1.3	7.0		20.74	95.2
	8	620.12	0.94	337	48	90	107	1.3	7.0		20.74	95.4
2	12	623.52	0.94	336	47	91	110	1.3	8.5		20.73	97.0
	16	626.90	0.94	336	47	91	111	1.3	8.5		20.73	96.1
	20	630.23	0.9	335	47	100	112	1.3	10.0		20.27	94.5
3	24	633.55	0.89	334	46	92	112	1.25	10.0		20.14	95.4
	28	636.85	0.89	334	44	100	113	1.25	10.0		20.14	96.0
	32	640.13	0.87	334	43	93	113	1.25	10.0		19.92	94.6
4	36	643.44	0.84	333	43	94	114	1.2	11.0		19.56	97.2
	40	646.70	0.84	333	42	94	114	1.2	11.0		19.56	97.2
	44	649.94	0.84	333	42	95	115	1.2	12.0		19.56	96.6
5	48	653.17	0.75	333	42	95	115	1.1	12.0		18.48	96.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 1
Date:	October 27, 2016	**Operator:**	JG

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.53 "Hg	**CWTR (g)**	759.6
Static Pressure	-2.000 "H_2O	**WCBDA (g)**	24
Nozzle	0.2602 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.12 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.51
CO2%	10.12
COppm	15.2

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 %
	52	656.35	0.75	324	42	96	116	1.1	13.0		18.38	100.1
	56	659.53	0.73	323	42	95	116	1.1	13.0		18.12	99.4
6	60	662.66	0.71	320	43	97	115	1.1	13.0		17.83	99.2
	64	665.76	0.68	316	43	96	115	1.05	13.0		17.41	99.3
	68	668.80	0.68	316	44	97	115	1.05	13.0		17.41	99.3
	72	671.80								0.54		97.9
1	0	672.34	0.76	338	67	84	85	1.1	7.0		18.66	
	4	675.37	0.72	340	47	78	88	1	7.0		18.19	98.6
	8	678.28	0.73	339	43	78	91	1.05	7.5		18.30	97.7
2	12	681.20	0.82	338	47	80	95	1.1	9.0		19.39	97.1
	16	684.20	0.84	337	42	80	98	1.2	10.0		19.61	93.5
	20	687.30	0.83	337	42	83	100	1.2	10.5		19.49	95.2
3	24	690.48	0.83	337	41	83	102	1.2	11.0		19.49	97.8
	28	693.68	0.83	336	42	85	105	1.2	11.0		19.48	98.2
	32	696.91	0.83	336	43	86	106	1.2	12.0		19.48	98.6
4	36	700.15	0.8	335	42	88	108	1.15	12.5		19.11	98.8
	40	703.33	0.78	334	42	88	109	1.1	13.0		18.86	98.3
	44	706.46	0.78	335	43	89	110	1.1	13.5		18.87	97.8
5	48	709.58	0.76	336	44	90	110	1.1	13.5		18.64	97.4
	52	712.66	0.76	335	43	91	111	1.1	14.0		18.63	97.4
	56	715.74	0.74	334	43	92	112	1.05	14.0		18.37	97.1
6	60	718.76	0.74	334	44	92	114	1	14.0		18.37	96.3
	64	721.74	0.74	335	45	93	113	1	14.0		18.38	94.8
	68	724.71	0.73	335	44	95	113	1	14.0		18.26	94.6
	72	727.62								0.31		93.1
1	0	727.93	0.85	334	59	94	96	1.2	8.0		19.69	
	4	731.18	0.85	336	46	96	102	1.2	8.0		19.71	97.9
	8	734.42	0.84	336	45	90	105	1.2	8.0		19.60	97.1
2	12	737.63	0.84	337	45	93	108	1.2	8.0		19.61	97.0
	16	740.75	0.9	335	45	90	109	1.25	10.0		20.27	93.8
	20	744.02	0.9	336	45	91	110	1.3	11.0		20.28	95.1
3	24	747.37	0.9	335	48	92	111	1.3	11.0		20.27	97.3

Plant: Covanta DYEC
Test No.: 1 - SVOC
Date: October 27, 2016

Plant Location: Courtice, ON
Test Location: Quench Inlet Unit 1
Operator: JG

Pitot Factor	0.84
DGMCF	1.019
Barometric Pressure	29.53 "Hg
Static Pressure	-2.000 "H_2O
Nozzle	0.2602 inches
Stack Diameter	4.500 ft
Length	0.000 ft
Width	0.000 ft

Filter (mg)	0
Probe (mg)	0
CWTR (g)	759.6
WCBDA (g)	24
Leak Check Volume	1.12 ft^3
Reading Interval	4 minutes
Number of Ports	4
Number of points / Port	6

Combustion Gases	
O2%	8.51
CO2%	10.12
COppm	15.2

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 %
	28	750.79	0.94	335	46	94	113	1.3	12.0		20.72	99.1
	32	754.17	0.92	335	47	93	113	1.25	12.0		20.49	95.5
4	36	757.50	0.93	335	46	96	114	1.25	13.0		20.61	95.2
	40	760.82	0.91	334	45	95	114	1.25	13.0		20.37	94.0
	44	764.07	0.91	334	45	98	114	1.2	13.0		20.37	93.1
5	48	767.27	0.77	327	45	95	115	1.1	13.0		18.65	91.4
	52	770.41	0.77	325	47	97	119	1.1	13.0		18.63	97.2
	56	773.51	0.77	325	45	95	118	1.1	14.0		18.63	95.3
6	60	776.64	0.75	316	46	98	116	1.1	14.0		18.28	96.5
	64	779.72	0.74	320	46	96	116	1.1	14.0		18.21	95.6
	68	782.76	0.74	322	45	96	116	1.1	14.0		18.23	95.4
	72	785.75										93.9

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 1
Test No.:	2 - SVOC
Date:	October 28, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.84	
DGM CORRECTION FACTOR	1.019	
NOZZLE DIAMETER	6.01	mm
DRY REF GAS VOLUME SAMPLED	5.327	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	168.1	°C
AVERAGE GAS MOISTURE BY VOLUME	15.3	%
AVERAGE GAS VELOCITY	19.04	m/s
BAROMETRIC PRESSURE (Station)	100.779	Kpa
STATIC PRESSURE	-0.498	Kpa
ABSOLUTE GAS PRESSURE	100.281	Kpa
OXYGEN CONCENTRATION	8.32	%
CARBON DIOXIDE CONCENTRATION	10.44	%
CARBON MONOXIDE CONCENTRATION	11.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.13	m^3/s
DRY REF GAS FLOWRATE	15.94	Rm^3/s
DRY ADJ GAS FLOWRATE	20.25	Rm^3/s
WET REF GAS FLOWRATE	18.82	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		5.327	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:	October 28, 2016	**Operator:**	JG

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.76 "Hg	**CWTR (g)**	687.4
Static Pressure	-2.000 "H_2O	**WCBDA (g)**	18.5
Nozzle	0.2366 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.65 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.32
CO2%	10.44
COppm	11.7

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	786.15	0.5	334	64	68	72	0.5	2.0		15.05	
	4	787.87	0.51	335	52	68	76	0.7	3.0		15.21	86.2
	8	790.03	0.53	334	45	69	89	0.6	3.0		15.49	106.9
2	12	792.07	0.76	334	44	74	86	0.75	4.0		18.55	97.7
	16	794.36	0.75	334	41	74	88	0.85	4.5		18.43	91.5
	20	796.85	0.75	335	40	75	91	0.85	5.0		18.44	99.9
3	24	799.37	0.76	335	40	77	95	0.9	5.0		18.56	100.8
	28	802.07	0.76	336	40	79	97	0.85	5.0		18.57	106.7
	32	804.55	0.76	334	38	80	99	0.85	5.0		18.55	97.7
4	36	807.12	0.76	334	40	82	100	0.85	5.0		18.55	100.9
	40	809.70	0.72	334	39	82	102	0.8	6.0		18.06	101.0
	44	812.24	0.73	339	39	85	103	0.85	6.0		18.24	102.0
5	48	814.80	0.75	336	38	87	105	0.85	6.0		18.45	102.0
	52	817.34	0.73	335	40	87	105	0.85	6.5		18.19	99.3
	56	819.89	0.74	334	40	92	106	0.85	7.0		18.30	101.0
6	60	822.45	0.76	334	40	89	107	0.9	8.0		18.55	100.1
	64	825.12	0.78	334	41	90	109	0.9	9.0		18.79	103.2
	68	827.86	0.78	334	41	90	109	0.9	9.0		18.79	104.3
	72	830.58								0.79		103.5
1	0	831.37	0.9	336	50	90	97	1	5.0		20.21	
	4	834.30	0.9	336	41	89	103	0.9	4.5		20.21	105.1
	8	837.14	0.9	336	40	89	105	0.9	5.0		20.21	101.4
2	12	839.92	0.9	334	40	91	108	0.95	5.0		20.19	99.1
	16	842.75	0.95	333	43	90	108	1	6.0		20.73	100.3
	20	845.65	0.94	333	43	91	109	1	6.0		20.62	100.1
3	24	848.59	0.9	338	40	92	110	0.95	6.5		20.24	101.8
	28	851.45	0.89	334	40	93	113	0.9	6.5		20.07	101.3
	32	854.23	0.91	335	41	92	111	0.95	7.0		20.31	98.4
4	36	857.05	0.86	331	40	93	112	0.9	7.0		19.70	99.1
	40	859.85	0.86	338	40	93	112	0.9	7.5		19.78	100.8
	44	862.60	0.87	333	40	95	112	0.95	8.5		19.83	99.4
5	48	865.20	0.82	333	41	94	112	0.9	9.0		19.26	93.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit 1
Date:	October 28, 2016	**Operator:**	JG

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.76 "Hg	**CWTR (g)**	687.4
Static Pressure	-2.000 "H_2O	**WCBDA (g)**	18.5
Nozzle	0.2366 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.65 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.32
CO2%	10.44
COppm	11.7

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	52	868.23	0.82	333	40	95	113	0.85	9.0		19.26	111.7
	56	870.94	0.8	333	40	95	112	0.8	9.0		19.02	99.7
6	60	873.59	0.75	325	41	96	112	0.8	9.0		18.32	98.8
	64	876.18	0.75	326	42	95	112	0.85	9.5		18.33	99.1
	68	878.86	0.75	328	43	97	112	0.8	10.0		18.36	102.7
	72	881.49								0.48		100.8
1	0	881.97	0.75	332	66	82	83	0.8	4.0		18.40	
	4	884.44	0.76	339	42	83	91	0.85	5.0		18.61	98.7
	8	887.01	0.77	340	41	82	95	0.85	5.0		18.74	101.7
2	12	889.60	0.83	338	40	82	97	0.9	6.0		19.43	101.6
	16	892.26	0.86	338	40	83	99	0.95	6.0		19.78	100.2
	20	895.03	0.87	338	40	83	103	0.95	6.0		19.90	102.2
3	24	897.77	0.86	340	42	85	104	0.9	6.5		19.81	100.2
	28	900.49	0.83	339	45	87	106	0.85	7.0		19.45	99.9
	32	903.17	0.85	339	42	91	107	0.9	7.0		19.68	99.7
4	36	905.93	0.8	338	41	90	108	0.85	7.5		19.08	101.0
	40	908.62	0.82	338	42	91	109	0.85	7.5		19.32	101.4
	44	911.28	0.82	338	42	93	110	0.9	8.0		19.32	98.9
5	48	914.00	0.78	338	39	92	111	0.85	9.0		18.84	100.9
	52	916.66	0.82	339	40	93	112	0.9	9.0		19.33	101.1
	56	919.43	0.79	339	42	93	112	0.85	9.0		18.97	102.6
6	60	922.13	0.77	338	42	94	112	0.75	9.0		18.72	101.9
	64	924.74	0.77	338	43	94	113	0.75	9.0		18.72	99.6
	68	927.32	0.74	336	43	100	113	0.75	9.0		18.33	98.3
	72	929.86								0.38		98.1
1	0	930.24	0.75	338	48	92	95	0.8	5.0		18.47	
	4	932.78	0.75	337	44	91	104	0.8	5.0		18.46	99.9
	8	935.34	0.73	336	44	92	106	0.8	5.0		18.20	99.9
2	12	937.91	0.73	337	42	99	108	0.8	5.0		18.21	101.3
	16	940.47	0.76	337	42	92	108	0.85	6.0		18.59	100.2
	20	943.17	0.74	336	41	92	110	0.8	6.0		18.33	104.2
3	24	945.80	0.88	336	42	94	111	0.95	7.0		19.99	102.6

ORTECH Environmental

Plant: Covanta DYEC
Test No.: 2 - SVOC
Date: October 28, 2016

Plant Location: Courtice, ON
Test Location: Quench Inlet Unit 1
Operator: JG

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.76 "Hg	**CWTR (g)**	687.4
Static Pressure	-2.000 "H_2O	**WCBDA (g)**	18.5
Nozzle	0.2366 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.65 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.32
CO2%	10.44
COppm	11.7

Measured H2O
15.3 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	28	948.63	0.9	336	41	93	111	1	7.0		20.21	101.0
	32	951.56	0.88	336	41	94	112	0.95	7.0		19.99	103.5
4	36	954.47	0.88	334	41	95	113	0.95	7.0		19.96	103.8
	40	957.35	0.92	335	41	95	114	0.95	7.5		20.42	102.4
	44	960.30	0.92	334	42	96	114	0.95	8.0		20.41	102.5
5	48	963.06	0.9	333	43	96	115	0.95	8.0		20.17	95.8
	52	965.90	0.92	333	42	97	115	0.95	8.5		20.40	99.5
	56	968.80	0.92	334	45	99	115	0.95	9.0		20.41	100.4
6	60	971.67	0.82	320	43	97	119	0.85	9.0		19.10	99.3
	64	974.44	0.8	319	43	97	117	0.85	9.0		18.85	100.4
	68	977.18	0.8	318	43	98	117	0.85	9.0		18.84	100.6
	72	979.93										100.8

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 1
Test No.:	3 - SVOC
Date:	October 31, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.84
DGM CORRECTION FACTOR	1.019
NOZZLE DIAMETER	6.01 mm
DRY REF GAS VOLUME SAMPLED	5.400 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	168.9 °C
AVERAGE GAS MOISTURE BY VOLUME	14.7 %
AVERAGE GAS VELOCITY	19.38 m/s
BAROMETRIC PRESSURE (Station)	100.914 Kpa
STATIC PRESSURE	-0.647 Kpa
ABSOLUTE GAS PRESSURE	100.267 Kpa
OXYGEN CONCENTRATION	8.59 %
CARBON DIOXIDE CONCENTRATION	10.19 %
CARBON MONOXIDE CONCENTRATION	12.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	28.63 m^3/s
DRY REF GAS FLOWRATE	16.29 Rm^3/s
DRY ADJ GAS FLOWRATE	20.26 Rm^3/s
WET REF GAS FLOWRATE	19.12 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.400 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:	October 31, 2016	**Operator:**	TT

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	671.6
Static Pressure	-2.600 "H_2O	**WCBDA (g)**	14.1
Nozzle	0.2366 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.53 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.59
CO2%	10.19
COppm	12.6

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	80.65	0.57	335	71	73	73	0.5	2.0		16.06	
	4	82.55	0.57	336	68	72	81	0.6	2.0		16.07	88.4
	8	84.60	0.56	335	55	80	84	0.7	3.5		15.92	94.8
2	12	86.94	0.66	334	54	80	88	0.75	4.0		17.28	108.1
	16	89.47	0.66	334	52	76	91	0.65	4.0		17.28	107.2
	20	91.82	0.71	334	55	79	95	0.7	4.0		17.92	99.6
3	24	94.24	0.76	336	50	80	96	0.75	4.5		18.56	98.3
	28	96.75	0.77	336	48	82	99	0.8	5.0		18.68	98.5
	32	99.33	0.77	336	48	84	102	0.8	5.0		18.68	100.1
4	36	101.92	0.77	336	48	86	105	0.8	5.0		18.68	100.1
	40	104.47	0.76	336	48	87	106	0.8	6.0		18.56	98.1
	44	107.09	0.81	337	48	88	108	0.85	6.5		19.17	101.2
5	48	109.82	0.79	337	51	90	109	0.8	6.5		18.94	102.0
	52	112.45	0.79	337	49	90	110	0.8	6.5		18.94	99.2
	56	115.05	0.79	338	48	92	111	0.85	7.0		18.95	98.0
6	60	117.74	0.83	338	48	93	112	0.85	8.0		19.42	101.2
	64	120.46	0.8	338	49	95	113	0.85	8.0		19.07	99.6
	68	123.13	0.8	337	50	94	112	0.85	8.0		19.06	99.4
	72	125.78								0.45		98.7
1	0	126.23	0.94	334	64	94	100	0.95	4.0		20.62	
	4	129.10	0.9	335	51	93	107	0.9	4.0		20.19	99.5
	8	131.87	0.89	335	50	94	110	0.9	4.5		20.07	97.7
2	12	134.65	0.92	335	44	94	112	0.95	5.0		20.41	98.3
	16	137.52	0.92	334	50	95	113	0.95	5.0		20.40	99.6
	20	140.43	0.91	333	51	96	114	0.95	5.5		20.27	100.7
3	24	143.31	0.91	333	50	95	114	0.95	6.0		20.27	100.0
	28	146.19	0.91	333	50	96	115	0.95	6.0		20.27	100.1
	32	149.08	0.89	333	52	98	116	0.95	6.5		20.05	100.3
4	36	151.95	0.9	333	54	97	116	0.95	6.5		20.16	100.4
	40	154.82	0.88	333	51	97	116	0.95	7.0		19.94	100.0
	44	157.66	0.88	333	48	98	118	0.9	7.0		19.94	100.0
5	48	160.48	0.83	333	47	98	118	0.85	7.0		19.36	99.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 1
Date:	October 31, 2016	**Operator:**	TT

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	671.6
Static Pressure	-2.600 "H_2O	**WCBDA (g)**	14.1
Nozzle	0.2366 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.53 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.59
CO2%	10.19
COppm	12.6

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 %
	52	163.24	0.82	333	47	98	117	0.85	7.0		19.24	99.8
	56	165.99	0.83	333	48	99	117	0.85	7.0		19.36	100.1
6	60	168.74	0.69	333	48	100	118	0.75	7.0		17.65	99.4
	64	171.29	0.67	333	47	100	118	0.7	7.0		17.39	100.9
	68	173.74	0.7	333	47	99	117	0.75	7.5		17.78	98.4
	72	176.26								0.67		99.2
1	0	176.93	0.78	335	73	93	95	0.8	4.0		18.79	
	4	179.48	0.77	337	50	86	94	0.8	4.0		18.69	97.6
	8	182.02	0.78	336	47	85	97	0.8	4.5		18.80	98.7
2	12	184.60	0.82	333	46	90	101	0.85	5.0		19.24	99.4
	16	187.27	0.8	336	45	88	103	0.8	5.0		19.04	99.3
	20	189.89	0.79	335	46	89	104	0.8	5.0		18.91	98.8
3	24	192.49	0.84	336	47	89	108	0.85	6.0		19.51	98.5
	28	195.21	0.84	336	45	92	108	0.85	7.0		19.51	99.6
	32	197.96	0.84	336	44	91	109	0.85	7.0		19.51	100.5
4	36	200.68	0.81	336	45	93	111	0.85	7.5		19.16	99.4
	40	203.39	0.82	337	46	95	112	0.85	7.5		19.29	100.4
	44	206.08	0.84	337	47	95	113	0.85	8.5		19.53	98.9
5	48	208.83	0.82	338	47	96	114	0.85	9.0		19.30	99.8
	52	211.58	0.82	338	47	98	116	0.85	9.0		19.30	100.9
	56	214.29	0.85	338	48	98	117	0.9	10.5		19.65	99.1
6	60	217.04	0.8	339	48	98	118	0.85	10.5		19.08	98.7
	64	219.84	0.84	340	48	100	119	0.9	11.5		19.56	103.5
	68	222.66	0.82	340	48	100	119	0.85	11.5		19.33	101.6
	72	225.47								0.41		102.4
1	0	225.88	0.88	337	70	98	100	0.9	4.0		19.99	
	4	228.62	0.87	338	49	97	109	0.9	5.0		19.88	98.0
	8	231.41	0.89	337	47	97	111	0.9	5.0		20.10	99.7
2	12	234.20	0.95	337	47	100	113	1	6.0		20.77	98.4
	16	237.15	0.95	337	46	99	114	1	6.5		20.77	100.3
	20	240.11	0.95	338	46	99	116	1	7.0		20.78	100.6
3	24	243.08	0.97	338	46	99	116	1	7.0		21.00	100.8

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 1
Date:	October 31, 2016	**Operator:**	TT

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	1.019	**Probe (mg)**	0
Barometric Pressure	29.8 "Hg	**CWTR (g)**	671.6
Static Pressure	-2.600 "H_2O	**WCBDA (g)**	14.1
Nozzle	0.2366 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.53 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.59
CO2%	10.19
COppm	12.6

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 %
	28	246.05	0.97	338	47	99	117	1.05	8.0		21.00	**99.8**
	32	249.12	0.97	338	50	100	118	1.05	8.0		21.00	**103.1**
4	36	252.15	0.97	338	47	101	119	1	8.5		21.00	**101.5**
	40	255.13	0.97	338	47	101	120	1	9.0		21.00	**99.7**
	44	258.15	0.98	338	48	102	120	1	9.0		21.10	**100.9**
5	48	261.13	0.97	338	48	102	120	1	9.5		21.00	**99.0**
	52	264.11	0.92	337	48	103	121	0.95	10.0		20.43	**99.5**
	56	267.07	0.92	337	48	103	122	0.9	9.5		20.43	**101.2**
6	60	269.92	0.83	337	49	103	122	0.9	10.0		19.41	**97.4**
	64	272.70	0.83	337	49	103	122	0.9	10.5		19.41	**100.0**
	68	275.53	0.82	337	49	104	122	0.8	10.0		19.29	**101.8**
	72	278.22										**97.2**

APPENDIX 28

Particulate and Metals Test Emission Calculations at Boiler No. 2 (12 pages)

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet Unit 2
Test No.:	1 - Metals and Particulate
Date:	October 26, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.988
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.792 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	140.7 °C
AVERAGE GAS MOISTURE BY VOLUME	15.9 %
AVERAGE GAS VELOCITY	17.94 m/s
BAROMETRIC PRESSURE (Station)	101.626 Kpa
STATIC PRESSURE	-2.365 Kpa
ABSOLUTE GAS PRESSURE	99.260 Kpa
OXYGEN CONCENTRATION	8.44 %
CARBON DIOXIDE CONCENTRATION	11.02 %
CARBON MONOXIDE CONCENTRATION	17.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.51 m^3/s
DRY REF GAS FLOWRATE	15.73 Rm^3/s
DRY ADJ GAS FLOWRATE	19.80 Rm^3/s
WET REF GAS FLOWRATE	18.72 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.6 mg
	-FILTER	1.9 mg
	-TOTAL	4.5 mg
DRY REF GAS VOLUME SAMPLED		3.792 m^3
PARTICULATE CONC. - ACTUAL		0.704 mg/m^3
PARTICULATE CONC. - DRY REF		1.187 mg/m^3
PARTICULATE CONC. - DRY ADJ		0.943 mg/m^3
PARTICULATE CONC. - WET REF		0.998 mg/m^3
PARTICULATE EMISSION RATE		0.018671 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 - Metals and Particulate	**Test Location:**	APC Outlet Unit 2
Date:	October 26, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	1.9
DGMCF	0.988	**Probe (mg)**	2.6
Barometric Pressure	30.01 "Hg	**CWTR (g)**	508.9
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	18.6
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 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%	8.44
CO2%	11.02
COppm	17.6

Measured H2O
15.9 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	22.32	0.82	282	51	63	63	1.9	6.0		18.85	
	2.5	24.26	0.83	284	42	63	63	1.9	6.0		18.99	101.7
	5	26.13	0.84	284	42	63	64	1.95	6.0		19.11	97.6
2	7.5	28.02	0.84	284	42	63	65	2	6.0		19.11	98.0
	10	29.93	0.86	284	42	63	66	2.1	6.0		19.34	98.9
	12.5	31.88	0.89	284	42	63	67	2.2	6.5		19.67	99.8
3	15	33.90	0.81	286	42	63	68	2	6.0		18.79	101.5
	17.5	35.82	0.81	286	42	63	68	2	6.0		18.79	101.1
	20	37.73	0.8	285	42	64	69	2	6.0		18.66	100.6
4	22.5	39.62	0.74	286	42	64	70	1.8	6.0		17.96	99.9
	25	41.45	0.76	286	42	64	70	1.9	6.0		18.20	100.5
	27.5	43.30	0.75	286	42	64	70	1.9	6.0		18.08	100.3
5	30	45.17	0.66	286	42	64	71	1.6	6.0		16.96	102.0
	32.5	46.92	0.65	286	42	64	71	1.6	6.0		16.83	101.6
	35	48.61	0.65	286	42	64	71	1.6	6.0		16.83	98.9
6	37.5	50.33	0.65	286	42	64	71	1.6	6.0		16.83	100.7
	40	52.05	0.65	286	42	65	72	1.6	6.0		16.83	100.7
	42.5	53.77	0.63	286	42	65	72	1.55	6.0		16.57	100.5
7	45	55.46	0.7	286	42	65	72	1.75	6.0		17.47	100.3
	47.5	57.24	0.7	286	42	65	72	1.75	6.0		17.47	100.2
	50	59.05	0.7	286	42	65	72	1.75	6.0		17.47	101.9
8	52.5	60.85	0.71	286	42	65	72	1.75	6.0		17.59	101.3
	55	62.63	0.73	286	42	65	72	1.8	6.0		17.84	99.5
	57.5	64.45	0.72	286	42	66	73	1.8	6.0		17.72	100.4
9	60	66.28	0.72	285	42	66	73	1.8	6.0		17.70	101.4
	62.5	68.08	0.72	285	42	66	73	1.8	6.0		17.70	99.7
	65	69.88	0.72	286	42	66	73	1.8	6.0		17.72	99.7
10	67.5	71.68	0.72	286	42	66	73	1.8	6.0		17.72	99.8
	70	73.49	0.72	286	42	66	73	1.8	6.0		17.72	100.3
	72.5	75.31	0.71	286	42	66	73	1.8	6.0		17.59	100.9
11	75	77.12	0.71	286	42	66	73	1.8	6.0		17.59	101.0

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals and Particulate	**Test Location:**	APC Outlet Unit 2
Date:	October 26, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	1.9
DGMCF	0.988	**Probe (mg)**	2.6
Barometric Pressure	30.01 "Hg	**CWTR (g)**	508.9
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	18.6
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 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%	8.44
CO2%	11.02
COppm	17.6

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 %
	77.5	78.93	0.68	286	42	66	73	1.7	6.0		17.22	**101.0**
	80	80.69	0.68	286	42	66	73	1.7	6.0		17.22	**100.3**
12	82.5	82.47	0.67	286	42	66	73	1.65	6.0		17.09	**101.5**
	85	84.24	0.67	286	42	66	73	1.65	6.0		17.09	**101.6**
	87.5	85.94	0.7	286	43	66	73	1.75	6.0		17.47	**97.6**
	90	87.74								0.53		**101.2**
1	0	88.27	0.76	282	53	65	67	1.9	6.0		18.15	
	2.5	90.12	0.78	285	45	66	67	1.95	6.5		18.43	**100.2**
	5	92.02	0.78	285	43	66	68	1.95	6.5		18.43	**101.7**
2	7.5	93.90	0.78	285	42	66	69	1.95	6.5		18.43	**100.5**
	10	95.78	0.79	285	41	66	70	2	6.5		18.54	**100.4**
	12.5	97.68	0.81	285	41	66	70	2.05	6.5		18.78	**100.8**
3	15	99.62	0.81	285	41	66	71	2.05	6.5		18.78	**101.6**
	17.5	101.55	0.76	285	41	66	71	1.9	6.5		18.19	**101.0**
	20	103.41	0.76	285	41	66	72	1.9	6.5		18.19	**100.5**
4	22.5	105.27	0.76	285	41	66	72	1.9	6.5		18.19	**100.4**
	25	107.13	0.72	285	41	66	72	1.8	6.0		17.70	**100.4**
	27.5	108.93	0.76	285	41	66	72	1.9	6.5		18.19	**99.8**
5	30	110.79	0.71	284	41	66	73	1.8	6.5		17.57	**100.4**
	32.5	112.61	0.71	283	41	66	73	1.8	6.5		17.56	**101.4**
	35	114.42	0.71	282	41	66	73	1.8	6.5		17.54	**100.8**
6	37.5	116.24	0.75	281	41	66	73	1.9	6.5		18.02	**101.3**
	40	118.10	0.69	281	41	66	73	1.75	6.5		17.28	**100.7**
	42.5	119.90	0.71	282	41	67	73	1.8	6.5		17.54	**101.5**
7	45	121.70	0.79	282	41	67	73	2	6.5		18.51	**100.1**
	47.5	123.61	0.79	282	41	67	73	2	6.5		18.51	**100.7**
	50	125.52	0.8	283	41	67	73	2.05	7.0		18.64	**100.7**
8	52.5	127.46	0.8	283	41	67	73	2.05	7.0		18.64	**101.8**
	55	129.40	0.79	284	42	67	73	2	7.0		18.53	**101.8**
	57.5	131.32	0.79	285	42	67	73	2	7.0		18.54	**101.4**
9	60	133.23	0.81	286	42	67	73	2.05	7.0		18.79	**100.9**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - Metals and Particulate	**Test Location:**	APC Outlet Unit 2
Date:	October 26, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	1.9
DGMCF	0.988	**Probe (mg)**	2.6
Barometric Pressure	30.01 "Hg	**CWTR (g)**	508.9
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	18.6
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.53 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%	8.44
CO2%	11.02
COppm	17.6

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 %
	62.5	135.16	0.78	287	42	67	73	2	7.0		18.45	**100.8**
	65	137.07	0.81	287	42	67	73	2.05	7.0		18.80	**101.7**
10	67.5	138.98	0.79	287	42	67	73	2	7.0		18.57	**99.8**
	70	140.88	0.79	288	43	67	73	2	7.0		18.58	**100.5**
	72.5	142.78	0.77	288	43	67	73	1.9	7.0		18.34	**100.6**
11	75	144.66	0.77	288	43	67	74	1.9	7.0		18.34	**100.8**
	77.5	146.56	0.65	288	43	67	74	1.65	6.0		16.85	**101.8**
	80	148.32	0.64	288	43	68	74	1.6	6.0		16.72	**102.6**
12	82.5	150.05	0.64	288	43	67	74	1.5	6.0		16.72	**101.5**
	85	151.72	0.63	288	43	67	74	1.5	6.0		16.59	**98.0**
	87.5	153.39	0.63	288	44	67	74	1.55	6.0		16.59	**98.8**
	90	155.15										**104.2**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet Unit 2
Test No.:	2 - Metals and Particulate
Date:	October 26, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.988
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.747 m^3
AVGERGE ISOKINETICITY	99.8 %
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	15.1 %
AVERAGE GAS VELOCITY	17.65 m/s
BAROMETRIC PRESSURE (Station)	101.456 Kpa
STATIC PRESSURE	-2.365 Kpa
ABSOLUTE GAS PRESSURE	99.091 Kpa
OXYGEN CONCENTRATION	8.52 %
CARBON DIOXIDE CONCENTRATION	10.83 %
CARBON MONOXIDE CONCENTRATION	19.2 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.07 m^3/s
DRY REF GAS FLOWRATE	15.68 Rm^3/s
DRY ADJ GAS FLOWRATE	19.60 Rm^3/s
WET REF GAS FLOWRATE	18.48 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	3.4 mg
	-FILTER	2.1 mg
	-TOTAL	5.5 mg
DRY REF GAS VOLUME SAMPLED		3.747 m^3
PARTICULATE CONC. - ACTUAL		0.882 mg/m^3
PARTICULATE CONC. - DRY REF		1.468 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.174 mg/m^3
PARTICULATE CONC. - WET REF		1.246 mg/m^3
PARTICULATE EMISSION RATE		0.023007 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 - Metals and Particulate	**Test Location:**	APC Outlet Unit 2
Date:	October 26, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.1
DGMCF	0.988	**Probe (mg)**	3.4
Barometric Pressure	29.96 "Hg	**CWTR (g)**	472.1
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	19.3
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.43 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%	8.52
CO2%	10.83
COppm	19.2

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	55.89	0.81	279	64	66	67	2	6.0		18.69	
	2.5	57.76	0.81	279	59	66	67	2.05	6.0		18.69	97.0
	5	59.69	0.81	278	57	67	68	2.05	6.0		18.68	100.1
2	7.5	61.63	0.83	278	57	67	69	2.1	6.5		18.91	100.4
	10	63.60	0.83	278	57	67	70	2.1	6.5		18.91	100.6
	12.5	65.58	0.81	278	57	67	71	2.05	6.0		18.68	101.0
3	15	67.52	0.81	279	56	67	72	2.05	6.0		18.69	100.1
	17.5	69.47	0.82	280	56	67	73	2.05	6.0		18.82	100.6
	20	71.41	0.82	280	56	67	73	2.05	6.0		18.82	99.4
4	22.5	73.35	0.78	281	55	68	74	2	6.0		18.37	99.4
	25	75.27	0.75	281	54	68	74	1.9	6.0		18.01	100.8
	27.5	77.14	0.75	281	54	68	75	1.9	6.0		18.01	100.1
5	30	79.01	0.75	281	53	68	75	1.9	6.0		18.01	100.0
	32.5	80.91	0.71	281	53	68	75	1.8	6.0		17.53	101.6
	35	82.71	0.72	282	53	68	75	1.8	6.0		17.66	98.9
6	37.5	84.50	0.66	281	52	69	76	1.65	6.0		16.90	97.7
	40	86.26	0.67	281	52	69	76	1.7	6.0		17.02	100.0
	42.5	88.03	0.67	282	51	69	76	1.7	6.0		17.04	99.9
7	45	89.80	0.67	282	51	69	76	1.7	6.0		17.04	99.9
	47.5	91.58	0.64	282	50	69	76	1.6	6.0		16.65	100.5
	50	93.31	0.66	282	50	69	77	1.65	6.0		16.91	99.9
8	52.5	95.05	0.66	283	50	69	77	1.65	6.0		16.92	98.9
	55	96.80	0.66	283	50	69	77	1.65	6.0		16.92	99.5
	57.5	98.55	0.66	283	50	70	77	1.65	6.0		16.92	99.5
9	60	100.29	0.7	282	50	70	77	1.8	6.0		17.41	98.9
	62.5	102.10	0.68	282	50	70	77	1.7	6.0		17.16	99.8
	65	103.88	0.68	281	50	70	77	1.7	6.0		17.15	99.6
10	67.5	105.66	0.68	280	50	70	77	1.7	6.0		17.14	99.5
	70	107.43	0.68	280	50	70	77	1.7	6.0		17.14	98.9
	72.5	109.19	0.71	280	50	70	77	1.8	6.0		17.51	98.3
11	75	110.99	0.64	276	50	70	77	1.6	6.0		16.58	98.4

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals and Particulate	**Test Location:**	APC Outlet Unit 2
Date:	October 26, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.1
DGMCF	0.988	**Probe (mg)**	3.4
Barometric Pressure	29.96 "Hg	**CWTR (g)**	472.1
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	19.3
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.43 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%	8.52
CO2%	10.83
COppm	19.2

Measured H2O
15.1 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures				ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
				Stack °F	Imp. Out °F	DGM Out °F	DGM In °F					
	77.5	112.74	0.64	273	50	71	77	1.6	6.0		16.55	**100.5**
	80	114.45	0.64	273	50	71	78	1.65	6.0		16.55	**97.9**
12	82.5	116.19	0.64	272	50	71	78	1.65	6.0		16.54	**99.5**
	85	117.95	0.64	273	50	71	78	1.65	6.0		16.55	**100.6**
	87.5	119.69	0.65	274	50	71	78	1.65	6.0		16.69	**99.5**
	90	121.45								0.43		**100.0**
1	0	121.88	0.89	285	58	70	72	2.25	7.0		19.67	
	2.5	123.85	0.87	283	51	70	72	2.2	7.0		19.43	**97.1**
	5	125.90	0.86	283	47	70	73	2.2	7.0		19.31	**102.1**
2	7.5	127.92	0.88	284	46	70	74	2.2	7.0		19.55	**101.1**
	10	129.93	0.88	285	45	70	74	2.2	7.0		19.56	**99.4**
	12.5	131.94	0.88	285	45	70	75	2.2	7.0		19.56	**99.4**
3	15	133.97	0.85	284	45	70	75	2.1	7.0		19.21	**100.3**
	17.5	135.95	0.85	284	45	70	75	2.1	7.0		19.21	**99.5**
	20	137.93	0.85	283	45	70	76	2.1	7.0		19.20	**99.5**
4	22.5	139.91	0.81	282	45	70	76	2	7.0		18.73	**99.3**
	25	141.84	0.78	282	45	70	76	2	7.0		18.38	**99.1**
	27.5	143.76	0.78	282	45	70	76	2	7.0		18.38	**100.5**
5	30	145.67	0.7	282	45	70	76	18	6.0		17.41	**99.9**
	32.5	147.52	0.71	282	45	70	76	1.8	6.0		17.54	**106.2**
	35	149.33	0.71	282	45	71	77	1.8	6.0		17.54	**99.2**
6	37.5	151.16	0.71	282	45	71	77	1.8	6.0		17.54	**100.1**
	40	152.97	0.6	282	45	71	77	1.55	6.0		16.12	**99.0**
	42.5	154.67	0.6	282	45	71	77	1.5	6.0		16.12	**101.1**
7	45	156.37	0.66	281	45	71	77	1.7	6.0		16.90	**101.1**
	47.5	158.12	0.67	283	45	71	77	1.7	6.0		17.05	**99.2**
	50	159.87	0.67	284	45	71	77	1.7	6.0		17.06	**98.6**
8	52.5	161.65	0.7	284	45	71	77	1.8	6.5		17.44	**100.4**
	55	163.48	0.7	285	45	71	77	1.75	6.5		17.45	**101.0**
	57.5	165.29	0.71	285	45	71	77	1.8	6.5		17.57	**99.9**
9	60	167.11	0.71	286	46	71	77	1.8	6.5		17.58	**99.8**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - Metals and Particulate	**Test Location:**	APC Outlet Unit 2
Date:	October 26, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	2.1
DGMCF	0.988	**Probe (mg)**	3.4
Barometric Pressure	29.96 "Hg	**CWTR (g)**	472.1
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	19.3
Nozzle	0.2542 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.43 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%	8.52
CO2%	10.83
COppm	19.2

Measured H2O
15.1 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	168.93	0.71	286	46	71	77	1.8	6.5		17.58	99.8
	65	170.74	0.71	286	46	71	77	1.8	6.5		17.58	99.3
10	67.5	172.57	0.69	281	46	71	77	1.75	6.5		17.28	100.4
	70	174.38	0.69	280	46	71	77	1.75	6.5		17.27	100.4
	72.5	176.17	0.69	280	46	71	77	1.75	6.5		17.27	99.2
11	75	177.96	0.63	280	46	71	77	1.75	6.5		16.50	99.2
	77.5	179.74	0.63	280	46	71	77	1.6	6.5		16.50	103.2
	80	181.43	0.63	280	46	71	77	1.6	6.3		16.50	98.0
12	82.5	183.12	0.61	280	46	71	77	1.6	6.3		16.23	98.0
	85	184.81	0.61	280	47	71	77	1.6	6.3		16.23	99.6
	87.5	186.50	0.61	280	47	71	77	1.6	6.3		16.23	99.6
	90	188.23										101.9

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	APC Outlet 2
Test No.:	3 - Metals and Particulate
Date:	October 27, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.847
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.46 mm
DRY REF GAS VOLUME SAMPLED	3.778 m^3
AVGERGE ISOKINETICITY	100.9 %
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	137.7 °C
AVERAGE GAS MOISTURE BY VOLUME	15.6 %
AVERAGE GAS VELOCITY	17.98 m/s
BAROMETRIC PRESSURE (Station)	99.898 Kpa
STATIC PRESSURE	-2.677 Kpa
ABSOLUTE GAS PRESSURE	97.222 Kpa
OXYGEN CONCENTRATION	8.7 %
CARBON DIOXIDE CONCENTRATION	10.38 %
CARBON MONOXIDE CONCENTRATION	19.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.57 m^3/s
DRY REF GAS FLOWRATE	15.62 Rm^3/s
DRY ADJ GAS FLOWRATE	19.25 Rm^3/s
WET REF GAS FLOWRATE	18.51 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	2.4 mg
	-FILTER	2.3 mg
	-TOTAL	4.7 mg
DRY REF GAS VOLUME SAMPLED		3.778 m^3
PARTICULATE CONC. - ACTUAL		0.731 mg/m^3
PARTICULATE CONC. - DRY REF		1.244 mg/m^3
PARTICULATE CONC. - DRY ADJ		1.010 mg/m^3
PARTICULATE CONC. - WET REF		1.050 mg/m^3
PARTICULATE EMISSION RATE		0.019431 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 - Metals and Particulate	**Test Location:**	APC Outlet 2
Date:	October 27, 2016	**Operator:**	DU

Pitot Factor	0.847	**Filter (mg)**	2.3
DGMCF	0.989	**Probe (mg)**	2.4
Barometric Pressure	29.5 "Hg	**CWTR (g)**	493.2
Static Pressure	-10.750 "H_2O	**WCBDA (g)**	19.4
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 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%	8.7
CO2%	10.38
COppm	19.8

Measured H2O
15.6 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	71.31	0.85	281	54	64	63	2.1	3.0		19.42	
	2.5	73.36	0.86	280	44	65	64	2.1	3.0		19.52	**104.2**
	5	75.38	0.86	281	43	65	65	2.1	3.0		19.53	**101.8**
2	7.5	77.40	0.86	280	42	65	65	2.1	3.0		19.52	**101.8**
	10	79.41	0.84	281	43	65	65	2.1	3.0		19.30	**101.2**
	12.5	81.42	0.84	280	43	65	65	2.1	3.0		19.29	**102.5**
3	15	83.41	0.83	280	43	66	65	2.1	3.0		19.18	**101.4**
	17.5	85.41	0.83	280	44	65	66	2.1	3.0		19.18	**102.4**
	20	87.39	0.82	279	44	67	65	2.1	3.0		19.05	**101.4**
4	22.5	89.38	0.82	279	44	67	65	2	3.0		19.05	**102.4**
	25	91.33	0.82	279	44	68	65	2	3.0		19.05	**100.3**
	27.5	93.29	0.81	279	44	68	65	2	3.0		18.93	**100.7**
5	30	95.23	0.68	277	45	68	66	1.7	3.0		17.32	**100.3**
	32.5	97.06	0.67	276	45	69	66	1.7	3.0		17.18	**102.9**
	35	98.82	0.66	275	45	69	66	1.7	3.0		17.04	**99.6**
6	37.5	100.63	0.62	275	45	69	66	1.6	3.0		16.52	**103.1**
	40	102.38	0.64	275	45	69	66	1.6	3.0		16.78	**102.8**
	42.5	104.10	0.65	276	45	69	66	1.6	3.0		16.92	**99.5**
7	45	105.82	0.62	277	45	70	66	1.6	3.0		16.54	**98.8**
	47.5	107.61	0.6	279	45	70	66	1.5	3.0		16.29	**105.2**
	50	109.22	0.62	280	45	71	67	1.5	3.0		16.57	**96.3**
8	52.5	110.94	0.67	280	45	71	67	1.7	3.0		17.23	**101.1**
	55	112.71	0.67	281	44	71	67	1.7	3.0		17.24	**100.1**
	57.5	114.51	0.67	281	44	71	67	1.7	3.0		17.24	**101.9**
9	60	116.30	0.75	282	44	72	67	1.9	3.0		18.25	**101.3**
	62.5	118.19	0.74	282	44	72	67	1.9	3.0		18.13	**101.1**
	65	120.08	0.73	282	44	72	68	1.8	3.0		18.01	**101.8**
10	67.5	121.96	0.74	282	45	72	68	1.8	3.0		18.13	**101.8**
	70	123.85	0.74	282	45	72	68	1.8	3.0		18.13	**101.7**
	72.5	125.70	0.72	282	45	72	68	1.8	3.0		17.88	**99.5**
11	75	127.57	0.72	282	45	72	69	1.8	3.0		17.88	**102.0**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals and Particulate	**Test Location:**	APC Outlet 2
Date:	October 27, 2016	**Operator:**	DU

Pitot Factor	0.847	**Filter (mg)**	2.3
DGMCF	0.989	**Probe (mg)**	2.4
Barometric Pressure	29.5 "Hg	**CWTR (g)**	493.2
Static Pressure	-10.750 "H_2O	**WCBDA (g)**	19.4
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 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%	8.7
CO2%	10.38
COppm	19.8

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	77.5	129.45	0.7	280	45	72	68	1.8	3.0		17.61	**102.5**
	80	131.32	0.68	280	45	73	69	1.7	3.0		17.36	**103.3**
12	82.5	133.13	0.62	280	45	73	69	1.6	3.0		16.57	**101.2**
	85	134.87	0.6	280	45	73	69	1.5	3.0		16.30	**101.9**
	87.5	136.56	0.62	278	45	73	69	1.5	3.0		16.55	**100.6**
	90	138.20								0.41		95.9
1	0	138.61	0.77	280	48	72	69	1.9	3.0		18.47	
	2.5	140.60	0.77	281	45	72	69	1.9	3.0		18.48	**104.8**
	5	142.45	0.77	281	44	72	69	1.9	3.0		18.48	**97.4**
2	7.5	144.38	0.87	281	44	72	70	2.2	3.5		19.65	**101.7**
	10	146.43	0.87	282	44	72	70	2.2	3.5		19.66	**101.6**
	12.5	148.47	0.87	282	43	73	70	2.2	3.5		19.66	**101.1**
3	15	150.55	0.8	281	43	73	70	2	3.5		18.84	**103.0**
	17.5	152.50	0.82	281	43	73	70	2	3.5		19.07	**100.6**
	20	154.44	0.81	281	43	73	70	2	3.5		18.96	**98.9**
4	22.5	156.39	0.76	280	43	73	70	2	3.5		18.35	**100.0**
	25	158.33	0.79	281	43	73	70	2	3.5		18.72	**102.6**
	27.5	160.28	0.77	280	43	73	70	2	3.5		18.47	**101.2**
5	30	162.23	0.71	280	43	74	71	1.8	3.5		17.74	**102.5**
	32.5	164.05	0.71	281	43	74	71	1.8	3.5		17.75	**99.4**
	35	165.94	0.72	281	43	74	71	1.8	3.5		17.87	**103.3**
6	37.5	167.80	0.62	281	44	74	71	1.6	3.5		16.59	**100.9**
	40	169.56	0.63	281	44	74	71	1.6	3.5		16.72	**102.8**
	42.5	171.31	0.62	281	44	74	71	1.6	3.5		16.59	**101.5**
7	45	173.06	0.67	281	44	74	71	1.6	3.5		17.24	**102.3**
	47.5	174.82	0.69	281	44	74	71	1.6	3.5		17.50	**98.9**
	50	176.60	0.67	281	44	74	71	1.6	3.5		17.24	**98.6**
8	52.5	178.34	0.69	281	44	74	71	1.7	3.5		17.50	**97.8**
	55	180.17	0.69	281	44	75	71	1.7	3.5		17.50	**101.4**
	57.5	181.96	0.69	281	44	75	71	1.7	3.5		17.50	**99.1**
9	60	183.78	0.74	281	44	75	72	1.8	3.6		18.12	**100.7**

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - Metals and Particulate	**Test Location:**	APC Outlet 2
Date:	October 27, 2016	**Operator:**	DU

Pitot Factor	0.847	**Filter (mg)**	2.3
DGMCF	0.989	**Probe (mg)**	2.4
Barometric Pressure	29.5 "Hg	**CWTR (g)**	493.2
Static Pressure	-10.750 "H_2O	**WCBDA (g)**	19.4
Nozzle	0.2543 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.41 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%	8.7
CO2%	10.38
COppm	19.8

Measured H2O
15.6 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	62.5	185.65	0.74	281	44	75	71	1.8	3.6		18.12	99.9
	65	187.55	0.74	281	44	75	72	1.8	3.6		18.12	101.6
10	67.5	189.39	0.75	280	44	75	72	1.8	3.6		18.23	98.3
	70	191.24	0.75	281	44	75	72	1.8	3.6		18.24	98.1
	72.5	193.12	0.75	280	40	75	72	1.8	3.6		18.23	99.8
11	75	194.98	0.72	276	41	75	72	1.8	3.6		17.81	98.6
	77.5	196.81	0.72	276	41	75	72	1.8	3.6		17.81	98.8
	80	198.68	0.7	275	41	75	72	1.8	3.6		17.55	100.9
12	82.5	200.54	0.71	276	41	75	72	1.8	3.6		17.69	101.7
	85	202.40	0.71	276	41	75	72	1.8	3.6		17.69	101.1
	87.5	204.25	0.72	277	41	75	72	1.8	3.6		17.82	100.5
	90	206.08										98.8

APPENDIX 29

Particle Size Distribution Test Emission Calculations at Boiler No. 2 (6 pages)

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	October-25-16
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	1
Test Location:	Unit 2 Outlet

Project No.: 21698
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.47
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.989
Pitot Factor	0.846
Barometric Pressure (" Hg)	29.81
Static Pressure ("H_2O)	-9.25
Oxygen Content (%)	8.9
Carbon Dioxide Content (%)	10.4
Carbon Monoxide Content (PPM)	16.5
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.38 Rft^3/min*	10.8 l/min*
Cyclone Qs_{actual}	0.63 ft^3/min	18.0 l/min
Stack Gas Sampling Parameters		
V_{ms}	45.6 Rft^3*	1.291 Rm^3*
Average Cyclone I Cut Diameter		9.69 µm
Average Cyclone IV Cut Diameter		2.15 µm
Average Isokineticity		102.9 %
Stack Gas Physical Parameters		
B_{ws}	15.1 % v/v	
Average m	220.5 (dimensionless)	
M_d	30.02 lbs/lbs mole	
M_w	28.20 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	56944 ACFM	26.9 m^3/s
Wet Reference Q_s	40119 SCFM*	18.9 Rm^3/s*
Dry Reference Q_s	34057 SCFM*	16.1 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	1.78 mg/Rm^3*	0.029 g/s
Total Part. (b)	1.78 mg/Rm^3*	0.029 g/s
PM_{10} Part.	0.77 mg/Rm^3*	0.012 g/s
$PM_{2.5}$ Part.	0.39 mg/Rm^3*	0.0062 g/s
Cond. Part.	0.00 mg/Rm^3*	0.000 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)	475.4	630.6	740.5	882.7	0.0
final volume or weight (ml or mg)	635.9	630.5	740.2	891.7	0.0
gain in volume or weight (ml or mg)	160.5	-0.1	-0.3	9.0	0.0
				TOTAL	169.1

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	1.3	0.5	0.5	0.00	0.0

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: October-25-16	Plant: DYEC	Test No.: 1	Project No.: 21698
Client: Covanta	Location: Courtice, Ontario	Test location: Unit 2 Outlet	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	DR ("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	10.80	7.39	0.87	0.35	282	68	67	0.45	2.5	64.0	9.37	2.02	101.1
	2	10.80	10.70	11.67	0.85	0.35	282	68	67	0.45	2.5	63.3	9.60	2.10	98.8
	3	21.50	10.20	15.77	0.81	0.35	283	69	67	0.45	2.5	61.8	9.73	2.15	99.5
	4	31.70	9.50	19.61	0.68	0.35	283	70	68	0.45	2.5	56.6	9.73	2.16	108.5
	5	41.20	9.20	23.19	0.64	0.35	283	71	69	0.45	2.5	54.9	9.76	2.17	111.4
	6	50.40	9.20	26.65	0.69	0.35	279	72	70	0.45	2.5	56.9	9.49	2.06	111.1
		59.60		30.25											
2	1	0.00	10.60	30.25	0.86	0.35	282	73	70	0.45	2.5	63.6	9.75	2.16	96.1
	2	10.60	10.50	34.25	0.83	0.35	282	73	71	0.45	2.5	62.5	9.96	2.24	94.9
	3	21.10	10.10	38.10	0.76	0.35	282	74	71	0.45	2.5	59.8	9.90	2.22	100.1
	4	31.20	9.90	41.84	0.76	0.35	282	74	72	0.45	2.5	59.8	9.99	2.26	98.7
	5	41.10	9.60	45.46	0.68	0.35	283	75	72	0.45	2.5	56.6	9.54	2.08	111.5
	6	50.70	9.80	49.21	0.71	0.35	282	75	73	0.45	2.5	57.8	9.51	2.07	109.5
		60.50		53.06											
Averages					0.76		282	71		0.45		59.8	9.69	2.15	102.9

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	October-25-16
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	2
Test Location:	Unit 2 Outlet

Project No.: 21698
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.47
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.989
Pitot Factor	0.846
Barometric Pressure (" Hg)	29.83
Static Pressure ("H_2O)	-9.25
Oxygen Content (%)	8.7
Carbon Dioxide Content (%)	10.6
Carbon Monoxide Content (PPM)	16.3
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft³/min*	10.1 l/min*
Cyclone Qs_{actual}	0.60 ft³/min	17.0 l/min
Stack Gas Sampling Parameters		
V_{ms}	42.7 Rft³*	1.208 Rm³*
Average Cyclone I Cut Diameter		10.10 µm
Average Cyclone IV Cut Diameter		2.31 µm
Average Isokineticity		99.1 %
Stack Gas Physical Parameters		
B_{ws}	15.9 % v/v	
Average m	220.0 (dimensionless)	
M_d	30.04 lbs/lbs mole	
M_w	28.12 lbs/lbs mole	
Average T_s	283 °F	139 °C
Average U_s	59.4 ft/s	18.1 m/s
Stack Area	15.9 ft²	1.47 m²
Actual Q_s	56570 ACFM	26.7 m³/s
Wet Reference Q_s	39842 SCFM*	18.8 Rm³/s*
Dry Reference Q_s	33510 SCFM*	15.8 Rm³/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	Emission Rate
Total Part. (a)	4.14 mg/Rm³*	0.065 g/s
Total Part. (b)	4.14 mg/Rm³*	0.065 g/s
PM_{10} Part.	0.99 mg/Rm³*	0.016 g/s
$PM_{2.5}$ Part.	0.58 mg/Rm³*	0.0092 g/s
Cond. Part.	0.00 mg/Rm³*	0.000 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)	491.2	657.6	768.0	884.0	0.0
final volume or weight (ml or mg)	650.1	657.6	767.3	893.7	0.0
gain in volume or weight (ml or mg)	158.9	0.0	-0.7	9.7	0.0
				TOTAL	167.9

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	3.8	0.5	0.5	0.20	0.0

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: October-25-16	Plant: DYEC	Test No.: 2	Project No.: 21698
Client: Covanta	Location: Courtice, Ontario	Test location: Unit 2 Outlet	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	DR ("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	53.83	0.78	0.35	277	72	72	0.40	2.5	60.5	9.74	2.16	100.2
	2	10.60	10.40	57.79	0.68	0.35	275	72	72	0.40	2.5	56.4	9.83	2.19	105.7
	3	21.00	10.10	61.62	0.64	0.35	278	73	72	0.40	2.5	54.8	9.92	2.23	107.9
	4	31.10	10.00	65.30	0.57	0.35	280	74	72	0.40	2.5	51.8	10.02	2.27	113.0
	5	41.10	9.50	68.90	0.62	0.35	283	75	73	0.40	2.5	54.1	9.87	2.21	110.9
	6	50.60	9.70	72.40	0.69	0.35	283	75	73	0.40	2.5	57.1	10.02	2.27	102.9
		60.30		75.90											
2	1	0.00	10.70	75.90	0.91	0.35	283	76	74	0.40	2.5	65.6	11.83	3.03	70.9
	2	10.70	10.60	78.96	0.86	0.35	286	76	74	0.40	2.5	63.9	10.01	2.27	92.6
	3	21.30	10.30	82.80	0.84	0.35	286	76	74	0.40	2.5	63.1	9.92	2.23	94.9
	4	31.60	9.50	86.58	0.83	0.35	288	77	74	0.40	2.5	62.8	9.90	2.23	95.9
	5	41.10	9.20	90.08	0.77	0.35	289	77	74	0.40	2.5	60.6	10.21	2.35	95.5
	6	50.30	9.50	93.33	0.82	0.35	286	77	74	0.40	2.5	62.4	9.96	2.25	95.5
		59.80		96.80											
Averages					0.75		283	74		0.40		59.4	10.10	2.31	99.1

EPA Draft Method - $PM_{10/2.5}$ Calculations

Date:	October-25-16
Client:	Covanta
Plant:	DYEC
Location:	Courtice, Ontario
Test No.:	3
Test Location:	Unit 2 Outlet

Project No.: 21698
Operator: DU

Stack Diameter (m)	1.37
Stack Width (m)	0.00
Stack Breadth (m)	0.00
Stack Area (m^2)	1.47
No. of Traverses	2
No. of Points Per Traverse	6
Data Readings Per Point	1
DGMCF	0.989
Pitot Factor	0.846
Barometric Pressure (" Hg)	29.84
Static Pressure ("H_2O)	-9.25
Oxygen Content (%)	9.0
Carbon Dioxide Content (%)	10.3
Carbon Monoxide Content (PPM)	14.5
Assumed Moisture (%)	
Nozzle Diameter (inches)	0.177

Cyclone Sampling Parameters		
Cyclone Qs_{ST}	0.36 Rft^3/min*	10.3 l/min*
Cyclone Qs_{actual}	0.60 ft^3/min	17.1 l/min
Stack Gas Sampling Parameters		
V_{ms}	43.5 Rft^3*	1.233 Rm^3*
Average Cyclone I Cut Diameter		10.07 µm
Average Cyclone IV Cut Diameter		2.29 µm
Average Isokineticity		96.2 %
Stack Gas Physical Parameters		
B_{ws}	14.5 % v/v	
Average m	221.2 (dimensionless)	
M_d	30.01 lbs/lbs mole	
M_w	28.28 lbs/lbs mole	
Average T_s	283 °F	139 °C
Average U_s	60.7 ft/s	18.5 m/s
Stack Area	15.9 ft^2	1.47 m^2
Actual Q_s	57822 ACFM	27.3 m^3/s
Wet Reference Q_s	40756 SCFM*	19.2 Rm^3/s*
Dry Reference Q_s	34867 SCFM*	16.5 Rm^3/s*
Summary of Particulate Emission Rates		
	Dry Ref. Conc.	**Emission Rate**
Total Part. (a)	1.2 mg/Rm^3*	0.020 g/s
Total Part. (b)	1.2 mg/Rm^3*	0.02 g/s
PM_{10} Part.	0.8 mg/Rm^3*	0.013 g/s
$PM_{2.5}$ Part.	0.4 mg/Rm^3*	0.007 g/s
Cond. Part.	0.0 mg/Rm^3*	0.000 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)	475.6	630.4	740.2	891.4	0.0
final volume or weight (ml or mg)	607.1	640.8	744.6	898.3	0.0
gain in volume or weight (ml or mg)	131.5	10.4	4.4	6.9	0.0
				TOTAL	**153.2**

Particulate Weight Gains	>10mm	<10mm, >2.5mm	<2.5mm	back-up filter	cond. part.
particulate weight gains (mg)	0.5	0.5	0.5	0.00	0.0

*Reference conditions: 77°F, 29.92 in. Hg or 25°C, 101.3 KPa

Test Data Page Calculations

Date: October-25-16	Plant: DYEC	Test No.: 3	Project No.: 21698
Client: Covanta	Location: Courtice, Ontario	Test location: Unit 2 Outlet	Operator: DU

Port No.	Point	Clock Time (min)	Dwell Time (min)	Dry Gas Meter (ft^3)	DR ("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	10.20	96.99	0.93	0.35	282	74	73	0.40	2.5	66.1	9.75	2.16	92.7
	2	10.20	9.50	100.89	0.87	0.35	282	73	73	0.40	2.5	63.9	9.98	2.25	92.7
	3	19.70	9.30	104.40	0.80	0.35	282	73	73	0.40	2.5	61.3	10.12	2.31	94.8
	4	29.00	8.70	107.77	0.75	0.35	283	74	74	0.40	2.5	59.4	10.10	2.30	98.3
	5	37.70	9.10	110.94	0.65	0.35	283	74	74	0.40	2.5	55.3	10.05	2.28	106.4
	6	46.80	9.60	114.28	0.73	0.35	283	74	74	0.40	2.5	58.6	10.05	2.28	100.3
		56.40		117.80											
2	1	0.00	11.00	117.80	0.93	0.35	283	75	75	0.40	2.5	66.1	10.15	2.31	87.7
	2	11.00	10.70	121.79	0.89	0.35	284	77	75	0.40	2.5	64.7	10.16	2.32	89.5
	3	21.70	10.60	125.67	0.79	0.35	284	78	76	0.40	2.5	61.0	10.15	2.32	95.2
	4	32.30	10.50	129.53	0.74	0.35	282	78	76	0.40	2.5	58.9	10.19	2.33	97.7
	5	42.80	10.20	133.33	0.68	0.35	282	76	76	0.40	2.5	56.5	10.12	2.30	102.9
	6	53.00	10.50	137.05	0.70	0.35	280	76	76	0.40	2.5	57.2	10.08	2.28	101.8
		63.50		140.90											
Averages					0.79		283	75		0.40		60.7	10.07	2.29	96.2

APPENDIX 30

Acid Gases Test Emission Calculations
at Boiler No. 2
(6 pages)

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 Outlet
Test No.:	Test 1 Method 26A
Date:	October 26, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	1.162 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	139.9 °C
AVERAGE GAS MOISTURE BY VOLUME	15.7 %
AVERAGE GAS VELOCITY	16.77 m/s
BAROMETRIC PRESSURE (Station)	101.626 Kpa
STATIC PRESSURE	-2.365 Kpa
ABSOLUTE GAS PRESSURE	99.260 Kpa
OXYGEN CONCENTRATION	8.45 %
CARBON DIOXIDE CONCENTRATION	10.94 %
CARBON MONOXIDE CONCENTRATION	22.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	24.77 m^3/s
DRY REF GAS FLOWRATE	14.76 Rm^3/s
DRY ADJ GAS FLOWRATE	18.57 Rm^3/s
WET REF GAS FLOWRATE	17.52 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.162 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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 1 Method 26A	**Test Location:**	Unit No. 2 Outlet
Date:	October 26, 2016	**Operator:**	CB

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	30.01 "Hg	**CWTR (g)**	148.7
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	10.5
Nozzle	0.255 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%	8.45
CO2%	10.94
COppm	22.8

Measured H2O
15.7 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Temperatures: Imp. Out °F	Temperatures: DGM Out °F	Temperatures: DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
5	0	91.53	0.62	283	62	64	63	1.45	2.0		16.44	
	5	94.90	0.63	284	46	64	64	1.45	2.0		16.58	**100.9**
	10	98.26	0.66	283	46	64	64	1.45	2.0		16.96	**99.8**
	15	101.68	0.66	284	47	64	64	1.45	2.0		16.97	**99.2**
	20	104.89	0.66	284	47	64	64	1.45	2.0		16.97	**93.1**
	25	107.98	0.65	284	47	64	64	1.45	2.0		16.85	89.7
	30	111.24	0.65	284	49	64	64	1.6	2.5		16.85	**95.3**
	35	114.55	0.65	284	50	65	64	1.6	2.5		16.85	**96.8**
	40	117.95	0.64	284	51	65	64	1.6	2.5		16.71	**99.3**
	45	121.33	0.64	284	51	65	64	1.6	2.5		16.71	**99.5**
	50	124.81	0.64	284	54	66	64	1.6	2.5		16.71	**102.5**
	55	128.10	0.63	284	55	66	64	1.6	2.5		16.58	**96.8**
	60	131.57										**102.9**

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 Outlet
Test No.:	Test 2 Method 26A
Date:	October 26, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.993	
NOZZLE DIAMETER	6.48	mm
DRY REF GAS VOLUME SAMPLED	1.143	m^3
AVGERGE ISOKINETICITY	100.5	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	139.2	°C
AVERAGE GAS MOISTURE BY VOLUME	16.4	%
AVERAGE GAS VELOCITY	16.19	m/s
BAROMETRIC PRESSURE (Station)	101.592	Kpa
STATIC PRESSURE	-2.365	Kpa
ABSOLUTE GAS PRESSURE	99.226	Kpa
OXYGEN CONCENTRATION	8.45	%
CARBON DIOXIDE CONCENTRATION	11.08	%
CARBON MONOXIDE CONCENTRATION	12.2	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	23.91	m^3/s
DRY REF GAS FLOWRATE	14.16	Rm^3/s
DRY ADJ GAS FLOWRATE	17.80	Rm^3/s
WET REF GAS FLOWRATE	16.94	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		1.143	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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 2 Method 26A	**Test Location:**	Unit No. 2 Outlet
Date:	October 26, 2016	**Operator:**	CB

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	30 "Hg	**CWTR (g)**	155
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	9.7
Nozzle	0.255 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%	8.45
CO2%	11.08
COppm	12.2

Measured H2O
16.4 %

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 %
5	0	32.15	0.58	281	61	66	65	1.45	2.0		15.90	
	5	35.47	0.58	282	46	66	66	1.4	2.0		15.91	**103.0**
	10	38.67	0.57	283	44	66	65	1.4	2.0		15.78	**99.2**
	15	41.83	0.57	284	43	66	66	1.4	2.0		15.80	**99.0**
	20	45.00	0.57	281	42	66	66	1.4	2.0		15.76	**99.3**
	25	48.19	0.58	280	43	67	65	1.4	2.0		15.89	**99.7**
	30	51.38	0.62	281	43	66	65	1.5	2.2		16.44	**98.7**
	35	54.74	0.63	281	44	67	66	1.6	2.2		16.57	**100.8**
	40	57.98	0.63	281	44	67	66	1.65	2.3		16.57	**96.3**
	45	61.45	0.63	284	45	68	66	1.65	2.3		16.61	**103.1**
	50	64.88	0.62	286	46	68	66	1.65	2.3		16.50	**102.0**
	55	68.29	0.62	286	48	68	66	1.65	2.3		16.50	**102.4**
	60	71.70										**102.4**

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 Outlet
Test No.:	Test 3 Method 26A
Date:	October 26, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	0.993
NOZZLE DIAMETER	6.48 mm
DRY REF GAS VOLUME SAMPLED	1.102 m^3
AVGERGE ISOKINETICITY	98.2 %
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	136.9 °C
AVERAGE GAS MOISTURE BY VOLUME	14.5 %
AVERAGE GAS VELOCITY	15.54 m/s
BAROMETRIC PRESSURE (Station)	101.524 Kpa
STATIC PRESSURE	-2.365 Kpa
ABSOLUTE GAS PRESSURE	99.158 Kpa
OXYGEN CONCENTRATION	8.61 %
CARBON DIOXIDE CONCENTRATION	10.74 %
CARBON MONOXIDE CONCENTRATION	17.6 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	22.95 m^3/s
DRY REF GAS FLOWRATE	13.97 Rm^3/s
DRY ADJ GAS FLOWRATE	17.34 Rm^3/s
WET REF GAS FLOWRATE	16.34 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		1.102 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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 3 Method 26A	**Test Location:**	Unit No. 2 Outlet
Date:	October 26, 2016	**Operator:**	CB

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.993	**Probe (mg)**	0
Barometric Pressure	29.98 "Hg	**CWTR (g)**	129.6
Static Pressure	-9.500 "H_2O	**WCBDA (g)**	7.4
Nozzle	0.255 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%	8.61
CO2%	10.74
COppm	17.6

Measured H2O
14.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
5	0	72.35	0.56	276	66	68	67	1.4	2.0		15.52	
	5	75.62	0.56	276	49	68	67	1.4	2.0		15.52	**100.5**
	10	78.90	0.56	276	47	68	67	1.4	2.0		15.52	**100.8**
	15	82.04	0.55	278	47	68	68	1.4	2.0		15.41	**96.5**
	20	85.25	0.55	278	46	68	67	1.4	2.0		15.41	**99.5**
	25	88.37	0.54	279	47	68	67	1.4	2.0		15.27	**96.8**
	30	91.60	0.54	279	47	68	67	1.4	2.0		15.27	**101.2**
	35	94.70	0.57	279	47	68	68	1.4	2.0		15.69	**97.2**
	40	97.87	0.58	279	46	70	68	1.4	2.0		15.83	**96.6**
	45	101.15	0.57	280	46	70	68	1.4	2.0		15.70	**98.9**
	50	104.26	0.57	280	46	70	68	1.4	2.0		15.70	**94.7**
	55	107.49	0.56	280	46	71	68	1.4	2.0		15.57	**98.3**
	60	110.66										**97.3**

APPENDIX 31

SVOC Test Emission Calculations
at Boiler No. 2
(24 pages)

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 Outlet
Test No.:	Test 1 SVOC
Date:	November 1, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.989	
NOZZLE DIAMETER	6.47	mm
DRY REF GAS VOLUME SAMPLED	7.595	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	136.5	^oC
AVERAGE GAS MOISTURE BY VOLUME	15.7	%
AVERAGE GAS VELOCITY	18.27	m/s
BAROMETRIC PRESSURE (Station)	99.797	Kpa
STATIC PRESSURE	-2.664	Kpa
ABSOLUTE GAS PRESSURE	97.133	Kpa
OXYGEN CONCENTRATION	8.89	%
CARBON DIOXIDE CONCENTRATION	10.24	%
CARBON MONOXIDE CONCENTRATION	13.6	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.99	m^3/s
DRY REF GAS FLOWRATE	15.87	Rm^3/s
DRY ADJ GAS FLOWRATE	19.25	Rm^3/s
WET REF GAS FLOWRATE	18.84	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		7.595	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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 1 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 1, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.47 "Hg	**CWTR (g)**	1032.9
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	10.1
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.89
CO2%	10.24
COppm	13.6

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 %
1	0	207.07	0.86	276	56	72	71	2.15	7.0		19.51	
	5	211.07	0.84	276	52	72	71	2.1	7.0		19.28	99.0
	10	215.11	0.85	276	48	72	72	2.12	7.0		19.40	101.1
2	15	219.13	0.85	276	45	73	72	2.12	7.0		19.40	99.9
	20	223.10	0.87	277	44	73	72	2.18	8.5		19.64	98.6
	25	227.19	0.87	277	43	73	72	2.18	8.5		19.64	100.5
3	30	231.47	0.84	277	43	74	73	2.1	8.0		19.29	105.1
	35	235.56	0.86	277	44	75	73	2.12	8.0		19.52	102.0
	40	239.63	0.84	277	43	75	73	2.1	8.0		19.29	100.3
4	45	243.69	0.81	277	44	75	73	2.03	7.5		18.95	101.2
	50	247.63	0.8	278	44	76	74	2	7.5		18.84	100.0
	55	251.55	0.8	278	44	76	74	2	7.5		18.84	100.0
5	60	255.45	0.78	278	45	77	74	1.95	7.0		18.61	99.5
	65	259.33	0.77	278	45	77	75	1.9	7.0		18.49	100.1
	70	263.16	0.77	278	45	78	75	1.9	7.0		18.49	99.4
6	75	267.00	0.7	278	45	78	75	1.75	7.0		17.63	99.5
	80	270.69	0.7	278	45	78	76	1.7	7.0		17.63	100.3
	85	274.33	0.69	277	46	79	76	1.7	7.0		17.49	98.8
7	90	277.94	0.74	278	46	79	76	1.85	7.0		18.12	98.5
	95	281.70	0.72	277	46	79	76	1.8	7.0		17.86	99.2
	100	285.45	0.72	277	46	79	76	1.8	7.0		17.86	100.2
8	105	289.19	0.72	278	46	80	77	1.8	7.0		17.88	100.0
	110	292.94	0.72	277	46	80	77	1.8	7.0		17.86	100.1
	115	296.69	0.72	277	46	80	77	1.8	7.0		17.86	100.0
9	120	300.44	0.73	278	47	80	78	1.8	7.0		18.00	100.0
	125	304.18	0.73	278	47	80	78	1.8	7.0		18.00	99.1
	130	307.92	0.74	278	46	80	78	1.8	7.0		18.12	99.1
10	135	311.65	0.71	277	46	80	78	1.8	7.0		17.74	98.1
	140	315.36	0.71	280	47	82	79	1.8	7.0		17.78	99.6
	145	319.09	0.71	278	46	81	78	1.78	7.0		17.75	100.0
11	150	322.82	0.67	278	46	81	79	1.65	7.0		17.24	100.1

ORTECH Environmental

Plant: DYEC
Test No.: Test 1 SVOC
Date: November 1, 2016

Plant Location: Courtice, ON
Test Location: Unit No. 2 Outlet
Operator: AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.47 "Hg	**CWTR (g)**	1032.9
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	10.1
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.89
CO2%	10.24
COppm	13.6

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 %
	155	326.41	0.67	278	46	81	78	1.65	7.0		17.24	99.0
	160	330.00	0.65	278	46	81	79	1.6	6.5		16.98	99.1
12	165	333.53	0.62	278	46	81	79	1.52	6.0		16.59	98.9
	170	336.99	0.6	278	47	81	79	1.5	6.0		16.32	99.2
	175	340.43	0.6	278	47	81	79	1.5	6.0		16.32	100.2
	180	343.86								0.36		100.0
1	0	344.22	0.92	277	50	80	79	2.3	8.0		20.19	
	5	348.42	0.89	277	48	80	79	2.25	8.0		19.86	99.0
	10	352.63	0.89	277	48	80	79	2.2	8.0		19.86	100.9
2	15	356.81	0.91	277	46	79	79	2.2	8.0		20.08	100.2
	20	360.96	0.91	277	46	80	79	2.2	8.0		20.08	98.5
	25	365.12	0.91	278	45	80	79	2.2	8.0		20.10	98.6
3	30	369.27	0.91	278	45	80	79	2.2	8.0		20.10	98.5
	35	373.33	0.87	278	45	80	79	2.2	8.0		19.65	96.3
	40	377.49	0.84	278	46	80	79	2.1	8.0		19.31	100.9
4	45	381.57	0.78	277	46	80	79	1.95	8.0		18.59	100.7
	50	385.47	0.81	278	47	80	79	2	8.0		18.96	99.8
	55	389.39	0.81	278	46	81	79	2	8.0		18.96	98.5
5	60	393.31	0.74	278	47	81	79	1.85	7.5		18.12	98.4
	65	397.13	0.74	278	48	81	80	1.85	7.5		18.12	100.3
	70	400.96	0.74	279	46	81	80	1.85	7.5		18.13	100.5
6	75	404.81	0.66	279	45	82	80	1.65	7.0		17.13	101.1
	80	408.43	0.66	279	45	82	80	1.65	7.0		17.13	100.5
	85	412.02	0.66	279	45	82	80	1.65	7.0		17.13	99.7
7	90	415.61	0.71	279	47	82	80	1.8	7.0		17.76	99.7
	95	419.32	0.69	279	45	82	80	1.75	7.0		17.51	99.3
	100	423.06	0.7	279	46	82	80	1.75	7.0		17.64	101.6
8	105	426.77	0.71	278	46	82	80	1.75	7.0		17.75	100.0
	110	430.48	0.73	278	46	83	80	1.75	7.0		18.00	99.3
	115	434.19	0.73	278	46	82	81	1.75	7.0		18.00	97.8
9	120	437.90	0.72	278	46	83	81	1.75	7.0		17.88	97.8

ORTECH Environmental

Plant:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 1 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 1, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.47 "Hg	**CWTR (g)**	1032.9
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	10.1
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.36 ft^3
Length	0.000 ft	**Reading Interval**	5 minutes
Width	0.000 ft	**Number of Ports**	2
		Number of points / Port	12

Combustion Gases	
O2%	8.89
CO2%	10.24
COppm	13.6

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 %
	125	441.57	0.75	278	47	83	81	1.9	7.0		18.24	97.3
	130	445.39	0.75	278	47	83	81	1.9	7.0		18.24	99.3
10	135	449.22	0.71	278	48	83	81	1.8	7.0		17.75	99.6
	140	452.99	0.71	278	48	82	81	1.8	7.0		17.75	100.7
	145	456.73	0.73	278	48	83	81	1.8	7.0		18.00	100.0
11	150	460.46	0.65	277	48	83	81	1.6	6.5		16.97	98.3
	155	464.06	0.66	277	48	83	81	1.6	6.5		17.10	100.4
	160	467.61	0.66	277	49	83	81	1.6	6.5		17.10	98.2
12	165	471.22	0.69	277	49	83	91	1.75	6.0		17.49	99.9
	170	474.84	0.7	277	49	83	81	1.8	7.0		17.61	97.1
	175	478.55	0.7	277	49	83	83	1.8	7.0		17.61	99.7
	180	482.24										98.9

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 Outlet
Test No.:	Test 2 SVOC
Date:	November 2, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848
DGM CORRECTION FACTOR	0.989
NOZZLE DIAMETER	6.47 mm
DRY REF GAS VOLUME SAMPLED	7.323 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	136.6 °C
AVERAGE GAS MOISTURE BY VOLUME	15.8 %
AVERAGE GAS VELOCITY	17.56 m/s
BAROMETRIC PRESSURE (Station)	100.440 Kpa
STATIC PRESSURE	-2.664 Kpa
ABSOLUTE GAS PRESSURE	97.776 Kpa
OXYGEN CONCENTRATION	8.91 %
CARBON DIOXIDE CONCENTRATION	10.24 %
CARBON MONOXIDE CONCENTRATION	12.8 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	25.95 m^3/s
DRY REF GAS FLOWRATE	15.33 Rm^3/s
DRY ADJ GAS FLOWRATE	18.57 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		7.323 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: DYEC
Test No.: Test 2 SVOC
Date: November 2, 2016

Plant Location: Courtice, ON
Test Location: Unit No. 2 Outlet
Operator: AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.66 "Hg	**CWTR (g)**	989.1
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.372 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%	8.91
CO2%	10.24
COppm	12.8

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 %
1	0	482.87	0.79	279	60	81	81	2	5.0		18.68	
	5	486.77	0.79	279	57	80	80	2	5.0		18.68	99.6
	10	490.74	0.78	279	52	80	80	1.95	5.0		18.56	101.4
2	15	494.65	0.79	280	51	80	80	1.9	5.0		18.69	100.5
	20	498.36	0.79	280	51	80	80	1.9	5.0		18.69	94.8
	25	502.19	0.78	279	51	80	80	1.9	5.0		18.56	97.9
3	30	506.03	0.81	279	51	81	80	1.9	5.0		18.91	98.7
	35	509.86	0.78	280	50	82	80	1.9	5.0		18.57	96.5
	40	513.74	0.77	279	50	82	80	1.9	5.0		18.44	99.6
4	45	517.59	0.74	279	51	83	81	1.9	5.0		18.08	99.4
	50	521.35	0.72	279	51	83	81	1.8	5.0		17.83	98.9
	55	525.10	0.73	278	51	83	81	1.8	5.0		17.94	99.9
5	60	528.81	0.7	278	51	84	81	1.7	5.0		17.57	98.1
	65	532.44	0.67	278	52	84	82	1.7	5.0		17.19	97.9
	70	536.06	0.67	278	52	84	81	1.7	5.0		17.19	99.7
6	75	539.70	0.63	278	52	85	82	1.6	5.0		16.67	100.4
	80	543.20	0.62	278	53	85	82	1.6	5.0		16.54	99.3
	85	546.60	0.62	278	52	85	82	1.5	5.0		16.54	97.3
7	90	550.06	0.67	278	53	85	82	1.7	5.0		17.19	99.0
	95	553.68	0.67	278	53	85	82	1.7	5.0		17.19	99.6
	100	557.33	0.67	278	53	85	83	1.7	5.0		17.19	100.5
8	105	561.01	0.67	278	54	85	83	1.7	5.0		17.19	101.2
	110	564.60	0.67	279	54	86	83	1.7	5.0		17.20	98.7
	115	568.22	0.67	279	55	86	83	1.7	5.0		17.20	99.5
9	120	571.84	0.67	278	55	86	83	1.7	5.0		17.19	99.5
	125	575.49	0.67	278	56	86	84	1.7	5.0		17.19	100.3
	130	579.10	0.68	278	56	86	84	1.7	5.0		17.32	99.1
10	135	582.72	0.7	277	57	86	84	1.8	5.0		17.56	98.6
	140	586.44	0.69	277	57	86	84	1.8	5.0		17.43	99.9
	145	590.13	0.69	277	58	86	84	1.8	5.0		17.43	99.8
11	150	593.84	0.68	277	59	86	84	1.75	5.0		17.31	100.3

ORTECH Environmental

Plant:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 2 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 2, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.66 "Hg	**CWTR (g)**	989.1
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.372 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%	8.91
CO2%	10.24
COppm	12.8

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 %
	155	597.54	0.67	277	59	86	84	1.7	5.0		17.18	**100.8**
	160	601.19	0.66	277	60	87	84	1.7	5.0		17.05	**100.1**
12	165	604.81	0.67	277	56	87	84	1.7	5.0		17.18	**100.0**
	170	608.43	0.67	277	53	87	84	1.7	5.0		17.18	**99.2**
	175	612.06	0.66	277	51	87	85	1.7	5.0		17.05	**99.5**
	180	615.69								0.372		**100.1**
1	0	616.06	0.79	277	54	86	84	2	5.5		18.65	
	5	620.04	0.79	278	49	85	84	1.9	5.5		18.67	**100.6**
	10	623.93	0.77	278	50	85	84	1.9	5.5		18.43	**98.5**
2	15	627.74	0.79	277	50	85	84	1.9	5.5		18.65	**97.7**
	20	631.63	0.78	278	51	86	84	1.9	5.5		18.55	**98.4**
	25	635.52	0.79	278	51	86	85	1.9	5.5		18.67	**99.0**
3	30	639.41	0.75	278	52	86	85	1.85	5.5		18.19	**98.3**
	35	643.23	0.76	279	52	86	85	1.85	5.5		18.32	**99.0**
	40	647.06	0.77	278	52	87	85	1.9	5.5		18.43	**98.7**
4	45	650.94	0.78	278	53	87	85	1.9	5.5		18.55	**99.2**
	50	654.81	0.76	278	53	87	85	1.9	5.5		18.31	**98.3**
	55	658.67	0.76	278	54	87	85	1.9	5.5		18.31	**99.3**
5	60	662.59	0.71	278	54	87	85	1.8	5.5		17.70	**100.9**
	65	666.28	0.71	278	54	87	85	1.8	5.5		17.70	**98.2**
	70	670.12	0.69	279	56	88	85	1.75	5.5		17.46	**102.2**
6	75	673.83	0.66	278	56	88	85	1.7	5.5		17.06	**100.2**
	80	677.44	0.64	278	57	88	86	1.6	5.0		16.80	**99.6**
	85	681.02	0.63	278	57	88	86	1.6	5.0		16.67	**100.1**
7	90	684.56	0.63	278	58	88	86	1.6	5.0		16.67	**99.8**
	95	688.09	0.62	278	54	88	86	1.5	5.0		16.54	**99.5**
	100	691.49	0.63	278	52	88	86	1.7	5.0		16.67	**96.6**
8	105	695.22	0.63	279	51	89	86	1.6	5.0		16.68	**105.2**
	110	698.77	0.64	278	51	88	86	1.6	5.0		16.80	**100.1**
	115	702.31	0.63	278	51	89	86	1.6	5.0		16.67	**99.0**
9	120	705.85	0.67	277	51	89	87	1.7	5.0		17.18	**99.7**

ORTECH Environmental

Plant:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 2 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 2, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.66 "Hg	**CWTR (g)**	989.1
Static Pressure	-10.700 "H_2O	**WCBDA (g)**	23.9
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.372 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%	8.91
CO2%	10.24
COppm	12.8

Measured H2O
15.8 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	125	709.50	0.67	277	51	89	87	1.6	5.0		17.18	99.6
	130	713.16	0.66	278	51	89	87	1.7	5.0		17.06	99.8
10	135	716.77	0.68	277	51	89	87	1.7	5.0		17.31	99.3
	140	720.45	0.69	277	52	89	87	1.7	5.0		17.43	99.6
	145	724.16	0.68	277	52	89	87	1.7	5.0		17.31	99.7
11	150	727.85	0.65	277	53	89	87	1.65	5.0		16.92	99.9
	155	731.45	0.65	277	54	90	87	1.65	5.0		16.92	99.7
	160	735.05	0.67	277	55	89	87	1.65	5.0		17.18	99.6
12	165	738.62	0.67	277	55	90	87	1.7	5.0		17.18	97.4
	170	742.27	0.65	277	56	90	88	1.7	5.0		16.92	99.5
	175	745.87	0.68	277	56	90	88	1.7	5.0		17.31	99.5
	180	749.59										100.4

ORTECH Environmental

Plant:	DYEC
Plant Location:	Courtice, ON
Test Location:	Unit No. 2 Outlet
Test No.:	Test 3 SVOC
Date:	November 3, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.848	
DGM CORRECTION FACTOR	0.989	
NOZZLE DIAMETER	6.47	mm
DRY REF GAS VOLUME SAMPLED	7.614	m^3
AVGERGE ISOKINETICITY	98.7	%
STACK DIAMETER	1.37	m
LENGTH	0.00	m
WIDTH	0.00	m
AREA OF STACK or DUCT	1.48	m^3

STACK GAS PHYSICAL PARAMETERS

AVERAGE GAS TEMPERATURE	136.6	°C
AVERAGE GAS MOISTURE BY VOLUME	15.2	%
AVERAGE GAS VELOCITY	18.32	m/s
BAROMETRIC PRESSURE (Station)	100.034	Kpa
STATIC PRESSURE	-2.540	Kpa
ABSOLUTE GAS PRESSURE	97.494	Kpa
OXYGEN CONCENTRATION	8.61	%
CARBON DIOXIDE CONCENTRATION	10.41	%
CARBON MONOXIDE CONCENTRATION	18.0	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.07	m^3/s
DRY REF GAS FLOWRATE	16.06	Rm^3/s
DRY ADJ GAS FLOWRATE	19.94	Rm^3/s
WET REF GAS FLOWRATE	18.96	Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0	mg
	-FILTER	0	mg
	-TOTAL	0	mg
DRY REF GAS VOLUME SAMPLED		7.614	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:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 3 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 3, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	999.9
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	7.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.316 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%	8.61
CO2%	10.41
COppm	18.0

Measured H2O
15.2 %

				Temperatures								
Point	Time	DGM Reading	ΔP "H2O	Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	750.31	0.96	279	58	74	74	2.3	8.0		20.59	
	5	754.48	0.88	280	56	74	74	2.1	8.0		19.73	97.1
	10	758.54	0.89	279	51	74	74	2.1	8.0		19.83	98.7
2	15	762.53	0.88	279	47	74	74	2.1	8.0		19.71	96.4
	20	766.52	0.88	278	45	74	75	2.1	8.0		19.70	96.9
	25	770.52	0.89	278	45	75	74	2.1	8.0		19.81	97.0
3	30	774.58	0.86	278	44	76	74	2.1	8.0		19.48	97.9
	35	778.65	0.88	278	44	76	74	2.1	8.0		19.70	99.7
	40	782.67	0.9	278	44	76	74	2.2	8.5		19.92	97.4
4	45	786.79	0.83	278	44	76	75	2	8.0		19.13	98.7
	50	790.77	0.81	278	44	77	75	2	8.0		18.90	99.2
	55	794.74	0.81	277	45	77	75	2	8.0		18.89	100.0
5	60	798.68	0.74	278	45	77	75	1.8	7.5		18.07	99.2
	65	802.44	0.76	278	45	78	75	1.8	7.5		18.31	99.1
	70	806.20	0.78	278	45	78	76	1.9	7.5		18.55	97.7
6	75	810.03	0.72	278	46	78	76	1.7	7.0		17.82	98.1
	80	813.72	0.71	279	46	79	76	1.7	7.0		17.71	98.4
	85	817.42	0.7	278	46	79	76	1.7	7.0		17.57	99.3
7	90	821.08	0.72	278	47	79	77	1.7	7.0		17.82	98.9
	95	824.74	0.72	278	47	79	77	1.7	7.0		17.82	97.4
	100	828.42	0.73	278	47	79	77	1.8	7.0		17.94	97.9
8	105	832.12	0.72	278	47	79	77	1.8	7.0		17.82	97.8
	110	835.82	0.73	277	48	79	77	1.8	7.0		17.93	98.5
	115	839.53	0.73	277	48	79	77	1.8	7.0		17.93	98.0
9	120	843.30	0.75	277	49	79	78	1.8	7.0		18.17	99.6
	125	847.10	0.76	277	49	80	78	1.8	7.0		18.30	98.9
	130	850.83	0.76	277	50	79	78	1.9	7.5		18.30	96.4
10	135	854.57	0.76	277	50	79	78	1.9	7.5		18.30	96.8
	140	858.44	0.76	277	51	79	78	1.9	7.5		18.30	100.1
	145	862.31	0.75	277	51	80	78	1.9	7.5		18.17	100.1
11	150	866.10	0.68	277	53	79	78	1.7	7.0		17.31	98.6

ORTECH Environmental

Plant:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 3 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 3, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	999.9
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	7.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.316 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%	8.61
CO2%	10.41
COppm	18.0

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	155	869.76	0.69	277	54	80	79	1.7	7.0		17.43	**100.0**
	160	873.42	0.67	277	53	79	78	1.7	7.0		17.18	**99.1**
12	165	877.06	0.56	277	53	80	78	1.4	6.0		15.70	**100.2**
	170	880.39	0.55	277	48	80	78	1.4	6.0		15.56	**100.1**
	175	883.67	0.53	277	47	80	78	1.3	6.0		15.28	**99.5**
	180	886.94								0.316		**101.1**
1	0	887.26	0.92	277	47	80	78	2.3	9.0		20.13	
	5	891.42	0.92	277	45	78	78	2.3	9.0		20.13	**97.9**
	10	895.75	0.92	278	45	78	78	2.3	9.0		20.14	**102.0**
2	15	899.85	0.92	278	46	78	78	2.3	9.0		20.14	**96.7**
	20	904.05	0.92	278	46	78	77	2.3	9.0		20.14	**99.0**
	25	908.23	0.91	277	46	78	78	2.3	9.0		20.02	**98.6**
3	30	912.40	0.9	278	46	78	77	2.2	9.0		19.92	**98.8**
	35	916.54	0.91	278	47	78	77	2.2	9.0		20.03	**98.7**
	40	920.67	0.91	278	47	78	77	2.2	9.0		20.03	**98.0**
4	45	924.80	0.84	278	48	78	78	2.1	8.5		19.25	**98.0**
	50	928.79	0.84	278	48	78	77	2.1	8.5		19.25	**98.4**
	55	932.77	0.82	278	49	78	77	2.1	8.5		19.02	**98.2**
5	60	936.75	0.7	278	49	78	78	1.7	7.5		17.57	**99.4**
	65	940.57	0.7	278	50	79	78	1.7	7.5		17.57	**103.1**
	70	944.25	0.73	278	50	79	78	1.7	7.5		17.94	**99.2**
6	75	947.92	0.65	278	52	79	78	1.6	7.0		16.93	**96.9**
	80	951.43	0.67	278	50	80	78	1.6	7.0		17.19	**98.2**
	85	954.93	0.68	279	49	80	78	1.6	7.0		17.33	**96.3**
7	90	958.47	0.66	278	48	80	78	1.6	7.0		17.06	**96.8**
	95	962.03	0.66	279	47	81	79	1.6	7.0		17.07	**98.7**
	100	965.55	0.67	278	46	81	79	1.6	7.0		17.19	**97.5**
8	105	969.09	0.71	278	46	81	79	1.8	7.0		17.70	**97.3**
	110	972.79	0.73	278	46	81	79	1.8	7.0		17.94	**98.8**
	115	976.46	0.73	277	46	81	79	1.8	7.0		17.93	**96.6**
9	120	980.15	0.73	277	46	81	79	1.8	7.0		17.93	**97.1**

ORTECH Environmental

Plant:	DYEC	**Plant Location:**	Courtice, ON
Test No.:	Test 3 SVOC	**Test Location:**	Unit No. 2 Outlet
Date:	November 3, 2016	**Operator:**	AS

Pitot Factor	0.848	**Filter (mg)**	0
DGMCF	0.989	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	999.9
Static Pressure	-10.200 "H_2O	**WCBDA (g)**	7.4
Nozzle	0.2546 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.316 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%	8.61
CO2%	10.41
COppm	18.0

Measured H2O
15.2 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures Stack °F	Imp. Out °F	DGM Out °F	DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
	125	983.84	0.76	277	47	81	79	2	8.0		18.30	**97.1**
	130	987.68	0.76	278	47	81	79	2	8.0		18.31	**99.1**
10	135	991.57	0.76	277	47	81	81	2	8.0		18.30	**100.4**
	140	995.48	0.76	277	47	81	79	2	8.0		18.30	**100.7**
	145	999.39	0.77	283	50	82	81	1.9	8.0		18.49	**100.9**
11	150	1003.26	0.77	278	48	81	80	1.9	8.0		18.43	**99.3**
	155	1007.13	0.68	277	48	81	80	1.7	7.5		17.31	**99.2**
	160	1010.82	0.67	277	48	81	80	1.7	7.5		17.18	**100.5**
12	165	1014.45	0.64	277	48	81	80	1.6	7.0		16.79	**99.6**
	170	1017.98	0.64	277	48	82	80	1.6	7.0		16.79	**99.1**
	175	1021.53	0.62	277	48	82	80	1.6	7.0		16.52	**99.5**
	180	1025.08										**101.0**

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 2
Test No.:	1 - SVOC
Date:	November 1, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.84
DGM CORRECTION FACTOR	0.978
NOZZLE DIAMETER	6.53 mm
DRY REF GAS VOLUME SAMPLED	5.662 m^3
AVGERGE ISOKINETICITY	97.4 %
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	171.0 °C
AVERAGE GAS MOISTURE BY VOLUME	15.5 %
AVERAGE GAS VELOCITY	18.09 m/s
BAROMETRIC PRESSURE (Station)	99.797 Kpa
STATIC PRESSURE	-0.622 Kpa
ABSOLUTE GAS PRESSURE	99.174 Kpa
OXYGEN CONCENTRATION	8.05 %
CARBON DIOXIDE CONCENTRATION	10.24 %
CARBON MONOXIDE CONCENTRATION	17.9 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	26.73 m^3/s
DRY REF GAS FLOWRATE	14.84 Rm^3/s
DRY ADJ GAS FLOWRATE	19.27 Rm^3/s
WET REF GAS FLOWRATE	17.57 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.662 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:	November 1, 2016	**Operator:**	TT

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.47 "Hg	**CWTR (g)**	738.1
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	23.4
Nozzle	0.2571 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.44 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.05
CO2%	10.24
COppm	17.9

Measured H2O
15.5 %

Point	Time	DGM Reading	ΔP "H2O	Temperatures: Stack °F	Temperatures: Imp. Out °F	Temperatures: DGM Out °F	Temperatures: DGM In °F	ΔH "H2O	Vacuum "Hg	Leak Check Volume	Velocity m/s	Isokinetic %
1	0	17.74	0.64	336	75	76	76	1.5	5.0		17.16	
	4	20.57	0.65	337	55	77	79	1.4	5.5		17.30	100.9
	8	23.28	0.63	337	52	77	80	1.4	5.5		17.03	95.5
2	12	26.00	0.67	337	51	77	82	1.5	6.5		17.57	97.3
	16	28.81	0.71	338	50	78	83	1.6	7.0		18.09	97.3
	20	31.68	0.73	338	50	79	85	1.7	8.0		18.35	96.5
3	24	34.66	0.73	339	50	79	86	1.7	8.0		18.36	98.5
	28	37.66	0.72	339	50	80	87	1.65	8.0		18.23	99.2
	32	40.62	0.73	339	50	81	88	1.7	9.0		18.36	98.3
4	36	43.60	0.73	338	50	81	89	1.7	9.0		18.35	98.1
	40	46.62	0.72	338	50	82	90	1.7	9.5		18.22	99.3
	44	49.60	0.74	338	50	82	90	1.75	10.0		18.47	98.5
5	48	52.61	0.72	338	50	83	91	1.7	10.0		18.22	98.1
	52	55.59	0.73	338	50	83	91	1.7	11.0		18.35	98.3
	56	58.60	0.72	339	50	84	92	1.7	11.0		18.23	98.6
6	60	61.59	0.72	339	50	84	92	1.7	11.0		18.23	98.5
	64	64.55	0.71	338	50	84	92	1.65	12.0		18.09	97.5
	68	67.46	0.73	338	51	85	92	1.7	12.5		18.35	96.5
	72	70.40								0.71		96.0
1	0	71.11	0.8	335	76	83	85	1.9	7.5		19.17	
	4	74.32	0.81	339	54	83	85	1.85	7.5		19.34	100.9
	8	77.48	0.82	339	52	83	88	1.9	8.0		19.46	98.9
2	12	80.63	0.85	339	52	83	89	1.9	8.5		19.81	97.7
	16	83.83	0.87	339	51	83	90	1.95	9.5		20.04	97.4
	20	87.09	0.88	340	50	84	91	2	10.0		20.17	98.0
3	24	90.38	0.89	340	50	84	92	2	10.5		20.28	98.3
	28	93.64	0.9	341	51	85	93	2.05	11.0		20.41	96.7
	32	96.97	0.9	341	50	85	94	2.05	11.5		20.41	98.2
4	36	100.27	0.92	341	50	86	94	2.1	12.5		20.64	97.2
	40	103.62	0.92	342	50	86	95	2.1	12.5		20.65	97.5
	44	106.98	0.98	341	50	87	95	2.1	12.5		21.30	97.8
5	48	110.16	0.83	342	51	87	95	1.9	13.0		19.61	89.5

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	November 1, 2016	**Operator:**	TT

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.47 "Hg	**CWTR (g)**	738.1
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	23.4
Nozzle	0.2571 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.44 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.05
CO2%	10.24
COppm	17.9

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 %
	52	113.35	0.82	340	51	89	96	1.9	13.0		19.47	97.6
	56	116.53	0.82	340	51	88	96	1.9	13.0		19.47	97.5
6	60	119.64	0.65	340	52	88	96	1.6	12.5		17.33	95.4
	64	122.59	0.61	340	52	88	96	1.45	11.0		16.79	101.6
	68	125.39	0.62	340	53	89	96	1.45	11.0		16.93	99.5
	72	128.14								0.37		96.8
1	0	128.51	0.53	341	72	88	90	1.25	6.0		15.66	
	4	131.06	0.51	342	58	87	91	1.2	5.5		15.37	97.8
	8	133.55	0.51	342	56	87	92	1.2	6.0		15.37	97.4
2	12	136.05	0.5	342	55	87	93	1.2	6.5		15.22	97.7
	16	138.58	0.5	341	55	87	94	1.2	6.5		15.21	99.7
	20	141.08	0.51	341	55	87	94	1.2	7.0		15.36	98.4
3	24	143.58	0.51	341	55	88	95	1.25	7.0		15.36	97.4
	28	146.11	0.51	341	55	88	95	1.25	7.0		15.36	98.4
	32	148.62	0.51	341	55	88	95	1.25	8.0		15.36	97.6
4	36	151.15	0.51	341	55	88	95	1.25	8.0		15.36	98.4
	40	153.71	0.51	340	55	88	96	1.25	8.5		15.35	99.6
	44	156.27	0.51	340	55	89	96	1.25	8.5		15.35	99.4
5	48	158.80	0.51	341	56	89	97	1.25	9.0		15.36	98.2
	52	161.32	0.51	341	56	89	97	1.25	9.0		15.36	97.8
	56	163.89	0.51	340	56	89	97	1.25	9.5		15.35	99.7
6	60	166.32	0.52	341	55	89	97	1.25	10.0		15.51	94.2
	64	168.85	0.52	342	55	89	97	1.25	10.0		15.52	97.2
	68	171.38	0.52	342	56	89	97	1.25	10.0		15.52	97.3
	72	173.86								0.36		95.3
1	0	174.22	0.82	338	76	88	91	1.95	8.0		19.44	
	4	177.49	0.82	342	54	89	93	1.95	9.0		19.49	100.7
	8	180.71	0.8	341	53	89	95	1.95	9.0		19.24	99.1
2	12	183.87	0.85	341	53	88	96	2	10.0		19.83	98.2
	16	187.16	0.84	341	53	88	96	2	10.0		19.72	99.2
	20	190.41	0.85	341	53	89	97	2	11.0		19.83	98.6
3	24	193.70	0.86	340	53	88	97	2	12.0		19.94	99.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	1 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	November 1, 2016	**Operator:**	TT

Pitot Factor	0.84	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.47 "Hg	**CWTR (g)**	738.1
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	23.4
Nozzle	0.2571 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	1.44 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.05
CO2%	10.24
COppm	17.9

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 %
	28	196.99	0.87	340	54	88	97	2	12.5		20.05	98.5
	32	200.32	0.87	340	54	89	97	2	12.5		20.05	99.1
4	36	203.58	0.88	340	54	89	96	1.9	13.0		20.17	97.0
	40	206.79	0.88	339	54	89	96	1.9	13.0		20.16	95.0
	44	209.93	0.88	340	55	89	96	1.8	13.5		20.17	92.9
5	48	213.01	0.81	340	55	90	97	1.7	13.5		19.35	91.1
	52	216.01	0.8	340	56	90	97	1.7	14.0		19.23	92.3
	56	219.00	0.81	340	56	90	98	1.7	14.0		19.35	92.6
6	60	221.94	0.67	340	56	91	98	1.55	14.0		17.60	90.4
	64	224.84	0.69	340	56	91	98	1.5	14.0		17.86	97.9
	68	227.69	0.68	340	57	91	98	1.45	14.0		17.73	94.8
	72	230.50										94.1

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 2
Test No.:	2 - SVOC
Date:	November 2, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846	
DGM CORRECTION FACTOR	0.978	
NOZZLE DIAMETER	6.15	mm
DRY REF GAS VOLUME SAMPLED	5.297	m^3
AVGERGE ISOKINETICITY	98.9	%
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	168.8	°C
AVERAGE GAS MOISTURE BY VOLUME	15.1	%
AVERAGE GAS VELOCITY	18.50	m/s
BAROMETRIC PRESSURE (Station)	100.440	Kpa
STATIC PRESSURE	-0.622	Kpa
ABSOLUTE GAS PRESSURE	99.818	Kpa
OXYGEN CONCENTRATION	8.08	%
CARBON DIOXIDE CONCENTRATION	10.24	%
CARBON MONOXIDE CONCENTRATION	17.7	ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.34	m^3/s
DRY REF GAS FLOWRATE	15.42	Rm^3/s
DRY ADJ GAS FLOWRATE	19.97	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		5.297	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:	November 2, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.66 "Hg	**CWTR (g)**	681.9
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	11.9
Nozzle	0.242 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	2.76 ft³
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.08
CO2%	10.24
COppm	17.7

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	31.43	0.67	335	85	85	86	1.3	2.0		17.60	
	4	34.05	0.65	335	75	84	86	1.2	2.0		17.33	100.4
	8	36.56	0.65	334	67	85	88	1.2	3.0		17.32	97.7
2	12	39.12	0.72	335	59	85	89	1.35	3.5		18.24	99.3
	16	41.82	0.71	335	56	86	91	1.35	3.5		18.12	99.5
	20	44.49	0.7	335	54	86	92	1.3	3.5		17.99	98.8
3	24	47.12	0.75	335	52	87	93	1.4	4.0		18.62	97.9
	28	49.83	0.77	336	52	87	94	1.5	5.0		18.88	97.3
	32	52.67	0.79	336	51	88	95	1.5	5.0		19.12	100.7
4	36	55.50	0.77	335	51	89	96	1.45	5.0		18.87	98.9
	40	58.26	0.79	335	51	89	96	1.5	5.5		19.11	97.4
	44	61.07	0.77	335	51	90	97	1.45	6.0		18.87	97.9
5	48	63.89	0.71	335	51	91	97	1.4	6.0		18.12	99.4
	52	66.64	0.72	334	51	91	97	1.4	6.0		18.23	100.8
	56	69.35	0.73	334	52	92	98	1.4	6.0		18.36	98.6
6	60	72.08	0.74	334	52	92	98	1.4	9.0		18.48	98.4
	64	74.75	0.73	334	51	92	99	1.4	14.0		18.36	95.6
	68	77.38	0.73	335	50	92	99	1.35	14.5		18.37	94.8
	72	80.06								0.35		96.6
1	0	80.41	0.84	335	69	91	93	1.6	4.0		19.71	
	4	83.36	0.84	335	51	91	94	1.6	4.0		19.71	99.8
	8	86.29	0.84	335	50	91	96	1.6	4.5		19.71	99.1
2	12	89.24	0.88	335	49	91	97	1.7	5.0		20.17	99.5
	16	92.25	0.88	336	49	91	98	1.7	5.5		20.18	99.2
	20	95.26	0.88	336	50	92	99	1.7	5.5		20.18	99.1
3	24	98.29	0.88	336	50	92	100	1.7	6.0		20.18	99.6
	28	101.34	0.89	336	50	93	101	1.7	6.0		20.30	100.2
	32	104.35	0.89	335	50	93	101	1.7	6.5		20.28	98.1
4	36	107.41	0.89	335	49	93	102	1.7	7.0		20.28	99.7
	40	110.44	0.9	335	49	94	102	1.75	8.0		20.40	98.6
	44	113.51	0.9	335	49	94	102	1.75	8.0		20.40	99.3
5	48	116.61	0.79	335	49	94	103	1.6	7.5		19.11	100.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	November 2, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.66 "Hg	**CWTR (g)**	681.9
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	11.9
Nozzle	0.242 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	2.76 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.08
CO2%	10.24
COppm	17.7

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 %
	52	119.55	0.8	335	50	94	103	1.6	7.5		19.23	101.4
	56	122.46	0.78	334	49	94	103	1.6	8.0		18.98	99.7
6	60	125.39	0.77	332	50	94	103	1.5	8.0		18.83	101.6
	64	128.26	0.78	334	50	94	103	1.5	8.0		18.98	100.0
	68	131.08	0.78	334	50	95	102	1.5	8.5		18.98	97.8
	72	133.93								0.36		98.8
1	0	134.29	0.6	337	79	93	95	1.15	3.0		16.67	
	4	136.75	0.6	337	50	92	95	1.15	3.0		16.67	98.1
	8	139.17	0.6	336	49	92	96	1.2	4.0		16.66	96.6
2	12	141.71	0.61	336	49	92	97	1.2	4.0		16.80	101.3
	16	144.24	0.64	337	49	92	98	1.3	4.5		17.22	100.0
	20	146.80	0.62	336	49	92	98	1.25	4.5		16.94	98.8
3	24	149.35	0.65	336	49	92	99	1.3	5.0		17.34	99.9
	28	151.99	0.64	336	50	92	99	1.3	5.0		17.21	100.9
	32	154.56	0.65	337	50	93	100	1.2	5.0		17.36	99.0
4	36	157.05	0.64	337	50	93	100	1.25	5.5		17.22	95.0
	40	159.57	0.63	337	50	93	101	1.25	5.5		17.09	96.9
	44	162.12	0.64	337	51	93	101	1.25	5.5		17.22	98.8
5	48	164.67	0.63	337	51	93	101	1.25	6.0		17.09	98.0
	52	167.17	0.6	337	51	94	101	1.2	6.0		16.67	96.8
	56	169.65	0.61	337	51	94	101	1.2	6.2		16.81	98.3
6	60	172.12	0.65	337	51	94	102	1.3	7.0		17.36	97.1
	64	174.73	0.65	337	51	95	102	1.3	7.5		17.36	99.4
	68	177.32	0.66	337	51	95	102	1.3	8.0		17.49	98.5
	72	179.94								2.05		98.9
1	0	181.99	0.83	337	81	92	94	1.6	4.0		19.61	
	4	184.95	0.83	337	49	92	95	1.55	4.0		19.61	100.7
	8	187.83	0.84	337	48	92	97	1.6	5.0		19.73	97.9
2	12	190.76	0.84	337	49	92	98	1.6	5.0		19.73	98.8
	16	193.69	0.85	337	49	92	99	1.6	5.0		19.85	98.7
	20	196.62	0.85	337	49	92	99	1.6	5.0		19.85	98.1
3	24	199.55	0.84	336	50	93	101	1.65	6.0		19.72	98.1

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	2 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	November 2, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.66 "Hg	**CWTR (g)**	681.9
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	11.9
Nozzle	0.242 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	2.76 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	8.08
CO2%	10.24
COppm	17.7

Measured H2O
15.1 %

				Temperatures								
Point	**Time**	**DGM Reading**	**ΔP "H2O**	**Stack °F**	**Imp. Out °F**	**DGM Out °F**	**DGM In °F**	**ΔH "H2O**	**Vacuum "Hg**	**Leak Check Volume**	**Velocity m/s**	**Isokinetic %**
	28	202.55	0.84	336	50	94	101	1.65	6.0		19.72	100.7
	32	205.50	0.88	336	51	94	102	1.75	7.5		20.18	98.9
4	36	208.58	0.87	338	51	94	102	1.7	7.5		20.09	100.8
	40	211.63	0.83	338	51	94	103	1.6	8.0		19.62	100.5
	44	214.58	0.83	338	51	95	103	1.6	8.0		19.62	99.4
5	48	217.53	0.83	338	51	95	103	1.6	8.0		19.62	99.3
	52	220.44	0.68	337	51	95	103	1.35	8.0		17.75	98.0
	56	223.14	0.68	337	52	95	103	1.35	8.0		17.75	100.3
6	60	225.82	0.52	337	52	95	103	1	7.0		15.52	99.6
	64	228.15	0.54	337	52	96	103	1.05	7.5		15.82	98.9
	68	230.51	0.53	337	52	96	103	1.05	7.5		15.67	98.2
	72	232.86										98.8

ORTECH Environmental

Plant:	Covanta DYEC
Plant Location:	Courtice, ON
Test Location:	Quench Inlet Unit 2
Test No.:	3 - SVOC
Date:	November 3, 2016

STACK GAS SAMPLING PARAMETERS

PITOT TUBE COEFFICIENT	0.846
DGM CORRECTION FACTOR	0.978
NOZZLE DIAMETER	6.15 mm
DRY REF GAS VOLUME SAMPLED	5.286 m^3
AVGERGE ISOKINETICITY	98.9 %
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	168.4 °C
AVERAGE GAS MOISTURE BY VOLUME	14.8 %
AVERAGE GAS VELOCITY	18.47 m/s
BAROMETRIC PRESSURE (Station)	100.034 Kpa
STATIC PRESSURE	-0.622 Kpa
ABSOLUTE GAS PRESSURE	99.411 Kpa
OXYGEN CONCENTRATION	7.89 %
CARBON DIOXIDE CONCENTRATION	10.41 %
CARBON MONOXIDE CONCENTRATION	23.3 ppm

FLOWRATE

ACTUAL GAS FLOWRATE	27.29 m^3/s
DRY REF GAS FLOWRATE	15.39 Rm^3/s
DRY ADJ GAS FLOWRATE	20.23 Rm^3/s
WET REF GAS FLOWRATE	18.08 Rm^3/s

PARTICULATE EMISSION DATA

PARTICULATE COLLECTED	-PROBE	0 mg
	-FILTER	0 mg
	-TOTAL	0 mg
DRY REF GAS VOLUME SAMPLED		5.286 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:	November 3, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	654
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	22.9
Nozzle	0.242 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.95 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	7.89
CO2%	10.41
COppm	23.3

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	33.42	0.64	335	79	79	80	1.15	5.0		17.22	
	4	35.89	0.61	335	60	79	81	1.1	5.5		16.81	97.4
	8	38.33	0.61	335	57	80	82	1.1	5.5		16.81	98.5
2	12	40.77	0.61	334	54	80	84	1.1	5.5		16.80	98.3
	16	43.23	0.7	335	53	80	85	1.3	7.0		18.01	98.9
	20	45.87	0.76	335	51	81	86	1.4	8.5		18.76	99.1
3	24	48.63	0.78	335	51	81	87	1.45	9.0		19.01	99.2
	28	51.43	0.8	335	51	82	88	1.5	10.0		19.25	99.3
	32	54.29	0.8	336	51	82	89	1.5	10.0		19.26	100.0
4	36	57.14	0.78	335	51	83	90	1.45	10.0		19.01	99.6
	40	59.95	0.8	336	51	84	90	1.5	11.0		19.26	99.2
	44	62.82	0.79	335	51	84	91	1.5	11.0		19.13	100.0
5	48	65.70	0.78	335	52	85	92	1.45	11.0		19.01	100.8
	52	68.53	0.77	335	52	85	92	1.45	11.0		18.89	99.5
	56	71.33	0.75	335	52	86	92	1.4	11.5		18.64	99.1
6	60	74.10	0.79	335	53	86	93	1.5	12.5		19.13	99.2
	64	76.92	0.79	336	53	87	93	1.5	12.5		19.14	98.4
	68	79.75	0.79	335	53	87	93	1.5	13.5		19.13	98.7
	72	82.56								0.3		97.9
1	0	82.86	0.91	336	73	85	87	1.7	9.0		20.55	
	4	85.91	0.87	336	50	85	88	1.65	9.5		20.09	99.9
	8	88.98	0.87	336	50	85	88	1.65	9.5		20.09	102.7
2	12	91.90	0.88	335	48	85	91	1.7	10.0		20.19	97.7
	16	94.94	0.91	335	47	85	92	1.7	10.0		20.53	100.8
	20	97.95	0.87	334	47	86	92	1.65	10.5		20.06	98.1
3	24	100.93	0.87	334	47	86	93	1.65	10.5		20.06	99.1
	28	103.88	0.88	334	47	86	93	1.65	10.5		20.18	98.0
	32	106.85	0.89	335	47	86	93	1.65	11.0		20.31	98.1
4	36	109.80	0.8	334	47	87	94	1.5	11.0		19.24	97.0
	40	112.68	0.8	335	47	87	94	1.5	11.0		19.25	99.6
	44	115.51	0.81	334	48	87	94	1.5	11.5		19.36	97.9
5	48	118.37	0.77	333	48	87	95	1.4	11.5		18.86	98.3

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	November 3, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	654
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	22.9
Nozzle	0.242 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.95 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	7.89
CO2%	10.41
COppm	23.3

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 %
	52	121.17	0.76	334	48	88	95	1.4	11.5		18.75	98.5
	56	123.93	0.76	334	49	83	95	1.4	11.5		18.75	97.7
6	60	126.74	0.66	332	49	88	95	1.3	11.5		17.45	99.9
	64	129.48	0.66	332	49	88	95	1.3	11.5		17.45	103.9
	68	132.13	0.66	332	50	88	95	1.2	11.0		17.45	100.5
	72	134.69								0.31		97.1
1	0	135.00	0.6	336	73	86	88	1.1	6.0		16.68	
	4	137.38	0.6	336	54	85	87	1.15	7.0		16.68	95.7
	8	139.80	0.61	336	52	84	88	1.15	7.0		16.82	97.5
2	12	142.27	0.65	336	51	84	89	1.2	8.0		17.36	98.7
	16	144.82	0.63	336	51	85	90	1.2	8.0		17.10	98.6
	20	147.37	0.65	337	51	85	91	1.2	8.0		17.38	100.0
3	24	149.92	0.67	336	51	85	91	1.3	9.5		17.63	98.4
	28	152.56	0.66	336	51	85	92	1.25	9.5		17.50	100.3
	32	155.14	0.65	336	51	86	93	1.2	9.0		17.36	98.6
4	36	157.73	0.65	337	51	86	93	1.2	9.0		17.38	99.6
	40	160.18	0.64	337	51	86	93	1.3	10.0		17.24	94.3
	44	162.78	0.64	336	51	86	93	1.25	10.0		17.23	100.8
5	48	165.38	0.61	336	51	86	93	1.15	10.5		16.82	100.8
	52	167.84	0.61	337	52	86	93	1.15	10.5		16.83	97.6
	56	170.31	0.6	336	52	86	94	1.15	10.5		16.68	98.1
6	60	172.78	0.58	335	52	87	94	1.1	11.0		16.39	98.8
	64	175.23	0.59	335	52	87	94	1.1	11.0		16.53	99.5
	68	177.69	0.6	336	53	87	94	1.1	12.0		16.68	99.0
	72	180.14								0.34		97.9
1	0	180.48	0.84	337	72	87	89	1.6	9.5		19.75	
	4	183.42	0.84	338	50	87	91	1.6	9.5		19.76	99.9
	8	186.37	0.85	337	49	87	92	1.6	10.0		19.87	100.1
2	12	189.29	0.89	337	48	87	93	1.75	11.5		20.33	98.3
	16	192.40	0.86	337	48	87	94	1.6	11.5		19.99	102.3
	20	195.38	0.87	336	48	87	94	1.6	11.5		20.09	99.6
3	24	198.32	0.87	335	49	87	94	1.6	11.5		20.08	97.6

ORTECH Environmental

Plant:	Covanta DYEC	**Plant Location:**	Courtice, ON
Test No.:	3 - SVOC	**Test Location:**	Quench Inlet Unit 2
Date:	November 3, 2016	**Operator:**	TT

Pitot Factor	0.846	**Filter (mg)**	0
DGMCF	0.978	**Probe (mg)**	0
Barometric Pressure	29.54 "Hg	**CWTR (g)**	654
Static Pressure	-2.500 "H_2O	**WCBDA (g)**	22.9
Nozzle	0.242 inches		
Stack Diameter	4.500 ft	**Leak Check Volume**	0.95 ft^3
Length	0.000 ft	**Reading Interval**	4 minutes
Width	0.000 ft	**Number of Ports**	4
		Number of points / Port	6

Combustion Gases	
O2%	7.89
CO2%	10.41
COppm	23.3

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 %
	28	201.26	0.87	335	49	87	95	1.6	12.0		20.08	97.6
	32	204.20	0.86	335	49	87	95	1.65	14.0		19.96	97.5
4	36	207.12	0.84	335	49	87	95	1.6	14.0		19.73	97.4
	40	210.00	0.84	335	50	88	95	1.6	14.0		19.73	97.2
	44	213.10	0.84	335	50	88	95	1.5	14.0		19.73	104.5
5	48	216.00	0.83	335	50	88	95	1.5	14.0		19.61	97.8
	52	218.78	0.64	334	50	88	95	1.2	12.0		17.21	94.3
	56	221.34	0.64	335	51	88	95	1.2	12.0		17.22	98.7
6	60	223.87	0.56	333	51	88	95	1.05	11.0		16.09	97.6
	64	226.26	0.56	334	51	88	95	1.05	11.0		16.10	98.4
	68	228.64	0.57	334	51	88	96	1.1	12.0		16.24	98.1
	72	231.06										98.8

APPENDIX 32

ORTECH Total Hydrocarbon CEM Data
(4 pages)

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 Quench Inlet
October 25, 2016

	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	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
08:00	7.0		09:10	0.0		10:20	0.6	
08:01	2.6		09:11	5.5		10:21	10.5	
08:02	11.3		09:12	9.3		10:22	0.1	
08:03	0.9		09:13	3.0		10:23	1.6	
08:04	7.3		09:14	10.6		10:24	7.2	
08:05	1.4		09:15	1.1		10:25	0.0	
08:06	1.1		09:16	6.2		10:26	8.3	
08:07	10.6		09:17	7.1		10:27	2.5	
08:08	1.6		09:18	0.9		10:28	0.5	
08:09	4.7	4.8	09:19	11.0	5.5	10:29	9.8	4.1
08:10	4.4	4.6	09:20	0.9	5.6	10:30	0.0	4.1
08:11	1.9	4.5	09:21	4.9	5.5	10:31	5.8	3.6
08:12	6.7	4.1	09:22	6.4	5.2	10:32	7.8	4.4
08:13	0.4	4.0	09:23	1.9	5.1	10:33	0.0	4.2
08:14	8.6	4.1	09:24	10.6	5.1	10:34	7.0	4.2
08:15	4.0	4.4	09:25	1.1	5.1	10:35	0.9	4.3
08:16	4.1	4.7	09:26	5.1	5.0	10:36	0.0	3.4
08:17	8.8	4.5	09:27	3.2	4.6	10:37	7.0	3.9
08:18	1.6	4.5	09:28	1.7	4.7	10:38	0.0	3.8
08:19	9.8	5.0	09:29	8.5	4.4	10:39	3.1	3.1
08:20	3.0	4.9	09:30	0.0	4.3	10:40	4.6	3.6
08:21	4.5	5.1	09:31	7.7	4.6	10:41	0.0	3.0
08:22	8.9	5.4	09:32	0.1	4.0	10:42	8.3	3.1
08:23	1.6	5.5	09:33	2.9	4.1	10:43	1.8	3.3
08:24	12.0	5.8	09:34	6.5	3.7	10:44	2.0	2.8
08:25	6.2	6.0	09:35	0.0	3.6	10:45	6.7	3.3
08:26	5.2	6.2	09:36	6.7	3.7	10:46	0.0	3.3
08:27	12.8	6.6	09:37	0.0	3.4	10:47	6.5	3.3
08:28	3.2	6.7	09:38	3.1	3.6	10:48	2.7	3.6
08:29	9.9	6.7	09:39	2.8	3.0	10:49	0.0	3.3
08:30	5.7	7.0	09:40	0.0	3.0	10:50	8.0	3.6
08:31	8.2	7.4	09:41	3.8	2.6	10:51	0.0	3.6
08:32	10.1	7.5	09:42	0.0	2.6	10:52	3.9	3.2
08:33	4.6	7.8	09:43	5.7	2.9	10:53	6.9	3.7
08:34	12.8	7.9	09:44	0.6	2.3	10:54	0.0	3.5
08:35	4.7	7.7	09:45	0.0	2.3	10:55	6.1	3.4
08:36	8.7	8.1	09:46	3.6	2.0	10:56	0.3	3.4
08:37	10.9	7.9	09:47	0.0	2.0	10:57	0.0	2.8
08:38	6.0	8.2	09:48	6.9	2.3	10:58	7.3	3.2
08:39	14.6	8.6	09:49	0.0	2.1	10:59	0.0	3.2
08:40	6.1	8.7	09:50	0.1	2.1	11:00	2.4	2.7
08:41	10.9	8.9	09:51	2.3	1.9	11:01	3.8	3.1
08:42	9.7	8.9	09:52	0.0	1.9	11:02	0.0	2.7
08:43	4.2	8.9	09:53	8.9	2.2	11:03	5.6	2.5
08:44	11.5	8.7	09:54	0.0	2.2	11:04	0.0	2.5
08:45	3.4	8.6	09:55	1.8	2.4	11:05	0.0	1.9
08:46	10.8	8.8	09:56	6.9	2.7	11:06	5.2	2.4
08:47	11.5	8.9	09:57	0.0	2.7	11:07	0.0	2.4
08:48	3.6	8.6	09:58	6.8	2.7	11:08	7.0	2.4
08:49	13.1	8.5	09:59	1.4	2.8	11:09	1.1	2.5
08:50	5.6	8.4	10:00	2.6	3.1	11:10	3.5	2.6
08:51	8.1	8.1	10:01	6.7	3.5	11:11	9.4	3.2
08:52	8.4	8.0	10:02	0.0	3.5	11:12	2.0	3.4
08:53	3.6	8.0	10:03	8.4	3.5	11:13	8.1	3.6
08:54	11.0	7.9	10:04	0.3	3.5	11:14	2.2	3.9
08:55	2.7	7.8	10:05	0.8	3.4	11:15	5.5	4.4
08:56	7.9	7.5	10:06	6.8	3.4	11:16	7.9	4.7
08:57	6.9	7.1	10:07	0.0	3.4	11:17	0.0	4.7
08:58	2.4	7.0	10:08	7.0	3.4	11:18	9.4	4.9
08:59	11.4	6.8	10:09	2.2	3.5	11:19	2.8	5.1
09:00	2.1	6.4	10:10	1.4	3.4	11:20	1.6	4.9

Min	0.4	4.0	Min	0.0	1.9	Min	0.0	1.9
Max	14.6	8.9	Max	11.0	5.6	Max	10.5	5.1
Avg	6.7	6.9	Avg	3.5	3.4	Avg	3.5	3.5

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 1 BH Outlet
October 26, 2016

	Test No. 1			Test No. 2			Test No. 3	
Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry	Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
09:45	1.2		10:53	2.6		12:00	1.9	
09:46	3.3		10:54	3.6		12:01	0.9	
09:47	2.0		10:55	3.3		12:02	1.6	
09:48	3.0		10:56	2.2		12:03	1.7	
09:49	2.9		10:57	3.6		12:04	2.0	
09:50	1.8		10:58	3.1		12:05	0.1	
09:51	2.7		10:59	2.8		12:06	1.4	
09:52	2.6		11:00	2.4		12:07	1.8	
09:53	1.7		11:01	2.0		12:08	0.6	
09:54	2.3	2.4	11:02	3.3	2.9	12:09	1.8	1.4
09:55	2.3	2.5	11:03	3.3	3.0	12:10	3.4	1.5
09:56	1.6	2.3	11:04	2.6	2.9	12:11	2.9	1.7
09:57	2.7	2.4	11:05	2.6	2.8	12:12	3.9	2.0
09:58	1.5	2.2	11:06	2.3	2.8	12:13	4.0	2.2
09:59	1.4	2.1	11:07	2.4	2.7	12:14	3.9	2.4
10:00	2.9	2.2	11:08	3.0	2.7	12:15	4.3	2.8
10:01	0.9	2.0	11:09	2.3	2.6	12:16	2.4	2.9
10:02	0.9	1.8	11:10	3.2	2.7	12:17	1.6	2.9
10:03	1.1	1.8	11:11	2.4	2.7	12:18	1.4	3.0
10:04	0.4	1.6	11:12	2.6	2.7	12:19	0.9	2.9
10:05	0.5	1.4	11:13	2.3	2.6	12:20	0.7	2.6
10:06	1.3	1.4	11:14	2.5	2.6	12:21	1.6	2.5
10:07	0.8	1.2	11:15	2.0	2.5	12:22	1.0	2.2
10:08	0.1	1.0	11:16	2.1	2.5	12:23	0.5	1.8
10:09	1.3	1.0	11:17	1.8	2.4	12:24	1.5	1.6
10:10	0.4	0.8	11:18	1.6	2.3	12:25	1.3	1.3
10:11	0.7	0.7	11:19	2.2	2.3	12:26	1.5	1.2
10:12	1.1	0.8	11:20	2.3	2.2	12:27	1.4	1.2
10:13	0.1	0.7	11:21	2.0	2.1	12:28	0.9	1.1
10:14	0.6	0.7	11:22	2.1	2.1	12:29	1.0	1.1
10:15	0.5	0.7	11:23	2.3	2.1	12:30	1.2	1.2
10:16	0.5	0.6	11:24	1.9	2.0	12:31	0.7	1.1
10:17	0.5	0.6	11:25	2.8	2.1	12:32	0.3	1.0
10:18	0.1	0.6	11:26	1.9	2.1	12:33	1.0	1.1
10:19	0.4	0.5	11:27	2.7	2.2	12:34	1.3	1.1
10:20	0.6	0.5	11:28	1.9	2.2	12:35	0.7	1.0
10:21	0.9	0.5	11:29	1.4	2.1	12:36	1.2	1.0
10:22	0.3	0.5	11:30	1.7	2.1	12:37	0.6	0.9
10:23	0.6	0.5	11:31	2.0	2.1	12:38	0.6	0.9
10:24	0.1	0.5	11:32	2.4	2.1	12:39	0.6	0.8
10:25	0.6	0.5	11:33	2.0	2.1	12:40	0.7	0.8
10:26	0.4	0.4	11:34	1.5	2.0	12:41	0.9	0.8
10:27	1.2	0.5	11:35	2.0	2.0	12:42	1.0	0.9
10:28	0.0	0.5	11:36	0.5	1.8	12:43	1.2	0.9
10:29	0.5	0.5	11:37	2.1	1.8	12:44	0.5	0.8
10:30	0.0	0.5	11:38	1.9	1.8	12:45	1.2	0.9
10:31	0.0	0.4	11:39	1.4	1.7	12:46	0.8	0.8
10:32	0.0	0.3	11:40	1.9	1.8	12:47	1.3	0.9
10:33	0.2	0.3	11:41	1.8	1.7	12:48	0.6	0.9
10:34	0.0	0.3	11:42	1.7	1.7	12:49	0.8	0.9
10:35	0.0	0.2	11:43	1.4	1.6	12:50	0.0	0.8
10:36	0.0	0.2	11:44	1.1	1.6	12:51	1.2	0.9
10:37	0.1	0.1	11:45	1.8	1.6	12:52	0.8	0.8
10:38	0.6	0.1	11:46	1.8	1.7	12:53	1.8	0.9
10:39	0.0	0.1	11:47	1.6	1.6	12:54	1.3	1.0
10:40	0.0	0.1	11:48	1.4	1.6	12:55	0.0	0.9
10:41	0.6	0.1	11:49	1.2	1.6	12:56	1.1	0.9
10:42	0.1	0.1	11:50	1.9	1.6	12:57	0.6	0.8
10:43	0.0	0.1	11:51	1.4	1.5	12:58	0.0	0.8
10:44	0.0	0.1	11:52	1.6	1.5	12:59	1.4	0.8
10:45	0.0	0.1	11:53	2.0	1.6	13:00	0.8	0.9

Min	0.0	0.1	Min	0.5	1.5	Min	0.0	0.8
Max	3.3	2.5	Max	3.6	3.0	Max	4.3	3.0
Avg	0.9	0.8	Avg	2.2	2.1	Avg	1.3	1.3

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 Quench Inlet
October 25, 2016

	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	Time	ppm, dry	ppm, dry	Time	ppm, dry	ppm, dry
12:40	6.8		13:52	4.0		15:15	2.6	
12:41	6.3		13:53	4.3		15:16	2.5	
12:42	6.3		13:54	3.5		15:17	2.4	
12:43	6.1		13:55	4.2		15:18	2.7	
12:44	5.8		13:56	3.9		15:19	2.3	
12:45	5.7		13:57	4.1		15:20	2.1	
12:46	5.5		13:58	3.7		15:21	2.4	
12:47	5.0		13:59	3.6		15:22	2.1	
12:48	4.7		14:00	3.4		15:23	2.1	
12:49	6.1	5.8	14:01	3.1	3.8	15:24	1.9	2.3
12:50	6.4	5.8	14:02	3.2	3.7	15:25	2.5	2.3
12:51	5.6	5.7	14:03	3.0	3.6	15:26	2.5	2.3
12:52	4.9	5.6	14:04	3.2	3.5	15:27	2.4	2.3
12:53	4.2	5.4	14:05	3.2	3.4	15:28	2.5	2.3
12:54	4.1	5.2	14:06	3.2	3.4	15:29	2.0	2.2
12:55	4.1	5.1	14:07	3.2	3.3	15:30	2.1	2.2
12:56	3.9	4.9	14:08	3.2	3.2	15:31	2.1	2.2
12:57	3.5	4.7	14:09	2.8	3.1	15:32	1.9	2.2
12:58	3.4	4.6	14:10	3.0	3.1	15:33	1.9	2.2
12:59	3.2	4.3	14:11	3.2	3.1	15:34	2.5	2.2
13:00	2.9	4.0	14:12	3.1	3.1	15:35	3.2	2.3
13:01	2.4	3.6	14:13	3.2	3.1	15:36	2.8	2.3
13:02	1.8	3.3	14:14	3.0	3.1	15:37	2.6	2.4
13:03	1.7	3.1	14:15	2.8	3.1	15:38	3.2	2.4
13:04	0.9	2.8	14:16	3.6	3.1	15:39	2.8	2.5
13:05	1.2	2.5	14:17	6.7	3.5	15:40	3.0	2.6
13:06	1.4	2.2	14:18	7.4	3.9	15:41	3.0	2.7
13:07	0.7	2.0	14:19	5.7	4.2	15:42	3.5	2.8
13:08	2.2	1.8	14:20	5.7	4.4	15:43	1.3	2.8
13:09	1.5	1.7	14:21	5.8	4.7	15:44	3.1	2.8
13:10	1.7	1.6	14:22	5.8	5.0	15:45	3.2	2.8
13:11	2.7	1.6	14:23	5.7	5.2	15:46	3.7	2.9
13:12	2.7	1.7	14:24	5.6	5.5	15:47	3.8	3.0
13:13	2.7	1.8	14:25	5.6	5.8	15:48	4.0	3.1
13:14	2.8	2.0	14:26	5.8	6.0	15:49	3.4	3.2
13:15	4.5	2.3	14:27	2.9	5.6	15:50	2.5	3.1
13:16	4.8	2.6	14:28	3.2	5.2	15:51	2.0	3.0
13:17	5.3	3.1	14:29	5.2	5.1	15:52	2.0	2.9
13:18	5.2	3.4	14:30	6.8	5.2	15:53	2.8	3.1
13:19	5.5	3.8	14:31	6.6	5.3	15:54	3.7	3.1
13:20	5.7	4.2	14:32	6.8	5.4	15:55	3.5	3.1
13:21	5.4	4.4	14:33	6.8	5.5	15:56	3.3	3.1
13:22	5.3	4.7	14:34	6.2	5.6	15:57	3.2	3.1
13:23	5.9	5.0	14:35	6.1	5.6	15:58	3.9	3.0
13:24	5.7	5.3	14:36	6.1	5.7	15:59	4.5	3.2
13:25	6.5	5.5	14:37	5.9	6.0	16:00	3.9	3.3
13:26	6.4	5.7	14:38	5.5	6.2	16:01	4.0	3.5
13:27	6.0	5.8	14:39	5.5	6.2	16:02	5.0	3.8
13:28	5.5	5.8	14:40	5.1	6.1	16:03	4.5	4.0
13:29	5.1	5.8	14:41	5.3	5.9	16:04	3.9	4.0
13:30	4.8	5.7	14:42	5.4	5.8	16:05	4.4	4.1
13:31	5.3	5.7	14:43	5.4	5.6	16:06	4.3	4.2
13:32	4.9	5.6	14:44	5.2	5.5	16:07	4.4	4.3
13:33	4.4	5.5	14:45	5.4	5.5	16:08	3.7	4.3
13:34	5.0	5.4	14:46	5.3	5.4	16:09	3.7	4.2
13:35	4.5	5.2	14:47	5.4	5.3	16:10	3.6	4.2
13:36	4.4	5.0	14:48	5.3	5.3	16:11	3.2	4.1
13:37	4.3	4.8	14:49	5.1	5.3	16:12	3.2	3.9
13:38	4.5	4.7	14:50	5.0	5.3	16:13	2.7	3.7
13:39	4.3	4.6	14:51	5.3	5.3	16:14	3.1	3.6
13:40	4.6	4.6	14:52	5.1	5.3	16:15	3.5	3.5

Min	0.7	1.6	Min	2.8	3.1	Min	1.3	2.2
Max	6.8	5.8	Max	7.4	6.2	Max	5.0	4.3
Avg	4.3	4.2	Avg	4.7	4.7	Avg	3.0	3.1

Covanta - Durham York Energy Centre
Total Hydrocarbon Sampling at the Boiler No. 2 BH Outlet
October 26, 2016

Test No. 1

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
15:00	1.9	
15:01	2.2	
15:02	2.3	
15:03	0.7	
15:04	3.5	
15:05	1.1	
15:06	0.9	
15:07	2.6	
15:08	1.2	
15:09	0.8	1.7
15:10	2.5	1.8
15:11	0.4	1.6
15:12	2.2	1.6
15:13	1.5	1.7
15:14	0.0	1.3
15:15	0.9	1.3
15:16	1.5	1.4
15:17	0.0	1.1
15:18	2.0	1.2
15:19	1.4	1.2
15:20	0.7	1.1
15:21	0.6	1.1
15:22	0.8	0.9
15:23	0.7	0.9
15:24	0.7	0.9
15:25	1.5	1.0
15:26	5.9	1.4
15:27	3.8	1.8
15:28	1.8	1.8
15:29	3.7	2.0
15:30	2.3	2.2
15:31	2.5	2.4
15:32	3.8	2.7
15:33	3.0	2.9
15:34	3.8	3.2
15:35	3.4	3.4
15:36	2.0	3.0
15:37	3.1	2.9
15:38	2.2	3.0
15:39	2.9	2.9
15:40	2.9	3.0
15:41	2.9	3.0
15:42	2.3	2.8
15:43	3.1	2.9
15:44	3.0	2.8
15:45	2.5	2.7
15:46	2.7	2.8
15:47	2.2	2.7
15:48	1.5	2.6
15:49	2.3	2.5
15:50	2.2	2.5
15:51	2.1	2.4
15:52	2.8	2.4
15:53	2.4	2.4
15:54	3.3	2.4
15:55	2.5	2.4
15:56	2.4	2.4
15:57	2.0	2.4
15:58	2.2	2.4
15:59	2.3	2.4
16:00	1.9	2.4
Min	0.0	0.9
Max	5.9	3.4
Avg	2.1	2.1

Test No. 2

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
16:05	2.4	
16:06	3.0	
16:07	3.8	
16:08	2.2	
16:09	3.3	
16:10	1.5	
16:11	2.5	
16:12	1.8	
16:13	2.2	
16:14	2.7	2.5
16:15	1.8	2.5
16:16	1.7	2.3
16:17	2.2	2.2
16:18	2.9	2.3
16:19	2.1	2.1
16:20	3.0	2.3
16:21	1.9	2.2
16:22	2.9	2.3
16:23	2.1	2.3
16:24	2.4	2.3
16:25	2.3	2.3
16:26	2.5	2.4
16:27	1.9	2.4
16:28	2.4	2.4
16:29	2.2	2.4
16:30	1.8	2.2
16:31	2.6	2.3
16:32	2.4	2.3
16:33	2.3	2.3
16:34	2.0	2.2
16:35	1.5	2.2
16:36	2.7	2.2
16:37	1.6	2.1
16:38	1.4	2.0
16:39	2.0	2.0
16:40	1.7	2.0
16:41	1.0	1.8
16:42	3.0	1.9
16:43	3.1	2.0
16:44	1.9	2.0
16:45	2.9	2.1
16:46	1.3	2.0
16:47	2.1	2.0
16:48	1.5	2.0
16:49	1.6	2.0
16:50	1.0	1.9
16:51	2.4	2.1
16:52	2.4	2.0
16:53	2.4	1.9
16:54	2.4	2.0
16:55	2.8	2.0
16:56	1.7	2.0
16:57	1.9	2.0
16:58	2.3	2.1
16:59	1.5	2.1
17:00	1.2	2.1
17:01	1.7	2.0
17:02	1.2	1.9
17:03	1.2	1.8
17:04	1.4	1.7
17:05	1.1	1.5
Min	1.0	1.5
Max	3.8	2.5
Avg	2.1	2.1

Test No. 3

Time	THC - 1 min ppm, dry	THC - 10 min Avg ppm, dry
17:10	1.2	
17:11	0.0	
17:12	1.3	
17:13	1.8	
17:14	0.7	
17:15	1.1	
17:16	1.2	
17:17	0.7	
17:18	1.1	
17:19	0.9	1.0
17:20	1.4	1.0
17:21	1.3	1.1
17:22	1.0	1.1
17:23	1.0	1.0
17:24	1.1	1.1
17:25	1.1	1.1
17:26	0.8	1.0
17:27	0.9	1.1
17:28	0.7	1.0
17:29	1.3	1.1
17:30	0.3	1.0
17:31	0.8	0.9
17:32	1.0	0.9
17:33	0.2	0.8
17:34	0.7	0.8
17:35	1.6	0.8
17:36	0.5	0.8
17:37	3.1	1.0
17:38	1.7	1.1
17:39	1.4	1.1
17:40	2.0	1.3
17:41	1.2	1.3
17:42	0.6	1.3
17:43	1.2	1.4
17:44	0.7	1.4
17:45	0.5	1.3
17:46	1.3	1.4
17:47	0.6	1.1
17:48	0.6	1.0
17:49	0.4	0.9
17:50	1.0	0.8
17:51	0.5	0.7
17:52	0.5	0.7
17:53	1.4	0.8
17:54	0.5	0.7
17:55	0.1	0.7
17:56	0.7	0.7
17:57	0.9	0.7
17:58	0.9	0.7
17:59	1.0	0.8
18:00	0.3	0.7
18:01	1.2	0.8
18:02	1.3	0.8
18:03	0.6	0.8
18:04	1.4	0.8
18:05	0.9	0.9
18:06	1.1	1.0
18:07	0.9	1.0
18:08	0.5	0.9
18:09	1.1	0.9
18:10	1.0	1.0
Min	0.0	0.7
Max	3.1	1.4
Avg	1.0	1.0

APPENDIX 33

Dispersion Modelling Results
for the October/November 2016 Testing Program
(19 pages)

TECHNICAL MEMORANDUM

DATE December 21, 2016 **PROJECT No.** 1668367

TO Leon Brasowski
Covanta Energy

CC Anthony Ciccone

FROM Katie Armstrong **EMAIL** ksarmstrong@golder.com

CALPUFF MODELLING FOR NOVEMBER 2016 SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Durham York Renewable Energy LP (DYRE) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, dated June 28, 2011. The 2011 ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (Golder) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment 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 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 results of the modelling updates for November 2016 source testing using the same CALPUFF model and other input data sets used in the ESDM Report but the results are compared to current 2016 O.Reg. 419/05 limits.

2.0 EMISSION RATES

Source testing was completed by Ortech Environmental in November 2016 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 comments from Airzone One on previous modelling completed by Ortech Environmental, and the clarifications provided by the MOECC of December 9, 2016 to these comments, 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 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 30Km 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 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.

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. A revised Exhibit 9 is attached to this memo in Appendix B.

Table 1: 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*
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)

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
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 2, below:

Table 2: 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)	24.07 (UPDATED)	413.5 (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 3, below:

Table 3: Modelling Dispersion Factors

Averaging Period	10-min	½- hr	1-hr	24-hr	30-day	Annual
Dispersion Factor [µg/m³ per g/s]	30.49	22.18	18.48	1.00	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.

Contaminants at the Facility that do not have MOECC POI Limits were screened against the Jurisdictional Screening Limits (JSLs) listed in the MOECC publication "*Jurisdictional Screening Level (JSL) List a Screening Tool for Ontario Regulation 419: Air Pollution – Local Air Quality*" dated February 2008.

For those contaminants that have neither a MOECC POI Limit nor JSL, the *de minimis* limit was used for the assessment.

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 C. It has been modified to include new or updated standards introduced since the ESDM Report was prepared and additional contaminants that were not included in the EA or ESDM Report but for which source testing was completed. The contaminants with updated standards are identified in Table 4 below:

Table 4: Updated O.Reg. 419/05 Schedule 3 Standards

Contaminant	Standard or Guideline used in ESDM Report		Current Schedule 3 Standards	
	Concentration [µg/m³]	Averaging Period [hours]	Concentration [µg/m³]	Averaging Period [hours]
Cadmium	0.25	24	0.025	24
	0.75	½		
Dioxins and Furans	5×10^{-6}	24	1×10^{-7}	24
Chromium (hexavalent)	0.1	24	0.00014	Annual
Total Chromium Compounds	1.5	24	0.5	24
1,1- Dichloroethane	600	½	165	24
Nickel	0.1	24	0.04	Annual
Benzo(a)pyrene	0.0011	24	0.00001	Annual
	0.0033	½		
Benzene	N/A	24	0.45	Annual

The contaminant with the highest predicted concentration relative to O.Reg. 419/05 standard is Nitrogen Oxides at 20.21% of the relevant limit. The Emission Summary Table has been updated and is included in AppendixC it includes the Facility wide emission rate of all contaminants and the maximum POI concentration from all on-site sources.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for DYEC was updated to reflect 2016 source testing data. 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 November 2016 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	Annual averaging added 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	No Change. For contaminants with updated O.Reg. 419/05 standards, the background data for the new averaging period was taken from the EA report.
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 provided.

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.

Katherine Armstrong, M.Sc.
Air Quality Specialist

Anthony Ciccone, Ph.D., P.Eng.
Principal

KSA/ADC/ng

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APPENDIX A

Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Stack Volumetric Flow Rate [Am^3/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 [%]
		Source Parameters					Emission Data						
1A	Main Stack - November Source Testing Conditions	54.64	140	1.7	87.6	(680538, 4860346)	Carbon Monoxide	630-08-0	5.25E-01	1,24, annual	ST	Above-Average	67%
							Sulphur Dioxide	7446-09-5	3.50E-01	1,24, annual	ST	Above-Average	95%
							Total Particulate Matter (Condensable and Filterable)	N/A	3.18E-01	1,24, annual	ST	Above-Average	100%
							Total Particulate Matter (Filterable only)	N/A	3.96E-02	1,24, annual	ST	Above-Average	100%
							PM_{10}	N/A	3.33E-02	1,24, annual	ST	Above-Average	35%
							$PM_{2.5}$	N/A	2.00E-02	1,24, annual	ST	Above-Average	24%
							Lead	7439-92-1	1.34E-05	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	3.83E-06	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	1.65E-06	1,24, annual	ST	Above-Average	100%
							Fluorides	7664-39-3	5.49E-03	1,24, annual	ST	Above-Average	100%
							Dioxins and Furans (TEQ)	N/A	3.33E-10	1,24, annual	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.47E-01	1,24, annual	ST	Above-Average	100%
							Ammonia	7664-41-7	5.08E-02	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.38E+00	1,24, annual	ST	Above-Average	44%
							Nitrogen Oxides	10102-44-1	4.38E+00	1,24, annual	ST	Above-Average	44%
							Polychlorinated Biphenyls (PCB)	N/A	3.33E-10	1,24, annual	ST	Above-Average	100%
							Antimony	7440-36-0	6.69E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.67E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	1.23E-04	1,24, annual	ST	Above-Average	100%
							Beryllium	7440-41-7	1.67E-06	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	6.84E-05	1,24, annual	ST	Above-Average	100%
							Total Chromium (and compounds)	7440-47-3	6.84E-05	1,24, annual	ST	Above-Average	100%
							Cobalt	7440-48-4	8.92E-07	1,24, annual	ST	Above-Average	100%
							Nickel	7440-02-0	3.49E-05	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	3.34E-06	1,24, annual	ST	Above-Average	100%
							Selenium	7782-49-2	4.18E-06	1,24, annual	ST	Above-Average	100%
							Thallium	7440-28-0	8.36E-06	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	1.25E-06	1,24, annual	ST	Above-Average	100%
							Zinc	7440-66-6	1.64E-04	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	1.16E-06	1,24, annual	ST	Above-Average	100%
							1,2,4,5-Tetrachlorobenzene	95-94-3	1.16E-06	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	1.27E-06	1,24, annual	ST	Above-Average	100%
							2,3,4,6-Tetrachlorophenol	58-90-2	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,4,6-Trichlorophenol	88-06-2	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,4-Dichlorophenol	120-83-2	2.65E-06	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	1.16E-06	1,24, annual	ST	Above-Average	100%
							Hexachlorobenzene	118-74-1	1.16E-06	1,24, annual	ST	Above-Average	100%
							Pentachlorobenzene	608-93-5	1.16E-06	1,24, annual	ST	Above-Average	100%
							Acenaphthylene	208-96-8	1.16E-06	1,24, annual	ST	Above-Average	28%
							Acenaphthene	83-32-9	1.16E-06	1,24, annual	ST	Above-Average	43%
							Anthracene	120-12-7	1.16E-06	1,24, annual	ST	Above-Average	74%
							Benzo(a)anthracene	56-55-3	1.16E-06	1,24, annual	ST	Above-Average	85%
							Benzo(b)fluoranthene	205-99-2	1.16E-06	1,24, annual	ST	Above-Average	76%
							Benzo(k)fluoranthene	207-08-9	1.16E-06	1,24, annual	ST	Above-Average	94%
							Benzo(a)fluorene	238-84-6	4.62E-06	1,24, annual	ST	Above-Average	100%
							Benzo(b)fluorene	243-17-4	1.68E-06	1,24, annual	ST	Above-Average	100%
							Benzo(ghi)perylene	191-24-2	1.78E-06	1,24, annual	ST	Above-Average	91%
							Benzo(a)pyrene	50-32-8	1.16E-06	1,24, annual	ST	Above-Average	93%
							Benzo(e)pyrene	192-97-2	2.31E-06	1,24, annual	ST	Above-Average	100%
							Biphenyl	92-51-3	2.31E-06	1,24, annual	ST	Above-Average	100%
							Chrysene	218-01-9	1.16E-06	1,24, annual	ST	Above-Average	70%
							Dibenzo(a,c)anthracene	215-58-7	1.16E-06	1,24, annual	ST	Above-Average	100%
							Dibenzo(a,h)anthracene	53-70-3	1.16E-06	1,24, annual	ST	Above-Average	91%
							Fluoranthene	206-44-0	1.16E-06	1,24, annual	ST	Above-Average	47%
							Fluorine	86-73-7	1.16E-06	1,24, annual	ST	Above-Average	100%

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.16E-06	1,24, annual	ST	Above-Average	89%
							1 – methylnaphthalene	90-12-0	2.31E-06	1,24, annual	ST	Above-Average	100%
							2 – methylnaphthalene	91-57-6	1.16E-06	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	2.31E-06	1,24, annual	ST	Above-Average	5%
							Perylene	198-55-0	4.62E-06	1,24, annual	ST	Above-Average	100%
							Phenanthrene	85-01-8	1.16E-06	1,24, annual	ST	Above-Average	8%
							Pyrene	129-00-0	1.16E-06	1,24, annual	ST	Above-Average	49%
							Tetralin	119-64-2	2.31E-06	1,24, annual	ST	Above-Average	100%
							O-terphenyl	84-15-1	2.31E-06	1,24, annual	ST	Above-Average	100%
							Acetaldehyde	75-07-0	2.24E-03	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	4.16E-05	1,24, annual	ST	Above-Average	14%
							Bromodichloromethane	75-27-4	1.68E-05	1,24, annual	ST	Above-Average	100%
							Bromoform	75-25-2	2.14E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	2.76E-05	1,24, annual	ST	Above-Average	100%
							Carbon tetrachloride	56-23-5	2.45E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	2.33E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	3.61E-05	1,24, annual	ST	Above-Average	100%
							Dichloroethene, 1,1 -	75-34-3	1.68E-05	1,24, annual	ST	Above-Average	100%
							Dichloromethane	75-09-2	3.33E-05	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	2.31E-05	1,24, annual	ST	Above-Average	100%
							Ethylene Dibromide	106-93-4	1.53E-05	1,24, annual	ST	Above-Average	100%
							Formaldehyde	50-00-0	2.82E-03	1,24, annual	ST	Above-Average	99%
							Tetrachloroethene	127-18-4	3.13E-05	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	3.32E-04	1,24, annual	ST	Above-Average	78%
							Trichloroethane, 1,1,1 -	71-55-6	2.14E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	86-42-0	1.68E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	3.13E-05	1,24, annual	ST	Above-Average	100%
							Trichlorofluoromethane	75-69-4	2.23E-05	1,24, annual	ST	Above-Average	100%
							Vinyl chloride	75-01-4	1.99E-05	1,24, annual	ST	Above-Average	100%
							Xylenes, m-, p- and o-	1330-20-7	4.76E-05	1,24, annual	ST	Above-Average	43%
							Copper	7440-50-8	7.60E-05	1,24, annual	ST	Above-Average	100%
							Manganese	7439-96-5	3.37E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	1.93E-04	1,24, annual	ST	Above-Average	100%
							1,3-Dichlorobenzene	541-73-1	1.16E-06	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	1.16E-06	1,24, annual	ST	Above-Average	100%
							1,3,5-trichlorobenzene	108-70-3	1.16E-06	1,24, annual	ST	Above-Average	100%
							1,2,3-trichlorobenzene	87-61-6	1.16E-06	1,24, annual	ST	Above-Average	100%
							1,2,3,4-tetrachlorobenzene	634-66-2	1.16E-06	1,24, annual	ST	Above-Average	100%
							2-monochlorophenol	95-57-8	1.16E-06	1,24, annual	ST	Above-Average	100%
							3-monochlorophenol	108-43-0	1.16E-06	1,24, annual	ST	Above-Average	100%
							4-monochlorophenol	106-48-9	2.73E-06	1,24, annual	ST	Above-Average	100%
							2,6-dichlorophenol	87-65-0	1.16E-06	1,24, annual	ST	Above-Average	100%
							3,5-dichlorophenol	591-35-5	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,3-dichlorophenol	576-24-9	1.16E-06	1,24, annual	ST	Above-Average	100%
							3,4-dichlorophenol	95-77-2	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,3,6-trichlorophenol	933-75-5	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,3,5-trichlorophenol	933-78-8	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,4,5-trichlorophenol	95-95-4	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,3,4-trichlorophenol	15950-66-0	1.16E-06	1,24, annual	ST	Above-Average	100%
							3,4,5-trichlorophenol	609-19-8	1.16E-06	1,24, annual	ST	Above-Average	100%
							2,3,5,6-tetrachlorophenol	935-95-5	1.16E-06	1,24, annual	ST	Above-Average	100%

Appendix A
Site-Wide Emission Inventory

		Source Parameters					Emission Data						
Source Identifier	Source Description	Stack Volumetric Flow Rate [Am^3/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	11%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
		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	11%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
		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	11%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
		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	11%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	33%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	11%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	5%
							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	20%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	23%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	86%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	22%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	57%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	<1%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	100%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	95%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	72%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	57%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	100%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	92%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	26%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	53%
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	51%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	15%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	30%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	24%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	6%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	7%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	11%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	9%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	9%

APPENDIX B

Updated Exhibit 9

Golder Associates

TECHNICAL MEMORANDUM

DATE December 21, 2016 **PROJECT No.** 1668367

TO Leon Brasowski
Covanta Energy

CC Anthony Ciccone

FROM Katherine Armstrong **EMAIL** ksarmstrong@golder.com

CORRECTED EXHIBIT 9 FOR DURHAM YORK ENERGY CENTRE EMISSION SUMMARY AND DISPERSION MODELLING REPORT

The following table is a corrected version of Exhibit 9 for Durham York Energy Centre Emission Summary and Dispersion Modelling Report. It has been corrected to modify the "MCHEM" and "MSPLIT" CALPUFF options and flags that were used as part of the Environmental Compliance Approval application approved by the Ministry of Environment and Climate Change in June 2011.

Exhibit 9: CALPUFF Options and Flags

Flag	Value used in ESDM Report	Comments
MGAUSS	1	Vertical distribution used in the near field
MCTADJ	3	Terrain adjustment method (3 used for partial plume path adjustment)
MCTSG	0	Subgrid-Scale complex terrain flag
MSLUG	0	Near-field puffs modelled as elongated
MTRANS	1	Transitional Plume Rise modelled
MTIP	1	Stack-tip downwash
MBDW	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	Vertical wind shear modelled above stack top
MSPLIT	0*	Puff splitting allowed 0 = No; 1 = Yes
MCHEM	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	Aqueous phase transformation flag (only used if MCHEM =1 or 3)
MWET	0	Wet removal modelled 0 = NO; 1 = Yes
MDRY	0	Dry deposition modelled 0 = NO; 1 = Yes
MTILT	0	Gravitational settling (plume tilt) modelled

CANADA'S BEST MANAGED COMPANIES Platinum member

Flag	Value used in ESDM Report	Comments
MDISP	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	Sigma measurements used (Used only if MDISP = 1or 5)
MDISP2	3	Back-up method used to compute dispersion when measured turbulence data are missing (Used only if MDISP=1 or 5)
MTAULY	0	Method used for Lagrangian timescale for Sigma-y (used only if MDISP=1,2 or MSIDP2=1,2)
MTAUADV	0	Method used for Advective-Decay timescale for Turbulence (used only if MDISP=2 or MDISP2=2)
MCTURB	1	Method used to compute turbulence sigma-v & sigma-w using micrometeorological variables (Used only if MDISP = 2 or MDISP2 = 2)
MROUGH	0	PG sigma y,z adjusted for roughness
MPARTL	1	Partial plume penetration of elevated inversion
MTINV	0	Strength of temp inversion provided in PROFILE.DAT extended records
MPDF	1	Probability Distribution Function used for dispersion under convective conditions 0 = NO; 1 = Yes
MSGTIBL	1	Sub-grid TIBL module used for shore line
MBCON	0	Boundary conditions (concentration) modeled
MFOG	0	Configure for FOG Model output
MREG	0	Test options specified to see if they conform to regulatory values

APPENDIX C

Emission Summary Table

Appendix C
Emission Summary Table

Contaminant	CAS No.	Air Dispersion Model Used	Total Emission Rate [g/s]	Maximum POI Concentration [µg/m³]	Averaging Period [hours]	MOECC POI Limit [µg/m³]	Limiting Effect	Regulation Schedule No.	Percentage of MOECC Limit [%]
Carbon Monoxide	630-08-0	Calpuff	5.25E-01	1.16E+01	½	6000	Health	Schedule 3	<1%
Sulphur Dioxide	7446-09-5	Calpuff	3.50E-01	3.51E-01	24	275	Health & Vegetation	Schedule 3	<1%
Sulphur Dioxide	7446-09-5	Calpuff	3.50E-01	6.46E+00	1	690	Health & Vegetation	Schedule 3	<1%
Total Particulate Matter (Condensable and Filterable)	N/A	Calpuff	3.18E-01	5.78E-01	24	120	Visibility	Schedule 3	<1%
Total Particulate Matter (Filterable only)	N/A	Calpuff	3.96E-02	2.99E-01	24	120	Visibility	Schedule 3	<1%
PM_{10}	N/A	Calpuff	3.33E-02	2.92E-01	24	50	—	Ontario AAQC	<1%
$PM_{2.5}$	N/A	Calpuff	2.00E-02	2.79E-01	24	30	—	Ontario AAQC	<1%
Lead	7439-92-1	Calpuff	1.34E-05	1.35E-05	24	0.5	Health	Schedule 3	<1%
Lead	7439-92-1	Calpuff	1.34E-05	1.51E-06	30-day	0.2	Health	Schedule 3	<1%
Cadmium	7440-43-9	Calpuff	3.83E-06	3.85E-06	24	0.025	Health	Schedule 3	<1%
Mercury	7439-97-6	Calpuff	1.65E-06	1.66E-06	24	2	Health	Schedule 3	<1%
Fluorides	7664-39-3	Calpuff	5.49E-03	5.52E-03	24	0.86	Vegetation	Schedule 3	<1%
Fluorides	7664-39-3	Calpuff	5.49E-03	6.16E-04	30-day	0.34	Vegetation	Schedule 3	<1%
Dioxins and Furans (TEQ)	N/A	Calpuff	3.33E-10	3.35E-10	24	1.00E-07	—	Guideline	<1%
Hydrogen Chloride	7647-01-0	Calpuff	1.47E-01	1.48E-01	24	20	Health	Schedule 3	<1%
Ammonia	7664-41-7	Calpuff	5.08E-02	5.10E-02	24	100	Health	Schedule 3	<1%
Nitrogen Oxides	10102-44-0	Calpuff	4.38E+00	4.40E+00	24	200	Health	Schedule 3	2.20%
Nitrogen Oxides	10102-44-0	Calpuff	4.38E+00	8.08E+01	1	400	Health	Schedule 3	20.21%
Polychlorinated Biphenyls (PCB)	N/A	Calpuff	3.33E-10	3.35E-10	24	0.15	Health	Point-of-Impingement	<1%
Antimony	7440-36-0	Calpuff	6.69E-06	6.72E-06	24	25	Health	Schedule 3	<1%
Arsenic	7440-38-2	Calpuff	1.67E-06	1.68E-06	24	0.3	Health	Guideline	<1%
Arsenic	7440-38-2	Calpuff	1.67E-06	3.71E-05	½	1	Health	Guideline	<1%
Barium	7440-39-3	Calpuff	1.23E-04	1.24E-04	24	10	Health	Guideline	<1%
Barium	7440-39-3	Calpuff	1.23E-04	2.73E-03	½	30	Health	Guideline	<1%
Beryllium	7440-41-7	Calpuff	1.67E-06	1.68E-06	24	0.01	Health	Schedule 3	<1%
Chromium (hexavalent)	18540-29-9	Calpuff	6.84E-05	2.19E-06	Annual	0.00014	Health	Schedule 3	1.57%
Total Chromium (and compounds)	7440-47-3	Calpuff	6.84E-05	6.87E-05	24	0.5	Health	Schedule 3	<1%
Cobalt	7440-48-4	Calpuff	8.92E-07	8.96E-07	24	0.1	Health	Guideline	<1%
Cobalt	7440-48-4	Calpuff	8.92E-07	1.98E-05	½	0.3	Health	Guideline	<1%
Nickel	7440-02-0	Calpuff	3.49E-05	1.12E-06	Annual	0.04	Health	Schedule 3	<1%
Silver	7440-22-4	Calpuff	3.34E-06	3.36E-06	24	1	Health	Schedule 3	<1%
Selenium	7782-49-2	Calpuff	4.18E-06	4.20E-06	24	10	Health	Guideline	<1%
Selenium	7782-49-2	Calpuff	4.18E-06	9.27E-05	½	20	Health	Guideline	<1%
Thallium	7440-28-0	Calpuff	8.36E-06	8.40E-06	24	0.24	—	JSL	Below JSL
Vanadium	7440-62-2	Calpuff	1.25E-06	1.26E-06	24	2	Health	Schedule 3	<1%
Zinc	7440-66-6	Calpuff	1.64E-04	1.65E-04	24	120	Particulate	Schedule 3	<1%
1,2-Dichlorobenzene	95-50-1	Calpuff	1.16E-06	2.56E-05	½	37000	Health	Guideline	<1%
1,2-Dichlorobenzene	95-50-1	Calpuff	1.16E-06	2.13E-05	1	30500	Health	Point-of-Impingement	<1%
1,2,4,5-Tetrachlorobenzene	95-94-3	Calpuff	1.16E-06	1.16E-06	24	1	—	JSL	Below JSL
1,2,4 – Trichlorobenzene	120-82-1	Calpuff	1.27E-06	1.28E-06	24	400	Health	Guideline	<1%
1,2,4 – Trichlorobenzene	120-82-1	Calpuff	1.27E-06	2.82E-05	½	100	Particulate	Guideline	<1%
2,3,4,6-Tetrachlorophenol	58-90-2	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,4,6-Trichlorophenol	88-06-2	Calpuff	1.16E-06	1.16E-06	24	1.5	—	JSL	Below JSL
2,4-Dichlorophenol	120-83-2	Calpuff	2.65E-06	2.66E-06	24	77	—	JSL	Below JSL
Pentachlorophenol	87-86-5	Calpuff	1.16E-06	1.16E-06	24	20	Health	Guideline	<1%
Pentachlorophenol	87-86-5	Calpuff	1.16E-06	2.56E-05	½	60	Health	Guideline	<1%
Hexachlorobenzene	118-74-1	Calpuff	1.16E-06	1.16E-06	24	0.011	—	JSL	Below JSL
Pentachlorobenzene	608-93-5	Calpuff	1.16E-06	1.16E-06	24	3	—	JSL	Below JSL
Acenaphthylene	208-96-8	Calpuff	1.16E-06	1.16E-06	24	3.5	—	JSL	Below JSL
Acenaphthene	83-32-9	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Anthracene	120-12-7	Calpuff	1.16E-06	1.16E-06	24	0.2	—	JSL	Below JSL
Benzo(a)anthracene	56-55-3	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Benzo(b)fluoranthene	205-99-2	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Benzo(k)fluoranthene	207-08-9	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus

Made by: TB
Checked by: KSA

Appendix C
Emission Summary Table

Contaminant	CAS No.	Air Dispersion Model Used	Total Emission Rate [g/s]	Maximum POI Concentration [µg/m³]	Averaging Period [hours]	MOECC POI Limit [µg/m³]	Limiting Effect	Regulation Schedule No.	Percentage of MOECC Limit [%]
Benzo(a)fluorene	238-84-6	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
Benzo(b)fluorene	243-17-4	Calpuff	1.68E-06	1.69E-06	24	0.1	—	De Minimus	Below De Minimus
Benzo(ghi)perylene	191-24-2	Calpuff	1.78E-06	1.79E-06	24	1.2	—	JSL	Below JSL
Benzo(a)pyrene	50-32-8	Calpuff	1.16E-06	3.70E-08	Annual	0.00001	Health	Schedule 3	<1%
Benzo(e)pyrene	192-97-2	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
Biphenyl	92-51-3	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
Chrysene	218-01-9	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Dibenzo(a,c)anthracene	215-58-7	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Dibenzo(a,h)anthracene	53-70-3	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Fluoranthene	206-44-0	Calpuff	1.16E-06	1.16E-06	24	140	—	JSL	Below JSL
Fluorine	86-73-7	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Indeno(1,2,3 – cd)pyrene	193-39-5	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
1 – methylnaphthalene	90-12-0	Calpuff	2.31E-06	2.32E-06	24	12	—	JSL	Below JSL
2 – methylnaphthalene	91-57-6	Calpuff	1.16E-06	1.16E-06	24	10	—	JSL	Below JSL
Naphthalene	91-20-3	Calpuff	2.31E-06	2.32E-06	24	22.5	Health	Guideline	<1%
Naphthalene	91-20-3	Calpuff	2.31E-06	5.12E-05	½	36	Odour	Guideline	<1%
Naphthalene	91-20-3	Calpuff	2.31E-06	7.04E-05	10-min	50	Odour	Guideline	<1%
Perylene	198-55-0	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
Phenanthrene	85-01-8	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Pyrene	129-00-0	Calpuff	1.16E-06	1.16E-06	24	0.2	—	JSL	Below JSL
Tetralin	119-64-2	Calpuff	2.31E-06	2.32E-06	24	1200	—	JSL	Below JSL
O-terphenyl	84-15-1	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
Acetaldehyde	75-07-0	Calpuff	2.24E-03	2.25E-03	24	500	Health	Schedule 3	<1%
Acetaldehyde	75-07-0	Calpuff	2.24E-03	4.97E-02	½	500	Health	Schedule 3	<1%
Benzene	71-43-2	Calpuff	4.16E-05	1.33E-06	Annual	0.45	Health	Schedule 3	<1%
Bromodichloromethane	75-27-4	Calpuff	1.68E-05	1.69E-05	24	0.1	—	De Minimus	Below De Minimus
Bromoform	75-25-2	Calpuff	2.14E-05	2.15E-05	24	55	Health	Guideline	<1%
Bromoform	75-25-2	Calpuff	2.14E-05	4.75E-04	½	165	Health	Guideline	<1%
Bromomethane	74-83-9	Calpuff	2.76E-05	2.78E-05	24	1350	Health	Guideline	<1%
Bromomethane	74-83-9	Calpuff	2.76E-05	6.13E-04	½	4000	Health	Guideline	<1%
Carbon tetrachloride	56-23-5	Calpuff	2.45E-05	2.46E-05	24	2.4	Health	Schedule 3	<1%
Chloroform	67-66-3	Calpuff	2.33E-05	2.34E-05	24	1	Health	Schedule 3	<1%
Dichlorodifluoromethane	75-71-8	Calpuff	3.61E-05	3.62E-05	24	500000	Health	Guideline	<1%
Dichlorodifluoromethane	75-71-8	Calpuff	3.61E-05	8.00E-04	½	1500000	Health	Guideline	<1%
Dichloroethene, 1,1 -	75-34-3	Calpuff	1.68E-05	1.69E-05	24	165	Health	Schedule 3	<1%
Dichloromethane	75-09-2	Calpuff	3.33E-05	3.35E-05	24	220	Health	Schedule 3	<1%
Ethylbenzene	100-41-4	Calpuff	2.31E-05	2.32E-05	24	1000	Health	Schedule 3	<1%
Ethylbenzene	100-41-4	Calpuff	2.31E-05	7.05E-04	10-min	1900	Odour	Guideline	<1%
Ethylene Dibromide	106-93-4	Calpuff	1.53E-05	1.54E-05	24	3	Health	Guideline	<1%
Ethylene Dibromide	106-93-4	Calpuff	1.53E-05	3.40E-04	½	9	Health	Guideline	<1%
Formaldehyde	50-00-0	Calpuff	2.82E-03	2.83E-03	24	65	Health	Schedule 3	<1%
Tetrachloroethene	127-18-4	Calpuff	3.13E-05	3.14E-05	24	360	Health	Schedule 3	<1%
Toluene	108-88-3	Calpuff	3.32E-04	3.33E-04	24	2000	Odour	Guideline	<1%
Trichloroethane, 1,1,1 -	71-55-6	Calpuff	2.14E-05	2.15E-05	24	115000	Health	Schedule 3	<1%
Trichloroethene	86-42-0	Calpuff	1.68E-05	1.69E-05	24	12	—	Guideline	<1%
Trichloroethylene, 1,1,2 -	79-01-6	Calpuff	3.13E-05	3.14E-05	24	12	Health	Schedule 3	<1%
Trichlorofluoromethane	75-69-4	Calpuff	2.23E-05	2.24E-05	24	6000	Health	Guideline	<1%
Trichlorofluoromethane	75-69-4	Calpuff	2.23E-05	4.94E-04	½	18000	Health	Guideline	<1%
Vinyl chloride	75-01-4	Calpuff	1.99E-05	2.00E-05	24	1	Health	Schedule 3	<1%
Xylenes, m-, p- and o-	1330-20-7	Calpuff	4.76E-05	4.78E-05	24	730	Health	Schedule 3	<1%
Xylenes, m-, p- and o-	1330-20-7	Calpuff	4.76E-05	1.45E-03	10-min	3000	Odour	Guideline	<1%
Copper	7440-50-8	Calpuff	7.60E-05	7.63E-05	24	50	Health	Schedule 3	<1%
Manganese	7439-96-5	Calpuff	3.37E-05	3.39E-05	24	0.4	Health	Schedule 3	2.50%
Molybdenum	7439-98-7	Calpuff	1.93E-04	1.94E-04	24	120	Particulate	Point-of-Impingement	<1%
1,3-Dichlorobenzene	541-73-1	Calpuff	1.16E-06	1.16E-06	24	360	—	JSL	Below JSL
1,4-Dichlorobenzene	106-46-7	Calpuff	1.16E-06	1.16E-06	24	95	Health	Schedule 3	<1%
1,3,5-trichlorobenzene	108-70-3	Calpuff	1.16E-06	1.16E-06	24	18	—	JSL	Below JSL
1,2,3-trichlorobenzene	87-61-6	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
1,2,3,4-tetrachlorobenzene	634-66-2	Calpuff	1.16E-06	1.16E-06	24	4	—	JSL	Below JSL
2-monochlorophenol	95-57-8	Calpuff	1.16E-06	1.16E-06	24	0.8	—	JSL	Below JSL

Made by: TB
Checked by: KSA

Appendix C
Emission Summary Table

Contaminant	CAS No.	Air Dispersion Model Used	Total Emission Rate [g/s]	Maximum POI Concentration [µg/m³]	Averaging Period [hours]	MOECC POI Limit [µg/m³]	Limiting Effect	Regulation Schedule No.	Percentage of MOECC Limit [%]
3-monochlorophenol	108-43-0	Calpuff	1.16E-06	1.16E-06	24	0.8	—	JSL	Below JSL
4-monochlorophenol	106-48-9	Calpuff	2.73E-06	2.74E-06	24	12	—	JSL	Below JSL
2,6-dichlorophenol	87-65-0	Calpuff	1.16E-06	1.16E-06	24	8	—	JSL	Below JSL
3,5-dichlorophenol	591-35-5	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,3-dichlorophenol	576-24-9	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
3,4-dichlorophenol	95-77-2	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,3,6-trichlorophenol	933-75-5	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,3,5-trichlorophenol	933-78-8	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,4,5-trichlorophenol	95-95-4	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,3,4-trichlorophenol	15950-66-0	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
3,4,5-trichlorophenol	609-19-8	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,3,5,6-tetrachlorophenol	935-95-5	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2,3,4,5-tetrachlorophenol	4901-51-3	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
2-Chloronaphthalene	91-58-7	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
Coronene	191-07-1	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
Dibenzo(a,e)pyrene	192-65-4	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
9,10-Dimethylanthracene	781-43-1	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
7,12-Dimethylbenzo(a)anthracene	57-97-6	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
2-Methylanthracene	613-12-7	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
3-Methylcholanthrene	56-49-5	Calpuff	4.62E-06	4.64E-06	24	0.1	—	De Minimus	Below De Minimus
1-Methylphenanthrene	832-69-9	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
9-Methylphenanthrene	883-20-5	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Picene	213-46-7	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
m-Terphenyl	92-06-8	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
p-Terphenyl	92-94-4	Calpuff	2.31E-06	2.32E-06	24	0.1	—	De Minimus	Below De Minimus
Triphenylene	217-59-4	Calpuff	1.16E-06	1.16E-06	24	0.1	—	De Minimus	Below De Minimus
Acetone	67-64-1	Calpuff	1.02E-04	1.02E-04	24	11880	Health	Schedule 3	<1%
1,3-Butadiene	106-99-0	Calpuff	3.83E-05	1.23E-06	Annual	2	Health	Schedule 3	<1%
2-Butanone	78-93-3	Calpuff	5.51E-05	5.54E-05	24	1000	Health	Schedule 3	<1%
Chlorobenzene	108-90-7	Calpuff	1.68E-05	3.11E-04	1	3500	Health	Point-of-Impingement	<1%
Chlorobenzene	108-90-7	Calpuff	1.68E-05	5.14E-04	10-min	4500	Odour	Guideline	<1%
Cumene (Isopropylbenzene)	98-82-8	Calpuff	1.00E-04	1.01E-04	24	400	Health	Schedule 3	<1%
Dibromochloromethane	124-48-1	Calpuff	1.38E-05	1.38E-05	24	0.2	—	JSL	Below JSL
1,2-Dichloroethane	107-06-2	Calpuff	1.07E-05	1.08E-05	24	2	Health	Schedule 3	<1%
trans,1,2-Dichloroethene	156-60-5	Calpuff	1.53E-05	1.54E-05	24	105	Health	Point-of-Impingement	<1%
1,2-Dichloropropane	78-87-5	Calpuff	1.68E-05	1.69E-05	24	2400	Odour	Point-of-Impingement	<1%
Mesitylene (1,3,5-Trimethylbenzene)	108-67-8	Calpuff	3.83E-05	3.85E-05	24	220	Health	Schedule 3	<1%
Styrene	100-42-5	Calpuff	1.99E-05	2.00E-05	24	400	Health	Schedule 3	<1%
1,1,2-Trichloroethane	79-00-5	Calpuff	2.45E-05	2.46E-05	24	0.31	—	JSL	Below JSL
Trichlorotrifluoroethane	76-13-1	Calpuff	3.83E-05	3.85E-05	24	800000	Health	Schedule 3	<1%
Acrolein	107-02-8	Calpuff	2.24E-03	2.25E-03	24	0.4	Health	Schedule 3	2.50%
Acrolein	107-02-8	Calpuff	2.24E-03	4.14E-02	1	4.5	Health	Schedule 3	<1%

APPENDIX 34

Dispersion Modelling Results
for the May 2016 Testing Program
(12 pages)

TECHNICAL MEMORANDUM

DATE December 20, 2016 **PROJECT No.** 1668367

TO Leon Brasowski
Covanta Energy

CC Anthony Ciccone

FROM Katie Armstrong **EMAIL** ksarmstrong@golder.com

UPDATED CALPUFF MODELLING FOR DIOXINS AND FURANS FROM MAY 2016 SOURCE TESTING AT DURHAM YORK ENERGY CENTRE

1.0 INTRODUCTION

Durham York Renewable Energy LP (DYRE) operates the Durham York Energy Centre (DYEC) under the multi-media Environmental Compliance Approval (ECA) 7306-8FDKNX, dated June 28, 2011 and as subsequently amended. The 2011 ECA application was supported with an Emission Summary and Dispersion Modelling (ESDM) Report prepared by Golder Associates Ltd (Golder) using the CALPUFF dispersion model version 6.263, with results compared to Ministry of Environment 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 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 source testing and modelling were originally completed by Ortech Environmental in May 2016, however, modelling was carried out with a different version of the CALPUFF model which is not the approved version as notified by the MOECC. The MOECC requested via an email dated October 18, 2016 that the modelling of Dioxins and Furans only be updated with the 2011 CALPUFF dispersion model version 6.263 including meteorological and receptor data as listed in the ESDM Report. In addition, DYRE also provided a copy of comments and recommendations made by Airzone One, a consultant to the Regions of Durham and York.

This memorandum summarizes the results of the revised Dioxins and Furans modelling for May 2016 source testing using the same CALPUFF model and other input data sets but the results are compared to applicable 2016 Ontario Regulation (O.Reg.) 419/05 limits following the recommendations of Airzone One. This memorandum also responds to the comments made by Airzone One and the clarifications provided by the MOECC of December 9, 2016 to these comments.

2.0 EMISSION RATES

Source testing was completed by Ortech Environmental in May 2016 for each of the two combustion train units and results were provided to Golder on a mass per time. 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 per contaminants.

Emission rates for which source testing data was available were converted to grams per second (g/s) and are provided in the 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 emissions from the main stack. For the current updated modelling exercise we have only assessed Dioxins and Furans.

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 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 and options 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 Reports. It extends 40 km by 30 km and is centred approximately 5 km North of the DYEC Site. This domain covers more than the air quality study area identified in the EA 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 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 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 predicts 1-hour average values and sums 24-hr sequential values to generate a 24-hour or daily average value. Similarly, the hourly values are averaged over 30 days or a year to generate the appropriate time-averaged values. The relevant Dioxins and Furans Schedule 3 Toxic Equivalency (TEQ) standard is based on a 24-hour averaging time. Additional averaging periods less than 1 hour are also presented in this memorandum. For these averaging periods, the 1 hour average concentration was converted using the conversion factors listed in Table 4-1 of 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.

3.8 Chemical Transformation

Chemical transformation was not used for Dioxins and Furans modelling. 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 original report, puff splitting was not used for this assessment.

Table 1: 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

Flag	Value used in ESDM Report	Value Used in this Assessment	Comments
MSLUG	0	0	Near-field puffs modelled as elongated
MTRANS	1	1	Transitional Plume Rise modelled
MTIP	1	1	Stack-tip downwash
MBDW	2	2	Method used to simulate building downwash 1 = ISC method; 2 = PRIME method
MSHEAR	0	0	Vertical wind shear modelled above stack top
MSPLIT	0*	0	Puff splitting allowed 0 = No; 1 = Yes ** NB: Value of "1" reported in ESDM Report but value of "0" actually used in ESDM Report modelling*
MCHEM	0	0	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 the May 2016 source testing. All other source parameters are consistent with those used in the ESDM Report. The source parameters modelled are provided in Table 2, below:

Table 2: 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)	22.1 (UPDATED)	414 (UPDATED)

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 3, below:

Table 3: Modelling Dispersion Factors

Averaging Period	10-min	½- hr	1-hr	24-hr	30-day	Annual
Dispersion Factor [µg/m³ per g/s]	32.66	23.75	19.80	1.03	0.12	0.03

The average emission rate for Dioxins and Furans TEQ 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 for Dioxins and Furans TEQ (0.015 pg/m³) were compared to the Schedule 3 standards listed in O.Reg. 419/05 that applied at the time of the source testing (May 2016). The results are approximately 1.51% of the relevant 24-hr standard (1 pg/m³). The Emission Summary Table has been updated and is included in Appendix B it includes the Facility wide emission rate of Dioxins and Furans TEQ and the maximum POI concentration from all on-site sources of Dioxins and Furans TEQ.

4.1 Comparison of Modelling Results between CALPUFF Model Versions

The results of the updated Dioxins and Furans TEQ modelling, using CALPUFF v6.263 result in a POI concentration that is approximately 25% lower than the POI concentration using CALPUFF v5.84 (as per the table provided in Section 8.2 of the Ortech report, dated June 2016) for time periods of 24-hr or less. A comparison of the dispersion factors from the two different models is provided in Table 4, below.

Table 4: Comparison of Modelling Dispersion Factors

Averaging Period	½- hr	1-hr	24-hr	30-day
CALPUFF v5.84 Dispersion factor [µg/m³ per g/s]	30.10	25.10	1.29	0.12
CALPUFF v6.263 Dispersion factor [µg/m³ per g/s]	23.75	19.80	1.03	0.12
Percentage Change [%]	-27%	-27%	-25%	<1%

It is anticipated that remodelling of any additional contaminants is not required as all contaminants that were reported by Ortech to have concentrations less than the relevant MOECC POI limits or guidelines and remodelling using CALPUFF v6.263 would result in lower POI concentrations.

5.0 SUMMARY OF MODELLING UPDATES

The dispersion modelling for DYEC was updated to reflect 2016 source testing data. 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 2016 Source Testing Data.
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	No Change
Dispersion Modelling Options	No Change
Background Air Quality Concentrations	No Change.
Emission Summary Table	Updated Results for Dioxin & Furans

6.0 CONCLUSIONS

This assessment was completed as a follow up to the Ortech report dated May 2016 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 current Dioxins and Furans TEQ limit listed in s.20 of O. Reg. 419/05. This memo also addresses the outstanding concerns raised by Airzone One in their report dated September 2016 on dispersion modelling methodology used to document compliance for May 2016 Source testing results. A comparison of the modelled results indicates that predicted concentrations are approximately 25% lower than those reported from these of CALPUFF v 5.84.

7.0 CLOSURE

We trust this memorandum meets your needs at this time. Should you have any questions please contact the undersigned.

K. Armstrong

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Air Quality Specialist

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Principal

KSA/ADC/ng

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APPENDIX A

Site-Side Emission Inventory

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: 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 Source Testing Conditions	50.30	141	1.7	87.6	(680538, 4860346)	Carbon Monoxide	630-08-0	6.20E-01	1,24, annual	ST	Above-Average	71%
							Total Particulate Matter	N/A	2.13E-02	1,24, annual	ST	Above-Average	22%
							Filterable TSP	N/A	2.13E-02	1,24, annual	ST	Above-Average	51%
							PM_{10}	N/A	2.13E-02	1,24, annual	ST	Above-Average	26%
							$PM_{2.5}$	N/A	2.13E-02	1,24, annual	ST	Above-Average	26%
							Lead	7439-92-1	9.40E-06	1,24, annual	ST	Above-Average	100%
							Cadmium	7440-43-9	1.70E-06	1,24, annual	ST	Above-Average	100%
							Mercury	7439-97-6	1.40E-05	1,24, annual	ST	Above-Average	100%
							Dioxins and Furans (TEQ)	N/A	1.47E-08	1, 24	ST	Above-Average	100%
							Hydrogen Chloride	7647-01-0	1.55E-01	1,24, annual	ST	Above-Average	100%
							Ammonia	7664-41-7	4.89E-02	1,24, annual	ST	Above-Average	100%
							Nitrogen Oxides	10102-44-0	4.20E+00	1,24, annual	ST	Above-Average	79%
							Polychlorinated Biphenyls (PCB)	N/A	1.47E-08	1,24, annual	ST	Above-Average	100%
							Antimony	7440-36-0	6.70E-06	1,24, annual	ST	Above-Average	100%
							Arsenic	7440-38-2	1.70E-06	1,24, annual	ST	Above-Average	100%
							Barium	7440-39-3	5.90E-05	1,24, annual	ST	Above-Average	100%
							Beryllium	7440-41-7	1.70E-06	1,24, annual	ST	Above-Average	100%
							Chromium (hexavalent)	18540-29-9	9.90E-05	1,24, annual	ST	Above-Average	100%
							Total Chromium (and compounds)	7440-47-3	9.90E-05	1,24, annual	ST	Above-Average	100%
							Cobalt	7440-48-4	1.70E-06	1,24, annual	ST	Above-Average	100%
							Nickel	7440-02-0	1.50E-04	1,24, annual	ST	Above-Average	100%
							Silver	7440-22-4	3.30E-06	1,24, annual	ST	Above-Average	100%
							Selenium	7782-49-2	9.30E-06	1,24, annual	ST	Above-Average	100%
							Vanadium	7440-62-2	1.30E-06	1,24, annual	ST	Above-Average	100%
							Zinc	7440-66-6	5.30E-05	1,24, annual	ST	Above-Average	100%
							1,2-Dichlorobenzene	95-50-1	1.25E-06	1,24, annual	ST	Above-Average	100%
							1,2,4 – Trichlorobenzene	120-82-1	1.25E-06	1,24, annual	ST	Above-Average	100%
							Pentachlorophenol	87-86-5	2.01E-06	1,24, annual	ST	Above-Average	100%
							Benzo(a)pyrene	50-32-8	1.25E-06	1,24, annual	ST	Above-Average	94%
							Biphenyl	92-51-3	2.50E-06	1,24, annual	ST	Above-Average	100%
							Naphthalene	91-20-3	2.50E-06	1,24, annual	ST	Above-Average	6%
							Acetaldehyde	75-07-0	1.95E-03	1,24, annual	ST	Above-Average	100%
							Benzene	71-43-2	4.60E-05	1,24, annual	ST	Above-Average	15%
							Bromoform	75-25-2	2.10E-05	1,24, annual	ST	Above-Average	100%
							Bromomethane	74-83-9	2.10E-05	1,24, annual	ST	Above-Average	100%
							Chloroform	67-66-3	4.60E-05	1,24, annual	ST	Above-Average	100%
							Dichlorodifluoromethane	75-71-8	4.10E-05	1,24, annual	ST	Above-Average	100%
							Ethylbenzene	100-41-4	2.10E-05	1,24, annual	ST	Above-Average	100%
							Formaldehyde	50-00-0	1.22E-03	1,24, annual	ST	Above-Average	98%
							Tetrachloroethene	127-18-4	3.20E-05	1,24, annual	ST	Above-Average	100%
							Toluene	108-88-3	7.60E-05	1,24, annual	ST	Above-Average	45%
							Trichloroethane, 1,1,1 -	71-55-6	2.10E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethene	86-42-0	1.60E-05	1,24, annual	ST	Above-Average	100%
							Trichloroethylene, 1,1,2 -	79-01-6	3.20E-05	1,24, annual	ST	Above-Average	100%

Appendix A
Site-Wide Emission Inventory

Source Identifier	Source Description	Source Parameters: Stack Volumetric Flow Rate [Am³/s]	Stack Exit Gas Temperature [°C]	Stack Inner Diameter [m]	Stack Height Above Grade [m]	Stack Location [x, y]	Emission Data: Contaminant	CAS No.	Maximum Emission Rate [g/s]	Averaging Period [hours]	Emission Estimating Technique	Emissions Data Quality	Percentage of Overall Emissions [%]
							Trichlorofluoromethane	75-69-4	1.50E-05	1,24, annual	ST	Above-Average	100%
							Copper	7440-50-8	6.20E-05	1,24, annual	ST	Above-Average	100%
							Manganese	7439-96-5	4.50E-05	1,24, annual	ST	Above-Average	100%
							Molybdenum	7439-98-7	3.40E-04	1,24, annual	ST	Above-Average	100%
							1,4-Dichlorobenzene	106-46-7	1.25E-06	1,24, annual	ST	Above-Average	100%
							Acetone	67-64-1	1.40E-04	1,24, annual	ST	Above-Average	100%
							1,3-Butadiene	106-99-0	3.60E-05	1,24, annual	ST	Above-Average	100%
							2-Butanone	78-93-3	5.30E-05	1,24, annual	ST	Above-Average	100%
							trans,1,2-Dichloroethene	156-60-5	1.50E-05	1,24, annual	ST	Above-Average	100%
							Styrene	100-42-5	1.80E-05	1,24, annual	ST	Above-Average	100%
							Trichlorotrifluoroethane	76-13-1	3.60E-05	1,24, annual	ST	Above-Average	100%
							Acrolein	107-02-8	1.95E-03	1,24, annual	ST	Above-Average	100%
2	Silo Filling	0.31	Ambient	0.10	5.4864	(680551,4860359)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	11%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	13%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
		0.31	Ambient	0.10	4.8768	(680513,4860332)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	11%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	13%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
		0.31	Ambient	0.10	3.9624	(680517,4860333)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	11%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	13%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
		0.31	Ambient	0.10	12.4	(680537,4860391)	Total Particulate Matter	N/A	1.07E-02	1	EC	Above-Average	11%
							PM_{10}	N/A	1.07E-02	1	EC	Above-Average	13%
							$PM_{2.5}$	N/A	1.07E-02	1	EC	Above-Average	13%
3	Stand-by generator	1.16	265.85	0.2	3	(680475,4860419)	Carbon Monoxide	630-08-0	2.56E-01	½	EF	Marginal	29%
							Nitrogen Oxides	10102-44-0	1.12E+00	½	EF	Marginal	21%
							Sulphur Dioxide	7446-09-5	1.88E-02	½	EF	Above-Average	100%
							Total Particulate Matter	N/A	3.25E-02	½	EF	Above-Average	34%
							Filterable TSP	N/A	2.03E-02	½	EF	Above-Average	49%
							PM_{10}	N/A	1.88E-02	½	EF	Above-Average	23%
							$PM_{2.5}$	N/A	1.88E-02	½	EF	Above-Average	23%
							Sulphuric Acid	7664-93-9	2.88E-04	½	EC	Above-Average	100%
							Benzene	71-43-2	2.54E-04	½	EF	Marginal	85%
							Toluene	108-88-3	9.21E-05	½	EF	Marginal	55%
							Xylenes, m-, p- and o-	1330-20-7	6.32E-05	½	EF	Marginal	100%
							Propylene	115-07-1	9.14E-04	½	EF	Marginal	100%
							Formaldehyde	50-00-0	2.58E-05	½	EF	Marginal	2%
							Acetaldehyde	75-07-0	8.26E-06	½	EF	Marginal	<1%
							Acrolein	107-02-8	2.58E-06	½	EF	Marginal	<1%
							Naphthalene	91-20-3	4.26E-05	½	EF	Marginal	94%
							Acenaphthylene	208-96-8	3.02E-06	½	EF	Marginal	100%
							Acenaphthene	83-32-9	1.53E-06	½	EF	Marginal	100%
							Fluorene	86-73-7	4.19E-06	½	EF	Marginal	100%
							Phenanthrene	85-01-8	1.34E-05	½	EF	Marginal	100%
							Anthracene	120-12-7	4.03E-07	½	EF	Marginal	100%
							Fluoranthene	206-44-0	1.32E-06	½	EF	Marginal	100%

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 [%]
							Pyrene	129-00-0	1.22E-06	½	EF	Marginal	100%
							Benzo(a)anthracene	56-55-3	2.04E-07	½	EF	Marginal	100%
							Chrysene	218-01-9	5.01E-07	½	EF	Marginal	100%
							Benzo(b)fluoranthene	205-99-2	3.64E-07	½	EF	Marginal	100%
							Benzo(k)fluoranthene	207-08-9	7.14E-08	½	EF	Marginal	100%
							Benzo(a)pyrene	50-32-8	8.42E-08	½	EF	Marginal	6%
							Indeno(1,2,3 – cd)pyrene	193-39-5	1.36E-07	½	EF	Marginal	100%
							Dibenzo(a,h)anthracene	53-70-3	1.13E-07	½	EF	Marginal	100%
							Benzo(ghi)perylene	191-24-2	1.82E-07	½	EF	Marginal	100%

APPENDIX B
Emission Summary Table

Appendix B
Emission Summary Table

Contaminant	CAS No.	Air Dispersion Model Used	Total Emission Rate [ng/s]	Maximum POI Concentration [pg/m³]	Averaging Period [hours]	MOECC POI Limit [pg/m³]	Limiting Effect	Regulation Schedule No.	Percentage of MOECC Limit [%]
Dioxins and Furans [TEQ][1]	N/A	Calpuff	1.47E-02	1.51E-02	24	1	—	Schedule 6	1.51%

Note:
1. Calculated using the WHO (O. Reg. 419/05) toxicity equivalence factors and half the detection limit for those isomers not detected in quantities greater than the reportable detection limit.

APPENDIX 35

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
25-Oct-16	0:00	8.88	0.19	11		0		122		0		0	8
25-Oct-16	1:00	10.36	0.16	22		2		100		0		0	9
25-Oct-16	2:00	9.92	0.16	12		1		117		0		0	10
25-Oct-16	3:00	10.26	0.17	19	16.0	1		107		0		0	9
25-Oct-16	4:00	9.65	0.18	20	18.3	0		117		0		0	9
25-Oct-16	5:00	9.36	0.17	14	16.3	0		124		0		0	9
25-Oct-16	6:00	9.22	0.18	16	17.3	2		111		0		0	9
25-Oct-16	7:00	9.01	0.19	13	15.8	0		132		0		0	9
25-Oct-16	8:00	8.88	0.18	15	14.5	2		114		0		0	8
25-Oct-16	9:00	9.53	0.18	11	13.8	3		110		0		0	9
25-Oct-16	10:00	9.11	0.19	18	14.3	0		108		0		0	9
25-Oct-16	11:00	8.82	0.18	13	14.3	0		105		0		0	8
25-Oct-16	12:00	9.23	0.18	10	13.0	1		117		0		0	9
25-Oct-16	13:00	9.07	0.19	8	12.3	1		108		0		0	8
25-Oct-16	14:00	9.82	0.17	15	11.5	1		102		0		0	9
25-Oct-16	15:00	9.29	0.18	11	11.0	0		113		1		0	9
25-Oct-16	16:00	9.28	0.18	12	11.5	2		111		1		0	9
25-Oct-16	17:00	9.34	0.18	15	13.3	3		105		1		0	9
25-Oct-16	18:00	9.61	0.18	14	13.0	0		109		1		0	9
25-Oct-16	19:00	9.25	0.19	13	13.5	2		115		1		0	9
25-Oct-16	20:00	9.50	0.18	14	14.0	1		112		2		0	9
25-Oct-16	21:00	9.36	0.18	14	13.8	0		110		2		0	9
25-Oct-16	22:00	9.05	0.19	9	12.5	0		117		2		0	8
25-Oct-16	23:00	9.15	0.18	10	11.8	3	1.0	100	112	1	0.5	0	9
26-Oct-16	0:00	9.22	0.18	9	10.5	0	1.0	110	111	1	0.5	0	9
26-Oct-16	1:00	9.30	0.18	10	9.5	0	1.0	110	112	1	0.6	0	9
26-Oct-16	2:00	9.02	0.19	10	9.8	0	0.9	111	112	1	0.6	0	8
26-Oct-16	3:00	9.18	0.19	10	9.8	3	1.0	104	111	1	0.7	0	9
26-Oct-16	4:00	9.28	0.18	12	10.5	0	1.0	123	112	2	0.8	0	9
26-Oct-16	5:00	9.24	0.18	14	11.5	0	1.0	126	112	3	0.9	0	9
26-Oct-16	6:00	9.67	0.18	15	12.8	2	1.0	116	112	2	1.0	0	9
26-Oct-16	7:00	9.49	0.18	14	13.8	0	1.0	123	112	2	1.0	0	9
26-Oct-16	8:00	9.89	0.18	24	16.8	2	1.0	107	111	2	1.1	0	9
26-Oct-16	9:00	9.71	0.18	17	17.5	0	0.9	124	112	1	1.2	0	9
26-Oct-16	10:00	9.70	0.18	14	17.3	0	0.9	106	112	1	1.2	0	9
26-Oct-16	11:00	9.15	0.18	12	16.8	0	0.9	103	112	1	1.3	0	9
26-Oct-16	12:00	9.29	0.19	12	13.8	3	1.0	113	112	1	1.3	0	9
26-Oct-16	13:00	9.28	0.18	13	12.8	0	0.9	115	112	2	1.4	1	9
26-Oct-16	14:00	9.08	0.19	16	13.3	5	1.1	118	113	2	1.5	0	8
26-Oct-16	15:00	8.94	0.19	13	13.5	0	1.1	116	113	1	1.5	0	8
26-Oct-16	16:00	9.13	0.19	14	14.0	0	1.0	106	112	1	1.5	0	9
26-Oct-16	17:00	9.20	0.18	11	13.5	0	0.9	99	112	1	1.5	0	9
26-Oct-16	18:00	9.39	0.18	10	12.0	0	0.9	116	113	1	1.5	0	9
26-Oct-16	19:00	8.98	0.19	11	11.5	0	0.8	112	112	1	1.5	0	8
26-Oct-16	20:00	9.11	0.18	11	10.8	0	0.8	107	112	3	1.5	0	8
26-Oct-16	21:00	8.83	0.19	7	9.8	0	0.8	119	113	2	1.5	0	8
26-Oct-16	22:00	8.79	0.19	11	10.0	0	0.8	107	112	1	1.5	0	8
26-Oct-16	23:00	8.78	0.18	11	10.0	1	0.7	98	112	2	1.5	0	8
27-Oct-16	0:00	8.75	0.19	8	9.3	1	0.7	121	113	1	1.5	0	8
27-Oct-16	1:00	8.68	0.19	12	10.5	2	0.8	113	113	1	1.5	0	8
27-Oct-16	2:00	8.41	0.19	7	9.5	1	0.8	111	113	1	1.5	0	8
27-Oct-16	3:00	8.89	0.19	9	9.0	0	0.7	99	112	1	1.5	0	8
27-Oct-16	4:00	8.50	0.19	8	9.0	0	0.7	140	113	2	1.5	0	8
27-Oct-16	5:00	8.38	0.19	8	8.0	1	0.8	122	113	2	1.5	0	8
27-Oct-16	6:00	8.42	0.19	11	9.0	1	0.7	112	113	1	1.4	0	8
27-Oct-16	7:00	9.00	0.19	9	9.0	0	0.7	132	113	3	1.5	0	8
27-Oct-16	8:00	8.88	0.19	11	9.8	0	0.6	104	113	3	1.5	0	8
27-Oct-16	9:00	8.72	0.19	12	10.8	0	0.6	112	113	1	1.5	0	8
27-Oct-16	10:00	9.27	0.18	14	11.5	1	0.7	104	112	1	1.5	0	9
27-Oct-16	11:00	8.76	0.18	12	12.3	0	0.7	116	113	1	1.5	0	8
27-Oct-16	12:00	9.36	0.18	13	12.8	2	0.6	108	113	1	1.5	0	9
27-Oct-16	13:00	9.34	0.18	12	12.8	17	1.3	117	113	2	1.5	0	9
27-Oct-16	14:00	9.24	0.18	10	11.8	0	1.1	101	112	4	1.6	0	9
27-Oct-16	15:00	9.08	0.18	11	11.5	0	1.1	109	112	4	1.7	0	8
27-Oct-16	16:00	9.03	0.18	10	10.8	0	1.1	114	112	3	1.8	0	8
27-Oct-16	17:00	9.01	0.18	12	10.8	0	1.1	98	112	2	1.8	0	8
27-Oct-16	18:00	9.27	0.18	12	11.3	1	1.2	119	112	1	1.8	0	8
27-Oct-16	19:00	9.32	0.18	14	12.0	0	1.2	112	112	1	1.8	0	9
27-Oct-16	20:00	9.56	0.18	12	12.5	0	1.2	100	112	1	1.8	0	9
27-Oct-16	21:00	9.01	0.18	9	11.8	0	1.2	111	112	1	1.7	0	8
27-Oct-16	22:00	8.79	0.19	11	11.5	0	1.2	124	112	1	1.7	0	8
27-Oct-16	23:00	9.08	0.18	11	10.8	0	1.1	95	112	1	1.7	0	9

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
28-Oct-16	0:00	8.70	0.19	9	10.0	0	1.1	119	112	0	1.6	0	8
28-Oct-16	1:00	8.88	0.19	10	10.3	0	1.0	112	112	0	1.6	0	8
28-Oct-16	2:00	9.17	0.18	10	10.0	0	1.0	108	112	0	1.5	0	9
28-Oct-16	3:00	9.33	0.18	11	10.0	0	1.0	108	112	0	1.5	0	9
28-Oct-16	4:00	8.86	0.19	7	9.5	0	1.0	132	112	0	1.4	0	8
28-Oct-16	5:00	8.85	0.18	9	9.3	0	0.9	126	112	0	1.3	0	8
28-Oct-16	6:00	8.75	0.19	7	8.5	0	0.9	112	112	0	1.3	0	8
28-Oct-16	7:00	8.93	0.19	8	7.8	0	0.9	130	112	0	1.2	0	8
28-Oct-16	8:00	9.16	0.18	9	8.3	0	0.9	105	112	0	1.0	0	8
28-Oct-16	9:00	8.93	0.19	9	8.3	0	0.9	109	112	0	1.0	0	8
28-Oct-16	10:00	8.86	0.19	9	8.8	0	0.8	120	113	0	1.0	0	8
28-Oct-16	11:00	8.84	0.18	9	9.0	0	0.8	100	112	0	0.9	0	8
28-Oct-16	12:00	9.10	0.19	12	9.8	0	0.8	106	112	1	0.9	0	8
28-Oct-16	13:00	8.91	0.19	8	9.5	0	0.0	120	112	1	0.9	0	8
28-Oct-16	14:00	8.57	0.19	7	9.0	0	0.0	107	112	1	0.8	0	8
28-Oct-16	15:00	8.64	0.19	7	8.5	0	0.0	107	112	1	0.6	0	8
28-Oct-16	16:00	8.63	0.19	7	7.3	0	0.0	113	112	1	0.5	0	8
28-Oct-16	17:00	8.97	0.18	10	7.8	0	0.0	98	112	1	0.5	0	8
28-Oct-16	18:00	8.94	0.19	10	8.5	0	0.0	108	112	1	0.5	0	8
28-Oct-16	19:00	8.76	0.19	10	8.4	0	0.0	112	112	1	0.5	0	8
28-Oct-16	20:00	8.68	0.18	15	9.4	0	0.0	106	112	1	0.5	0	8
28-Oct-16	21:00	8.74	0.19	10	9.9	0	0.0	105	112	1	0.5	0	8
28-Oct-16	22:00	8.80	0.19	9	11.0	0	0.0	108	111	1	0.5	0	8
28-Oct-16	23:00	8.60	0.18	9	10.8	0	0.0	111	112	1	0.5	0	8
31-Oct-16	0:00	8.57	0.19	5		0		109		0		0	8
31-Oct-16	1:00	8.86	0.19	10		0		108		0		0	8
31-Oct-16	2:00	8.94	0.19	12		0		113		0		0	8
31-Oct-16	3:00	9.21	0.18	17	11.0	0		115		0		0	9
31-Oct-16	4:00	9.57	0.18	16	13.8	0		119		0		0	9
31-Oct-16	5:00	9.48	0.18	14	14.8	0		127		0		0	9
31-Oct-16	6:00	9.57	0.18	15	15.5	0		129		0		0	9
31-Oct-16	7:00	9.25	0.18	10	13.8	2		136		0		0	9
31-Oct-16	8:00	9.61	0.18	11	12.5	3		93		0		0	9
31-Oct-16	9:00	9.54	0.18	11	11.8	4		120		1		0	9
31-Oct-16	10:00	9.31	0.18	11	10.8	2		118		1		0	9
31-Oct-16	11:00	9.36	0.18	11	11.0	1		99		1		0	9
31-Oct-16	12:00	9.19	0.18	9	10.5	0		113		1		0	9
31-Oct-16	13:00	9.08	0.18	10	10.3	0		116		1		0	8
31-Oct-16	14:00	9.18	0.18	10	10.0	0		120		1		0	9
31-Oct-16	15:00	9.20	0.18	9	9.5	0		106		1		0	9
31-Oct-16	16:00	9.19	0.18	9	9.5	0		110		1		0	9
31-Oct-16	17:00	9.25	0.18	7	8.8	0		104		0		0	9
31-Oct-16	18:00	9.34	0.18	8	8.3	0		106		1		0	9
31-Oct-16	19:00	9.22	0.18	9	8.3	0		107		0		0	9
31-Oct-16	20:00	9.03	0.19	13	9.3	0		109		0		0	8
31-Oct-16	21:00	8.93	0.19	15	11.3	0		116		0		0	8
31-Oct-16	22:00	8.83	0.19	8	11.3	0		109		0		0	8
31-Oct-16	23:00	9.03	0.18	8	11.0	0	0.5	103	113	0	0.4	0	8
	Min	8.38	0.16	5	7.3	0	0.0	93	111	0	0.4	0	8
	Max	10.36	0.19	24	18.3	17	1.3	140	113	4	1.8	1	10
	Avg	9.12	0.18	11	11.4	1	0.8	112	112	1	1.2	0	9
	Std Dev	0.36	0.01	3.2	2.4	2	0.4	8.83	0.4	0.9	0.4	0.1	0.5

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
25-Oct-16	0:00	8.66	0.19	12		3		111		0		0	8
25-Oct-16	1:00	8.56	0.19	16		1		121		0		0	8
25-Oct-16	2:00	8.68	0.19	18		1		104		0		0	8
25-Oct-16	3:00	8.86	0.19	18	16.0	1		117		0		0	9
25-Oct-16	4:00	8.78	0.19	11	15.8	6		127		0		0	8
25-Oct-16	5:00	8.63	0.18	18	16.3	2		123		0		0	8
25-Oct-16	6:00	8.76	0.19	19	16.5	1		151		1		0	8
25-Oct-16	7:00	8.75	0.19	23	17.8	3		112		1		0	8
25-Oct-16	8:00	8.94	0.18	18	19.5	3		117		1		0	8
25-Oct-16	9:00	9.08	0.18	15	18.8	5		113		1		0	8
25-Oct-16	10:00	8.73	0.19	15	17.8	3		107		1		0	8
25-Oct-16	11:00	9.10	0.18	55	25.8	2		97		1		0	8
25-Oct-16	12:00	8.89	0.19	16	25.3	0		122		1		0	9
25-Oct-16	13:00	8.52	0.19	15	25.3	1		111		1		0	8
25-Oct-16	14:00	9.23	0.18	11	24.3	2		102		1		0	9
25-Oct-16	15:00	8.93	0.19	13	13.8	1		119		1		0	9
25-Oct-16	16:00	8.94	0.19	16	13.8	2		102		1		0	8
25-Oct-16	17:00	8.91	0.19	16	14.0	0		117		1		0	8
25-Oct-16	18:00	9.04	0.19	18	15.8	0		108		1		0	9
25-Oct-16	19:00	8.94	0.19	15	16.3	0		111		1		0	8
25-Oct-16	20:00	8.97	0.18	15	16.0	0		111		1		0	8
25-Oct-16	21:00	8.63	0.19	11	14.8	0		114		1		0	8
25-Oct-16	22:00	8.63	0.19	18	14.8	0		109		1		0	8
25-Oct-16	23:00	8.61	0.19	22	16.5	2	1.6	111	114	2	0.8	0	8
26-Oct-16	0:00	8.97	0.19	21	18.0	1	1.5	110	114	1	0.8	0	9
26-Oct-16	1:00	8.70	0.19	25	21.5	0	1.5	113	114	1	0.9	0	8
26-Oct-16	2:00	8.83	0.19	17	21.3	0	1.5	105	114	1	0.9	0	8
26-Oct-16	3:00	8.46	0.19	13	19.0	1	1.5	114	114	1	1.0	0	8
26-Oct-16	4:00	8.59	0.19	14	17.3	2	1.3	138	114	1	1.0	0	8
26-Oct-16	5:00	8.21	0.19	22	16.5	2	1.3	112	114	1	1.0	0	8
26-Oct-16	6:00	8.97	0.19	19	17.0	6	1.5	127	113	4	1.2	0	8
26-Oct-16	7:00	8.72	0.19	21	19.0	0	1.4	120	113	2	1.2	0	8
26-Oct-16	8:00	8.29	0.19	25	21.8	0	1.3	105	112	1	1.2	0	8
26-Oct-16	9:00	8.29	0.20	15	20.0	0	1.0	108	112	1	1.2	0	8
26-Oct-16	10:00	8.44	0.20	11	18.0	0	0.9	116	113	2	1.3	0	8
26-Oct-16	11:00	8.85	0.18	15	16.5	1	0.9	109	113	1	1.3	0	8
26-Oct-16	12:00	8.77	0.19	17	14.5	1	0.9	114	113	2	1.3	0	8
26-Oct-16	13:00	8.51	0.20	20	15.8	1	0.9	115	113	2	1.3	0	8
26-Oct-16	14:00	8.63	0.19	18	17.5	0	0.8	107	113	2	1.4	0	8
26-Oct-16	15:00	8.27	0.20	12	16.8	0	0.8	108	113	1	1.4	0	8
26-Oct-16	16:00	8.35	0.20	10	15.0	0	0.7	111	113	1	1.4	0	8
26-Oct-16	17:00	8.45	0.19	12	13.0	0	0.7	106	113	2	1.4	0	8
26-Oct-16	18:00	8.58	0.19	14	12.0	5	0.9	119	113	2	1.5	0	8
26-Oct-16	19:00	8.51	0.19	10	11.5	0	0.9	113	113	2	1.5	0	8
26-Oct-16	20:00	8.44	0.19	11	11.8	0	0.9	105	113	1	1.5	0	8
26-Oct-16	21:00	8.51	0.19	13	12.0	0	0.9	109	113	1	1.5	0	8
26-Oct-16	22:00	9.01	0.18	7	10.3	3	1.0	116	113	2	1.5	0	8
26-Oct-16	23:00	8.25	0.20	10	10.3	5	1.2	110	113	1	1.5	0	7
27-Oct-16	0:00	8.33	0.20	15	11.3	2	1.2	109	113	2	1.5	0	8
27-Oct-16	1:00	8.17	0.20	10	10.5	2	1.3	115	113	1	1.5	0	7
27-Oct-16	2:00	8.20	0.19	17	13.0	4	1.5	101	113	1	1.5	0	8
27-Oct-16	3:00	8.09	0.20	10	13.0	3	1.5	110	113	1	1.5	0	8
27-Oct-16	4:00	8.44	0.19	11	12.0	0	1.5	142	113	1	1.5	0	8
27-Oct-16	5:00	8.37	0.19	11	12.3	1	1.4	117	113	1	1.5	0	8
27-Oct-16	6:00	8.51	0.19	15	11.8	3	1.3	119	113	3	1.5	0	8
27-Oct-16	7:00	8.01	0.20	23	15.0	0	1.3	122	113	2	1.5	0	7
27-Oct-16	8:00	8.43	0.19	13	15.5	2	1.4	114	113	2	1.5	0	8
27-Oct-16	9:00	8.26	0.19	14	16.3	1	1.4	112	113	1	1.5	0	8
27-Oct-16	10:00	8.37	0.19	18	17.0	0	1.4	108	113	2	1.5	0	8
27-Oct-16	11:00	8.64	0.19	12	14.3	3	1.5	104	113	2	1.6	0	8
27-Oct-16	12:00	8.95	0.18	21	16.3	2	1.5	118	113	1	1.5	0	9
27-Oct-16	13:00	8.70	0.19	21	18.0	3	1.6	105	113	1	1.5	0	8
27-Oct-16	14:00	8.21	0.19	14	17.0	7	1.9	113	113	1	1.5	0	8
27-Oct-16	15:00	8.57	0.19	16	18.0	7	2.2	108	113	1	1.5	0	8
27-Oct-16	16:00	8.55	0.19	18	17.3	3	2.3	109	113	1	1.5	0	8
27-Oct-16	17:00	8.21	0.19	21	17.3	11	2.8	111	113	1	1.4	0	8
27-Oct-16	18:00	8.46	0.19	18	18.3	11	3.0	105	112	1	1.4	0	8
27-Oct-16	19:00	8.44	0.19	15	18.0	1	3.1	108	112	1	1.3	0	8
27-Oct-16	20:00	8.69	0.19	11	16.3	0	3.1	110	112	1	1.3	0	8
27-Oct-16	21:00	8.33	0.19	17	15.3	0	3.1	111	112	1	1.3	0	8
27-Oct-16	22:00	8.43	0.19	15	14.5	0	3.0	110	112	1	1.3	0	8
27-Oct-16	23:00	8.36	0.19	14	14.3	0	2.8	114	112	1	1.3	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/m³	mg/m³ @ 11% O_2		mg/m³ @ 11% O_2		mg/m³ @ 11% O_2		mg/m³ @ 11% O_2		mg/m³ @ 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
1-Nov-16	0:00	9.16	0.18	11		0		112		1		0	9
1-Nov-16	1:00	9.07	0.18	14		0		113		1		0	9
1-Nov-16	2:00	9.26	0.18	15		0		102		1		0	9
1-Nov-16	3:00	9.03	0.18	13	13.3	0		119		1		0	8
1-Nov-16	4:00	9.04	0.18	12	13.5	0		131		1		0	8
1-Nov-16	5:00	9.03	0.18	12	13.0	0		132		1		0	8
1-Nov-16	6:00	9.96	0.17	19	14.0	0		113		2		0	9
1-Nov-16	7:00	9.93	0.17	23	16.5	0		117		1		0	9
1-Nov-16	8:00	9.26	0.18	14	17.0	0		122		1		0	9
1-Nov-16	9:00	9.10	0.18	13	17.3	0		106		1		0	8
1-Nov-16	10:00	9.10	0.18	11	15.3	0		113		1		0	8
1-Nov-16	11:00	8.93	0.18	13	12.8	0		113		1		0	8
1-Nov-16	12:00	8.91	0.18	11	12.0	0		113		1		0	8
1-Nov-16	13:00	8.77	0.19	14	12.3	0		111		1		0	8
1-Nov-16	14:00	8.73	0.19	12	12.5	0		100		1		0	8
1-Nov-16	15:00	8.81	0.19	17	13.5	0		110		1		0	8
1-Nov-16	16:00	9.06	0.18	22	16.3	0		117		1		0	8
1-Nov-16	17:00	9.55	0.18	37	22.0	1		109		1		0	9
1-Nov-16	18:00	8.76	0.19	17	23.3	0		115		1		0	8
1-Nov-16	19:00	8.48	0.19	11	21.8	0		113		1		0	8
1-Nov-16	20:00	8.78	0.19	15	20.0	0		105		1		0	8
1-Nov-16	21:00	9.00	0.18	13	14.0	3		109		1		0	8
1-Nov-16	22:00	9.14	0.18	21	15.0	3		111		1		0	8
1-Nov-16	23:00	8.81	0.19	10	14.8	1	0.3	108	113	1	1.0	0	8
2-Nov-16	0:00	8.64	0.19	10	13.5	0	0.3	112	113	1	1.0	0	8
2-Nov-16	1:00	8.87	0.19	15	14.0	0	0.3	110	113	1	1.0	0	8
2-Nov-16	2:00	8.91	0.18	12	11.8	1	0.4	123	114	1	1.0	0	8
2-Nov-16	3:00	9.32	0.18	18	13.8	3	0.5	109	113	1	1.0	0	9
2-Nov-16	4:00	9.01	0.18	9	13.5	0	0.5	154	114	1	1.0	0	8
2-Nov-16	5:00	8.92	0.18	12	12.8	0	0.5	111	114	1	1.0	0	8
2-Nov-16	6:00	9.18	0.18	18	14.3	0	0.5	131	114	2	1.0	0	8
2-Nov-16	7:00	9.13	0.18	18	14.3	0	0.5	112	114	1	1.0	0	8
2-Nov-16	8:00	9.00	0.18	14	15.5	0	0.5	115	114	1	1.0	0	8
2-Nov-16	9:00	9.00	0.18	12	15.5	0	0.5	118	114	1	1.0	0	8
2-Nov-16	10:00	8.95	0.18	12	14.0	0	0.5	106	114	1	1.0	0	8
2-Nov-16	11:00	8.92	0.18	12	12.5	0	0.5	114	114	1	1.0	0	8
2-Nov-16	12:00	8.84	0.19	12	12.0	0	0.5	106	114	1	1.0	0	8
2-Nov-16	13:00	8.81	0.18	11	11.8	0	0.5	118	114	1	1.0	0	8
2-Nov-16	14:00	8.72	0.19	11	11.5	0	0.5	115	115	1	1.0	0	8
2-Nov-16	15:00	9.20	0.18	14	12.0	0	0.5	112	115	1	1.0		
2-Nov-16	16:00	9.08	0.18	23	14.8	0	0.5	108	114	1	1.0	0	8
2-Nov-16	17:00	8.57	0.19	15	15.8	0	0.5	116	115	1	1.0	0	8
2-Nov-16	18:00	9.03	0.18	18	17.5	0	0.5	104	114	1	1.0	0	8
2-Nov-16	19:00	8.78	0.19	12	17.0	0	0.5	111	114	1	1.0	0	8
2-Nov-16	20:00	9.04	0.18	16	15.3	0	0.5	112	114	1	1.0	0	8
2-Nov-16	21:00	8.84	0.19	15	15.3	0	0.3	116	115	1	1.0	0	8
2-Nov-16	22:00	8.62	0.19	15	14.5	0	0.2	111	115	1	1.0	0	8
2-Nov-16	23:00	8.85	0.19	18	16.0	0	0.2	110	115	1	1.0	0	8
3-Nov-16	0:00	8.89	0.19	15	15.8	0	0.2	118	115	1	1.0	0	8
3-Nov-16	1:00	8.99	0.19	20	17.0	0	0.2	105	115	1	1.0	0	8
3-Nov-16	2:00	8.94	0.18	20	18.3	0	0.1	107	114	1	1.0	0	8
3-Nov-16	3:00	9.12	0.18	31	21.5	0	0.0	108	114	1	1.0	0	8
3-Nov-16	4:00	8.85	0.18	14	21.3	0	0.0	128	113	1	1.0	0	8
3-Nov-16	5:00	8.64	0.19	14	19.8	0	0.0	116	113	1	1.0	0	8
3-Nov-16	6:00	8.44	0.19	12	17.8	0	0.0	129	113	2	1.0	0	8
3-Nov-16	7:00	8.45	0.19	12	13.0	0	0.0	122	114	2	1.1	0	8
3-Nov-16	8:00	8.47	0.19	16	13.5	0	0.0	109	113	1	1.1	0	8
3-Nov-16	9:00	8.62	0.19	17	14.3	0	0.0	113	113	1	1.1	0	8
3-Nov-16	10:00	8.65	0.19	20	16.3	0	0.0	113	113	1	1.1	0	8
3-Nov-16	11:00	8.55	0.19	16	17.3	0	0.0	112	113	1	1.1	0	8
3-Nov-16	12:00	8.62	0.19	19	18.0	0	0.0	111	114	1	1.1	0	8
3-Nov-16	13:00	8.69	0.19	14	17.3	0	0.0	111	113	1	1.1	0	8
3-Nov-16	14:00	8.73	0.19	19	17.0	0	0.0	108	113	1	1.1	0	8
3-Nov-16	15:00	7.56	0.20	10	15.5	0	0.0	115	113	1	1.1		
3-Nov-16	16:00	7.78	0.20	11	13.5	0	0.0	112	113	1	1.1	0	7
3-Nov-16	17:00	8.06	0.20	11	12.8	0	0.0	109	113	1	1.1	0	7
3-Nov-16	18:00	7.98	0.20	11	10.8	0	0.0	109	113	2	1.1	0	7
3-Nov-16	19:00	8.21	0.20	13	11.5	0	0.0	113	113	1	1.1	0	7
3-Nov-16	20:00	8.46	0.19	13	12.0	0	0.0	108	113	1	1.1	0	8
3-Nov-16	21:00	8.35	0.19	17	13.5	0	0.0	109	113	1	1.1	0	7
3-Nov-16	22:00	7.96	0.20	10	13.3	0	0.0	116	113	1	1.1	0	7
3-Nov-16	23:00	8.41	0.19	13	13.3	0	0.0	108	113	1	1.1	0	8
	Min	7.56	0.17	7	10.3	0	0.0	97	112	0	0.8	0	7
	Max	9.96	0.20	55	25.8	11	3.1	154	115	4	1.6	0	9
	Avg	8.71	0.19	16	15.7	1	0.9	113	113	1	1.2	0	8
	Std Dev	0.36	0.01	5.5	3.2	2	0.8	8.40	0.7	0.5	0.2	0.0	0.4

APPENDIX 36

DYEC AMESA Dioxin and Furan Analytical Report and Results

AMESA Dioxin and Furan Emission Data
Calculated with AMESA Cartridge
and Probe Rinse
(57 pages)

TABLE 1
Covanta - Durham York Energy Centre
AMESA Monitor
Dioxin and Furan Test Schedule

Boiler No. 1 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	October 27, 2016	8:20	14:44	380
2	October 28, 2016	8:05	14:32	384
3	October 31, 2016	10:15	16:38	379

Boiler No. 2 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	November 1, 2016	9:36	15:51	371
2	November 2, 2016	8:08	14:25	373
3	November 3, 2016	8:14	14:24	366

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

Dioxins

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	234	90.9	325	0.037	0.063	0.053	0.053	1.00
Pentachlorodibenzo-p-dioxins	1110	3870	4980	0.56	0.96	0.81	0.81	15.3
Hexachlorodibenzo-p-dioxins	1700	20000	21700	2.45	4.18	3.52	3.54	66.9
Heptachlorodibenzo-p-dioxins	1170	17000	18170	2.05	3.50	2.95	2.96	56.0
Octachlorodibenzo-p-dioxin	628	8150	8778	0.99	1.69	1.42	1.43	27.1
Total			53953	6.09	10.4	8.75	8.80	166

Furans

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	881	370	1251	0.14	0.24	0.20	0.20	3.86
Pentachlorodibenzofurans	1840	6440	8280	0.93	1.59	1.34	1.35	25.5
Hexachlorodibenzofurans	1120	15500	16620	1.88	3.20	2.70	2.71	51.2
Heptachlorodibenzofurans	564	10500	11064	1.25	2.13	1.79	1.80	34.1
Octachlorodibenzofuran	<110	<1700	<1810	<0.20	<0.35	<0.29	<0.30	<5.58
Total			<39025	<4.41	<7.52	<6.33	<6.36	<120

Dry Gas Volume Sampled (Nm³***) :	4.756
Dry Gas Volume Sampled (Rm³*) :	5.191
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	93.7	27.3	121	0.014	0.023	0.019	0.019	0.37
Pentachlorodibenzo-p-dioxins	592	1880	2472	0.28	0.47	0.39	0.40	7.47
Hexachlorodibenzo-p-dioxins	1090	11800	12890	1.44	2.45	2.04	2.06	39.0
Heptachlorodibenzo-p-dioxins	905	11500	12405	1.39	2.36	1.96	1.98	37.5
Octachlorodibenzo-p-dioxin	478	6390	6868	0.77	1.31	1.09	1.10	20.8
Total			34756	3.89	6.61	5.50	5.56	105

Furans

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	352	161	513	0.057	0.098	0.081	0.082	1.55
Pentachlorodibenzofurans	878	2450	3328	0.37	0.63	0.53	0.53	10.1
Hexachlorodibenzofurans	772	9510	10282	1.15	1.96	1.63	1.64	31.1
Heptachlorodibenzofurans	487	7850	8337	0.93	1.59	1.32	1.33	25.2
Octachlorodibenzofuran	<83	<1400	<1483	<0.17	<0.28	<0.23	<0.24	<4.48
Total			<23943	<2.68	<4.55	<3.79	<3.83	<72.4

Dry Gas Volume Sampled (Nm³***) :	4.818
Dry Gas Volume Sampled (Rm³*) :	5.259
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	121	14.1	135.1	0.015	0.026	0.022	0.022	0.41
Pentachlorodibenzo-p-dioxins	591	706	1297	0.15	0.25	0.21	0.21	3.94
Hexachlorodibenzo-p-dioxins	785	3720	4505	0.51	0.87	0.73	0.73	13.7
Heptachlorodibenzo-p-dioxins	529	3620	4149	0.47	0.80	0.67	0.67	12.6
Octachlorodibenzo-p-dioxin	345	2310	2655	0.30	0.51	0.43	0.43	8.06
Total			12741	1.45	2.45	2.07	2.07	38.7

Furans

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	361	78.9	440	0.050	0.084	0.071	0.071	1.33
Pentachlorodibenzofurans	868	1040	1908	0.22	0.37	0.31	0.31	5.79
Hexachlorodibenzofurans	541	2900	3441	0.39	0.66	0.56	0.56	10.4
Heptachlorodibenzofurans	255	2140	2395	0.27	0.46	0.39	0.39	7.27
Octachlorodibenzofuran	<56	<520	<576	<0.065	<0.11	<0.093	<0.093	<1.75
Total			<8760	<1.00	<1.68	<1.42	<1.42	<26.6

Dry Gas Volume Sampled (Nm³***) :	4.770
Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.037	0.014	0.015	0.022	58.8
Pentachlorodibenzo-p-dioxins	0.56	0.28	0.15	0.33	64.5
Hexachlorodibenzo-p-dioxins	2.45	1.44	0.51	1.47	66.0
Heptachlorodibenzo-p-dioxins	2.05	1.39	0.47	1.30	60.8
Octachlorodibenzo-p-dioxin	0.99	0.77	0.30	0.69	51.2
Total	6.09	3.89	1.45	3.81	61.0

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	0.14	0.057	0.050	0.083	61.1
Pentachlorodibenzofurans	0.93	0.37	0.22	0.51	74.3
Hexachlorodibenzofurans	1.88	1.15	0.39	1.14	65.2
Heptachlorodibenzofurans	1.25	0.93	0.27	0.82	60.9
Octachlorodibenzofuran	<0.20	<0.17	<0.065	<0.15	49.4
Total	<4.41	<2.68	<1.00	<2.69	63.3

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry 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	0.063	0.023	0.026	0.037	59.3
Pentachlorodibenzo-p-dioxins	0.96	0.47	0.25	0.56	65.0
Hexachlorodibenzo-p-dioxins	4.18	2.45	0.87	2.50	66.3
Heptachlorodibenzo-p-dioxins	3.50	2.36	0.80	2.22	61.2
Octachlorodibenzo-p-dioxin	1.69	1.31	0.51	1.17	51.5
Total	10.4	6.61	2.45	6.48	61.3

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.24	0.098	0.084	0.14	61.6
Pentachlorodibenzofurans	1.59	0.63	0.37	0.86	74.7
Hexachlorodibenzofurans	3.20	1.96	0.66	1.94	65.5
Heptachlorodibenzofurans	2.13	1.59	0.46	1.39	61.2
Octachlorodibenzofuran	<0.35	<0.28	<0.11	<0.25	49.7
Total	<7.52	<4.55	<1.68	<4.58	63.6

* At 25°C and 1 atmosphere

TABLE 7
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.053	0.019	0.022	0.031	59.6
Pentachlorodibenzo-p-dioxins	0.81	0.39	0.21	0.47	65.2
Hexachlorodibenzo-p-dioxins	3.52	2.04	0.73	2.10	66.5
Heptachlorodibenzo-p-dioxins	2.95	1.96	0.67	1.86	61.3
Octachlorodibenzo-p-dioxin	1.42	1.09	0.43	0.98	51.5
Total	8.75	5.50	2.07	5.44	61.4

Furans

Congener Group	Dry Adjusted Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.20	0.081	0.071	0.12	61.8
Pentachlorodibenzofurans	1.34	0.53	0.31	0.73	75.0
Hexachlorodibenzofurans	2.70	1.63	0.56	1.63	65.7
Heptachlorodibenzofurans	1.79	1.32	0.39	1.17	61.3
Octachlorodibenzofuran	<0.29	<0.23	<0.093	<0.21	49.6
Total	<6.33	<3.79	<1.42	<3.85	63.8

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

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet 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	0.053	0.019	0.022	0.031	59.6
Pentachlorodibenzo-p-dioxins	0.81	0.40	0.21	0.47	65.2
Hexachlorodibenzo-p-dioxins	3.54	2.06	0.73	2.11	66.5
Heptachlorodibenzo-p-dioxins	2.96	1.98	0.67	1.87	61.3
Octachlorodibenzo-p-dioxin	1.43	1.10	0.43	0.99	51.6
Total	8.80	5.56	2.07	5.48	61.5

Furans

Congener Group	Wet reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.20	0.082	0.071	0.12	61.8
Pentachlorodibenzofurans	1.35	0.53	0.31	0.73	75.0
Hexachlorodibenzofurans	2.71	1.64	0.56	1.64	65.7
Heptachlorodibenzofurans	1.80	1.33	0.39	1.18	61.3
Octachlorodibenzofuran	<0.30	<0.24	<0.093	<0.21	49.8
Total	<6.36	<3.83	<1.42	<3.87	63.8

* At 25°C and 1 atmosphere

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Rates

Dioxins

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzo-p-dioxins	1.00	0.37	0.41	0.59	59.9
Pentachlorodibenzo-p-dioxins	15.3	7.47	3.94	8.92	65.5
Hexachlorodibenzo-p-dioxins	66.9	39.0	13.7	39.8	66.8
Heptachlorodibenzo-p-dioxins	56.0	37.5	12.6	35.4	61.6
Octachlorodibenzo-p-dioxin	27.1	20.8	8.06	18.6	52.0
Total	166	105	38.7	103	61.8

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	3.86	1.55	1.33	2.25	62.2
Pentachlorodibenzofurans	25.5	10.1	5.79	13.8	75.3
Hexachlorodibenzofurans	51.2	31.1	10.4	30.9	66.0
Heptachlorodibenzofurans	34.1	25.2	7.27	22.2	61.6
Octachlorodibenzofuran	<5.6	<4.48	<1.75	<3.94	50.1
Total	<120	<72.4	<26.6	<73.1	64.1

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.022	0.037	0.031	0.031	0.59
Pentachlorodibenzo-p-dioxins	0.33	0.56	0.47	0.47	8.92
Hexachlorodibenzo-p-dioxins	1.47	2.50	2.10	2.11	39.8
Heptachlorodibenzo-p-dioxins	1.30	2.22	1.86	1.87	35.4
Octachlorodibenzo-p-dioxin	0.69	1.17	0.98	0.99	18.6
Total	3.81	6.48	5.44	5.48	103

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.083	0.14	0.12	0.12	2.25
Pentachlorodibenzofurans	0.51	0.86	0.73	0.73	13.8
Hexachlorodibenzofurans	1.14	1.94	1.63	1.64	30.9
Heptachlorodibenzofurans	0.82	1.39	1.17	1.18	22.2
Octachlorodibenzofuran	<0.15	<0.25	<0.21	<0.21	<3.94
Total	<2.69	<4.58	<3.85	<3.87	<73.1

* At 25°C and 1 atmosphere

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

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1910	5400	7310	0.86	1.46	1.20	1.23	23.2
Pentachlorodibenzo-p-dioxins	4150	26800	30950	3.63	6.17	5.08	5.22	98.1
Hexachlorodibenzo-p-dioxins	3210	49400	52610	6.18	10.5	8.64	8.87	167
Heptachlorodibenzo-p-dioxins	771	20000	20771	2.44	4.14	3.41	3.50	65.8
Octachlorodibenzo-p-dioxin	238	4230	4468	0.52	0.89	0.73	0.75	14.2
Total			116109	13.6	23.1	19.1	19.6	368

Furans

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1230	2380	3610	0.42	0.72	0.59	0.61	11.4
Pentachlorodibenzofurans	1470	8590	10060	1.18	2.01	1.65	1.70	31.9
Hexachlorodibenzofurans	721	8860	9581	1.12	1.91	1.57	1.62	30.4
Heptachlorodibenzofurans	238	4390	4628	0.54	0.92	0.76	0.78	14.7
Octachlorodibenzofuran	<36	<670	<706	<0.083	<0.14	<0.12	<0.12	<2.24
Total			<28585	<3.36	<5.70	<4.70	<4.82	<90.6

Dry Gas Volume Sampled (Nm³***) :	4.595
Dry Gas Volume Sampled (Rm³*) :	5.016
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1610	4000	5610	0.67	1.14	0.94	0.96	17.5
Pentachlorodibenzo-p-dioxins	3660	21100	24760	2.97	5.04	4.15	4.24	77.1
Hexachlorodibenzo-p-dioxins	2610	36700	39310	4.71	8.00	6.58	6.73	122
Heptachlorodibenzo-p-dioxins	615	14600	15215	1.82	3.10	2.55	2.60	47.4
Octachlorodibenzo-p-dioxin	148	3510	3658	0.44	0.74	0.61	0.63	11.4
Total			88553	10.6	18.0	14.8	15.2	276

Furans

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	1060	2460	3520	0.42	0.72	0.59	0.60	11.0
Pentachlorodibenzofurans	1220	6660	7880	0.94	1.60	1.32	1.35	24.5
Hexachlorodibenzofurans	614	6830	7444	0.89	1.52	1.25	1.27	23.2
Heptachlorodibenzofurans	164	3340	3504	0.42	0.71	0.59	0.60	10.9
Octachlorodibenzofuran	<23	<550	<573	<0.069	<0.12	<0.096	<0.098	<1.78
Total			<22921	<2.75	<4.67	<3.84	<3.92	<71.4

Dry Gas Volume Sampled (Nm^3***) :	4.501
Dry Gas Volume Sampled (Rm^3*) :	4.913
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	18.6
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
*** At 0°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 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1020	3260	4280	0.53	0.89	0.72	0.75	14.3
Pentachlorodibenzo-p-dioxins	2000	12000	14000	1.72	2.90	2.35	2.46	46.7
Hexachlorodibenzo-p-dioxins	1560	19600	21160	2.61	4.39	3.55	3.72	70.6
Heptachlorodibenzo-p-dioxins	424	7750	8174	1.01	1.69	1.37	1.44	27.3
Octachlorodibenzo-p-dioxin	112	2090	2202	0.27	0.46	0.37	0.39	7.35
Total			49816	6.13	10.3	8.35	8.75	166

Furans

Congener Group	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	665	2020	2685	0.33	0.56	0.45	0.47	8.96
Pentachlorodibenzofurans	730	3510	4240	0.52	0.88	0.71	0.74	14.1
Hexachlorodibenzofurans	374	3750	4124	0.51	0.85	0.69	0.72	13.8
Heptachlorodibenzofurans	111	1790	1901	0.23	0.39	0.32	0.33	6.34
Octachlorodibenzofuran	<17	<340	<357	<0.044	<0.074	<0.060	<0.063	<1.19
Total			<13307	<1.64	<2.76	<2.23	<2.34	<44.4

Dry Gas Volume Sampled (Nm³***) :	4.420
Dry Gas Volume Sampled (Rm³*) :	4.825
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.86	0.67	0.53	0.69	24.2
Pentachlorodibenzo-p-dioxins	3.63	2.97	1.72	2.77	34.9
Hexachlorodibenzo-p-dioxins	6.18	4.71	2.61	4.50	39.9
Heptachlorodibenzo-p-dioxins	2.44	1.82	1.01	1.76	40.9
Octachlorodibenzo-p-dioxin	0.52	0.44	0.27	0.41	31.3
Total	13.6	10.6	6.13	10.1	37.3

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	0.42	0.42	0.33	0.39	13.6
Pentachlorodibenzofurans	1.18	0.94	0.52	0.88	37.8
Hexachlorodibenzofurans	1.12	0.89	0.51	0.84	37.0
Heptachlorodibenzofurans	0.54	0.42	0.23	0.40	39.0
Octachlorodibenzofuran	<0.083	<0.069	<0.044	<0.065	30.2
Total	<3.36	<2.75	<1.64	<2.58	33.7

TABLE 15

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet - AMESA Monitor

Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry 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	1.46	1.14	0.89	1.16	24.6
Pentachlorodibenzo-p-dioxins	6.17	5.04	2.90	4.70	35.3
Hexachlorodibenzo-p-dioxins	10.5	8.00	4.39	7.63	40.2
Heptachlorodibenzo-p-dioxins	4.14	3.10	1.69	2.98	41.2
Octachlorodibenzo-p-dioxin	0.89	0.74	0.46	0.70	31.7
Total	23.1	18.0	10.3	17.2	37.6

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.72	0.72	0.56	0.66	14.0
Pentachlorodibenzofurans	2.01	1.60	0.88	1.50	38.2
Hexachlorodibenzofurans	1.91	1.52	0.85	1.43	37.4
Heptachlorodibenzofurans	0.92	0.71	0.39	0.68	39.3
Octachlorodibenzofuran	<0.14	<0.12	<0.074	<0.11	30.6
Total	<5.70	<4.67	<2.76	<4.37	34.1

* At 25°C and 1 atmosphere

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	1.20	0.94	0.72	0.95	25.4
Pentachlorodibenzo-p-dioxins	5.08	4.15	2.35	3.86	36.0
Hexachlorodibenzo-p-dioxins	8.64	6.58	3.55	6.26	40.9
Heptachlorodibenzo-p-dioxins	3.41	2.55	1.37	2.44	41.9
Octachlorodibenzo-p-dioxin	0.73	0.61	0.37	0.57	32.5
Total	19.1	14.8	8.35	14.1	38.3

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	0.59	0.59	0.45	0.54	15.0
Pentachlorodibenzofurans	1.65	1.32	0.71	1.23	38.9
Hexachlorodibenzofurans	1.57	1.25	0.69	1.17	38.1
Heptachlorodibenzofurans	0.76	0.59	0.32	0.56	40.1
Octachlorodibenzofuran	<0.12	<0.096	<0.060	<0.091	31.4
Total	<4.70	<3.84	<2.23	<3.59	34.9

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

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	1.23	0.96	0.75	0.98	24.6
Pentachlorodibenzo-p-dioxins	5.22	4.24	2.46	3.97	35.2
Hexachlorodibenzo-p-dioxins	8.87	6.73	3.72	6.44	40.2
Heptachlorodibenzo-p-dioxins	3.50	2.60	1.44	2.51	41.2
Octachlorodibenzo-p-dioxin	0.75	0.63	0.39	0.59	31.6
Total	19.6	15.2	8.75	14.5	37.6

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	0.61	0.60	0.47	0.56	13.8
Pentachlorodibenzofurans	1.70	1.35	0.74	1.26	38.1
Hexachlorodibenzofurans	1.62	1.27	0.72	1.20	37.3
Heptachlorodibenzofurans	0.78	0.60	0.33	0.57	39.3
Octachlorodibenzofuran	<0.12	<0.098	<0.063	<0.093	30.5
Total	<4.82	<3.92	<2.34	<3.69	34.0

* At 25°C and 1 atmosphere

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	23.2	17.5	14.3	18.3	24.6
Pentachlorodibenzo-p-dioxins	98.1	77.1	46.7	74.0	34.9
Hexachlorodibenzo-p-dioxins	167	122	70.6	120	40.1
Heptachlorodibenzo-p-dioxins	65.8	47.4	27.3	46.8	41.2
Octachlorodibenzo-p-dioxin	14.2	11.4	7.35	11.0	31.3
Total	368	276	166	270	37.4

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	11.4	11.0	8.96	10.5	12.6
Pentachlorodibenzofurans	31.9	24.5	14.1	23.5	37.9
Hexachlorodibenzofurans	30.4	23.2	13.8	22.4	37.1
Heptachlorodibenzofurans	14.7	10.9	6.34	10.6	39.2
Octachlorodibenzofuran	<2.24	<1.78	<1.19	<1.74	30.2
Total	<90.6	<71.4	<44.4	<68.8	33.7

TABLE 19

Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.69	1.16	0.95	0.98	18.3
Pentachlorodibenzo-p-dioxins	2.77	4.70	3.86	3.97	74.0
Hexachlorodibenzo-p-dioxins	4.50	7.63	6.26	6.44	120
Heptachlorodibenzo-p-dioxins	1.76	2.98	2.44	2.51	46.8
Octachlorodibenzo-p-dioxin	0.41	0.70	0.57	0.59	11.0
Total	10.1	17.2	14.1	14.5	270

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.39	0.66	0.54	0.56	10.5
Pentachlorodibenzofurans	0.88	1.50	1.23	1.26	23.5
Hexachlorodibenzofurans	0.84	1.43	1.17	1.20	22.4
Heptachlorodibenzofurans	0.40	0.68	0.56	0.57	10.6
Octachlorodibenzofuran	<0.065	<0.11	<0.091	<0.093	<1.74
Total	<2.58	<4.37	<3.59	<3.69	<68.8

* At 25°C and 1 atmosphere

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

TABLE 20
Covanta - Durham York Energy Centre
BH Outlet - AMESA Monitor
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank AMESA Sample pg	Blank Probe Rinse pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<3.1	<3.5	<3.7
Pentachlorodibenzo-p-dioxins	<2.6	<3.6	<3.2
Hexachlorodibenzo-p-dioxins	<7.9	8.5	<7.1
Heptachlorodibenzo-p-dioxins	<2.3	24.7	<2.2
Octachlorodibenzo-p-dioxin	4.5	23.1	6.2
Total	<20.4	<63.4	<22.4

Furans

Congener Group	Blank AMESA Sample pg	Blank AMESA Sample pg	Laboratory Blank pg
Tetrachlorodibenzofurans	3.3	<2.2	<2.3
Pentachlorodibenzofurans	<2.2	<2.2	<2.3
Hexachlorodibenzofurans	<2.4	3.3	<2.3
Heptachlorodibenzofurans	<1.9	7.6	4.1
Octachlorodibenzofuran	<2.3	2.6	2.3
Total	<12.1	<17.9	<13.3

"<" 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 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	AMESA Sample pg	Probe Rinse pg	Total Collected pg	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	6.8	3.4	10.2	1.15	1.96	1.65	1.66	0.031
12378-pentachlorodibenzo-p-dioxin	25.1	163	188	21.2	36.2	30.5	30.7	0.58
123478-hexachlorodibenzo-p-dioxin	33.7	451	485	54.7	93.4	78.6	79.0	1.49
123678-hexachlorodibenzo-p-dioxin	95.2	1310	1405	159	271	228	229	4.33
123789-hexachlorodibenzo-p-dioxin	46.3	589	635	71.7	122	103	104	1.96
1234678-heptachlorodibenzo-p-dioxin	524	7210	7734	873	1490	1255	1261	23.8
Octachlorodibenzo-p-dioxin	628	8150	8778	991	1691	1424	1431	27.1
2378-tetrachlorodibenzofuran	22.6	17.6	40.2	4.54	7.74	6.52	6.56	0.12
12378-pentachlorodibenzofuran	66.2	270	336	38.0	64.8	54.5	54.8	1.04
23478-pentachlorodibenzofuran	120	703	823	92.9	159	134	134	2.54
123478-hexachlorodibenzofuran	253	3670	3923	443	756	636	640	12.1
123678-hexachlorodibenzofuran	<110	1550	<1660	<187	<320	<269	<271	<5.12
234678-hexachlorodibenzofuran	121	1870	1991	225	384	323	325	6.14
123789-hexachlorodibenzofuran	<4.6	<85	<89.6	<10.1	<17.3	<14.5	<14.6	<0.28
1234678-heptachlorodibenzofuran	399	7060	7459	842	1437	1210	1216	23.0
1234789-heptachlorodibenzofuran	29.5	438	468	52.8	90.1	75.8	76.2	1.44
Octachlorodibenzofuran	<110	<1700	<1810	<204	<349	<294	<295	<5.58
Total Dioxins & Furans Only			<37835	<4271	<7288	<6137	<6170	<117

Dry Gas Volume Sampled (Nm³***) :	4.756
Dry Gas Volume Sampled (Rm³*) :	5.191
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	AMESA Sample pg	Probe Rinse pg	Total Collected pg	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	<3.6	<2.6	<6.20	<0.69	<1.18	<0.98	<0.99	<0.019
12378-pentachlorodibenzo-p-dioxin	14.8	82.8	97.6	10.9	18.6	15.4	15.6	0.30
123478-hexachlorodibenzo-p-dioxin	21.2	271	292	32.7	55.6	46.3	46.7	0.88
123678-hexachlorodibenzo-p-dioxin	59.1	790	849	95.1	161	134	136	2.57
123789-hexachlorodibenzo-p-dioxin	57.2	403	460	51.5	87.5	72.8	73.6	1.39
1234678-heptachlorodibenzo-p-dioxin	414	5100	5514	617	1048	873	882	16.7
Octachlorodibenzo-p-dioxin	478	6390	6868	769	1306	1087	1099	20.8
2378-tetrachlorodibenzofuran	11.2	10.5	21.7	2.43	4.13	3.43	3.47	0.066
12378-pentachlorodibenzofuran	<39	132	<171	<19.1	<32.5	<27.1	<27.4	<0.52
23478-pentachlorodibenzofuran	64.0	332	396	44.3	75.3	62.7	63.3	1.20
123478-hexachlorodibenzofuran	161	2200	2361	264	449	374	378	7.14
123678-hexachlorodibenzofuran	70.7	964	1035	116	197	164	166	3.13
234678-hexachlorodibenzofuran	72.3	1080	1152	129	219	182	184	3.48
123789-hexachlorodibenzofuran	4.5	<44	<48.5	<5.43	<9.22	<7.68	<7.76	<0.15
1234678-heptachlorodibenzofuran	346	5150	5496	615	1045	870	879	16.6
1234789-heptachlorodibenzofuran	22.9	350	373	41.8	70.9	59.0	59.7	1.13
Octachlorodibenzofuran	<83	<1400	<1483	<166	<282	<235	<237	<4.48
Total Dioxins & Furans Only			<26624	<2981	<5063	<4214	<4259	<80.5

Dry Gas Volume Sampled (Nm^3***) :	4.818
Dry Gas Volume Sampled (Rm^3*) :	5.259
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	AMESA Sample pg	Probe Rinse pg	Total Collected pg	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	4.3	<2.7	<7.00	<0.80	<1.34	<1.14	<1.14	<0.021
12378-pentachlorodibenzo-p-dioxin	16.2	27.8	44.0	5.00	8.45	7.14	7.14	0.13
123478-hexachlorodibenzo-p-dioxin	15.4	85.1	101	11.4	19.3	16.3	16.3	0.30
123678-hexachlorodibenzo-p-dioxin	40.4	254	294	33.5	56.5	47.8	47.8	0.89
123789-hexachlorodibenzo-p-dioxin	19.1	143	162	18.4	31.1	26.3	26.3	0.49
1234678-heptachlorodibenzo-p-dioxin	248	1750	1998	227	384	324	324	6.06
Octachlorodibenzo-p-dioxin	345	2310	2655	302	510	431	431	8.06
2378-tetrachlorodibenzofuran	9.4	3.4	12.8	1.45	2.46	2.08	2.08	0.039
12378-pentachlorodibenzofuran	29.5	49.8	79.3	9.01	15.2	12.9	12.9	0.24
23478-pentachlorodibenzofuran	61.6	112	174	19.7	33.3	28.2	28.2	0.53
123478-hexachlorodibenzofuran	112	667	779	88.5	150	126	126	2.36
123678-hexachlorodibenzofuran	48.5	310	359	40.7	68.9	58.2	58.2	1.09
234678-hexachlorodibenzofuran	51.4	330	381	43.3	73.3	61.9	61.9	1.16
123789-hexachlorodibenzofuran	2.6	<14	<16.6	<1.89	<3.19	<2.69	<2.69	<0.050
1234678-heptachlorodibenzofuran	185	1540	1725	196	331	280	280	5.23
1234789-heptachlorodibenzofuran	13.0	119	132	15.0	25.4	21.4	21.4	0.40
Octachlorodibenzofuran	<56	<520	<576	<65.5	<111	<93.5	<93.5	<1.75
Total Dioxins & Furans Only			<9495	<1079	<1824	<1541	<1541	<28.8

Dry Gas Volume Sampled (Nm³***) :	4.770
Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	1.15	<0.69	<0.80	<0.88	27.3
12378-pentachlorodibenzo-p-dioxin	21.2	10.9	5.00	12.4	66.3
123478-hexachlorodibenzo-p-dioxin	54.7	32.7	11.4	33.0	65.7
123678-hexachlorodibenzo-p-dioxin	159	95.1	33.5	95.7	65.4
123789-hexachlorodibenzo-p-dioxin	71.7	51.5	18.4	47.2	57.0
1234678-heptachlorodibenzo-p-dioxin	873	617	227	573	56.8
Octachlorodibenzo-p-dioxin	991	769	302	687	51.2
2378-tetrachlorodibenzofuran	4.54	2.43	1.45	2.81	56.1
12378-pentachlorodibenzofuran	38.0	<19.1	9.01	<22.0	66.6
23478-pentachlorodibenzofuran	92.9	44.3	19.7	52.3	71.2
123478-hexachlorodibenzofuran	443	264	88.5	265	66.8
123678-hexachlorodibenzofuran	<187	116	40.7	<115	64.0
234678-hexachlorodibenzofuran	225	129	43.3	132	68.6
123789-hexachlorodibenzofuran	<10.1	<5.43	<1.89	<5.81	71.0
1234678-heptachlorodibenzofuran	842	615	196	551	59.5
1234789-heptachlorodibenzofuran	52.8	41.8	15.0	36.5	53.2
Octachlorodibenzofuran	<204	<166	<65.5	<145	49.4
Total Dioxins & Furans Only	<4271	<2981	<1079	<2777	57.8

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 - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	1.96	<1.18	<1.34	<1.50	27.7
12378-pentachlorodibenzo-p-dioxin	36.2	18.6	8.45	21.1	66.7
123478-hexachlorodibenzo-p-dioxin	93.4	55.6	19.3	56.1	66.0
123678-hexachlorodibenzo-p-dioxin	271	161	56.5	163	65.7
123789-hexachlorodibenzo-p-dioxin	122	87.5	31.1	80.3	57.3
1234678-heptachlorodibenzo-p-dioxin	1490	1048	384	974	57.2
Octachlorodibenzo-p-dioxin	1691	1306	510	1169	51.5
2378-tetrachlorodibenzofuran	7.74	4.13	2.46	4.78	56.6
12378-pentachlorodibenzofuran	64.8	<32.5	15.2	<37.5	67.0
23478-pentachlorodibenzofuran	159	75.3	33.3	89.1	71.5
123478-hexachlorodibenzofuran	756	449	150	451	67.1
123678-hexachlorodibenzofuran	<320	197	68.9	<195	64.3
234678-hexachlorodibenzofuran	384	219	73.3	225	68.9
123789-hexachlorodibenzofuran	<17.3	<9.22	<3.19	<9.89	71.4
1234678-heptachlorodibenzofuran	1437	1045	331	938	59.8
1234789-heptachlorodibenzofuran	90.1	70.9	25.4	62.1	53.5
Octachlorodibenzofuran	<349	<282	<111	<247	49.7
Total Dioxins & Furans Only	<7288	<5063	<1824	<4725	58.2

* 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 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	1.65	<0.98	<1.14	<1.26	28.0
12378-pentachlorodibenzo-p-dioxin	30.5	15.4	7.14	17.7	66.9
123478-hexachlorodibenzo-p-dioxin	78.6	46.3	16.3	47.1	66.2
123678-hexachlorodibenzo-p-dioxin	228	134	47.8	137	65.9
123789-hexachlorodibenzo-p-dioxin	103	72.8	26.3	67.4	57.4
1234678-heptachlorodibenzo-p-dioxin	1255	873	324	817	57.2
Octachlorodibenzo-p-dioxin	1424	1087	431	981	51.5
2378-tetrachlorodibenzofuran	6.52	3.43	2.08	4.01	56.8
12378-pentachlorodibenzofuran	54.5	<27.1	12.9	<31.5	67.3
23478-pentachlorodibenzofuran	134	62.7	28.2	74.8	71.8
123478-hexachlorodibenzofuran	636	374	126	379	67.3
123678-hexachlorodibenzofuran	<269	164	58.2	<164	64.5
234678-hexachlorodibenzofuran	323	182	61.9	189	69.1
123789-hexachlorodibenzofuran	<14.5	<7.68	<2.69	<8.30	71.6
1234678-heptachlorodibenzofuran	1210	870	280	787	59.8
1234789-heptachlorodibenzofuran	75.8	59.0	21.4	52.1	53.5
Octachlorodibenzofuran	<294	<235	<93.5	<207	49.6
Total Dioxins & Furans Only	<6137	<4214	<1541	<3964	58.2

* 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 27
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	1.66	<0.99	<1.14	<1.26	28.0
12378-pentachlorodibenzo-p-dioxin	30.7	15.6	7.14	17.8	66.9
123478-hexachlorodibenzo-p-dioxin	79.0	46.7	16.3	47.4	66.2
123678-hexachlorodibenzo-p-dioxin	229	136	47.8	138	65.9
123789-hexachlorodibenzo-p-dioxin	104	73.6	26.3	67.8	57.4
1234678-heptachlorodibenzo-p-dioxin	1261	882	324	823	57.3
Octachlorodibenzo-p-dioxin	1431	1099	431	987	51.6
2378-tetrachlorodibenzofuran	6.56	3.47	2.08	4.03	56.8
12378-pentachlorodibenzofuran	54.8	<27.4	12.9	<31.7	67.3
23478-pentachlorodibenzofuran	134	63.3	28.2	75.2	71.8
123478-hexachlorodibenzofuran	640	378	126	381	67.3
123678-hexachlorodibenzofuran	<271	166	58.2	<165	64.5
234678-hexachlorodibenzofuran	325	184	61.9	190	69.1
123789-hexachlorodibenzofuran	<14.6	<7.76	<2.69	<8.35	71.6
1234678-heptachlorodibenzofuran	1216	879	280	792	59.9
1234789-heptachlorodibenzofuran	76.2	59.7	21.4	52.4	53.6
Octachlorodibenzofuran	<295	<237	<93.5	<209	49.8
Total Dioxins & Furans Only	<6170	<4259	<1541	<3990	58.3

* 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 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.031	<0.019	<0.021	<0.024	28.2
12378-pentachlorodibenzo-p-dioxin	0.58	0.30	0.13	0.34	67.2
123478-hexachlorodibenzo-p-dioxin	1.49	0.88	0.30	0.89	66.5
123678-hexachlorodibenzo-p-dioxin	4.33	2.57	0.89	2.60	66.2
123789-hexachlorodibenzo-p-dioxin	1.96	1.39	0.49	1.28	57.7
1234678-heptachlorodibenzo-p-dioxin	23.8	16.7	6.06	15.5	57.6
Octachlorodibenzo-p-dioxin	27.1	20.8	8.06	18.6	52.0
2378-tetrachlorodibenzofuran	0.12	0.066	0.039	0.076	57.1
12378-pentachlorodibenzofuran	1.04	<0.52	0.24	<0.60	67.5
23478-pentachlorodibenzofuran	2.54	1.20	0.53	1.42	72.0
123478-hexachlorodibenzofuran	12.1	7.14	2.36	7.20	67.6
123678-hexachlorodibenzofuran	<5.12	3.13	1.09	<3.11	64.7
234678-hexachlorodibenzofuran	6.14	3.48	1.16	3.59	69.3
123789-hexachlorodibenzofuran	<0.28	<0.15	<0.050	<0.16	71.8
1234678-heptachlorodibenzofuran	23.0	16.6	5.23	14.9	60.2
1234789-heptachlorodibenzofuran	1.44	1.13	0.40	0.99	53.9
Octachlorodibenzofuran	<5.58	<4.48	<1.75	<3.94	50.1
Total Dioxins & Furans Only	<117	<80.5	<28.8	<75.3	58.6

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

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	<0.88	<1.50	<1.26	<1.26	<0.024
12378-pentachlorodibenzo-p-dioxin	12.4	21.1	17.7	17.8	0.34
123478-hexachlorodibenzo-p-dioxin	33.0	56.1	47.1	47.4	0.89
123678-hexachlorodibenzo-p-dioxin	95.7	163	137	138	2.60
123789-hexachlorodibenzo-p-dioxin	47.2	80.3	67.4	67.8	1.28
1234678-heptachlorodibenzo-p-dioxin	573	974	817	823	15.5
Octachlorodibenzo-p-dioxin	687	1169	981	987	18.6
2378-tetrachlorodibenzofuran	2.81	4.78	4.01	4.03	0.076
12378-pentachlorodibenzofuran	<22.0	<37.5	<31.5	<31.7	<0.60
23478-pentachlorodibenzofuran	52.3	89.1	74.8	75.2	1.42
123478-hexachlorodibenzofuran	265	451	379	381	7.20
123678-hexachlorodibenzofuran	<115	<195	<164	<165	<3.11
234678-hexachlorodibenzofuran	132	225	189	190	3.59
123789-hexachlorodibenzofuran	<5.81	<9.89	<8.30	<8.35	<0.16
1234678-heptachlorodibenzofuran	551	938	787	792	14.9
1234789-heptachlorodibenzofuran	36.5	62.1	52.1	52.4	0.99
Octachlorodibenzofuran	<145	<247	<207	<209	<3.94
Total Dioxins & Furans Only	<2777	<4725	<3964	<3990	<75.3

* 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 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.15	<0.69	<0.80	<0.88
12378-pentachlorodibenzo-p-dioxin	1.000	21.2	10.9	5.00	12.4
123478-hexachlorodibenzo-p-dioxin	0.100	5.47	3.27	1.14	3.30
123678-hexachlorodibenzo-p-dioxin	0.100	15.9	9.51	3.35	9.57
123789-hexachlorodibenzo-p-dioxin	0.100	7.17	5.15	1.84	4.72
1234678-heptachlorodibenzo-p-dioxin	0.010	8.73	6.17	2.27	5.73
Octachlorodibenzo-p-dioxin	0.0003	0.30	0.23	0.091	0.21
2378-tetrachlorodibenzofuran	0.100	0.45	0.24	0.15	0.28
12378-pentachlorodibenzofuran	0.030	1.14	<0.57	0.27	<0.66
23478-pentachlorodibenzofuran	0.300	27.9	13.3	5.92	15.7
123478-hexachlorodibenzofuran	0.100	44.3	26.4	8.85	26.5
123678-hexachlorodibenzofuran	0.100	<18.7	11.6	4.07	<11.5
234678-hexachlorodibenzofuran	0.100	22.5	12.9	4.33	13.2
123789-hexachlorodibenzofuran	0.100	<1.01	<0.54	<0.19	<0.58
1234678-heptachlorodibenzofuran	0.010	8.42	6.15	1.96	5.51
1234789-heptachlorodibenzofuran	0.010	0.53	0.42	0.15	0.37
Octachlorodibenzofuran	0.0003	<0.061	<0.050	<0.020	<0.044
Total Dioxins & Furans Only		<185	<108	<40.4	<111

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 BH Outlet - AMESA Monitor
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	1.96	<1.18	<1.34	<1.50
12378-pentachlorodibenzo-p-dioxin	1.000	36.2	18.6	8.45	21.1
123478-hexachlorodibenzo-p-dioxin	0.100	9.34	5.56	1.93	5.61
123678-hexachlorodibenzo-p-dioxin	0.100	27.1	16.1	5.65	16.3
123789-hexachlorodibenzo-p-dioxin	0.100	12.2	8.75	3.11	8.03
1234678-heptachlorodibenzo-p-dioxin	0.010	14.9	10.5	3.84	9.74
Octachlorodibenzo-p-dioxin	0.0003	0.51	0.39	0.15	0.35
2378-tetrachlorodibenzofuran	0.100	0.77	0.41	0.25	0.48
12378-pentachlorodibenzofuran	0.030	1.94	<0.98	0.46	<1.13
23478-pentachlorodibenzofuran	0.300	47.6	22.6	10.0	26.7
123478-hexachlorodibenzofuran	0.100	75.6	44.9	15.0	45.1
123678-hexachlorodibenzofuran	0.100	<32.0	19.7	6.89	<19.5
234678-hexachlorodibenzofuran	0.100	38.4	21.9	7.33	22.5
123789-hexachlorodibenzofuran	0.100	<1.73	<0.92	<0.32	<0.99
1234678-heptachlorodibenzofuran	0.010	14.4	10.5	3.31	9.38
1234789-heptachlorodibenzofuran	0.010	0.90	0.71	0.25	0.62
Octachlorodibenzofuran	0.0003	<0.10	<0.085	<0.033	<0.074
Total Dioxins & Furans Only		<316	<184	<68.3	<189

* 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 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

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	1.65	<0.98	<1.14	<1.26
12378-pentachlorodibenzo-p-dioxin	1.000	30.5	15.4	7.14	17.7
123478-hexachlorodibenzo-p-dioxin	0.100	7.86	4.63	1.63	4.71
123678-hexachlorodibenzo-p-dioxin	0.100	22.8	13.4	4.78	13.7
123789-hexachlorodibenzo-p-dioxin	0.100	10.3	7.28	2.63	6.74
1234678-heptachlorodibenzo-p-dioxin	0.010	12.5	8.73	3.24	8.17
Octachlorodibenzo-p-dioxin	0.0003	0.43	0.33	0.13	0.29
2378-tetrachlorodibenzofuran	0.100	0.65	0.34	0.21	0.40
12378-pentachlorodibenzofuran	0.030	1.64	<0.81	0.39	<0.94
23478-pentachlorodibenzofuran	0.300	40.1	18.8	8.45	22.4
123478-hexachlorodibenzofuran	0.100	63.6	37.4	12.6	37.9
123678-hexachlorodibenzofuran	0.100	<26.9	16.4	5.82	<16.4
234678-hexachlorodibenzofuran	0.100	32.3	18.2	6.19	18.9
123789-hexachlorodibenzofuran	0.100	<1.45	<0.77	<0.27	<0.83
1234678-heptachlorodibenzofuran	0.010	12.1	8.70	2.80	7.87
1234789-heptachlorodibenzofuran	0.010	0.76	0.59	0.21	0.52
Octachlorodibenzofuran	0.0003	<0.088	<0.070	<0.028	<0.062
Total Dioxins & Furans Only		<266	<153	<57.7	<159

* 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 32A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.65	0.49	0.92	1.02
12378-pentachlorodibenzo-p-dioxin	1.000	30.5	15.4	7.14	17.7
123478-hexachlorodibenzo-p-dioxin	0.100	7.86	4.63	1.63	4.71
123678-hexachlorodibenzo-p-dioxin	0.100	22.8	13.4	4.78	13.7
123789-hexachlorodibenzo-p-dioxin	0.100	10.3	7.28	2.63	6.74
1234678-heptachlorodibenzo-p-dioxin	0.010	12.5	8.73	3.24	8.17
Octachlorodibenzo-p-dioxin	0.0003	0.43	0.33	0.13	0.29
2378-tetrachlorodibenzofuran	0.100	0.65	0.34	0.21	0.40
12378-pentachlorodibenzofuran	0.030	1.64	0.72	0.39	0.91
23478-pentachlorodibenzofuran	0.300	40.1	18.8	8.45	22.4
123478-hexachlorodibenzofuran	0.100	63.6	37.4	12.6	37.9
123678-hexachlorodibenzofuran	0.100	26.0	16.4	5.82	16.1
234678-hexachlorodibenzofuran	0.100	32.3	18.2	6.19	18.9
123789-hexachlorodibenzofuran	0.100	0.73	0.42	0.16	0.43
1234678-heptachlorodibenzofuran	0.010	12.1	8.70	2.80	7.87
1234789-heptachlorodibenzofuran	0.010	0.76	0.59	0.21	0.52
Octachlorodibenzofuran	0.0003	0.044	0.035	0.014	0.031
Total Dioxins & Furans Only		264	152	57.3	158

* 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 32B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.65	<0.98	<1.14	<1.26
12378-pentachlorodibenzo-p-dioxin	0.500	15.3	7.72	3.57	8.85
123478-hexachlorodibenzo-p-dioxin	0.100	7.86	4.63	1.63	4.71
123678-hexachlorodibenzo-p-dioxin	0.100	22.8	13.4	4.78	13.7
123789-hexachlorodibenzo-p-dioxin	0.100	10.3	7.28	2.63	6.74
1234678-heptachlorodibenzo-p-dioxin	0.010	12.5	8.73	3.24	8.17
Octachlorodibenzo-p-dioxin	0.001	1.42	1.09	0.43	0.98
2378-tetrachlorodibenzofuran	0.100	0.65	0.34	0.21	0.40
12378-pentachlorodibenzofuran	0.050	2.73	<1.35	0.64	<1.57
23478-pentachlorodibenzofuran	0.500	66.8	31.3	14.1	37.4
123478-hexachlorodibenzofuran	0.100	63.6	37.4	12.6	37.9
123678-hexachlorodibenzofuran	0.100	<26.9	16.4	5.82	<16.4
234678-hexachlorodibenzofuran	0.100	32.3	18.2	6.19	18.9
123789-hexachlorodibenzofuran	0.100	<1.45	<0.77	<0.27	<0.83
1234678-heptachlorodibenzofuran	0.010	12.1	8.70	2.80	7.87
1234789-heptachlorodibenzofuran	0.010	0.76	0.59	0.21	0.52
Octachlorodibenzofuran	0.001	<0.29	<0.23	<0.093	<0.21
Total Dioxins & Furans		<279	<159	<60.4	<166
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 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.66	<0.99	<1.14	<1.26
12378-pentachlorodibenzo-p-dioxin	1.000	30.7	15.6	7.14	17.8
123478-hexachlorodibenzo-p-dioxin	0.100	7.90	4.67	1.63	4.74
123678-hexachlorodibenzo-p-dioxin	0.100	22.9	13.6	4.78	13.8
123789-hexachlorodibenzo-p-dioxin	0.100	10.4	7.36	2.63	6.78
1234678-heptachlorodibenzo-p-dioxin	0.010	12.6	8.82	3.24	8.23
Octachlorodibenzo-p-dioxin	0.0003	0.43	0.33	0.13	0.30
2378-tetrachlorodibenzofuran	0.100	0.66	0.35	0.21	0.40
12378-pentachlorodibenzofuran	0.030	1.64	<0.82	0.39	<0.95
23478-pentachlorodibenzofuran	0.300	40.3	19.0	8.45	22.6
123478-hexachlorodibenzofuran	0.100	64.0	37.8	12.6	38.1
123678-hexachlorodibenzofuran	0.100	<27.1	16.6	5.82	<16.5
234678-hexachlorodibenzofuran	0.100	32.5	18.4	6.19	19.0
123789-hexachlorodibenzofuran	0.100	<1.46	<0.78	<0.27	<0.84
1234678-heptachlorodibenzofuran	0.010	12.2	8.79	2.80	7.92
1234789-heptachlorodibenzofuran	0.010	0.76	0.60	0.21	0.52
Octachlorodibenzofuran	0.0003	<0.089	<0.071	<0.028	<0.063
Total Dioxins & Furans Only		<267	<155	<57.7	<160

* 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 34
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.031	<0.019	<0.021	<0.024
12378-pentachlorodibenzo-p-dioxin	1.000	0.58	0.30	0.13	0.34
123478-hexachlorodibenzo-p-dioxin	0.100	0.15	0.088	0.030	0.089
123678-hexachlorodibenzo-p-dioxin	0.100	0.43	0.26	0.089	0.26
123789-hexachlorodibenzo-p-dioxin	0.100	0.20	0.14	0.049	0.13
1234678-heptachlorodibenzo-p-dioxin	0.010	0.24	0.17	0.061	0.16
Octachlorodibenzo-p-dioxin	0.0003	0.0081	0.0062	0.0024	0.0056
2378-tetrachlorodibenzofuran	0.100	0.012	0.0066	0.0039	0.0076
12378-pentachlorodibenzofuran	0.030	0.031	<0.016	0.0072	<0.018
23478-pentachlorodibenzofuran	0.300	0.76	0.36	0.16	0.43
123478-hexachlorodibenzofuran	0.100	1.21	0.71	0.24	0.72
123678-hexachlorodibenzofuran	0.100	<0.51	0.31	0.11	<0.31
234678-hexachlorodibenzofuran	0.100	0.61	0.35	0.12	0.36
123789-hexachlorodibenzofuran	0.100	<0.028	<0.015	<0.0050	<0.016
1234678-heptachlorodibenzofuran	0.010	0.23	0.17	0.052	0.15
1234789-heptachlorodibenzofuran	0.010	0.014	0.011	0.0040	0.0099
Octachlorodibenzofuran	0.0003	<0.0017	<0.0013	<0.00052	<0.0012
Total Dioxins & Furans Only		<5.05	<2.92	<1.08	<3.02

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 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	<0.88	<1.50	<1.26	<1.26	<0.024
12378-pentachlorodibenzo-p-dioxin	12.4	21.1	17.7	17.8	0.34
123478-hexachlorodibenzo-p-dioxin	3.30	5.61	4.71	4.74	0.089
123678-hexachlorodibenzo-p-dioxin	9.57	16.3	13.7	13.8	0.26
123789-hexachlorodibenzo-p-dioxin	4.72	8.03	6.74	6.78	0.13
1234678-heptachlorodibenzo-p-dioxin	5.73	9.74	8.17	8.23	0.16
Octachlorodibenzo-p-dioxin	0.21	0.35	0.29	0.30	0.0056
2378-tetrachlorodibenzofuran	0.28	0.48	0.40	0.40	0.0076
12378-pentachlorodibenzofuran	<0.66	<1.13	<0.94	<0.95	<0.018
23478-pentachlorodibenzofuran	15.7	26.7	22.4	22.6	0.43
123478-hexachlorodibenzofuran	26.5	45.1	37.9	38.1	0.72
123678-hexachlorodibenzofuran	<11.5	<19.5	<16.4	<16.5	<0.31
234678-hexachlorodibenzofuran	13.2	22.5	18.9	19.0	0.36
123789-hexachlorodibenzofuran	<0.58	<0.99	<0.83	<0.84	<0.016
1234678-heptachlorodibenzofuran	5.51	9.38	7.87	7.92	0.15
1234789-heptachlorodibenzofuran	0.37	0.62	0.52	0.52	0.0099
Octachlorodibenzofuran	<0.044	<0.074	<0.062	<0.063	<0.0012
Total Dioxins & Furans Only	<111	<189	<159	<160	<3.02

* 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 36
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.71	1.21	1.02	1.03	0.019
12378-pentachlorodibenzo-p-dioxin	12.4	21.1	17.7	17.8	0.34
123478-hexachlorodibenzo-p-dioxin	3.30	5.61	4.71	4.74	0.089
123678-hexachlorodibenzo-p-dioxin	9.57	16.3	13.7	13.8	0.26
123789-hexachlorodibenzo-p-dioxin	4.72	8.03	6.74	6.78	0.13
1234678-heptachlorodibenzo-p-dioxin	5.73	9.74	8.17	8.23	0.16
Octachlorodibenzo-p-dioxin	0.21	0.35	0.29	0.30	0.0056
2378-tetrachlorodibenzofuran	0.28	0.48	0.40	0.40	0.0076
12378-pentachlorodibenzofuran	0.64	1.09	0.91	0.92	0.017
23478-pentachlorodibenzofuran	15.7	26.7	22.4	22.6	0.43
123478-hexachlorodibenzofuran	26.5	45.1	37.9	38.1	0.72
123678-hexachlorodibenzofuran	11.3	19.2	16.1	16.2	0.31
234678-hexachlorodibenzofuran	13.2	22.5	18.9	19.0	0.36
123789-hexachlorodibenzofuran	0.30	0.52	0.43	0.44	0.0082
1234678-heptachlorodibenzofuran	5.51	9.38	7.87	7.92	0.15
1234789-heptachlorodibenzofuran	0.37	0.62	0.52	0.52	0.0099
Octachlorodibenzofuran	0.022	0.037	0.031	0.031	0.00059
Total Dioxins & Furans Only	110	188	158	159	3.00

* 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 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	AMESA Sample pg	Probe Rinse pg	Total Collected pg	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	20.1	86.5	107	12.5	21.3	17.5	18.0	0.34
12378-pentachlorodibenzo-p-dioxin	76.2	764	840	98.6	168	138	142	2.66
123478-hexachlorodibenzo-p-dioxin	65.1	1320	1385	163	276	228	234	4.39
123678-hexachlorodibenzo-p-dioxin	171	3070	3241	381	646	532	547	10.3
123789-hexachlorodibenzo-p-dioxin	175	1420	1595	187	318	262	269	5.06
1234678-heptachlorodibenzo-p-dioxin	358	9380	9738	1143	1942	1600	1642	30.9
Octachlorodibenzo-p-dioxin	238	4320	4558	535	909	749	769	14.4
2378-tetrachlorodibenzofuran	19.1	89.6	109	12.8	21.7	17.9	18.3	0.34
12378-pentachlorodibenzofuran	52.6	272	325	38.1	64.7	53.3	54.7	1.03
23478-pentachlorodibenzofuran	134	1090	1224	144	244	201	206	3.88
123478-hexachlorodibenzofuran	148	1850	1998	235	398	328	337	6.33
123678-hexachlorodibenzofuran	74.4	953	1027	121	205	169	173	3.26
234678-hexachlorodibenzofuran	84.3	1780	1864	219	372	306	314	5.91
123789-hexachlorodibenzofuran	<3.9	<85	<88.9	<10.4	<17.7	<14.6	<15.0	<0.28
1234678-heptachlorodibenzofuran	136	2530	2666	313	532	438	450	8.45
1234789-heptachlorodibenzofuran	19.1	447	466	54.7	92.9	76.6	78.6	1.48
Octachlorodibenzofuran	<36	<670	<706	<82.9	<141	<116	<119	<2.24
Total Dioxins & Furans Only			<31938	<3750	<6368	<5246	<5386	<101

Dry Gas Volume Sampled (Nm³***) :	4.595
Dry Gas Volume Sampled (Rm³*) :	5.016
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	AMESA Sample pg	Probe Rinse pg	Total Collected pg	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	21.3	47.6	68.9	8.25	14.0	11.5	11.8	0.21
12378-pentachlorodibenzo-p-dioxin	83.3	640	723	86.6	147	121	124	2.25
123478-hexachlorodibenzo-p-dioxin	54.9	921	976	117	199	163	167	3.04
123678-hexachlorodibenzo-p-dioxin	135	2370	2505	300	510	419	429	7.80
123789-hexachlorodibenzo-p-dioxin	139	1450	1589	190	323	266	272	4.95
1234678-heptachlorodibenzo-p-dioxin	291	7110	7401	886	1506	1239	1266	23.0
Octachlorodibenzo-p-dioxin	148	3510	3658	438	745	612	626	11.4
2378-tetrachlorodibenzofuran	22.1	75.8	97.9	11.7	19.9	16.4	16.8	0.30
12378-pentachlorodibenzofuran	41.0	230	271	32.5	55.2	45.4	46.4	0.84
23478-pentachlorodibenzofuran	114	841	955	114	194	160	163	2.97
123478-hexachlorodibenzofuran	122	1430	1552	186	316	260	266	4.83
123678-hexachlorodibenzofuran	64.4	750	814	97.5	166	136	139	2.54
234678-hexachlorodibenzofuran	64.0	1450	1514	181	308	253	259	4.71
123789-hexachlorodibenzofuran	<3.1	<68	<71.1	<8.52	<14.5	<11.9	<12.2	<0.22
1234678-heptachlorodibenzofuran	100	1930	2030	243	413	340	347	6.32
1234789-heptachlorodibenzofuran	14.8	340	355	42.5	72.2	59.4	60.7	1.10
Octachlorodibenzofuran	<23	<550	<573	<68.6	<117	<95.9	<98.0	<1.78
Total Dioxins & Furans Only			<25154	<3013	<5120	<4212	<4304	<78.3

Dry Gas Volume Sampled (Nm³***) :	4.501
Dry Gas Volume Sampled (Rm³*) :	4.913
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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
*** At 0°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 - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	AMESA Sample pg	Probe Rinse pg	Total Collected pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	15.1	38.1	53.2	6.55	11.0	8.92	9.34	0.18
12378-pentachlorodibenzo-p-dioxin	50.6	410	461	56.7	95.5	77.2	80.9	1.54
123478-hexachlorodibenzo-p-dioxin	31.9	511	543	66.9	113	91.0	95.4	1.81
123678-hexachlorodibenzo-p-dioxin	84.6	1310	1395	172	289	234	245	4.65
123789-hexachlorodibenzo-p-dioxin	80.1	792	872	107	181	146	153	2.91
1234678-heptachlorodibenzo-p-dioxin	199	3900	4099	505	850	687	720	13.7
Octachlorodibenzo-p-dioxin	112	2090	2202	271	456	369	387	7.35
2378-tetrachlorodibenzofuran	16.5	65.6	82.1	10.1	17.0	13.8	14.4	0.27
12378-pentachlorodibenzofuran	30.1	153	183	22.5	38.0	30.7	32.2	0.61
23478-pentachlorodibenzofuran	72.7	<510	<583	<71.8	<121	<97.7	<102	<1.94
123478-hexachlorodibenzofuran	76.6	818	895	110	185	150	157	2.99
123678-hexachlorodibenzofuran	41.7	436	478	58.8	99.0	80.1	83.9	1.59
234678-hexachlorodibenzofuran	44.6	758	803	98.8	166	135	141	2.68
123789-hexachlorodibenzofuran	<3.4	<53	<56.4	<6.95	<11.7	<9.46	<9.91	<0.19
1234678-heptachlorodibenzofuran	64.9	1040	1105	136	229	185	194	3.69
1234789-heptachlorodibenzofuran	10.2	209	219	27.0	45.4	36.8	38.5	0.73
Octachlorodibenzofuran	<17	<340	<357	<44.0	<74.0	<59.9	<62.7	<1.19
Total Dioxins & Furans Only			<14385	<1771	<2982	<2412	<2526	<48.0

Dry Gas Volume Sampled (Nm^3***) :	4.420
Dry Gas Volume Sampled (Rm^3*) :	4.825
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	19.0

* At 25°C and 1 atmosphere

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

*** At 0°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 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m³	pg/m³	pg/m³	pg/m³	%
2378-tetrachlorodibenzo-p-dioxin	12.5	8.25	6.55	9.11	33.7
12378-pentachlorodibenzo-p-dioxin	98.6	86.6	56.7	80.7	26.8
123478-hexachlorodibenzo-p-dioxin	163	117	66.9	115	41.5
123678-hexachlorodibenzo-p-dioxin	381	300	172	284	37.1
123789-hexachlorodibenzo-p-dioxin	187	190	107	162	29.1
1234678-heptachlorodibenzo-p-dioxin	1143	886	505	845	38.0
Octachlorodibenzo-p-dioxin	535	438	271	415	32.2
2378-tetrachlorodibenzofuran	12.8	11.7	10.1	11.5	11.6
12378-pentachlorodibenzofuran	38.1	32.5	22.5	31.0	25.4
23478-pentachlorodibenzofuran	144	114	<71.8	<110	32.9
123478-hexachlorodibenzofuran	235	186	110	177	35.4
123678-hexachlorodibenzofuran	121	97.5	58.8	92.3	33.8
234678-hexachlorodibenzofuran	219	181	98.8	166	36.9
123789-hexachlorodibenzofuran	<10.4	<8.52	<6.95	<8.63	20.3
1234678-heptachlorodibenzofuran	313	243	136	231	38.6
1234789-heptachlorodibenzofuran	54.7	42.5	27.0	41.4	33.6
Octachlorodibenzofuran	<82.9	<68.6	<44.0	<65.2	30.2
Total Dioxins & Furans Only	<3750	<3013	<1771	<2845	35.2

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 - AMESA Monitor

Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	pg/Rm^3*	%
2378-tetrachlorodibenzo-p-dioxin	21.3	14.0	11.0	15.4	34.1
12378-pentachlorodibenzo-p-dioxin	168	147	95.5	137	27.2
123478-hexachlorodibenzo-p-dioxin	276	199	113	196	41.8
123678-hexachlorodibenzo-p-dioxin	646	510	289	482	37.4
123789-hexachlorodibenzo-p-dioxin	318	323	181	274	29.5
1234678-heptachlorodibenzo-p-dioxin	1942	1506	850	1433	38.4
Octachlorodibenzo-p-dioxin	909	745	456	703	32.6
2378-tetrachlorodibenzofuran	21.7	19.9	17.0	19.5	12.0
12378-pentachlorodibenzofuran	64.7	55.2	38.0	52.6	25.8
23478-pentachlorodibenzofuran	244	194	<121	<186	33.3
123478-hexachlorodibenzofuran	398	316	185	300	35.8
123678-hexachlorodibenzofuran	205	166	99.0	157	34.2
234678-hexachlorodibenzofuran	372	308	166	282	37.3
123789-hexachlorodibenzofuran	<17.7	<14.5	<11.7	<14.6	20.6
1234678-heptachlorodibenzofuran	532	413	229	391	39.0
1234789-heptachlorodibenzofuran	92.9	72.2	45.4	70.2	33.9
Octachlorodibenzofuran	<141	<117	<74.0	<110	30.6
Total Dioxins & Furans Only	<6368	<5120	<2982	<4823	35.5

* 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 42

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet - AMESA Monitor

Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	17.5	11.5	8.92	12.7	34.8
12378-pentachlorodibenzo-p-dioxin	138	121	77.2	112	28.0
123478-hexachlorodibenzo-p-dioxin	228	163	91.0	161	42.5
123678-hexachlorodibenzo-p-dioxin	532	419	234	395	38.1
123789-hexachlorodibenzo-p-dioxin	262	266	146	225	30.3
1234678-heptachlorodibenzo-p-dioxin	1600	1239	687	1175	39.1
Octachlorodibenzo-p-dioxin	749	612	369	577	33.3
2378-tetrachlorodibenzofuran	17.9	16.4	13.8	16.0	12.9
12378-pentachlorodibenzofuran	53.3	45.4	30.7	43.1	26.6
23478-pentachlorodibenzofuran	201	160	<97.7	<153	34.0
123478-hexachlorodibenzofuran	328	260	150	246	36.5
123678-hexachlorodibenzofuran	169	136	80.1	128	34.9
234678-hexachlorodibenzofuran	306	253	135	231	38.0
123789-hexachlorodibenzofuran	<14.6	<11.9	<9.46	<12.0	21.5
1234678-heptachlorodibenzofuran	438	340	185	321	39.7
1234789-heptachlorodibenzofuran	76.6	59.4	36.8	57.6	34.7
Octachlorodibenzofuran	<116	<95.9	<59.9	<90.6	31.4
Total Dioxins & Furans Only	<5246	<4212	<2412	<3957	36.2

* 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 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	18.0	11.8	9.34	13.0	34.1
12378-pentachlorodibenzo-p-dioxin	142	124	80.9	115	27.1
123478-hexachlorodibenzo-p-dioxin	234	167	95.4	165	41.8
123678-hexachlorodibenzo-p-dioxin	547	429	245	407	37.4
123789-hexachlorodibenzo-p-dioxin	269	272	153	231	29.3
1234678-heptachlorodibenzo-p-dioxin	1642	1266	720	1209	38.3
Octachlorodibenzo-p-dioxin	769	626	387	594	32.5
2378-tetrachlorodibenzofuran	18.3	16.8	14.4	16.5	11.9
12378-pentachlorodibenzofuran	54.7	46.4	32.2	44.4	25.7
23478-pentachlorodibenzofuran	206	163	<102	<157	33.2
123478-hexachlorodibenzofuran	337	266	157	253	35.8
123678-hexachlorodibenzofuran	173	139	83.9	132	34.1
234678-hexachlorodibenzofuran	314	259	141	238	37.2
123789-hexachlorodibenzofuran	<15.0	<12.2	<9.91	<12.4	20.6
1234678-heptachlorodibenzofuran	450	347	194	330	38.9
1234789-heptachlorodibenzofuran	78.6	60.7	38.5	59.3	33.9
Octachlorodibenzofuran	<119	<98.0	<62.7	<93.3	30.5
Total Dioxins & Furans Only	<5386	<4304	<2526	<4072	35.5

* 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 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	0.34	0.21	0.18	0.24	34.5
12378-pentachlorodibenzo-p-dioxin	2.66	2.25	1.54	2.15	26.5
123478-hexachlorodibenzo-p-dioxin	4.39	3.04	1.81	3.08	41.9
123678-hexachlorodibenzo-p-dioxin	10.3	7.80	4.65	7.58	37.2
123789-hexachlorodibenzo-p-dioxin	5.06	4.95	2.91	4.31	28.1
1234678-heptachlorodibenzo-p-dioxin	30.9	23.0	13.7	22.5	38.2
Octachlorodibenzo-p-dioxin	14.4	11.4	7.35	11.1	32.2
2378-tetrachlorodibenzofuran	0.34	0.30	0.27	0.31	11.5
12378-pentachlorodibenzofuran	1.03	0.84	0.61	0.83	25.3
23478-pentachlorodibenzofuran	3.88	2.97	<1.94	<2.93	33.0
123478-hexachlorodibenzofuran	6.33	4.83	2.99	4.72	35.6
123678-hexachlorodibenzofuran	3.26	2.54	1.59	2.46	33.9
234678-hexachlorodibenzofuran	5.91	4.71	2.68	4.43	36.8
123789-hexachlorodibenzofuran	<0.28	<0.22	<0.19	<0.23	20.6
1234678-heptachlorodibenzofuran	8.45	6.32	3.69	6.15	38.8
1234789-heptachlorodibenzofuran	1.48	1.10	0.73	1.10	33.8
Octachlorodibenzofuran	<2.24	<1.78	<1.19	<1.74	30.2
Total Dioxins & Furans Only	<101	<78.3	<48.0	<75.9	35.2

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 - AMESA Monitor

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	9.11	15.4	12.7	13.0	0.24
12378-pentachlorodibenzo-p-dioxin	80.7	137	112	115	2.15
123478-hexachlorodibenzo-p-dioxin	115	196	161	165	3.08
123678-hexachlorodibenzo-p-dioxin	284	482	395	407	7.58
123789-hexachlorodibenzo-p-dioxin	162	274	225	231	4.31
1234678-heptachlorodibenzo-p-dioxin	845	1433	1175	1209	22.5
Octachlorodibenzo-p-dioxin	415	703	577	594	11.1
2378-tetrachlorodibenzofuran	11.5	19.5	16.0	16.5	0.31
12378-pentachlorodibenzofuran	31.0	52.6	43.1	44.4	0.83
23478-pentachlorodibenzofuran	<110	<186	<153	<157	<2.93
123478-hexachlorodibenzofuran	177	300	246	253	4.72
123678-hexachlorodibenzofuran	92.3	157	128	132	2.46
234678-hexachlorodibenzofuran	166	282	231	238	4.43
123789-hexachlorodibenzofuran	<8.63	<14.6	<12.0	<12.4	<0.23
1234678-heptachlorodibenzofuran	231	391	321	330	6.15
1234789-heptachlorodibenzofuran	41.4	70.2	57.6	59.3	1.10
Octachlorodibenzofuran	<65.2	<110	<90.6	<93.3	<1.74
Total Dioxins & Furans Only	<2845	<4823	<3957	<4072	<75.9

* 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 46
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	12.5	8.25	6.55	9.11
12378-pentachlorodibenzo-p-dioxin	1.000	98.6	86.6	56.7	80.7
123478-hexachlorodibenzo-p-dioxin	0.100	16.3	11.7	6.69	11.5
123678-hexachlorodibenzo-p-dioxin	0.100	38.1	30.0	17.2	28.4
123789-hexachlorodibenzo-p-dioxin	0.100	18.7	19.0	10.7	16.2
1234678-heptachlorodibenzo-p-dioxin	0.010	11.4	8.86	5.05	8.45
Octachlorodibenzo-p-dioxin	0.0003	0.16	0.13	0.081	0.12
2378-tetrachlorodibenzofuran	0.100	1.28	1.17	1.01	1.15
12378-pentachlorodibenzofuran	0.030	1.14	0.97	0.68	0.93
23478-pentachlorodibenzofuran	0.300	43.1	34.3	<21.5	<33.0
123478-hexachlorodibenzofuran	0.100	23.5	18.6	11.0	17.7
123678-hexachlorodibenzofuran	0.100	12.1	9.75	5.88	9.23
234678-hexachlorodibenzofuran	0.100	21.9	18.1	9.88	16.6
123789-hexachlorodibenzofuran	0.100	<1.04	<0.85	<0.69	<0.86
1234678-heptachlorodibenzofuran	0.010	3.13	2.43	1.36	2.31
1234789-heptachlorodibenzofuran	0.010	0.55	0.42	0.27	0.41
Octachlorodibenzofuran	0.0003	<0.025	<0.021	<0.013	<0.020
Total Dioxins & Furans Only		<303	<251	<155	<237

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 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	21.3	14.0	11.0	15.4
12378-pentachlorodibenzo-p-dioxin	1.000	168	147	95.5	137
123478-hexachlorodibenzo-p-dioxin	0.100	27.6	19.9	11.3	19.6
123678-hexachlorodibenzo-p-dioxin	0.100	64.6	51.0	28.9	48.2
123789-hexachlorodibenzo-p-dioxin	0.100	31.8	32.3	18.1	27.4
1234678-heptachlorodibenzo-p-dioxin	0.010	19.4	15.1	8.50	14.3
Octachlorodibenzo-p-dioxin	0.0003	0.27	0.22	0.14	0.21
2378-tetrachlorodibenzofuran	0.100	2.17	1.99	1.70	1.95
12378-pentachlorodibenzofuran	0.030	1.94	1.65	1.14	1.58
23478-pentachlorodibenzofuran	0.300	73.2	58.3	<36.2	<55.9
123478-hexachlorodibenzofuran	0.100	39.8	31.6	18.5	30.0
123678-hexachlorodibenzofuran	0.100	20.5	16.6	9.90	15.7
234678-hexachlorodibenzofuran	0.100	37.2	30.8	16.6	28.2
123789-hexachlorodibenzofuran	0.100	<1.77	<1.45	<1.17	<1.46
1234678-heptachlorodibenzofuran	0.010	5.32	4.13	2.29	3.91
1234789-heptachlorodibenzofuran	0.010	0.93	0.72	0.45	0.70
Octachlorodibenzofuran	0.0003	<0.042	<0.035	<0.022	<0.033
Total Dioxins & Furans Only		<515	<427	<261	<401

* 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 - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

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	17.5	11.5	8.92	12.7
12378-pentachlorodibenzo-p-dioxin	1.000	138	121	77.2	112
123478-hexachlorodibenzo-p-dioxin	0.100	22.8	16.3	9.10	16.1
123678-hexachlorodibenzo-p-dioxin	0.100	53.2	41.9	23.4	39.5
123789-hexachlorodibenzo-p-dioxin	0.100	26.2	26.6	14.6	22.5
1234678-heptachlorodibenzo-p-dioxin	0.010	16.0	12.4	6.87	11.8
Octachlorodibenzo-p-dioxin	0.0003	0.22	0.18	0.11	0.17
2378-tetrachlorodibenzofuran	0.100	1.79	1.64	1.38	1.60
12378-pentachlorodibenzofuran	0.030	1.60	1.36	0.92	1.29
23478-pentachlorodibenzofuran	0.300	60.3	48.0	<29.3	<45.9
123478-hexachlorodibenzofuran	0.100	32.8	26.0	15.0	24.6
123678-hexachlorodibenzofuran	0.100	16.9	13.6	8.01	12.8
234678-hexachlorodibenzofuran	0.100	30.6	25.3	13.5	23.1
123789-hexachlorodibenzofuran	0.100	<1.46	<1.19	<0.95	<1.20
1234678-heptachlorodibenzofuran	0.010	4.38	3.40	1.85	3.21
1234789-heptachlorodibenzofuran	0.010	0.77	0.59	0.37	0.58
Octachlorodibenzofuran	0.0003	<0.035	<0.029	<0.018	<0.027
Total Dioxins & Furans Only		<425	<351	<212	<329

* 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 48A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	17.5	11.5	8.92	12.7
12378-pentachlorodibenzo-p-dioxin	1.000	138	121	77.2	112
123478-hexachlorodibenzo-p-dioxin	0.100	22.8	16.3	9.10	16.1
123678-hexachlorodibenzo-p-dioxin	0.100	53.2	41.9	23.4	39.5
123789-hexachlorodibenzo-p-dioxin	0.100	26.2	26.6	14.6	22.5
1234678-heptachlorodibenzo-p-dioxin	0.010	16.0	12.4	6.87	11.8
Octachlorodibenzo-p-dioxin	0.0003	0.22	0.18	0.11	0.17
2378-tetrachlorodibenzofuran	0.100	1.79	1.64	1.38	1.60
12378-pentachlorodibenzofuran	0.030	1.60	1.36	0.92	1.29
23478-pentachlorodibenzofuran	0.300	60.3	48.0	16.5	41.6
123478-hexachlorodibenzofuran	0.100	32.8	26.0	15.0	24.6
123678-hexachlorodibenzofuran	0.100	16.9	13.6	8.01	12.8
234678-hexachlorodibenzofuran	0.100	30.6	25.3	13.5	23.1
123789-hexachlorodibenzofuran	0.100	0.73	0.60	0.47	0.60
1234678-heptachlorodibenzofuran	0.010	4.38	3.40	1.85	3.21
1234789-heptachlorodibenzofuran	0.010	0.77	0.59	0.37	0.58
Octachlorodibenzofuran	0.0003	0.017	0.014	0.0090	0.014
Total Dioxins & Furans Only		424	351	198	324

* 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 48B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	17.5	11.5	8.92	12.7
12378-pentachlorodibenzo-p-dioxin	0.500	69.0	60.6	38.6	56.1
123478-hexachlorodibenzo-p-dioxin	0.100	22.8	16.3	9.10	16.1
123678-hexachlorodibenzo-p-dioxin	0.100	53.2	41.9	23.4	39.5
123789-hexachlorodibenzo-p-dioxin	0.100	26.2	26.6	14.6	22.5
1234678-heptachlorodibenzo-p-dioxin	0.010	16.0	12.4	6.87	11.8
Octachlorodibenzo-p-dioxin	0.001	0.75	0.61	0.37	0.58
2378-tetrachlorodibenzofuran	0.100	1.79	1.64	1.38	1.60
12378-pentachlorodibenzofuran	0.050	2.67	2.27	1.54	2.16
23478-pentachlorodibenzofuran	0.500	101	79.9	<48.9	<76.4
123478-hexachlorodibenzofuran	0.100	32.8	26.0	15.0	24.6
123678-hexachlorodibenzofuran	0.100	16.9	13.6	8.01	12.8
234678-hexachlorodibenzofuran	0.100	30.6	25.3	13.5	23.1
123789-hexachlorodibenzofuran	0.100	<1.46	<1.19	<0.95	<1.20
1234678-heptachlorodibenzofuran	0.010	4.38	3.40	1.85	3.21
1234789-heptachlorodibenzofuran	0.010	0.77	0.59	0.37	0.58
Octachlorodibenzofuran	0.001	<0.12	<0.096	<0.060	<0.091
Total Dioxins & Furans		<397	<324	<193	<305
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 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	18.0	11.8	9.34	13.0
12378-pentachlorodibenzo-p-dioxin	1.000	142	124	80.9	115
123478-hexachlorodibenzo-p-dioxin	0.100	23.4	16.7	9.54	16.5
123678-hexachlorodibenzo-p-dioxin	0.100	54.7	42.9	24.5	40.7
123789-hexachlorodibenzo-p-dioxin	0.100	26.9	27.2	15.3	23.1
1234678-heptachlorodibenzo-p-dioxin	0.010	16.4	12.7	7.20	12.1
Octachlorodibenzo-p-dioxin	0.0003	0.23	0.19	0.12	0.18
2378-tetrachlorodibenzofuran	0.100	1.83	1.68	1.44	1.65
12378-pentachlorodibenzofuran	0.030	1.64	1.39	0.96	1.33
23478-pentachlorodibenzofuran	0.300	61.9	49.0	<30.7	<47.2
123478-hexachlorodibenzofuran	0.100	33.7	26.6	15.7	25.3
123678-hexachlorodibenzofuran	0.100	17.3	13.9	8.39	13.2
234678-hexachlorodibenzofuran	0.100	31.4	25.9	14.1	23.8
123789-hexachlorodibenzofuran	0.100	<1.50	<1.22	<0.99	<1.24
1234678-heptachlorodibenzofuran	0.010	4.50	3.47	1.94	3.30
1234789-heptachlorodibenzofuran	0.010	0.79	0.61	0.38	0.59
Octachlorodibenzofuran	0.0003	<0.036	<0.029	<0.019	<0.028
Total Dioxins & Furans Only		<436	<359	<222	<339

* 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 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	0.34	0.21	0.18	0.24
12378-pentachlorodibenzo-p-dioxin	1.000	2.66	2.25	1.54	2.15
123478-hexachlorodibenzo-p-dioxin	0.100	0.44	0.30	0.18	0.31
123678-hexachlorodibenzo-p-dioxin	0.100	1.03	0.78	0.47	0.76
123789-hexachlorodibenzo-p-dioxin	0.100	0.51	0.49	0.29	0.43
1234678-heptachlorodibenzo-p-dioxin	0.010	0.31	0.23	0.14	0.23
Octachlorodibenzo-p-dioxin	0.0003	0.0043	0.0034	0.0022	0.0033
2378-tetrachlorodibenzofuran	0.100	0.034	0.030	0.027	0.031
12378-pentachlorodibenzofuran	0.030	0.031	0.025	0.018	0.025
23478-pentachlorodibenzofuran	0.300	1.16	0.89	<0.58	<0.88
123478-hexachlorodibenzofuran	0.100	0.63	0.48	0.30	0.47
123678-hexachlorodibenzofuran	0.100	0.33	0.25	0.16	0.25
234678-hexachlorodibenzofuran	0.100	0.59	0.47	0.27	0.44
123789-hexachlorodibenzofuran	0.100	<0.028	<0.022	<0.019	<0.023
1234678-heptachlorodibenzofuran	0.010	0.085	0.063	0.037	0.062
1234789-heptachlorodibenzofuran	0.010	0.015	0.011	0.0073	0.011
Octachlorodibenzofuran	0.0003	<0.00067	<0.00054	<0.00036	<0.00052
Total Dioxins & Furans Only		<8.19	<6.53	<4.21	<6.31

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 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	9.11	15.4	12.7	13.0	0.24
12378-pentachlorodibenzo-p-dioxin	80.7	137	112	115	2.15
123478-hexachlorodibenzo-p-dioxin	11.5	19.6	16.1	16.5	0.31
123678-hexachlorodibenzo-p-dioxin	28.4	48.2	39.5	40.7	0.76
123789-hexachlorodibenzo-p-dioxin	16.2	27.4	22.5	23.1	0.43
1234678-heptachlorodibenzo-p-dioxin	8.45	14.3	11.8	12.1	0.23
Octachlorodibenzo-p-dioxin	0.12	0.21	0.17	0.18	0.0033
2378-tetrachlorodibenzofuran	1.15	1.95	1.60	1.65	0.031
12378-pentachlorodibenzofuran	0.93	1.58	1.29	1.33	0.025
23478-pentachlorodibenzofuran	<33.0	<55.9	<45.9	<47.2	<0.88
123478-hexachlorodibenzofuran	17.7	30.0	24.6	25.3	0.47
123678-hexachlorodibenzofuran	9.23	15.7	12.8	13.2	0.25
234678-hexachlorodibenzofuran	16.6	28.2	23.1	23.8	0.44
123789-hexachlorodibenzofuran	<0.86	<1.46	<1.20	<1.24	<0.023
1234678-heptachlorodibenzofuran	2.31	3.91	3.21	3.30	0.062
1234789-heptachlorodibenzofuran	0.41	0.70	0.58	0.59	0.011
Octachlorodibenzofuran	<0.020	<0.033	<0.027	<0.028	<0.00052
Total Dioxins & Furans Only	<237	<401	<329	<339	<6.31

* 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 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	9.11	15.4	12.7	13.0	0.24
12378-pentachlorodibenzo-p-dioxin	80.7	137	112	115	2.15
123478-hexachlorodibenzo-p-dioxin	11.5	19.6	16.1	16.5	0.31
123678-hexachlorodibenzo-p-dioxin	28.4	48.2	39.5	40.7	0.76
123789-hexachlorodibenzo-p-dioxin	16.2	27.4	22.5	23.1	0.43
1234678-heptachlorodibenzo-p-dioxin	8.45	14.3	11.8	12.1	0.23
Octachlorodibenzo-p-dioxin	0.12	0.21	0.17	0.18	0.0033
2378-tetrachlorodibenzofuran	1.15	1.95	1.60	1.65	0.031
12378-pentachlorodibenzofuran	0.93	1.58	1.29	1.33	0.025
23478-pentachlorodibenzofuran	29.8	50.6	41.6	42.7	0.79
123478-hexachlorodibenzofuran	17.7	30.0	24.6	25.3	0.47
123678-hexachlorodibenzofuran	9.23	15.7	12.8	13.2	0.25
234678-hexachlorodibenzofuran	16.6	28.2	23.1	23.8	0.44
123789-hexachlorodibenzofuran	0.43	0.73	0.60	0.62	0.012
1234678-heptachlorodibenzofuran	2.31	3.91	3.21	3.30	0.062
1234789-heptachlorodibenzofuran	0.41	0.70	0.58	0.59	0.011
Octachlorodibenzofuran	0.0098	0.017	0.014	0.014	0.00026
Total Dioxins & Furans Only	233	395	324	334	6.22

* 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 53
Covanta - Durham York Energy Centre
BH Outlet - AMESA Monitor
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank AMESA Sample pg	Blank Probe Rinse pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<2.2	<2.4	<2.3
12378-pentachlorodibenzo-p-dioxin	<2.6	<2.2	<2.4
123478-hexachlorodibenzo-p-dioxin	<2.3	<2.3	<2.1
123678-hexachlorodibenzo-p-dioxin	<2.3	<2.3	<2.1
123789-hexachlorodibenzo-p-dioxin	<2.1	<2.1	<2.0
1234678-heptachlorodibenzo-p-dioxin	<2.3	10.9	<2.2
Octachlorodibenzo-p-dioxin	4.5	23.1	6.2
2378-tetrachlorodibenzofuran	<2.3	<2.2	<2.3
12378-pentachlorodibenzofuran	<2.2	<2.2	<2.3
23478-pentachlorodibenzofuran	<2.2	<2.2	<2.3
123478-hexachlorodibenzofuran	<2.3	3.3	<2.2
123678-hexachlorodibenzofuran	<2.2	<2.1	<2.1
234678-hexachlorodibenzofuran	<2.4	<2.3	<2.3
123789-hexachlorodibenzofuran	<2.6	<2.4	<2.4
1234678-heptachlorodibenzofuran	<1.8	7.6	4.1
1234789-heptachlorodibenzofuran	<2.1	<2.4	<2.4
Octachlorodibenzofuran	<2.3	2.6	2.3
Total Dioxins & Furans Only	<40.7	<74.6	<44.0

"<" 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.

AMESA Dioxin and Furan Emission Data
Calculated with AMESA Cartridge Only
(57 pages)

TABLE 1
Covanta - Durham York Energy Centre
AMESA Monitor
Dioxin and Furan Test Schedule

Boiler No. 1 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	October 27, 2016	8:20	14:44	380
2	October 28, 2016	8:05	14:32	384
3	October 31, 2016	10:15	16:38	379

Boiler No. 2 BH Outlet

Test Number	Test Date	Sampling Period Start	Sampling Period Finish	Sampling Time min
1	November 1, 2016	9:36	15:51	371
2	November 2, 2016	8:08	14:25	373
3	November 3, 2016	8:14	14:24	366

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

Dioxins

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	234	0.026	0.045	0.038	0.038	0.72
Pentachlorodibenzo-p-dioxins	1110	0.13	0.21	0.18	0.18	3.42
Hexachlorodibenzo-p-dioxins	1700	0.19	0.33	0.28	0.28	5.24
Heptachlorodibenzo-p-dioxins	1170	0.13	0.23	0.19	0.19	3.61
Octachlorodibenzo-p-dioxin	628	0.071	0.12	0.10	0.10	1.94
Total	4842	0.55	0.93	0.79	0.79	14.9

Furans

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	881	0.099	0.17	0.14	0.14	2.72
Pentachlorodibenzofurans	1840	0.21	0.35	0.30	0.30	5.67
Hexachlorodibenzofurans	1120	0.13	0.22	0.18	0.18	3.45
Heptachlorodibenzofurans	564	0.064	0.11	0.091	0.092	1.74
Octachlorodibenzofuran	<110	<0.012	<0.021	<0.018	<0.018	<0.34
Total	<4515	<0.51	<0.87	<0.73	<0.74	<13.9

Dry Gas Volume Sampled (Nm³***) :	4.756
Dry Gas Volume Sampled (Rm³*) :	5.191
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 3
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	AMESA Sample pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	93.7	0.010	0.018	0.015	0.015	0.28
Pentachlorodibenzo-p-dioxins	592	0.066	0.11	0.094	0.095	1.79
Hexachlorodibenzo-p-dioxins	1090	0.12	0.21	0.17	0.17	3.30
Heptachlorodibenzo-p-dioxins	905	0.10	0.17	0.14	0.14	2.74
Octachlorodibenzo-p-dioxin	478	0.054	0.091	0.076	0.076	1.45
Total	3159	0.35	0.60	0.50	0.51	9.55

Furans

Congener Group	AMESA Sample pg	Actual Concentration ng/m^3	Dry Reference Concentration ng/Rm^3*	Dry Adjusted Concentration ng/Rm^3**	Wet Reference Concentration ng/Rm^3*	Emission Rate ng/s
Tetrachlorodibenzofurans	352	0.039	0.067	0.056	0.056	1.06
Pentachlorodibenzofurans	878	0.098	0.17	0.14	0.14	2.65
Hexachlorodibenzofurans	772	0.086	0.15	0.12	0.12	2.33
Heptachlorodibenzofurans	487	0.055	0.093	0.077	0.078	1.47
Octachlorodibenzofuran	<83	<0.0093	<0.016	<0.013	<0.013	<0.25
Total	<2572	<0.29	<0.49	<0.41	<0.41	<7.78

Dry Gas Volume Sampled (Nm^3***) :	4.818
Dry Gas Volume Sampled (Rm^3*) :	5.259
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.1
Wet Reference Flowrate (Rm^3/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 4
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	121	0.014	0.023	0.020	0.020	0.37
Pentachlorodibenzo-p-dioxins	591	0.067	0.11	0.096	0.096	1.79
Hexachlorodibenzo-p-dioxins	785	0.089	0.15	0.13	0.13	2.38
Heptachlorodibenzo-p-dioxins	529	0.060	0.10	0.086	0.086	1.61
Octachlorodibenzo-p-dioxin	345	0.039	0.066	0.056	0.056	1.05
Total	2371	0.27	0.46	0.38	0.38	7.20

Furans

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	361	0.041	0.069	0.059	0.059	1.10
Pentachlorodibenzofurans	868	0.099	0.17	0.14	0.14	2.63
Hexachlorodibenzofurans	541	0.061	0.10	0.088	0.088	1.64
Heptachlorodibenzofurans	255	0.029	0.049	0.041	0.041	0.77
Octachlorodibenzofuran	<56	<0.0064	<0.011	<0.0091	<0.0091	<0.17
Total	<2081	<0.24	<0.40	<0.34	<0.34	<6.32

Dry Gas Volume Sampled (Nm³***) :	4.770
Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 5
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzo-p-dioxins	0.026	0.010	0.014	0.017	49.8
Pentachlorodibenzo-p-dioxins	0.13	0.066	0.067	0.086	39.2
Hexachlorodibenzo-p-dioxins	0.19	0.12	0.089	0.13	39.0
Heptachlorodibenzo-p-dioxins	0.13	0.10	0.060	0.098	36.9
Octachlorodibenzo-p-dioxin	0.071	0.054	0.039	0.055	29.1
Total	0.55	0.35	0.27	0.39	36.4

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m³	ng/m³	ng/m³	ng/m³	%
Tetrachlorodibenzofurans	0.099	0.039	0.041	0.060	57.0
Pentachlorodibenzofurans	0.21	0.098	0.099	0.13	46.8
Hexachlorodibenzofurans	0.13	0.086	0.061	0.091	35.8
Heptachlorodibenzofurans	0.064	0.055	0.029	0.049	36.6
Octachlorodibenzofuran	<0.012	<0.0093	<0.0064	<0.0094	32.3
Total	<0.51	<0.29	<0.24	<0.34	42.1

TABLE 6
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.045	0.018	0.023	0.029	50.3
Pentachlorodibenzo-p-dioxins	0.21	0.11	0.11	0.15	39.7
Hexachlorodibenzo-p-dioxins	0.33	0.21	0.15	0.23	39.5
Heptachlorodibenzo-p-dioxins	0.23	0.17	0.10	0.17	37.3
Octachlorodibenzo-p-dioxin	0.12	0.091	0.066	0.093	29.6
Total	0.93	0.60	0.46	0.66	36.9

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	0.17	0.067	0.069	0.10	57.5
Pentachlorodibenzofurans	0.35	0.17	0.17	0.23	47.2
Hexachlorodibenzofurans	0.22	0.15	0.10	0.16	36.3
Heptachlorodibenzofurans	0.11	0.093	0.049	0.083	37.0
Octachlorodibenzofuran	<0.021	<0.016	<0.011	<0.016	32.8
Total	<0.87	<0.49	<0.40	<0.59	42.6

* At 25°C and 1 atmosphere

TABLE 7

Covanta - Durham York Energy Centre

Boiler No. 1 BH Outlet - AMESA Monitor

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	0.038	0.015	0.020	0.024	50.6
Pentachlorodibenzo-p-dioxins	0.18	0.094	0.096	0.12	40.0
Hexachlorodibenzo-p-dioxins	0.28	0.17	0.13	0.19	39.6
Heptachlorodibenzo-p-dioxins	0.19	0.14	0.086	0.14	37.3
Octachlorodibenzo-p-dioxin	0.10	0.076	0.056	0.078	29.6
Total	0.79	0.50	0.38	0.56	37.1

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	0.14	0.056	0.059	0.086	57.8
Pentachlorodibenzofurans	0.30	0.14	0.14	0.19	47.5
Hexachlorodibenzofurans	0.18	0.12	0.088	0.13	36.4
Heptachlorodibenzofurans	0.091	0.077	0.041	0.070	36.9
Octachlorodibenzofuran	<0.018	<0.013	<0.0091	<0.013	32.8
Total	<0.73	<0.41	<0.34	<0.49	42.8

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

TABLE 8
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Wet Reference Concentrations

Dioxins

Congener Group	Wet 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	0.038	0.015	0.020	0.024	50.5
Pentachlorodibenzo-p-dioxins	0.18	0.095	0.096	0.12	39.9
Hexachlorodibenzo-p-dioxins	0.28	0.17	0.13	0.19	39.7
Heptachlorodibenzo-p-dioxins	0.19	0.14	0.086	0.14	37.5
Octachlorodibenzo-p-dioxin	0.10	0.076	0.056	0.078	29.7
Total	0.79	0.51	0.38	0.56	37.1

Furans

Congener Group	Wet reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/Rm³*	ng/Rm³*	ng/Rm³*	ng/Rm³*	%
Tetrachlorodibenzofurans	0.14	0.056	0.059	0.086	57.8
Pentachlorodibenzofurans	0.30	0.14	0.14	0.19	47.5
Hexachlorodibenzofurans	0.18	0.12	0.088	0.13	36.5
Heptachlorodibenzofurans	0.092	0.078	0.041	0.070	37.1
Octachlorodibenzofuran	<0.018	<0.013	<0.0091	<0.013	33.0
Total	<0.74	<0.41	<0.34	<0.50	42.8

* At 25°C and 1 atmosphere

TABLE 9
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.72	0.28	0.37	0.46	50.8
Pentachlorodibenzo-p-dioxins	3.42	1.79	1.79	2.33	40.3
Hexachlorodibenzo-p-dioxins	5.24	3.30	2.38	3.64	40.1
Heptachlorodibenzo-p-dioxins	3.61	2.74	1.61	2.65	37.9
Octachlorodibenzo-p-dioxin	1.94	1.45	1.05	1.48	30.2
Total	14.9	9.55	7.20	10.6	37.5

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	2.72	1.06	1.10	1.63	58.1
Pentachlorodibenzofurans	5.67	2.65	2.63	3.65	47.8
Hexachlorodibenzofurans	3.45	2.33	1.64	2.48	36.9
Heptachlorodibenzofurans	1.74	1.47	0.77	1.33	37.5
Octachlorodibenzofuran	<0.34	<0.25	<0.17	<0.25	33.4
Total	<13.9	<7.78	<6.32	<9.34	43.2

TABLE 10
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.017	0.029	0.024	0.024	0.46
Pentachlorodibenzo-p-dioxins	0.086	0.15	0.12	0.12	2.33
Hexachlorodibenzo-p-dioxins	0.13	0.23	0.19	0.19	3.64
Heptachlorodibenzo-p-dioxins	0.098	0.17	0.14	0.14	2.65
Octachlorodibenzo-p-dioxin	0.055	0.093	0.078	0.078	1.48
Total	0.39	0.66	0.56	0.56	10.6

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.060	0.10	0.086	0.086	1.63
Pentachlorodibenzofurans	0.13	0.23	0.19	0.19	3.65
Hexachlorodibenzofurans	0.091	0.16	0.13	0.13	2.48
Heptachlorodibenzofurans	0.049	0.083	0.070	0.070	1.33
Octachlorodibenzofuran	<0.0094	<0.016	<0.013	<0.013	<0.25
Total	<0.34	<0.59	<0.49	<0.50	<9.34

* At 25°C and 1 atmosphere

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

TABLE 11
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 1

Dioxins

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1910	0.22	0.38	0.31	0.32	6.05
Pentachlorodibenzo-p-dioxins	4150	0.49	0.83	0.68	0.70	13.2
Hexachlorodibenzo-p-dioxins	3210	0.38	0.64	0.53	0.54	10.2
Heptachlorodibenzo-p-dioxins	771	0.091	0.15	0.13	0.13	2.44
Octachlorodibenzo-p-dioxin	238	0.028	0.047	0.039	0.040	0.75
Total	10279	1.21	2.05	1.69	1.73	32.6

Furans

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1230	0.14	0.25	0.20	0.21	3.90
Pentachlorodibenzofurans	1470	0.17	0.29	0.24	0.25	4.66
Hexachlorodibenzofurans	721	0.085	0.14	0.12	0.12	2.29
Heptachlorodibenzofurans	238	0.028	0.047	0.039	0.040	0.75
Octachlorodibenzofuran	<36	<0.0042	<0.0072	<0.0059	<0.0061	<0.11
Total	<3695	<0.43	<0.74	<0.61	<0.62	<11.7

Dry Gas Volume Sampled (Nm³***) :	4.595
Dry Gas Volume Sampled (Rm³*) :	5.016
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.3
Wet Reference Flowrate (Rm³/s*) :	18.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 12
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 2

Dioxins

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1610	0.19	0.33	0.27	0.28	5.01
Pentachlorodibenzo-p-dioxins	3660	0.44	0.74	0.61	0.63	11.4
Hexachlorodibenzo-p-dioxins	2610	0.31	0.53	0.44	0.45	8.13
Heptachlorodibenzo-p-dioxins	615	0.074	0.13	0.10	0.11	1.92
Octachlorodibenzo-p-dioxin	148	0.018	0.030	0.025	0.025	0.46
Total	8643	1.04	1.76	1.45	1.48	26.9

Furans

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	1060	0.13	0.22	0.18	0.18	3.30
Pentachlorodibenzofurans	1220	0.15	0.25	0.20	0.21	3.80
Hexachlorodibenzofurans	614	0.074	0.12	0.10	0.11	1.91
Heptachlorodibenzofurans	164	0.020	0.033	0.027	0.028	0.51
Octachlorodibenzofuran	<23	<0.0028	<0.0047	<0.0039	<0.0039	<0.072
Total	<3081	<0.37	<0.63	<0.52	<0.53	<9.59

Dry Gas Volume Sampled (Nm³***) :	4.501
Dry Gas Volume Sampled (Rm³*) :	4.913
Actual Flowrate (m³/s) :	26.0
Dry Reference Flowrate (Rm³/s*) :	15.3
Dry Adjusted Flowrate (Rm³/s**) :	18.6
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
*** At 0°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 13
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Emission Data
Test No. 3

Dioxins

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	1020	0.13	0.21	0.17	0.18	3.40
Pentachlorodibenzo-p-dioxins	2000	0.25	0.41	0.34	0.35	6.67
Hexachlorodibenzo-p-dioxins	1560	0.19	0.32	0.26	0.27	5.21
Heptachlorodibenzo-p-dioxins	424	0.052	0.088	0.071	0.074	1.41
Octachlorodibenzo-p-dioxin	112	0.014	0.023	0.019	0.020	0.37
Total	5116	0.63	1.06	0.86	0.90	17.1

Furans

Congener Group	AMESA Sample pg	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	665	0.082	0.14	0.11	0.12	2.22
Pentachlorodibenzofurans	730	0.090	0.15	0.12	0.13	2.44
Hexachlorodibenzofurans	374	0.046	0.078	0.063	0.066	1.25
Heptachlorodibenzofurans	111	0.014	0.023	0.019	0.019	0.37
Octachlorodibenzofuran	<17	<0.0021	<0.0035	<0.0029	<0.0030	<0.057
Total	<1897	<0.23	<0.39	<0.32	<0.33	<6.33

Dry Gas Volume Sampled (Nm³***) :	4.420
Dry Gas Volume Sampled (Rm³*) :	4.825
Actual Flowrate (m³/s) :	27.1
Dry Reference Flowrate (Rm³/s*) :	16.1
Dry Adjusted Flowrate (Rm³/s**) :	19.9
Wet Reference Flowrate (Rm³/s*) :	19.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 14
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Actual Concentrations

Dioxins

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzo-p-dioxins	0.22	0.19	0.13	0.18	27.9
Pentachlorodibenzo-p-dioxins	0.49	0.44	0.25	0.39	32.6
Hexachlorodibenzo-p-dioxins	0.38	0.31	0.19	0.29	31.9
Heptachlorodibenzo-p-dioxins	0.091	0.074	0.052	0.072	26.6
Octachlorodibenzo-p-dioxin	0.028	0.018	0.014	0.020	36.9
Total	1.21	1.04	0.63	0.96	30.9

Furans

Congener Group	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	ng/m^3	ng/m^3	ng/m^3	ng/m^3	%
Tetrachlorodibenzofurans	0.14	0.13	0.082	0.12	27.4
Pentachlorodibenzofurans	0.17	0.15	0.090	0.14	31.0
Hexachlorodibenzofurans	0.085	0.074	0.046	0.068	29.2
Heptachlorodibenzofurans	0.028	0.020	0.014	0.020	35.1
Octachlorodibenzofuran	<0.0042	<0.0028	<0.0021	<0.0030	36.1
Total	<0.43	<0.37	<0.23	<0.35	29.6

TABLE 15
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Congener Group Dry Reference Concentrations

Dioxins

Congener Group	Dry 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	0.38	0.33	0.21	0.31	28.3
Pentachlorodibenzo-p-dioxins	0.83	0.74	0.41	0.66	33.0
Hexachlorodibenzo-p-dioxins	0.64	0.53	0.32	0.50	32.3
Heptachlorodibenzo-p-dioxins	0.15	0.13	0.088	0.12	27.0
Octachlorodibenzo-p-dioxin	0.047	0.030	0.023	0.034	37.2
Total	2.05	1.76	1.06	1.62	31.3

Furans

Congener Group	Dry Reference Concentration Test No. 1 ng/Rm³*	Test No. 2 ng/Rm³*	Test No. 3 ng/Rm³*	Average ng/Rm³*	Coefficient of Variation %
Tetrachlorodibenzofurans	0.25	0.22	0.14	0.20	27.8
Pentachlorodibenzofurans	0.29	0.25	0.15	0.23	31.4
Hexachlorodibenzofurans	0.14	0.12	0.078	0.12	29.6
Heptachlorodibenzofurans	0.047	0.033	0.023	0.035	35.4
Octachlorodibenzofuran	<0.0072	<0.0047	<0.0035	<0.0051	36.4
Total	<0.74	<0.63	<0.39	<0.59	30.0

* At 25°C and 1 atmosphere

TABLE 16
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	0.31	0.27	0.17	0.25	29.1
Pentachlorodibenzo-p-dioxins	0.68	0.61	0.34	0.54	33.7
Hexachlorodibenzo-p-dioxins	0.53	0.44	0.26	0.41	33.1
Heptachlorodibenzo-p-dioxins	0.13	0.10	0.071	0.10	27.8
Octachlorodibenzo-p-dioxin	0.039	0.025	0.019	0.028	37.9
Total	1.69	1.45	0.86	1.33	32.1

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	0.20	0.18	0.11	0.16	28.6
Pentachlorodibenzofurans	0.24	0.20	0.12	0.19	32.2
Hexachlorodibenzofurans	0.12	0.10	0.063	0.095	30.4
Heptachlorodibenzofurans	0.039	0.027	0.019	0.028	36.2
Octachlorodibenzofuran	<0.0059	<0.0039	<0.0029	<0.0042	37.1
Total	<0.61	<0.52	<0.32	<0.48	30.7

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

TABLE 17
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	0.32	0.28	0.18	0.26	28.2
Pentachlorodibenzo-p-dioxins	0.70	0.63	0.35	0.56	32.9
Hexachlorodibenzo-p-dioxins	0.54	0.45	0.27	0.42	32.2
Heptachlorodibenzo-p-dioxins	0.13	0.11	0.074	0.10	27.0
Octachlorodibenzo-p-dioxin	0.040	0.025	0.020	0.028	37.2
Total	1.73	1.48	0.90	1.37	31.2

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	0.21	0.18	0.12	0.17	27.7
Pentachlorodibenzofurans	0.25	0.21	0.13	0.19	31.3
Hexachlorodibenzofurans	0.12	0.11	0.066	0.097	29.5
Heptachlorodibenzofurans	0.040	0.028	0.019	0.029	35.5
Octachlorodibenzofuran	<0.0061	<0.0039	<0.0030	<0.0043	36.5
Total	<0.62	<0.53	<0.33	<0.49	29.9

* At 25°C and 1 atmosphere

TABLE 18
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	6.05	5.01	3.40	4.82	27.7
Pentachlorodibenzo-p-dioxins	13.2	11.4	6.67	10.4	32.2
Hexachlorodibenzo-p-dioxins	10.2	8.13	5.21	7.84	31.9
Heptachlorodibenzo-p-dioxins	2.44	1.92	1.41	1.92	26.7
Octachlorodibenzo-p-dioxin	0.75	0.46	0.37	0.53	37.7
Total	32.6	26.9	17.1	25.5	30.8

Furans

Congener Group	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
Tetrachlorodibenzofurans	3.90	3.30	2.22	3.14	27.1
Pentachlorodibenzofurans	4.66	3.80	2.44	3.63	30.9
Hexachlorodibenzofurans	2.29	1.91	1.25	1.82	29.0
Heptachlorodibenzofurans	0.75	0.51	0.37	0.55	35.6
Octachlorodibenzofuran	<0.11	<0.072	<0.057	<0.081	36.8
Total	<11.7	<9.59	<6.33	<9.21	29.4

TABLE 19
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Summary of Dioxin and Furan Congener Group Emission Data

Dioxins

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzo-p-dioxins	0.18	0.31	0.25	0.26	4.82
Pentachlorodibenzo-p-dioxins	0.39	0.66	0.54	0.56	10.4
Hexachlorodibenzo-p-dioxins	0.29	0.50	0.41	0.42	7.84
Heptachlorodibenzo-p-dioxins	0.072	0.12	0.10	0.10	1.92
Octachlorodibenzo-p-dioxin	0.020	0.034	0.028	0.028	0.53
Total	0.96	1.62	1.33	1.37	25.5

Furans

Congener Group	Actual Concentration ng/m³	Dry Reference Concentration ng/Rm³*	Dry Adjusted Concentration ng/Rm³**	Wet Reference Concentration ng/Rm³*	Emission Rate ng/s
Tetrachlorodibenzofurans	0.12	0.20	0.16	0.17	3.14
Pentachlorodibenzofurans	0.14	0.23	0.19	0.19	3.63
Hexachlorodibenzofurans	0.068	0.12	0.095	0.097	1.82
Heptachlorodibenzofurans	0.020	0.035	0.028	0.029	0.55
Octachlorodibenzofuran	<0.0030	<0.0051	<0.0042	<0.0043	<0.081
Total	<0.35	<0.59	<0.48	<0.49	<9.21

* At 25°C and 1 atmosphere

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

TABLE 20
Covanta - Durham York Energy Centre
BH Outlet - AMESA Monitor
Blank Dioxin and Furan Congener Group Analyses

Dioxins

Congener Group	Blank AMESA Sample pg	Laboratory Blank pg
Tetrachlorodibenzo-p-dioxins	<3.1	<3.7
Pentachlorodibenzo-p-dioxins	<2.6	<3.2
Hexachlorodibenzo-p-dioxins	<7.9	<7.1
Heptachlorodibenzo-p-dioxins	<2.3	<2.2
Octachlorodibenzo-p-dioxin	4.5	6.2
Total	<20.4	<22.4

Furans

Congener Group	Blank AMESA Sample pg	Laboratory Blank pg
Tetrachlorodibenzofurans	3.3	<2.3
Pentachlorodibenzofurans	<2.2	<2.3
Hexachlorodibenzofurans	<2.4	<2.3
Heptachlorodibenzofurans	<1.9	4.1
Octachlorodibenzofuran	<2.3	2.3
Total	<12.1	<13.3

"<" 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 21
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	AMESA Sample pg	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	6.8	0.77	1.31	1.10	1.11	0.021
12378-pentachlorodibenzo-p-dioxin	25.1	2.83	4.84	4.07	4.09	0.077
123478-hexachlorodibenzo-p-dioxin	33.7	3.80	6.49	5.47	5.50	0.10
123678-hexachlorodibenzo-p-dioxin	95.2	10.7	18.3	15.4	15.5	0.29
123789-hexachlorodibenzo-p-dioxin	46.3	5.23	8.92	7.51	7.55	0.14
1234678-heptachlorodibenzo-p-dioxin	524	59.2	101	85.0	85.5	1.62
Octachlorodibenzo-p-dioxin	628	70.9	121	102	102	1.94
2378-tetrachlorodibenzofuran	22.6	2.55	4.35	3.67	3.69	0.070
12378-pentachlorodibenzofuran	66.2	7.47	12.8	10.7	10.8	0.20
23478-pentachlorodibenzofuran	120	13.5	23.1	19.5	19.6	0.37
123478-hexachlorodibenzofuran	253	28.6	48.7	41.0	41.3	0.78
123678-hexachlorodibenzofuran	<110	<12.4	<21.2	<17.8	<17.9	<0.34
234678-hexachlorodibenzofuran	121	13.7	23.3	19.6	19.7	0.37
123789-hexachlorodibenzofuran	<4.6	<0.52	<0.89	<0.75	<0.75	<0.014
1234678-heptachlorodibenzofuran	399	45.0	76.9	64.7	65.1	1.23
1234789-heptachlorodibenzofuran	29.5	3.33	5.68	4.79	4.81	0.091
Octachlorodibenzofuran	<110	<12.4	<21.2	<17.8	<17.9	<0.34
Total Dioxins & Furans Only	<2595	<293	<500	<421	<423	<8.00

Dry Gas Volume Sampled (Nm³***) :	4.756
Dry Gas Volume Sampled (Rm³*) :	5.191
Actual Flowrate (m³/s) :	27.3
Dry Reference Flowrate (Rm³/s*) :	16.0
Dry Adjusted Flowrate (Rm³/s**) :	19.0
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 22
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	AMESA Sample pg	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	<3.6	<0.40	<0.68	<0.57	<0.58	<0.011
12378-pentachlorodibenzo-p-dioxin	14.8	1.66	2.81	2.34	2.37	0.045
123478-hexachlorodibenzo-p-dioxin	21.2	2.37	4.03	3.36	3.39	0.064
123678-hexachlorodibenzo-p-dioxin	59.1	6.62	11.2	9.36	9.45	0.18
123789-hexachlorodibenzo-p-dioxin	57.2	6.41	10.9	9.05	9.15	0.17
1234678-heptachlorodibenzo-p-dioxin	414	46.4	78.7	65.5	66.2	1.25
Octachlorodibenzo-p-dioxin	478	53.5	90.9	75.7	76.5	1.45
2378-tetrachlorodibenzofuran	11.2	1.25	2.13	1.77	1.79	0.034
12378-pentachlorodibenzofuran	<39	<4.37	<7.42	<6.17	<6.24	<0.12
23478-pentachlorodibenzofuran	64.0	7.17	12.2	10.1	10.2	0.19
123478-hexachlorodibenzofuran	161	18.0	30.6	25.5	25.8	0.49
123678-hexachlorodibenzofuran	70.7	7.92	13.4	11.2	11.3	0.21
234678-hexachlorodibenzofuran	72.3	8.10	13.7	11.4	11.6	0.22
123789-hexachlorodibenzofuran	4.5	0.50	0.86	0.71	0.72	0.014
1234678-heptachlorodibenzofuran	346	38.7	65.8	54.8	55.3	1.05
1234789-heptachlorodibenzofuran	22.9	2.56	4.35	3.62	3.66	0.069
Octachlorodibenzofuran	<83	<9.29	<15.8	<13.1	<13.3	<0.25
Total Dioxins & Furans Only	<1923	<215	<366	<304	<308	<5.81

Dry Gas Volume Sampled (Nm³***) :	4.818
Dry Gas Volume Sampled (Rm³*) :	5.259
Actual Flowrate (m³/s) :	27.0
Dry Reference Flowrate (Rm³/s*) :	15.9
Dry Adjusted Flowrate (Rm³/s**) :	19.1
Wet Reference Flowrate (Rm³/s*) :	18.9

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	Total Collected pg	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	4.3	0.49	0.83	0.70	0.70	0.013
12378-pentachlorodibenzo-p-dioxin	16.2	1.84	3.11	2.63	2.63	0.049
123478-hexachlorodibenzo-p-dioxin	15.4	1.75	2.96	2.50	2.50	0.047
123678-hexachlorodibenzo-p-dioxin	40.4	4.59	7.76	6.56	6.56	0.12
123789-hexachlorodibenzo-p-dioxin	19.1	2.17	3.67	3.10	3.10	0.058
1234678-heptachlorodibenzo-p-dioxin	248	28.2	47.6	40.2	40.2	0.75
Octachlorodibenzo-p-dioxin	345	39.2	66.3	56.0	56.0	1.05
2378-tetrachlorodibenzofuran	9.4	1.07	1.81	1.53	1.53	0.029
12378-pentachlorodibenzofuran	29.5	3.35	5.67	4.79	4.79	0.090
23478-pentachlorodibenzofuran	61.6	7.00	11.8	10.0	10.0	0.19
123478-hexachlorodibenzofuran	112	12.7	21.5	18.2	18.2	0.34
123678-hexachlorodibenzofuran	48.5	5.51	9.32	7.87	7.87	0.15
234678-hexachlorodibenzofuran	51.4	5.84	9.87	8.34	8.34	0.16
123789-hexachlorodibenzofuran	2.6	0.30	0.50	0.42	0.42	0.0079
1234678-heptachlorodibenzofuran	185	21.0	35.5	30.0	30.0	0.56
1234789-heptachlorodibenzofuran	13.0	1.48	2.50	2.11	2.11	0.039
Octachlorodibenzofuran	<56	<6.36	<10.8	<9.09	<9.09	<0.17
Total Dioxins & Furans Only	<1257	<143	<242	<204	<204	<3.82

Dry Gas Volume Sampled (Nm³***) :	4.770
Dry Gas Volume Sampled (Rm³*) :	5.207
Actual Flowrate (m³/s) :	26.7
Dry Reference Flowrate (Rm³/s*) :	15.8
Dry Adjusted Flowrate (Rm³/s**) :	18.7
Wet Reference Flowrate (Rm³/s*) :	18.7

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 24
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m^3	pg/m^3	pg/m^3	pg/m^3	%
2378-tetrachlorodibenzo-p-dioxin	0.77	<0.40	0.49	<0.55	34.5
12378-pentachlorodibenzo-p-dioxin	2.83	1.66	1.84	2.11	30.0
123478-hexachlorodibenzo-p-dioxin	3.80	2.37	1.75	2.64	39.9
123678-hexachlorodibenzo-p-dioxin	10.7	6.62	4.59	7.32	42.9
123789-hexachlorodibenzo-p-dioxin	5.23	6.41	2.17	4.60	47.5
1234678-heptachlorodibenzo-p-dioxin	59.2	46.4	28.2	44.6	34.9
Octachlorodibenzo-p-dioxin	70.9	53.5	39.2	54.5	29.1
2378-tetrachlorodibenzofuran	2.55	1.25	1.07	1.62	49.7
12378-pentachlorodibenzofuran	7.47	<4.37	3.35	<5.06	42.4
23478-pentachlorodibenzofuran	13.5	7.17	7.00	9.24	40.4
123478-hexachlorodibenzofuran	28.6	18.0	12.7	19.8	40.8
123678-hexachlorodibenzofuran	<12.4	7.92	5.51	<8.62	40.7
234678-hexachlorodibenzofuran	13.7	8.10	5.84	9.20	43.7
123789-hexachlorodibenzofuran	<0.52	0.50	0.30	<0.44	28.4
1234678-heptachlorodibenzofuran	45.0	38.7	21.0	34.9	35.6
1234789-heptachlorodibenzofuran	3.33	2.56	1.48	2.46	37.9
Octachlorodibenzofuran	<12.4	<9.29	<6.36	<9.36	32.3
Total Dioxins & Furans Only	<293	<215	<143	<217	34.6

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 - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	1.31	<0.68	0.83	<0.94	34.9
12378-pentachlorodibenzo-p-dioxin	4.84	2.81	3.11	3.59	30.4
123478-hexachlorodibenzo-p-dioxin	6.49	4.03	2.96	4.49	40.3
123678-hexachlorodibenzo-p-dioxin	18.3	11.2	7.76	12.4	43.3
123789-hexachlorodibenzo-p-dioxin	8.92	10.9	3.67	7.82	47.7
1234678-heptachlorodibenzo-p-dioxin	101	78.7	47.6	75.8	35.3
Octachlorodibenzo-p-dioxin	121	90.9	66.3	92.7	29.6
2378-tetrachlorodibenzofuran	4.35	2.13	1.81	2.76	50.2
12378-pentachlorodibenzofuran	12.8	<7.42	5.67	<8.61	42.9
23478-pentachlorodibenzofuran	23.1	12.2	11.8	15.7	40.9
123478-hexachlorodibenzofuran	48.7	30.6	21.5	33.6	41.2
123678-hexachlorodibenzofuran	<21.2	13.4	9.32	<14.6	41.1
234678-hexachlorodibenzofuran	23.3	13.7	9.87	15.6	44.2
123789-hexachlorodibenzofuran	<0.89	0.86	0.50	<0.75	28.8
1234678-heptachlorodibenzofuran	76.9	65.8	35.5	59.4	36.0
1234789-heptachlorodibenzofuran	5.68	4.35	2.50	4.18	38.3
Octachlorodibenzofuran	<21.2	<15.8	<10.8	<15.9	32.8
Total Dioxins & Furans Only	<500	<366	<242	<369	35.0

* 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 26
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	1.10	<0.57	0.70	<0.79	35.2
12378-pentachlorodibenzo-p-dioxin	4.07	2.34	2.63	3.01	30.7
123478-hexachlorodibenzo-p-dioxin	5.47	3.36	2.50	3.77	40.5
123678-hexachlorodibenzo-p-dioxin	15.4	9.36	6.56	10.5	43.5
123789-hexachlorodibenzo-p-dioxin	7.51	9.05	3.10	6.55	47.1
1234678-heptachlorodibenzo-p-dioxin	85.0	65.5	40.2	63.6	35.3
Octachlorodibenzo-p-dioxin	102	75.7	56.0	77.8	29.6
2378-tetrachlorodibenzofuran	3.67	1.77	1.53	2.32	50.4
12378-pentachlorodibenzofuran	10.7	<6.17	4.79	<7.23	43.1
23478-pentachlorodibenzofuran	19.5	10.1	10.0	13.2	41.1
123478-hexachlorodibenzofuran	41.0	25.5	18.2	28.2	41.4
123678-hexachlorodibenzofuran	<17.8	11.2	7.87	<12.3	41.3
234678-hexachlorodibenzofuran	19.6	11.4	8.34	13.1	44.4
123789-hexachlorodibenzofuran	<0.75	0.71	0.42	<0.63	28.4
1234678-heptachlorodibenzofuran	64.7	54.8	30.0	49.8	35.9
1234789-heptachlorodibenzofuran	4.79	3.62	2.11	3.51	38.3
Octachlorodibenzofuran	<17.8	<13.1	<9.09	<13.4	32.8
Total Dioxins & Furans Only	<421	<304	<204	<310	35.0

* 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 - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	1.11	<0.58	0.70	<0.79	35.2
12378-pentachlorodibenzo-p-dioxin	4.09	2.37	2.63	3.03	30.7
123478-hexachlorodibenzo-p-dioxin	5.50	3.39	2.50	3.80	40.5
123678-hexachlorodibenzo-p-dioxin	15.5	9.45	6.56	10.5	43.5
123789-hexachlorodibenzo-p-dioxin	7.55	9.15	3.10	6.60	47.5
1234678-heptachlorodibenzo-p-dioxin	85.5	66.2	40.2	64.0	35.5
Octachlorodibenzo-p-dioxin	102	76.5	56.0	78.3	29.7
2378-tetrachlorodibenzofuran	3.69	1.79	1.53	2.33	50.5
12378-pentachlorodibenzofuran	10.8	<6.24	4.79	<7.27	43.1
23478-pentachlorodibenzofuran	19.6	10.2	10.0	13.3	41.1
123478-hexachlorodibenzofuran	41.3	25.8	18.2	28.4	41.4
123678-hexachlorodibenzofuran	<17.9	11.3	7.87	<12.4	41.4
234678-hexachlorodibenzofuran	19.7	11.6	8.34	13.2	44.4
123789-hexachlorodibenzofuran	<0.75	0.72	0.42	<0.63	28.8
1234678-heptachlorodibenzofuran	65.1	55.3	30.0	50.1	36.1
1234789-heptachlorodibenzofuran	4.81	3.66	2.11	3.53	38.4
Octachlorodibenzofuran	<17.9	<13.3	<9.09	<13.4	33.0
Total Dioxins & Furans Only	<423	<308	<204	<312	35.2

* 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 28
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.021	<0.011	0.013	<0.015	35.4
12378-pentachlorodibenzo-p-dioxin	0.077	0.045	0.049	0.057	31.0
123478-hexachlorodibenzo-p-dioxin	0.10	0.064	0.047	0.072	40.9
123678-hexachlorodibenzo-p-dioxin	0.29	0.18	0.12	0.20	43.9
123789-hexachlorodibenzo-p-dioxin	0.14	0.17	0.058	0.12	47.9
1234678-heptachlorodibenzo-p-dioxin	1.62	1.25	0.75	1.21	35.9
Octachlorodibenzo-p-dioxin	1.94	1.45	1.05	1.48	30.2
2378-tetrachlorodibenzofuran	0.070	0.034	0.029	0.044	50.8
12378-pentachlorodibenzofuran	0.20	<0.12	0.090	<0.14	43.5
23478-pentachlorodibenzofuran	0.37	0.19	0.19	0.25	41.5
123478-hexachlorodibenzofuran	0.78	0.49	0.34	0.54	41.8
123678-hexachlorodibenzofuran	<0.34	0.21	0.15	<0.23	41.7
234678-hexachlorodibenzofuran	0.37	0.22	0.16	0.25	44.8
123789-hexachlorodibenzofuran	<0.014	0.014	0.0079	<0.012	29.2
1234678-heptachlorodibenzofuran	1.23	1.05	0.56	0.95	36.5
1234789-heptachlorodibenzofuran	0.091	0.069	0.039	0.067	38.8
Octachlorodibenzofuran	<0.34	<0.25	<0.17	<0.25	33.4
Total Dioxins & Furans Only	<8.00	<5.81	<3.82	<5.88	35.6

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

TABLE 29
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	<0.55	<0.94	<0.79	<0.79	<0.015
12378-pentachlorodibenzo-p-dioxin	2.11	3.59	3.01	3.03	0.057
123478-hexachlorodibenzo-p-dioxin	2.64	4.49	3.77	3.80	0.072
123678-hexachlorodibenzo-p-dioxin	7.32	12.4	10.5	10.5	0.20
123789-hexachlorodibenzo-p-dioxin	4.60	7.82	6.55	6.60	0.12
1234678-heptachlorodibenzo-p-dioxin	44.6	75.8	63.6	64.0	1.21
Octachlorodibenzo-p-dioxin	54.5	92.7	77.8	78.3	1.48
2378-tetrachlorodibenzofuran	1.62	2.76	2.32	2.33	0.044
12378-pentachlorodibenzofuran	<5.06	<8.61	<7.23	<7.27	<0.14
23478-pentachlorodibenzofuran	9.24	15.7	13.2	13.3	0.25
123478-hexachlorodibenzofuran	19.8	33.6	28.2	28.4	0.54
123678-hexachlorodibenzofuran	<8.62	<14.6	<12.3	<12.4	<0.23
234678-hexachlorodibenzofuran	9.20	15.6	13.1	13.2	0.25
123789-hexachlorodibenzofuran	<0.44	<0.75	<0.63	<0.63	<0.012
1234678-heptachlorodibenzofuran	34.9	59.4	49.8	50.1	0.95
1234789-heptachlorodibenzofuran	2.46	4.18	3.51	3.53	0.067
Octachlorodibenzofuran	<9.36	<15.9	<13.4	<13.4	<0.25
Total Dioxins & Furans Only	<217	<369	<310	<312	<5.88

* 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 30
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Actual Concentrations

Specific Isomer	Toxicity Equivalency Factor	Actual Concentration Test No. 1 pg TEQ/m^3	Test No. 2 pg TEQ/m^3	Test No. 3 pg TEQ/m^3	Average pg TEQ/m^3
2378-tetrachlorodibenzo-p-dioxin	1.000	0.77	<0.40	0.49	<0.55
12378-pentachlorodibenzo-p-dioxin	1.000	2.83	1.66	1.84	2.11
123478-hexachlorodibenzo-p-dioxin	0.100	0.38	0.24	0.18	0.26
123678-hexachlorodibenzo-p-dioxin	0.100	1.07	0.66	0.46	0.73
123789-hexachlorodibenzo-p-dioxin	0.100	0.52	0.64	0.22	0.46
1234678-heptachlorodibenzo-p-dioxin	0.010	0.59	0.46	0.28	0.45
Octachlorodibenzo-p-dioxin	0.0003	0.021	0.016	0.012	0.016
2378-tetrachlorodibenzofuran	0.100	0.26	0.13	0.11	0.16
12378-pentachlorodibenzofuran	0.030	0.22	<0.13	0.10	<0.15
23478-pentachlorodibenzofuran	0.300	4.06	2.15	2.10	2.77
123478-hexachlorodibenzofuran	0.100	2.86	1.80	1.27	1.98
123678-hexachlorodibenzofuran	0.100	<1.24	0.79	0.55	<0.86
234678-hexachlorodibenzofuran	0.100	1.37	0.81	0.58	0.92
123789-hexachlorodibenzofuran	0.100	<0.052	0.050	0.030	<0.044
1234678-heptachlorodibenzofuran	0.010	0.45	0.39	0.21	0.35
1234789-heptachlorodibenzofuran	0.010	0.033	0.026	0.015	0.025
Octachlorodibenzofuran	0.0003	<0.0037	<0.0028	<0.0019	<0.0028
Total Dioxins & Furans Only		<16.7	<10.4	<8.45	<11.8

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 BH Outlet - AMESA Monitor
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	1.31	<0.68	0.83	<0.94
12378-pentachlorodibenzo-p-dioxin	1.000	4.84	2.81	3.11	3.59
123478-hexachlorodibenzo-p-dioxin	0.100	0.65	0.40	0.30	0.45
123678-hexachlorodibenzo-p-dioxin	0.100	1.83	1.12	0.78	1.24
123789-hexachlorodibenzo-p-dioxin	0.100	0.89	1.09	0.37	0.78
1234678-heptachlorodibenzo-p-dioxin	0.010	1.01	0.79	0.48	0.76
Octachlorodibenzo-p-dioxin	0.0003	0.036	0.027	0.020	0.028
2378-tetrachlorodibenzofuran	0.100	0.44	0.21	0.18	0.28
12378-pentachlorodibenzofuran	0.030	0.38	<0.22	0.17	<0.26
23478-pentachlorodibenzofuran	0.300	6.93	3.65	3.55	4.71
123478-hexachlorodibenzofuran	0.100	4.87	3.06	2.15	3.36
123678-hexachlorodibenzofuran	0.100	<2.12	1.34	0.93	<1.46
234678-hexachlorodibenzofuran	0.100	2.33	1.37	0.99	1.56
123789-hexachlorodibenzofuran	0.100	<0.089	0.086	0.050	<0.075
1234678-heptachlorodibenzofuran	0.010	0.77	0.66	0.36	0.59
1234789-heptachlorodibenzofuran	0.010	0.057	0.044	0.025	0.042
Octachlorodibenzofuran	0.0003	<0.0064	<0.0047	<0.0032	<0.0048
Total Dioxins & Furans Only		<28.6	<17.6	<14.3	<20.1

* 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 32
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

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	1.10	<0.57	0.70	<0.79
12378-pentachlorodibenzo-p-dioxin	1.000	4.07	2.34	2.63	3.01
123478-hexachlorodibenzo-p-dioxin	0.100	0.55	0.34	0.25	0.38
123678-hexachlorodibenzo-p-dioxin	0.100	1.54	0.94	0.66	1.05
123789-hexachlorodibenzo-p-dioxin	0.100	0.75	0.91	0.31	0.66
1234678-heptachlorodibenzo-p-dioxin	0.010	0.85	0.66	0.40	0.64
Octachlorodibenzo-p-dioxin	0.0003	0.031	0.023	0.017	0.023
2378-tetrachlorodibenzofuran	0.100	0.37	0.18	0.15	0.23
12378-pentachlorodibenzofuran	0.030	0.32	<0.19	0.14	<0.22
23478-pentachlorodibenzofuran	0.300	5.84	3.04	3.00	3.96
123478-hexachlorodibenzofuran	0.100	4.10	2.55	1.82	2.82
123678-hexachlorodibenzofuran	0.100	<1.78	1.12	0.79	<1.23
234678-hexachlorodibenzofuran	0.100	1.96	1.14	0.83	1.31
123789-hexachlorodibenzofuran	0.100	<0.075	0.071	0.042	<0.063
1234678-heptachlorodibenzofuran	0.010	0.65	0.55	0.30	0.50
1234789-heptachlorodibenzofuran	0.010	0.048	0.036	0.021	0.035
Octachlorodibenzofuran	0.0003	<0.0054	<0.0039	<0.0027	<0.0040
Total Dioxins & Furans Only		<24.1	<14.6	<12.1	<16.9

* 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 32A
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.10	0.28	0.70	0.70
12378-pentachlorodibenzo-p-dioxin	1.000	4.07	2.34	2.63	3.01
123478-hexachlorodibenzo-p-dioxin	0.100	0.55	0.34	0.25	0.38
123678-hexachlorodibenzo-p-dioxin	0.100	1.54	0.94	0.66	1.05
123789-hexachlorodibenzo-p-dioxin	0.100	0.75	0.91	0.31	0.66
1234678-heptachlorodibenzo-p-dioxin	0.010	0.85	0.66	0.40	0.64
Octachlorodibenzo-p-dioxin	0.0003	0.031	0.023	0.017	0.023
2378-tetrachlorodibenzofuran	0.100	0.37	0.18	0.15	0.23
12378-pentachlorodibenzofuran	0.030	0.32	0.093	0.14	0.19
23478-pentachlorodibenzofuran	0.300	5.84	3.04	3.00	3.96
123478-hexachlorodibenzofuran	0.100	4.10	2.55	1.82	2.82
123678-hexachlorodibenzofuran	0.100	0.89	1.12	0.79	0.93
234678-hexachlorodibenzofuran	0.100	1.96	1.14	0.83	1.31
123789-hexachlorodibenzofuran	0.100	0.037	0.071	0.042	0.050
1234678-heptachlorodibenzofuran	0.010	0.65	0.55	0.30	0.50
1234789-heptachlorodibenzofuran	0.010	0.048	0.036	0.021	0.035
Octachlorodibenzofuran	0.0003	0.0027	0.0020	0.0014	0.0020
Total Dioxins & Furans Only		23.1	14.3	12.1	16.5

* 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 32B
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.10	<0.57	0.70	<0.79
12378-pentachlorodibenzo-p-dioxin	0.500	2.04	1.17	1.31	1.51
123478-hexachlorodibenzo-p-dioxin	0.100	0.55	0.34	0.25	0.38
123678-hexachlorodibenzo-p-dioxin	0.100	1.54	0.94	0.66	1.05
123789-hexachlorodibenzo-p-dioxin	0.100	0.75	0.91	0.31	0.66
1234678-heptachlorodibenzo-p-dioxin	0.010	0.85	0.66	0.40	0.64
Octachlorodibenzo-p-dioxin	0.001	0.10	0.076	0.056	0.078
2378-tetrachlorodibenzofuran	0.100	0.37	0.18	0.15	0.23
12378-pentachlorodibenzofuran	0.050	0.54	<0.31	0.24	<0.36
23478-pentachlorodibenzofuran	0.500	9.73	5.07	5.00	6.60
123478-hexachlorodibenzofuran	0.100	4.10	2.55	1.82	2.82
123678-hexachlorodibenzofuran	0.100	<1.78	1.12	0.79	<1.23
234678-hexachlorodibenzofuran	0.100	1.96	1.14	0.83	1.31
123789-hexachlorodibenzofuran	0.100	<0.075	0.071	0.042	<0.063
1234678-heptachlorodibenzofuran	0.010	0.65	0.55	0.30	0.50
1234789-heptachlorodibenzofuran	0.010	0.048	0.036	0.021	0.035
Octachlorodibenzofuran	0.001	<0.018	<0.013	<0.0091	<0.013
Total Dioxins & Furans		<26.2	<15.7	<12.9	<18.3
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 33
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	1.11	<0.58	0.70	<0.79
12378-pentachlorodibenzo-p-dioxin	1.000	4.09	2.37	2.63	3.03
123478-hexachlorodibenzo-p-dioxin	0.100	0.55	0.34	0.25	0.38
123678-hexachlorodibenzo-p-dioxin	0.100	1.55	0.95	0.66	1.05
123789-hexachlorodibenzo-p-dioxin	0.100	0.76	0.92	0.31	0.66
1234678-heptachlorodibenzo-p-dioxin	0.010	0.85	0.66	0.40	0.64
Octachlorodibenzo-p-dioxin	0.0003	0.031	0.023	0.017	0.023
2378-tetrachlorodibenzofuran	0.100	0.37	0.18	0.15	0.23
12378-pentachlorodibenzofuran	0.030	0.32	<0.19	0.14	<0.22
23478-pentachlorodibenzofuran	0.300	5.87	3.07	3.00	3.98
123478-hexachlorodibenzofuran	0.100	4.13	2.58	1.82	2.84
123678-hexachlorodibenzofuran	0.100	<1.79	1.13	0.79	<1.24
234678-hexachlorodibenzofuran	0.100	1.97	1.16	0.83	1.32
123789-hexachlorodibenzofuran	0.100	<0.075	0.072	0.042	<0.063
1234678-heptachlorodibenzofuran	0.010	0.65	0.55	0.30	0.50
1234789-heptachlorodibenzofuran	0.010	0.048	0.037	0.021	0.035
Octachlorodibenzofuran	0.0003	<0.0054	<0.0040	<0.0027	<0.0040
Total Dioxins & Furans Only		<24.2	<14.8	<12.1	<17.0

* At 25°C and 1 atmosphere

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

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

TABLE 34

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.021	<0.011	0.013	<0.015
12378-pentachlorodibenzo-p-dioxin	1.000	0.077	0.045	0.049	0.057
123478-hexachlorodibenzo-p-dioxin	0.100	0.010	0.0064	0.0047	0.0072
123678-hexachlorodibenzo-p-dioxin	0.100	0.029	0.018	0.012	0.020
123789-hexachlorodibenzo-p-dioxin	0.100	0.014	0.017	0.0058	0.012
1234678-heptachlorodibenzo-p-dioxin	0.010	0.016	0.013	0.0075	0.012
Octachlorodibenzo-p-dioxin	0.0003	0.00058	0.00043	0.00031	0.00044
2378-tetrachlorodibenzofuran	0.100	0.0070	0.0034	0.0029	0.0044
12378-pentachlorodibenzofuran	0.030	0.0061	<0.0035	0.0027	<0.0041
23478-pentachlorodibenzofuran	0.300	0.11	0.058	0.056	0.075
123478-hexachlorodibenzofuran	0.100	0.078	0.049	0.034	0.054
123678-hexachlorodibenzofuran	0.100	<0.034	0.021	0.015	<0.023
234678-hexachlorodibenzofuran	0.100	0.037	0.022	0.016	0.025
123789-hexachlorodibenzofuran	0.100	<0.0014	0.0014	0.00079	<0.0012
1234678-heptachlorodibenzofuran	0.010	0.012	0.010	0.0056	0.0095
1234789-heptachlorodibenzofuran	0.010	0.00091	0.00069	0.00039	0.00067
Octachlorodibenzofuran	0.0003	<0.00010	<0.000075	<0.000051	<0.000076
Total Dioxins & Furans Only		<0.46	<0.28	<0.23	<0.32

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 35
Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	<0.55	<0.94	<0.79	<0.79	<0.015
12378-pentachlorodibenzo-p-dioxin	2.11	3.59	3.01	3.03	0.057
123478-hexachlorodibenzo-p-dioxin	0.26	0.45	0.38	0.38	0.0072
123678-hexachlorodibenzo-p-dioxin	0.73	1.24	1.05	1.05	0.020
123789-hexachlorodibenzo-p-dioxin	0.46	0.78	0.66	0.66	0.012
1234678-heptachlorodibenzo-p-dioxin	0.45	0.76	0.64	0.64	0.012
Octachlorodibenzo-p-dioxin	0.016	0.028	0.023	0.023	0.00044
2378-tetrachlorodibenzofuran	0.16	0.28	0.23	0.23	0.0044
12378-pentachlorodibenzofuran	<0.15	<0.26	<0.22	<0.22	<0.0041
23478-pentachlorodibenzofuran	2.77	4.71	3.96	3.98	0.075
123478-hexachlorodibenzofuran	1.98	3.36	2.82	2.84	0.054
123678-hexachlorodibenzofuran	<0.86	<1.46	<1.23	<1.24	<0.023
234678-hexachlorodibenzofuran	0.92	1.56	1.31	1.32	0.025
123789-hexachlorodibenzofuran	<0.044	<0.075	<0.063	<0.063	<0.0012
1234678-heptachlorodibenzofuran	0.35	0.59	0.50	0.50	0.0095
1234789-heptachlorodibenzofuran	0.025	0.042	0.035	0.035	0.00067
Octachlorodibenzofuran	<0.0028	<0.0048	<0.0040	<0.0040	<0.000076
Total Dioxins & Furans Only	<11.8	<20.1	<16.9	<17.0	<0.32

* 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 36

Covanta - Durham York Energy Centre
Boiler No. 1 BH Outlet - AMESA Monitor
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	0.49	0.83	0.70	0.70	0.013
12378-pentachlorodibenzo-p-dioxin	2.11	3.59	3.01	3.03	0.057
123478-hexachlorodibenzo-p-dioxin	0.26	0.45	0.38	0.38	0.0072
123678-hexachlorodibenzo-p-dioxin	0.73	1.24	1.05	1.05	0.020
123789-hexachlorodibenzo-p-dioxin	0.46	0.78	0.66	0.66	0.012
1234678-heptachlorodibenzo-p-dioxin	0.45	0.76	0.64	0.64	0.012
Octachlorodibenzo-p-dioxin	0.016	0.028	0.023	0.023	0.00044
2378-tetrachlorodibenzofuran	0.16	0.28	0.23	0.23	0.0044
12378-pentachlorodibenzofuran	0.13	0.22	0.19	0.19	0.0035
23478-pentachlorodibenzofuran	2.77	4.71	3.96	3.98	0.075
123478-hexachlorodibenzofuran	1.98	3.36	2.82	2.84	0.054
123678-hexachlorodibenzofuran	0.65	1.11	0.93	0.94	0.018
234678-hexachlorodibenzofuran	0.92	1.56	1.31	1.32	0.025
123789-hexachlorodibenzofuran	0.035	0.060	0.050	0.051	0.00095
1234678-heptachlorodibenzofuran	0.35	0.59	0.50	0.50	0.0095
1234789-heptachlorodibenzofuran	0.025	0.042	0.035	0.035	0.00067
Octachlorodibenzofuran	0.0014	0.0024	0.0020	0.0020	0.000038
Total Dioxins & Furans Only	11.5	19.6	16.5	16.6	0.31

* 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 37
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 1

Specific Isomer	AMESA Sample pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	20.1	2.36	4.01	3.30	3.39	0.064
12378-pentachlorodibenzo-p-dioxin	76.2	8.95	15.2	12.5	12.8	0.24
123478-hexachlorodibenzo-p-dioxin	65.1	7.64	13.0	10.7	11.0	0.21
123678-hexachlorodibenzo-p-dioxin	171	20.1	34.1	28.1	28.8	0.54
123789-hexachlorodibenzo-p-dioxin	175	20.5	34.9	28.7	29.5	0.55
1234678-heptachlorodibenzo-p-dioxin	358	42.0	71.4	58.8	60.4	1.13
Octachlorodibenzo-p-dioxin	238	27.9	47.5	39.1	40.1	0.75
2378-tetrachlorodibenzofuran	19.1	2.24	3.81	3.14	3.22	0.061
12378-pentachlorodibenzofuran	52.6	6.18	10.5	8.64	8.87	0.17
23478-pentachlorodibenzofuran	134	15.7	26.7	22.0	22.6	0.42
123478-hexachlorodibenzofuran	148	17.4	29.5	24.3	25.0	0.47
123678-hexachlorodibenzofuran	74.4	8.74	14.8	12.2	12.5	0.24
234678-hexachlorodibenzofuran	84.3	9.90	16.8	13.8	14.2	0.27
123789-hexachlorodibenzofuran	<3.9	<0.46	<0.78	<0.64	<0.66	<0.012
1234678-heptachlorodibenzofuran	136	16.0	27.1	22.3	22.9	0.43
1234789-heptachlorodibenzofuran	19.1	2.24	3.81	3.14	3.22	0.061
Octachlorodibenzofuran	<36	<4.23	<7.18	<5.91	<6.07	<0.11
Total Dioxins & Furans Only	<1811	<213	<361	<297	<305	<5.74

Dry Gas Volume Sampled (Nm^3***) :	4.595
Dry Gas Volume Sampled (Rm^3*) :	5.016
Actual Flowrate (m^3/s) :	27.0
Dry Reference Flowrate (Rm^3/s*) :	15.9
Dry Adjusted Flowrate (Rm^3/s**) :	19.3
Wet Reference Flowrate (Rm^3/s*) :	18.8

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 38
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 2

Specific Isomer	AMESA Sample pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	21.3	2.55	4.34	3.57	3.64	0.066
12378-pentachlorodibenzo-p-dioxin	83.3	9.98	17.0	13.9	14.3	0.26
123478-hexachlorodibenzo-p-dioxin	54.9	6.58	11.2	9.19	9.39	0.17
123678-hexachlorodibenzo-p-dioxin	135	16.2	27.5	22.6	23.1	0.42
123789-hexachlorodibenzo-p-dioxin	139	16.6	28.3	23.3	23.8	0.43
1234678-heptachlorodibenzo-p-dioxin	291	34.9	59.2	48.7	49.8	0.91
Octachlorodibenzo-p-dioxin	148	17.7	30.1	24.8	25.3	0.46
2378-tetrachlorodibenzofuran	22.1	2.65	4.50	3.70	3.78	0.069
12378-pentachlorodibenzofuran	41.0	4.91	8.35	6.86	7.02	0.13
23478-pentachlorodibenzofuran	114	13.7	23.2	19.1	19.5	0.36
123478-hexachlorodibenzofuran	122	14.6	24.8	20.4	20.9	0.38
123678-hexachlorodibenzofuran	64.4	7.71	13.1	10.8	11.0	0.20
234678-hexachlorodibenzofuran	64.0	7.67	13.0	10.7	11.0	0.20
123789-hexachlorodibenzofuran	<3.1	<0.37	<0.63	<0.52	<0.53	<0.0097
1234678-heptachlorodibenzofuran	100	12.0	20.4	16.7	17.1	0.31
1234789-heptachlorodibenzofuran	14.8	1.77	3.01	2.48	2.53	0.046
Octachlorodibenzofuran	<23	<2.75	<4.68	<3.85	<3.94	<0.072
Total Dioxins & Furans Only	<1441	<173	<293	<241	<247	<4.49

Dry Gas Volume Sampled (Nm^3***) :	4.501
Dry Gas Volume Sampled (Rm^3*) :	4.913
Actual Flowrate (m^3/s) :	26.0
Dry Reference Flowrate (Rm^3/s*) :	15.3
Dry Adjusted Flowrate (Rm^3/s**) :	18.6
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
*** At 0°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 - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Data
Test No. 3

Specific Isomer	AMESA Sample pg	Actual Concentration pg/m^3	Dry Reference Concentration pg/Rm^3*	Dry Adjusted Concentration pg/Rm^3**	Wet Reference Concentration pg/Rm^3*	Emission Rate ng/s
2378-tetrachlorodibenzo-p-dioxin	15.1	1.86	3.13	2.53	2.65	0.050
12378-pentachlorodibenzo-p-dioxin	50.6	6.23	10.5	8.49	8.89	0.17
123478-hexachlorodibenzo-p-dioxin	31.9	3.93	6.61	5.35	5.60	0.11
123678-hexachlorodibenzo-p-dioxin	84.6	10.4	17.5	14.2	14.9	0.28
123789-hexachlorodibenzo-p-dioxin	80.1	9.86	16.6	13.4	14.1	0.27
1234678-heptachlorodibenzo-p-dioxin	199	24.5	41.2	33.4	35.0	0.66
Octachlorodibenzo-p-dioxin	112	13.8	23.2	18.8	19.7	0.37
2378-tetrachlorodibenzofuran	16.5	2.03	3.42	2.77	2.90	0.055
12378-pentachlorodibenzofuran	30.1	3.71	6.24	5.05	5.29	0.10
23478-pentachlorodibenzofuran	72.7	8.95	15.1	12.2	12.8	0.24
123478-hexachlorodibenzofuran	76.6	9.43	15.9	12.8	13.5	0.26
123678-hexachlorodibenzofuran	41.7	5.13	8.64	6.99	7.32	0.14
234678-hexachlorodibenzofuran	44.6	5.49	9.24	7.48	7.83	0.15
123789-hexachlorodibenzofuran	<3.4	<0.42	<0.70	<0.57	<0.60	<0.011
1234678-heptachlorodibenzofuran	64.9	7.99	13.5	10.9	11.4	0.22
1234789-heptachlorodibenzofuran	10.2	1.26	2.11	1.71	1.79	0.034
Octachlorodibenzofuran	<17	<2.09	<3.52	<2.85	<2.99	<0.057
Total Dioxins & Furans Only	<951	<117	<197	<159	<167	<3.17

Dry Gas Volume Sampled (Nm^3***) :	4.420
Dry Gas Volume Sampled (Rm^3*) :	4.825
Actual Flowrate (m^3/s) :	27.1
Dry Reference Flowrate (Rm^3/s*) :	16.1
Dry Adjusted Flowrate (Rm^3/s**) :	19.9
Wet Reference Flowrate (Rm^3/s*) :	19.0

* At 25°C and 1 atmosphere
** At 25°C and 1 atmosphere, adjusted to 11% oxygen by volume
*** At 0°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 40
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Actual Concentrations

Specific Isomer	Actual Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/m^3	pg/m^3	pg/m^3	pg/m^3	%
2378-tetrachlorodibenzo-p-dioxin	2.36	2.55	1.86	2.26	15.8
12378-pentachlorodibenzo-p-dioxin	8.95	9.98	6.23	8.39	23.1
123478-hexachlorodibenzo-p-dioxin	7.64	6.58	3.93	6.05	31.6
123678-hexachlorodibenzo-p-dioxin	20.1	16.2	10.4	15.6	31.2
123789-hexachlorodibenzo-p-dioxin	20.5	16.6	9.86	15.7	34.5
1234678-heptachlorodibenzo-p-dioxin	42.0	34.9	24.5	33.8	26.1
Octachlorodibenzo-p-dioxin	27.9	17.7	13.8	19.8	36.9
2378-tetrachlorodibenzofuran	2.24	2.65	2.03	2.31	13.6
12378-pentachlorodibenzofuran	6.18	4.91	3.71	4.93	25.0
23478-pentachlorodibenzofuran	15.7	13.7	8.95	12.8	27.2
123478-hexachlorodibenzofuran	17.4	14.6	9.43	13.8	29.2
123678-hexachlorodibenzofuran	8.74	7.71	5.13	7.19	25.8
234678-hexachlorodibenzofuran	9.90	7.67	5.49	7.69	28.7
123789-hexachlorodibenzofuran	<0.46	<0.37	<0.42	<0.42	10.4
1234678-heptachlorodibenzofuran	16.0	12.0	7.99	12.0	33.3
1234789-heptachlorodibenzofuran	2.24	1.77	1.26	1.76	28.1
Octachlorodibenzofuran	<4.23	<2.75	<2.09	<3.03	36.1
Total Dioxins & Furans Only	<213	<173	<117	<167	28.6

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 - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Reference Concentrations

Specific Isomer	Dry Reference Concentration Test No. 1	Test No. 2	Test No. 3	Average	Coefficient of Variation
	pg/Rm³*	pg/Rm³*	pg/Rm³*	pg/Rm³*	%
2378-tetrachlorodibenzo-p-dioxin	4.01	4.34	3.13	3.82	16.3
12378-pentachlorodibenzo-p-dioxin	15.2	17.0	10.5	14.2	23.5
123478-hexachlorodibenzo-p-dioxin	13.0	11.2	6.61	10.3	32.0
123678-hexachlorodibenzo-p-dioxin	34.1	27.5	17.5	26.4	31.6
123789-hexachlorodibenzo-p-dioxin	34.9	28.3	16.6	26.6	34.8
1234678-heptachlorodibenzo-p-dioxin	71.4	59.2	41.2	57.3	26.5
Octachlorodibenzo-p-dioxin	47.5	30.1	23.2	33.6	37.2
2378-tetrachlorodibenzofuran	3.81	4.50	3.42	3.91	14.0
12378-pentachlorodibenzofuran	10.5	8.35	6.24	8.36	25.4
23478-pentachlorodibenzofuran	26.7	23.2	15.1	21.7	27.6
123478-hexachlorodibenzofuran	29.5	24.8	15.9	23.4	29.6
123678-hexachlorodibenzofuran	14.8	13.1	8.64	12.2	26.2
234678-hexachlorodibenzofuran	16.8	13.0	9.24	13.0	29.0
123789-hexachlorodibenzofuran	<0.78	<0.63	<0.70	<0.70	10.4
1234678-heptachlorodibenzofuran	27.1	20.4	13.5	20.3	33.6
1234789-heptachlorodibenzofuran	3.81	3.01	2.11	2.98	28.5
Octachlorodibenzofuran	<7.18	<4.68	<3.52	<5.13	36.4
Total Dioxins & Furans Only	<361	<293	<197	<284	29.0

* 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 42
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Dry Adjusted Concentrations

Specific Isomer	Dry Adjusted Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	3.30	3.57	2.53	3.13	17.1
12378-pentachlorodibenzo-p-dioxin	12.5	13.9	8.49	11.6	24.3
123478-hexachlorodibenzo-p-dioxin	10.7	9.19	5.35	8.41	32.8
123678-hexachlorodibenzo-p-dioxin	28.1	22.6	14.2	21.6	32.4
123789-hexachlorodibenzo-p-dioxin	28.7	23.3	13.4	21.8	35.6
1234678-heptachlorodibenzo-p-dioxin	58.8	48.7	33.4	47.0	27.3
Octachlorodibenzo-p-dioxin	39.1	24.8	18.8	27.6	37.9
2378-tetrachlorodibenzofuran	3.14	3.70	2.77	3.20	14.7
12378-pentachlorodibenzofuran	8.64	6.86	5.05	6.85	26.2
23478-pentachlorodibenzofuran	22.0	19.1	12.2	17.8	28.4
123478-hexachlorodibenzofuran	24.3	20.4	12.8	19.2	30.4
123678-hexachlorodibenzofuran	12.2	10.8	6.99	10.0	27.0
234678-hexachlorodibenzofuran	13.8	10.7	7.48	10.7	29.8
123789-hexachlorodibenzofuran	<0.64	<0.52	<0.57	<0.58	10.6
1234678-heptachlorodibenzofuran	22.3	16.7	10.9	16.7	34.4
1234789-heptachlorodibenzofuran	3.14	2.48	1.71	2.44	29.2
Octachlorodibenzofuran	<5.91	<3.85	<2.85	<4.20	37.1
Total Dioxins & Furans Only	<297	<241	<159	<233	29.8

* 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 43
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Wet Reference Concentrations

Specific Isomer	Wet Reference Concentration Test No. 1 pg/Rm³*	Test No. 2 pg/Rm³*	Test No. 3 pg/Rm³*	Average pg/Rm³*	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	3.39	3.64	2.65	3.23	16.0
12378-pentachlorodibenzo-p-dioxin	12.8	14.3	8.89	12.0	23.2
123478-hexachlorodibenzo-p-dioxin	11.0	9.39	5.60	8.66	31.9
123678-hexachlorodibenzo-p-dioxin	28.8	23.1	14.9	22.3	31.6
123789-hexachlorodibenzo-p-dioxin	29.5	23.8	14.1	22.5	34.8
1234678-heptachlorodibenzo-p-dioxin	60.4	49.8	35.0	48.4	26.4
Octachlorodibenzo-p-dioxin	40.1	25.3	19.7	28.4	37.2
2378-tetrachlorodibenzofuran	3.22	3.78	2.90	3.30	13.5
12378-pentachlorodibenzofuran	8.87	7.02	5.29	7.06	25.4
23478-pentachlorodibenzofuran	22.6	19.5	12.8	18.3	27.5
123478-hexachlorodibenzofuran	25.0	20.9	13.5	19.8	29.5
123678-hexachlorodibenzofuran	12.5	11.0	7.32	10.3	26.1
234678-hexachlorodibenzofuran	14.2	11.0	7.83	11.0	29.0
123789-hexachlorodibenzofuran	<0.66	<0.53	<0.60	<0.60	10.7
1234678-heptachlorodibenzofuran	22.9	17.1	11.4	17.1	33.6
1234789-heptachlorodibenzofuran	3.22	2.53	1.79	2.51	28.4
Octachlorodibenzofuran	<6.07	<3.94	<2.99	<4.33	36.5
Total Dioxins & Furans Only	<305	<247	<167	<240	29.0

* 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 44
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
Dioxin and Furan Specific Isomer Emission Rates

Specific Isomer	Emission Rate Test No. 1 ng/s	Test No. 2 ng/s	Test No. 3 ng/s	Average ng/s	Coefficient of Variation %
2378-tetrachlorodibenzo-p-dioxin	0.064	0.066	0.050	0.060	14.2
12378-pentachlorodibenzo-p-dioxin	0.24	0.26	0.17	0.22	21.5
123478-hexachlorodibenzo-p-dioxin	0.21	0.17	0.11	0.16	31.4
123678-hexachlorodibenzo-p-dioxin	0.54	0.42	0.28	0.41	31.3
123789-hexachlorodibenzo-p-dioxin	0.55	0.43	0.27	0.42	34.5
1234678-heptachlorodibenzo-p-dioxin	1.13	0.91	0.66	0.90	26.1
Octachlorodibenzo-p-dioxin	0.75	0.46	0.37	0.53	37.7
2378-tetrachlorodibenzofuran	0.061	0.069	0.055	0.061	11.3
12378-pentachlorodibenzofuran	0.17	0.13	0.10	0.13	25.3
23478-pentachlorodibenzofuran	0.42	0.36	0.24	0.34	27.0
123478-hexachlorodibenzofuran	0.47	0.38	0.26	0.37	29.1
123678-hexachlorodibenzofuran	0.24	0.20	0.14	0.19	25.5
234678-hexachlorodibenzofuran	0.27	0.20	0.15	0.21	29.0
123789-hexachlorodibenzofuran	<0.012	<0.0097	<0.011	<0.011	12.3
1234678-heptachlorodibenzofuran	0.43	0.31	0.22	0.32	33.6
1234789-heptachlorodibenzofuran	0.061	0.046	0.034	0.047	28.3
Octachlorodibenzofuran	<0.11	<0.072	<0.057	<0.081	36.8
Total Dioxins & Furans Only	<5.74	<4.49	<3.17	<4.47	28.7

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 - AMESA Monitor
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	2.26	3.82	3.13	3.23	0.060
12378-pentachlorodibenzo-p-dioxin	8.39	14.2	11.6	12.0	0.22
123478-hexachlorodibenzo-p-dioxin	6.05	10.3	8.41	8.66	0.16
123678-hexachlorodibenzo-p-dioxin	15.6	26.4	21.6	22.3	0.41
123789-hexachlorodibenzo-p-dioxin	15.7	26.6	21.8	22.5	0.42
1234678-heptachlorodibenzo-p-dioxin	33.8	57.3	47.0	48.4	0.90
Octachlorodibenzo-p-dioxin	19.8	33.6	27.6	28.4	0.53
2378-tetrachlorodibenzofuran	2.31	3.91	3.20	3.30	0.061
12378-pentachlorodibenzofuran	4.93	8.36	6.85	7.06	0.13
23478-pentachlorodibenzofuran	12.8	21.7	17.8	18.3	0.34
123478-hexachlorodibenzofuran	13.8	23.4	19.2	19.8	0.37
123678-hexachlorodibenzofuran	7.19	12.2	10.0	10.3	0.19
234678-hexachlorodibenzofuran	7.69	13.0	10.7	11.0	0.21
123789-hexachlorodibenzofuran	<0.42	<0.70	<0.58	<0.60	<0.011
1234678-heptachlorodibenzofuran	12.0	20.3	16.7	17.1	0.32
1234789-heptachlorodibenzofuran	1.76	2.98	2.44	2.51	0.047
Octachlorodibenzofuran	<3.03	<5.13	<4.20	<4.33	<0.081
Total Dioxins & Furans Only	<167	<284	<233	<240	<4.47

* 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 46

Covanta - Durham York Energy Centre

Boiler No. 2 BH Outlet - AMESA Monitor

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	2.36	2.55	1.86	2.26
12378-pentachlorodibenzo-p-dioxin	1.000	8.95	9.98	6.23	8.39
123478-hexachlorodibenzo-p-dioxin	0.100	0.76	0.66	0.39	0.60
123678-hexachlorodibenzo-p-dioxin	0.100	2.01	1.62	1.04	1.56
123789-hexachlorodibenzo-p-dioxin	0.100	2.05	1.66	0.99	1.57
1234678-heptachlorodibenzo-p-dioxin	0.010	0.42	0.35	0.25	0.34
Octachlorodibenzo-p-dioxin	0.0003	0.0084	0.0053	0.0041	0.0059
2378-tetrachlorodibenzofuran	0.100	0.22	0.26	0.20	0.23
12378-pentachlorodibenzofuran	0.030	0.19	0.15	0.11	0.15
23478-pentachlorodibenzofuran	0.300	4.72	4.10	2.69	3.83
123478-hexachlorodibenzofuran	0.100	1.74	1.46	0.94	1.38
123678-hexachlorodibenzofuran	0.100	0.87	0.77	0.51	0.72
234678-hexachlorodibenzofuran	0.100	0.99	0.77	0.55	0.77
123789-hexachlorodibenzofuran	0.100	<0.046	<0.037	<0.042	<0.042
1234678-heptachlorodibenzofuran	0.010	0.16	0.12	0.080	0.12
1234789-heptachlorodibenzofuran	0.010	0.022	0.018	0.013	0.018
Octachlorodibenzofuran	0.0003	<0.0013	<0.00083	<0.00063	<0.00091
Total Dioxins & Furans Only		<25.5	<24.5	<15.9	<22.0

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

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

TABLE 47
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	4.01	4.34	3.13	3.82
12378-pentachlorodibenzo-p-dioxin	1.000	15.2	17.0	10.5	14.2
123478-hexachlorodibenzo-p-dioxin	0.100	1.30	1.12	0.66	1.03
123678-hexachlorodibenzo-p-dioxin	0.100	3.41	2.75	1.75	2.64
123789-hexachlorodibenzo-p-dioxin	0.100	3.49	2.83	1.66	2.66
1234678-heptachlorodibenzo-p-dioxin	0.010	0.71	0.59	0.41	0.57
Octachlorodibenzo-p-dioxin	0.0003	0.014	0.0090	0.0070	0.010
2378-tetrachlorodibenzofuran	0.100	0.38	0.45	0.34	0.39
12378-pentachlorodibenzofuran	0.030	0.31	0.25	0.19	0.25
23478-pentachlorodibenzofuran	0.300	8.02	6.96	4.52	6.50
123478-hexachlorodibenzofuran	0.100	2.95	2.48	1.59	2.34
123678-hexachlorodibenzofuran	0.100	1.48	1.31	0.86	1.22
234678-hexachlorodibenzofuran	0.100	1.68	1.30	0.92	1.30
123789-hexachlorodibenzofuran	0.100	<0.078	<0.063	<0.070	<0.070
1234678-heptachlorodibenzofuran	0.010	0.27	0.20	0.13	0.20
1234789-heptachlorodibenzofuran	0.010	0.038	0.030	0.021	0.030
Octachlorodibenzofuran	0.0003	<0.0022	<0.0014	<0.0011	<0.0015
Total Dioxins & Furans Only		<43.3	<41.6	<26.8	<37.2

* 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 - AMESA Monitor
Dioxin and Furan Toxicity Equivalent Dry Adjusted Concentrations

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	3.30	3.57	2.53	3.13
12378-pentachlorodibenzo-p-dioxin	1.000	12.5	13.9	8.49	11.6
123478-hexachlorodibenzo-p-dioxin	0.100	1.07	0.92	0.53	0.84
123678-hexachlorodibenzo-p-dioxin	0.100	2.81	2.26	1.42	2.16
123789-hexachlorodibenzo-p-dioxin	0.100	2.87	2.33	1.34	2.18
1234678-heptachlorodibenzo-p-dioxin	0.010	0.59	0.49	0.33	0.47
Octachlorodibenzo-p-dioxin	0.0003	0.012	0.0074	0.0056	0.0083
2378-tetrachlorodibenzofuran	0.100	0.31	0.37	0.28	0.32
12378-pentachlorodibenzofuran	0.030	0.26	0.21	0.15	0.21
23478-pentachlorodibenzofuran	0.300	6.60	5.73	3.66	5.33
123478-hexachlorodibenzofuran	0.100	2.43	2.04	1.28	1.92
123678-hexachlorodibenzofuran	0.100	1.22	1.08	0.70	1.00
234678-hexachlorodibenzofuran	0.100	1.38	1.07	0.75	1.07
123789-hexachlorodibenzofuran	0.100	<0.064	<0.052	<0.057	<0.058
1234678-heptachlorodibenzofuran	0.010	0.22	0.17	0.11	0.17
1234789-heptachlorodibenzofuran	0.010	0.031	0.025	0.017	0.024
Octachlorodibenzofuran	0.0003	<0.0018	<0.0012	<0.00086	<0.0013
Total Dioxins & Furans Only		<35.7	<34.3	<21.7	<30.5

* 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 48A
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	3.30	3.57	2.53	3.13
12378-pentachlorodibenzo-p-dioxin	1.000	12.5	13.9	8.49	11.6
123478-hexachlorodibenzo-p-dioxin	0.100	1.07	0.92	0.53	0.84
123678-hexachlorodibenzo-p-dioxin	0.100	2.81	2.26	1.42	2.16
123789-hexachlorodibenzo-p-dioxin	0.100	2.87	2.33	1.34	2.18
1234678-heptachlorodibenzo-p-dioxin	0.010	0.59	0.49	0.33	0.47
Octachlorodibenzo-p-dioxin	0.0003	0.012	0.0074	0.0056	0.0083
2378-tetrachlorodibenzofuran	0.100	0.31	0.37	0.28	0.32
12378-pentachlorodibenzofuran	0.030	0.26	0.21	0.15	0.21
23478-pentachlorodibenzofuran	0.300	6.60	5.73	3.66	5.33
123478-hexachlorodibenzofuran	0.100	2.43	2.04	1.28	1.92
123678-hexachlorodibenzofuran	0.100	1.22	1.08	0.70	1.00
234678-hexachlorodibenzofuran	0.100	1.38	1.07	0.75	1.07
123789-hexachlorodibenzofuran	0.100	0.032	0.026	0.029	0.029
1234678-heptachlorodibenzofuran	0.010	0.22	0.17	0.11	0.17
1234789-heptachlorodibenzofuran	0.010	0.031	0.025	0.017	0.024
Octachlorodibenzofuran	0.0003	0.00089	0.00058	0.00043	0.00063
Total Dioxins & Furans Only		35.7	34.2	21.6	30.5

* 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 48B
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	3.30	3.57	2.53	3.13
12378-pentachlorodibenzo-p-dioxin	0.500	6.26	6.97	4.24	5.82
123478-hexachlorodibenzo-p-dioxin	0.100	1.07	0.92	0.53	0.84
123678-hexachlorodibenzo-p-dioxin	0.100	2.81	2.26	1.42	2.16
123789-hexachlorodibenzo-p-dioxin	0.100	2.87	2.33	1.34	2.18
1234678-heptachlorodibenzo-p-dioxin	0.010	0.59	0.49	0.33	0.47
Octachlorodibenzo-p-dioxin	0.001	0.039	0.025	0.019	0.028
2378-tetrachlorodibenzofuran	0.100	0.31	0.37	0.28	0.32
12378-pentachlorodibenzofuran	0.050	0.43	0.34	0.25	0.34
23478-pentachlorodibenzofuran	0.500	11.0	9.54	6.10	8.88
123478-hexachlorodibenzofuran	0.100	2.43	2.04	1.28	1.92
123678-hexachlorodibenzofuran	0.100	1.22	1.08	0.70	1.00
234678-hexachlorodibenzofuran	0.100	1.38	1.07	0.75	1.07
123789-hexachlorodibenzofuran	0.100	<0.064	<0.052	<0.057	<0.058
1234678-heptachlorodibenzofuran	0.010	0.22	0.17	0.11	0.17
1234789-heptachlorodibenzofuran	0.010	0.031	0.025	0.017	0.024
Octachlorodibenzofuran	0.001	<0.0059	<0.0039	<0.0029	<0.0042
Total Dioxins & Furans		<34.1	<31.3	<20.0	<28.4
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 49
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	3.39	3.64	2.65	3.23
12378-pentachlorodibenzo-p-dioxin	1.000	12.8	14.3	8.89	12.0
123478-hexachlorodibenzo-p-dioxin	0.100	1.10	0.94	0.56	0.87
123678-hexachlorodibenzo-p-dioxin	0.100	2.88	2.31	1.49	2.23
123789-hexachlorodibenzo-p-dioxin	0.100	2.95	2.38	1.41	2.25
1234678-heptachlorodibenzo-p-dioxin	0.010	0.60	0.50	0.35	0.48
Octachlorodibenzo-p-dioxin	0.0003	0.012	0.0076	0.0059	0.0085
2378-tetrachlorodibenzofuran	0.100	0.32	0.38	0.29	0.33
12378-pentachlorodibenzofuran	0.030	0.27	0.21	0.16	0.21
23478-pentachlorodibenzofuran	0.300	6.78	5.85	3.83	5.49
123478-hexachlorodibenzofuran	0.100	2.50	2.09	1.35	1.98
123678-hexachlorodibenzofuran	0.100	1.25	1.10	0.73	1.03
234678-hexachlorodibenzofuran	0.100	1.42	1.10	0.78	1.10
123789-hexachlorodibenzofuran	0.100	<0.066	<0.053	<0.060	<0.060
1234678-heptachlorodibenzofuran	0.010	0.23	0.17	0.11	0.17
1234789-heptachlorodibenzofuran	0.010	0.032	0.025	0.018	0.025
Octachlorodibenzofuran	0.0003	<0.0018	<0.0012	<0.00090	<0.0013
Total Dioxins & Furans Only		<36.7	<35.0	<22.7	<31.4

* 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 50
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	0.064	0.066	0.050	0.060
12378-pentachlorodibenzo-p-dioxin	1.000	0.24	0.26	0.17	0.22
123478-hexachlorodibenzo-p-dioxin	0.100	0.021	0.017	0.011	0.016
123678-hexachlorodibenzo-p-dioxin	0.100	0.054	0.042	0.028	0.041
123789-hexachlorodibenzo-p-dioxin	0.100	0.055	0.043	0.027	0.042
1234678-heptachlorodibenzo-p-dioxin	0.010	0.011	0.0091	0.0066	0.0090
Octachlorodibenzo-p-dioxin	0.0003	0.00023	0.00014	0.00011	0.00016
2378-tetrachlorodibenzofuran	0.100	0.0061	0.0069	0.0055	0.0061
12378-pentachlorodibenzofuran	0.030	0.0050	0.0038	0.0030	0.0039
23478-pentachlorodibenzofuran	0.300	0.13	0.11	0.073	0.10
123478-hexachlorodibenzofuran	0.100	0.047	0.038	0.026	0.037
123678-hexachlorodibenzofuran	0.100	0.024	0.020	0.014	0.019
234678-hexachlorodibenzofuran	0.100	0.027	0.020	0.015	0.021
123789-hexachlorodibenzofuran	0.100	<0.0012	<0.00097	<0.0011	<0.0011
1234678-heptachlorodibenzofuran	0.010	0.0043	0.0031	0.0022	0.0032
1234789-heptachlorodibenzofuran	0.010	0.00061	0.00046	0.00034	0.00047
Octachlorodibenzofuran	0.0003	<0.000034	<0.000021	<0.000017	<0.000024
Total Dioxins & Furans Only		<0.69	<0.64	<0.43	<0.59

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 51
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	2.26	3.82	3.13	3.23	0.060
12378-pentachlorodibenzo-p-dioxin	8.39	14.2	11.6	12.0	0.22
123478-hexachlorodibenzo-p-dioxin	0.60	1.03	0.84	0.87	0.016
123678-hexachlorodibenzo-p-dioxin	1.56	2.64	2.16	2.23	0.041
123789-hexachlorodibenzo-p-dioxin	1.57	2.66	2.18	2.25	0.042
1234678-heptachlorodibenzo-p-dioxin	0.34	0.57	0.47	0.48	0.0090
Octachlorodibenzo-p-dioxin	0.0059	0.010	0.0083	0.0085	0.00016
2378-tetrachlorodibenzofuran	0.23	0.39	0.32	0.33	0.0061
12378-pentachlorodibenzofuran	0.15	0.25	0.21	0.21	0.0039
23478-pentachlorodibenzofuran	3.83	6.50	5.33	5.49	0.10
123478-hexachlorodibenzofuran	1.38	2.34	1.92	1.98	0.037
123678-hexachlorodibenzofuran	0.72	1.22	1.00	1.03	0.019
234678-hexachlorodibenzofuran	0.77	1.30	1.07	1.10	0.021
123789-hexachlorodibenzofuran	<0.042	<0.070	<0.058	<0.060	<0.0011
1234678-heptachlorodibenzofuran	0.12	0.20	0.17	0.17	0.0032
1234789-heptachlorodibenzofuran	0.018	0.030	0.024	0.025	0.00047
Octachlorodibenzofuran	<0.00091	<0.0015	<0.0013	<0.0013	<0.000024
Total Dioxins & Furans Only	<22.0	<37.2	<30.5	<31.4	<0.59

* 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 52
Covanta - Durham York Energy Centre
Boiler No. 2 BH Outlet - AMESA Monitor
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	2.26	3.82	3.13	3.23	0.060
12378-pentachlorodibenzo-p-dioxin	8.39	14.2	11.6	12.0	0.22
123478-hexachlorodibenzo-p-dioxin	0.60	1.03	0.84	0.87	0.016
123678-hexachlorodibenzo-p-dioxin	1.56	2.64	2.16	2.23	0.041
123789-hexachlorodibenzo-p-dioxin	1.57	2.66	2.18	2.25	0.042
1234678-heptachlorodibenzo-p-dioxin	0.34	0.57	0.47	0.48	0.0090
Octachlorodibenzo-p-dioxin	0.0059	0.010	0.0083	0.0085	0.00016
2378-tetrachlorodibenzofuran	0.23	0.39	0.32	0.33	0.0061
12378-pentachlorodibenzofuran	0.15	0.25	0.21	0.21	0.0039
23478-pentachlorodibenzofuran	3.83	6.50	5.33	5.49	0.10
123478-hexachlorodibenzofuran	1.38	2.34	1.92	1.98	0.037
123678-hexachlorodibenzofuran	0.72	1.22	1.00	1.03	0.019
234678-hexachlorodibenzofuran	0.77	1.30	1.07	1.10	0.021
123789-hexachlorodibenzofuran	0.021	0.035	0.029	0.030	0.00056
1234678-heptachlorodibenzofuran	0.12	0.20	0.17	0.17	0.0032
1234789-heptachlorodibenzofuran	0.018	0.030	0.024	0.025	0.00047
Octachlorodibenzofuran	0.00045	0.00077	0.00063	0.00065	0.000012
Total Dioxins & Furans Only	22.0	37.2	30.5	31.4	0.59

* 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 53
Covanta - Durham York Energy Centre
BH Outlet - AMESA Monitor
Blank Dioxin and Furan Specific Isomer Analyses

Specific Isomer	Blank AMESA Sample pg	Laboratory Blank pg
2378-tetrachlorodibenzo-p-dioxin	<2.2	<2.3
12378-pentachlorodibenzo-p-dioxin	<2.6	<2.4
123478-hexachlorodibenzo-p-dioxin	<2.3	<2.1
123678-hexachlorodibenzo-p-dioxin	<2.3	<2.1
123789-hexachlorodibenzo-p-dioxin	<2.1	<2.0
1234678-heptachlorodibenzo-p-dioxin	<2.3	<2.2
Octachlorodibenzo-p-dioxin	4.5	6.2
2378-tetrachlorodibenzofuran	<2.3	<2.3
12378-pentachlorodibenzofuran	<2.2	<2.3
23478-pentachlorodibenzofuran	<2.2	<2.3
123478-hexachlorodibenzofuran	<2.3	<2.2
123678-hexachlorodibenzofuran	<2.2	<2.1
234678-hexachlorodibenzofuran	<2.4	<2.3
123789-hexachlorodibenzofuran	<2.6	<2.4
1234678-heptachlorodibenzofuran	<1.8	4.1
1234789-heptachlorodibenzofuran	<2.1	<2.4
Octachlorodibenzofuran	<2.3	2.3
Total Dioxins & Furans Only	<40.7	<44.0

"<" 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.

AMESA Analytical Report
(49 pages)

Maxxam
A Bureau Veritas Group Company

Your P.O. #: 619
Your Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/12/01
Report #: R4270251
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6O1776
Received: 2016/11/03, 18:08

Sample Matrix: Stack Sampling Train
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
2,3,7,8-TCDF Confirmation (M23)	5	N/A	2016/11/29	BRL SOP-00404	EPA M23/23A m
2,3,7,8-TCDF Confirmation (M23)	1	N/A	2016/11/30	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	3	2016/11/22	2016/11/26	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	3	2016/11/23	2016/11/27	BRL SOP-00404	EPA M23/23A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
01 Dec 2016 11:10:22

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC618							
Sampling Date		2016/10/27				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161027-01-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	6.8 (1)	2.3	20	4.0	1.00	6.80	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	25.1	3.1	20	4.0	1.00	25.1	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	33.7	2.2	20	4.0	0.100	3.37	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	95.2	2.2	20	4.0	0.100	9.52	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	46.3	2.0	20	4.0	0.100	4.63	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	524	2.0	20	6.0	0.0100	5.24	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	628	2.3	200	6.0	0.000300	0.188	N/A	4765806
Total Tetra CDD *	pg	234	2.3	20	N/A	N/A	N/A	10	4765806
Total Penta CDD *	pg	1110	3.1	20	N/A	N/A	N/A	12	4765806
Total Hexa CDD *	pg	1700	2.2	20	N/A	N/A	N/A	8	4765806
Total Hepta CDD *	pg	1170	2.0	20	N/A	N/A	N/A	2	4765806
1,2,3,7,8-Penta CDF **	pg	66.2	9.5	20	4.0	0.0300	1.99	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	120	9.5	20	4.0	0.300	36.0	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	253 (2)	2.0	20	4.0	0.100	25.3	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	<110 (3)	110	20	4.0	0.100	11.0	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	121	2.1	20	4.0	0.100	12.1	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	<4.6 (4)	4.6	20	4.0	0.100	0.460	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	399	2.2	20	6.0	0.0100	3.99	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	29.5	2.5	20	4.0	0.0100	0.295	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<110 (3)	110	200	10	0.000300	0.0330	N/A	4765806
Total Tetra CDF **	pg	881	2.4	20	N/A	N/A	N/A	18	4765806

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

(2) EMPC / Merged Peak

(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

(4) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC618							
Sampling Date		2016/10/27				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161027-01-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Penta CDF **	pg	1840	9.5	20	N/A	N/A	N/A	14	4765806
Total Hexa CDF **	pg	1120	2.0	20	N/A	N/A	N/A	12	4765806
Total Hepta CDF **	pg	564	2.3	20	N/A	N/A	N/A	4	4765806
Confirmation 2,3,7,8-Tetra CDF **	pg	22.6	2.7	20	N/A	0.100	2.26	N/A	4769645
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	148	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDD *	%	116	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC619							
Sampling Date		2016/10/28				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161028-02-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<3.6	3.6	20	4.0	1.00	3.60	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	14.8	3.5	20	4.0	1.00	14.8	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	21.2	2.4	20	4.0	0.100	2.12	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	59.1	2.5	20	4.0	0.100	5.91	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	57.2 (1)	2.3	20	4.0	0.100	5.72	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	414	2.2	20	6.0	0.0100	4.14	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	478	2.3	200	6.0	0.000300	0.143	N/A	4765806
Total Tetra CDD *	pg	93.7	3.6	20	N/A	N/A	N/A	3	4765806
Total Penta CDD *	pg	592	3.5	20	N/A	N/A	N/A	11	4765806
Total Hexa CDD *	pg	1090	2.4	20	N/A	N/A	N/A	7	4765806
Total Hepta CDD *	pg	905	2.2	20	N/A	N/A	N/A	2	4765806
1,2,3,7,8-Penta CDF **	pg	<39 (2)	39	20	4.0	0.0300	1.17	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	64.0	6.4	20	4.0	0.300	19.2	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	161 (1)	2.3	20	4.0	0.100	16.1	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	70.7	2.2	20	4.0	0.100	7.07	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	72.3	2.4	20	4.0	0.100	7.23	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	4.5	2.6	20	4.0	0.100	0.450	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	346	2.1	20	6.0	0.0100	3.46	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	22.9	2.5	20	4.0	0.0100	0.229	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<83 (3)	83	200	10	0.000300	0.0249	N/A	4765806
Total Tetra CDF **	pg	352	2.2	20	N/A	N/A	N/A	14	4765806
Total Penta CDF **	pg	878	6.4	20	N/A	N/A	N/A	11	4765806
Total Hexa CDF **	pg	772	2.4	20	N/A	N/A	N/A	14	4765806
Total Hepta CDF **	pg	487	2.3	20	N/A	N/A	N/A	4	4765806
Confirmation 2,3,7,8-Tetra CDF **	pg	11.2	6.8	20	N/A	0.100	1.12	N/A	4769645

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak
(2) RT>2 seconds - PCDD/DF analysis-Peak maxima of monitored ions exceeds 2 seconds
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC619							
Sampling Date		2016/10/28				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161028-02-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	92.5	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	51	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	52	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDD *	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	63	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	60	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	57	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	50	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	50	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
* CDD = Chloro Dibenzo-p-Dioxin

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC620							
Sampling Date		2016/10/31				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161031-03-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	4.3 (1)	2.2	20	4.0	1.00	4.30	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	16.2	2.4	20	4.0	1.00	16.2	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	15.4	2.2	20	4.0	0.100	1.54	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	40.4	2.2	20	4.0	0.100	4.04	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	19.1	2.0	20	4.0	0.100	1.91	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	248	2.2	20	6.0	0.0100	2.48	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	345	2.2	200	6.0	0.000300	0.104	N/A	4765806
Total Tetra CDD *	pg	121	2.2	20	N/A	N/A	N/A	6	4765806
Total Penta CDD *	pg	591	2.4	20	N/A	N/A	N/A	11	4765806
Total Hexa CDD *	pg	785	2.2	20	N/A	N/A	N/A	8	4765806
Total Hepta CDD *	pg	529	2.2	20	N/A	N/A	N/A	2	4765806
1,2,3,7,8-Penta CDF **	pg	29.5	4.5	20	4.0	0.0300	0.885	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	61.6	4.5	20	4.0	0.300	18.5	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	112 (2)	2.0	20	4.0	0.100	11.2	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	48.5	1.9	20	4.0	0.100	4.85	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	51.4	2.1	20	4.0	0.100	5.14	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	2.6	2.2	20	4.0	0.100	0.260	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	185	1.9	20	6.0	0.0100	1.85	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	13.0	2.2	20	4.0	0.0100	0.130	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<56 (3)	56	200	10	0.000300	0.0168	N/A	4765806
Total Tetra CDF **	pg	361	2.2	20	N/A	N/A	N/A	16	4765806
Total Penta CDF **	pg	868	4.5	20	N/A	N/A	N/A	15	4765806
Total Hexa CDF **	pg	541	2.1	20	N/A	N/A	N/A	14	4765806
Total Hepta CDF **	pg	255	2.0	20	N/A	N/A	N/A	4	4765806
Confirmation 2,3,7,8-Tetra CDF **	pg	9.4	2.2	20	N/A	0.100	0.940	N/A	4769645

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

(2) EMPC / Merged Peak

(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC620							
Sampling Date		2016/10/31				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161031-03-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	74.3	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	115	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDD *	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	115	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	120	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6O1776
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ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC622							
Sampling Date		2016/10/27				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161027-01-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	3.4 (1)	2.2	20	4.0	1.00	3.40	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	163	2.8	20	4.0	1.00	163	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	451	2.4	20	4.0	0.100	45.1	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	1310	2.4	20	4.0	0.100	131	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	589	2.2	20	4.0	0.100	58.9	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	7210 (2)	22	200	6.0	0.0100	72.1	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	8150	2.4	200	6.0	0.000300	2.45	N/A	4767219
Total Tetra CDD *	pg	90.9	2.2	20	N/A	N/A	N/A	8	4767219
Total Penta CDD *	pg	3870	2.8	20	N/A	N/A	N/A	12	4767219
Total Hexa CDD *	pg	20000	2.4	20	N/A	N/A	N/A	8	4767219
Total Hepta CDD *	pg	17000 (2)	22	200	N/A	N/A	N/A	2	4767219
1,2,3,7,8-Penta CDF **	pg	270	13	20	4.0	0.0300	8.10	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	703	13	20	4.0	0.300	211	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	3670 (3)	11	20	4.0	0.100	367	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	1550	11	20	4.0	0.100	155	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	1870	12	20	4.0	0.100	187	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<85 (4)	85	20	4.0	0.100	8.50	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	7060 (2)	19	200	6.0	0.0100	70.6	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	438 (2)	22	200	4.0	0.0100	4.38	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1700 (4)	1700	200	10	0.000300	0.510	N/A	4767219
Total Tetra CDF **	pg	370	2.3	20	N/A	N/A	N/A	17	4767219
Total Penta CDF **	pg	6440	13	20	N/A	N/A	N/A	15	4767219
Total Hexa CDF **	pg	15500	11	20	N/A	N/A	N/A	12	4767219
Total Hepta CDF **	pg	10500 (2)	20	200	N/A	N/A	N/A	4	4767219

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

N/A = Not Applicable

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

(2) Results from 10xdiln

(3) EMPC / Merged Peak

(4) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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ORTECH Environmental
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Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC622							
Sampling Date		2016/10/27				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161027-01-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Confirmation 2,3,7,8-Tetra CDF **	pg	17.6	2.2	20	N/A	0.100	1.76	N/A	4769645
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1490	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	85 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-1234678 HeptaCDF **	%	92 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
(1) Results from 10xdiln

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC623							
Sampling Date		2016/10/28				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161028-02-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<2.6	2.6	20	4.0	1.00	2.60	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	82.8	3.2	20	4.0	1.00	82.8	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	271	2.6	20	4.0	0.100	27.1	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	790	2.7	20	4.0	0.100	79.0	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	403	2.5	20	4.0	0.100	40.3	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	5100 (1)	22	200	6.0	0.0100	51.0	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	6390	2.5	200	6.0	0.000300	1.92	N/A	4767219
Total Tetra CDD *	pg	27.3	2.6	20	N/A	N/A	N/A	2	4767219
Total Penta CDD *	pg	1880	3.2	20	N/A	N/A	N/A	12	4767219
Total Hexa CDD *	pg	11800	2.6	20	N/A	N/A	N/A	8	4767219
Total Hepta CDD *	pg	11500 (1)	22	200	N/A	N/A	N/A	2	4767219
1,2,3,7,8-Penta CDF **	pg	132	10	20	4.0	0.0300	3.96	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	332	10	20	4.0	0.300	99.6	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	2200 (2)	11	20	4.0	0.100	220	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	964	10	20	4.0	0.100	96.4	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	1080	11	20	4.0	0.100	108	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<44 (3)	44	20	4.0	0.100	4.40	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	5150 (1)	19	200	6.0	0.0100	51.5	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	350 (1)	23	200	4.0	0.0100	3.50	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	<1400 (3)	1400	200	10	0.000300	0.420	N/A	4767219
Total Tetra CDF **	pg	161	2.1	20	N/A	N/A	N/A	12	4767219
Total Penta CDF **	pg	2450	10	20	N/A	N/A	N/A	13	4767219
Total Hexa CDF **	pg	9510	11	20	N/A	N/A	N/A	13	4767219
Total Hepta CDF **	pg	7850 (1)	21	200	N/A	N/A	N/A	4	4767219
Confirmation 2,3,7,8-Tetra CDF **	pg	10.5	3.4	20	N/A	0.100	1.05	N/A	4769645

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) Results from 10xdiln
(2) EMPC / Merged Peak
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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ORTECH Environmental
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Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC623							
Sampling Date		2016/10/28				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161028-02-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	874	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	82 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-1234678 HeptaCDF **	%	89 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	70	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
* CDD = Chloro Dibenzo-p-Dioxin
(1) Results from 10xdiln

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Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC624							
Sampling Date		2016/10/31				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161031-03-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<2.7	2.7	20	4.0	1.00	2.70	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	27.8	4.3	20	4.0	1.00	27.8	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	85.1	2.3	20	4.0	0.100	8.51	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	254	2.3	20	4.0	0.100	25.4	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	143	2.1	20	4.0	0.100	14.3	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	1750	2.3	20	6.0	0.0100	17.5	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	2310	2.3	200	6.0	0.000300	0.693	N/A	4767219
Total Tetra CDD *	pg	14.1	2.7	20	N/A	N/A	N/A	1	4767219
Total Penta CDD *	pg	706	4.3	20	N/A	N/A	N/A	11	4767219
Total Hexa CDD *	pg	3720	2.3	20	N/A	N/A	N/A	8	4767219
Total Hepta CDD *	pg	3620	2.3	20	N/A	N/A	N/A	2	4767219
1,2,3,7,8-Penta CDF **	pg	49.8 (1)	4.6	20	4.0	0.0300	1.49	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	112	4.6	20	4.0	0.300	33.6	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	667 (1)	4.1	20	4.0	0.100	66.7	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	310	4.0	20	4.0	0.100	31.0	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	330	4.4	20	4.0	0.100	33.0	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<14 (2)	14	20	4.0	0.100	1.40	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	1540	2.2	20	6.0	0.0100	15.4	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	119	2.6	20	4.0	0.0100	1.19	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	<520 (2)	520	200	10	0.000300	0.156	N/A	4767219
Total Tetra CDF **	pg	78.9	2.1	20	N/A	N/A	N/A	11	4767219
Total Penta CDF **	pg	1040	4.6	20	N/A	N/A	N/A	12	4767219
Total Hexa CDF **	pg	2900	4.2	20	N/A	N/A	N/A	12	4767219
Total Hepta CDF **	pg	2140	2.4	20	N/A	N/A	N/A	4	4767219
Confirmation 2,3,7,8-Tetra CDF **	pg	3.4	2.6	20	N/A	0.100	0.340	N/A	4769645
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	281	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Merged Peak
(2) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC624							
Sampling Date		2016/10/31				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U1, 161031-03-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-1234678 HeptaCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	90	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	112	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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TEST SUMMARY

Maxxam ID: DKC618
Sample ID: M23 - U1, 161027-01-XAD
Matrix: Stack Sampling Train

Collected: 2016/10/27
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC619
Sample ID: M23 - U1, 161028-02-XAD
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC620
Sample ID: M23 - U1, 161031-03-XAD
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/30	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC622
Sample ID: M23 - U1, 161027-01-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/10/27
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

Maxxam ID: DKC623
Sample ID: M23 - U1, 161028-02-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/10/28
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

Maxxam ID: DKC624
Sample ID: M23 - U1, 161031-03-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/10/31
Shipped:
Received: 2016/11/03

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

GENERAL COMMENTS

Results relate only to the items tested.

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ORTECH Environmental
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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4765806	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/25		81	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/25		87	%	25 - 130
			C13-123678 HexaCDD	2016/11/25		90	%	40 - 130
			C13-123678 HexaCDF	2016/11/25		88	%	40 - 130
			C13-12378 PentaCDD	2016/11/25		96	%	40 - 130
			C13-12378 PentaCDF	2016/11/25		110	%	40 - 130
			C13-123789 HexaCDF	2016/11/25		75	%	40 - 130
			C13-2378 TetraCDD	2016/11/25		115	%	40 - 130
			C13-2378 TetraCDF	2016/11/25		110	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/25		83	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/25		99	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/25		118	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/25		98	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/25		102	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/25		103	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/25		97	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/25		100	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/25		117	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/25		119	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/25		103	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/25		113	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/25		114	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/25		109	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/25		99	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/25		96	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/25		106	%	80 - 140
4765806	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/26		71	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/26		66	%	25 - 130
			C13-123678 HexaCDD	2016/11/26		76	%	40 - 130
			C13-123678 HexaCDF	2016/11/26		70	%	40 - 130
			C13-12378 PentaCDD	2016/11/26		75	%	40 - 130
			C13-12378 PentaCDF	2016/11/26		85	%	40 - 130
			C13-123789 HexaCDF	2016/11/26		61	%	40 - 130
			C13-2378 TetraCDD	2016/11/26		95	%	40 - 130
			C13-2378 TetraCDF	2016/11/26		99	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/26		61	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/26		104	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/26		119	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/26		92	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/26		98	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/26		98	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/26		93	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/26		101	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/26		118	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/26		123	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/26		105	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/26		119	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/26		116	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/26		110	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/26		104	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/26		104	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/26		107	%	80 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4765806	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/26	4.9		%	20
			1,2,3,7,8-Penta CDD	2016/11/26	0.84		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/26	6.3		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/26	4.0		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/26	5.0		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/26	4.2		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/26	1.0		%	20
			1,2,3,7,8-Penta CDF	2016/11/26	0.85		%	20
			2,3,4,7,8-Penta CDF	2016/11/26	3.3		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/26	1.9		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/26	5.2		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/26	1.7		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/26	0.91		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/26	4.9		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/26	8.0		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/26	0.94		%	20
4765806	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/26		67	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/26		72	%	25 - 130
			C13-123678 HexaCDD	2016/11/26		82	%	40 - 130
			C13-123678 HexaCDF	2016/11/26		77	%	40 - 130
			C13-12378 PentaCDD	2016/11/26		82	%	40 - 130
			C13-12378 PentaCDF	2016/11/26		88	%	40 - 130
			C13-123789 HexaCDF	2016/11/26		64	%	40 - 130
			C13-2378 TetraCDD	2016/11/26		100	%	40 - 130
			C13-2378 TetraCDF	2016/11/26		98	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/26		63	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8-Penta CDD	2016/11/26	<2.4, EDL=2.4		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/26	<2.1, EDL=2.1		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/26	<2.3, EDL=2.3		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/26	6.0, EDL=2.4		pg	
			Total Tetra CDD	2016/11/26	<4.8, EDL=4.8 (1)		pg	
			Total Penta CDD	2016/11/26	<3.3, EDL=3.3 (1)		pg	
			Total Hexa CDD	2016/11/26	<6.6, EDL=6.6 (1)		pg	
			Total Hepta CDD	2016/11/26	<2.3, EDL=2.3		pg	
			1,2,3,7,8-Penta CDF	2016/11/26	<2.4, EDL=2.4		pg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,3,4,7,8-Penta CDF	2016/11/26	<2.4, EDL=2.4		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/26	<2.1, EDL=2.1		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/26	<2.0, EDL=2.0		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/26	<2.3, EDL=2.3		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/26	2.3, EDL=2.1		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/26	<2.5, EDL=2.5		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/26	3.1, EDL=2.3		pg	
			Total Tetra CDF	2016/11/26	<2.9, EDL=2.9 (1)		pg	
			Total Penta CDF	2016/11/26	<2.4, EDL=2.4		pg	
			Total Hexa CDF	2016/11/26	<2.2, EDL=2.2		pg	
			Total Hepta CDF	2016/11/26	<2.3, EDL=2.3		pg	
4767219	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/27		83	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/27		79	%	25 - 130
			C13-123678 HexaCDD	2016/11/27		87	%	40 - 130
			C13-123678 HexaCDF	2016/11/27		83	%	40 - 130
			C13-12378 PentaCDD	2016/11/27		88	%	40 - 130
			C13-12378 PentaCDF	2016/11/27		98	%	40 - 130
			C13-123789 HexaCDF	2016/11/27		70	%	40 - 130
			C13-2378 TetraCDD	2016/11/27		107	%	40 - 130
			C13-2378 TetraCDF	2016/11/27		99	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/27		81	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/27		113	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/27		111	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/27		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/27		101	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/27		105	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27		103	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27		112	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/27		121	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/27		128	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/27		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/27		99	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/27		120	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/27		117	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27		124	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27		131	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27		112	%	80 - 140
4767219	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/27		77	%	25 - 130

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			C13-1234678 HeptaCDF	2016/11/27		76	%	25 - 130
			C13-123678 HexaCDD	2016/11/27		87	%	40 - 130
			C13-123678 HexaCDF	2016/11/27		86	%	40 - 130
			C13-12378 PentaCDD	2016/11/27		96	%	40 - 130
			C13-12378 PentaCDF	2016/11/27		100	%	40 - 130
			C13-123789 HexaCDF	2016/11/27		72	%	40 - 130
			C13-2378 TetraCDD	2016/11/27		105	%	40 - 130
			C13-2378 TetraCDF	2016/11/27		101	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/27		73	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/27		122	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/27		107	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/27		138	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/27		102	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/27		103	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27		115	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27		118	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/27		127	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/27		135	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/27		135	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/27		105	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/27		121	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/27		118	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27		132	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27		133	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27		114	%	80 - 140
4767219	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/27	7.7		%	20
			1,2,3,7,8-Penta CDD	2016/11/27	3.7		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/27	1.5		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/27	0.99		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/27	1.9		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27	11		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27	5.2		%	20
			1,2,3,7,8-Penta CDF	2016/11/27	4.8		%	20
			2,3,4,7,8-Penta CDF	2016/11/27	5.3		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/27	0.74		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/27	5.9		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/27	0.83		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/27	0.85		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27	6.3		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27	1.5		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27	1.8		%	20
4767219	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/27		82	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/27		86	%	25 - 130
			C13-123678 HexaCDD	2016/11/27		94	%	40 - 130
			C13-123678 HexaCDF	2016/11/27		92	%	40 - 130
			C13-12378 PentaCDD	2016/11/27		100	%	40 - 130
			C13-12378 PentaCDF	2016/11/27		112	%	40 - 130
			C13-123789 HexaCDF	2016/11/27		79	%	40 - 130
			C13-2378 TetraCDD	2016/11/27		116	%	40 - 130
			C13-2378 TetraCDF	2016/11/27		108	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/27		83	%	25 - 130

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Maxxam Job #: B6O1776
Report Date: 2016/12/01

ORTECH Environmental
Client Project #: ORTECH SOURCE TESTING
Site Location: AMESA SAMPLES
Your P.O. #: 619

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,3,7,8-Tetra CDD	2016/11/27	<2.3, EDL=2.3		pg	
			1,2,3,7,8-Penta CDD	2016/11/27	<2.4, EDL=2.4		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/27	<2.1, EDL=2.1		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/27	<2.1, EDL=2.1		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/27	<2.0, EDL=2.0		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27	<2.2, EDL=2.2		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27	6.2, EDL=2.1		pg	
			Total Tetra CDD	2016/11/27	<3.7, EDL=3.7 (1)		pg	
			Total Penta CDD	2016/11/27	<3.2, EDL=3.2 (1)		pg	
			Total Hexa CDD	2016/11/27	<7.1, EDL=7.1 (1)		pg	
			Total Hepta CDD	2016/11/27	<2.2, EDL=2.2		pg	
			1,2,3,7,8-Penta CDF	2016/11/27	<2.3, EDL=2.3		pg	
			2,3,4,7,8-Penta CDF	2016/11/27	<2.3, EDL=2.3		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/27	<2.2, EDL=2.2		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/27	<2.1, EDL=2.1		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/27	<2.3, EDL=2.3		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/27	<2.4, EDL=2.4		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27	4.1, EDL=2.0 (2)		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27	<2.4, EDL=2.4		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27	2.3, EDL=2.1		pg	
			Total Tetra CDF	2016/11/27	<2.3, EDL=2.3		pg	
			Total Penta CDF	2016/11/27	<2.3, EDL=2.3		pg	
			Total Hexa CDF	2016/11/27	<2.3, EDL=2.3		pg	
			Total Hepta CDF	2016/11/27	4.1, EDL=2.2 (2)		pg	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4769645	VCI	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2016/11/29	<2.1, EDL=2.1		pg	
			Confirmation C13-2378 TetraCDF	2016/11/29		112	%	40 - 135

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

(2) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

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Your P.O. #: 469

Attention:CHRIS BELORE

ORTECH Environmental
804 Southdown Road
Mississauga, ON
L5J 2Y4

Report Date: 2016/12/01
Report #: R4270250
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B6O1617
Received: 2016/11/07, 15:21

Sample Matrix: Stack Sampling Train
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
2,3,7,8-TCDF Confirmation (M23)	3	N/A	2016/11/28	BRL SOP-00404	EPA M23/23A m
2,3,7,8-TCDF Confirmation (M23)	3	N/A	2016/11/29	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	4	2016/11/22	2016/11/26	BRL SOP-00404	EPA M23/23A m
Dioxins/Furans in Air (Method 23)	4	2016/11/23	2016/11/27	BRL SOP-00404	EPA M23/23A m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Clayton Johnson
Project Manager - Air Toxics, Source Evaluation
01 Dec 2016 11:11:51

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Clayton Johnson, Project Manager - Air Toxics, Source Evaluation
Email: CJohnson@maxxam.ca
Phone# (905)817-5769

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total Cover Pages : 1

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKB907							
Sampling Date		2016/11/04				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161104-01-BL-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<2.2	2.2	20	4.0	1.00	2.20	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	<2.6	2.6	20	4.0	1.00	2.60	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	<2.1	2.1	20	4.0	0.100	0.210	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	<2.3	2.3	20	6.0	0.0100	0.0230	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	4.5	2.4	200	6.0	0.000300	0.00135	N/A	4765806
Total Tetra CDD *	pg	<3.1 (1)	3.1	20	N/A	N/A	N/A	0	4765806
Total Penta CDD *	pg	<2.6	2.6	20	N/A	N/A	N/A	0	4765806
Total Hexa CDD *	pg	<7.9 (1)	7.9	20	N/A	N/A	N/A	0	4765806
Total Hepta CDD *	pg	<2.3	2.3	20	N/A	N/A	N/A	0	4765806
2,3,7,8-Tetra CDF **	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4765806
1,2,3,7,8-Penta CDF **	pg	<2.2	2.2	20	4.0	0.0300	0.0660	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	<2.2	2.2	20	4.0	0.300	0.660	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	<2.2	2.2	20	4.0	0.100	0.220	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	<2.4	2.4	20	4.0	0.100	0.240	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	<2.6	2.6	20	4.0	0.100	0.260	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	<1.8	1.8	20	6.0	0.0100	0.0180	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	<2.1	2.1	20	4.0	0.0100	0.0210	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<2.3	2.3	200	10	0.000300	0.000690	N/A	4765806
Total Tetra CDF **	pg	3.3	2.3	20	N/A	N/A	N/A	1	4765806
Total Penta CDF **	pg	<2.2	2.2	20	N/A	N/A	N/A	0	4765806
Total Hexa CDF **	pg	<2.4	2.4	20	N/A	N/A	N/A	0	4765806
Total Hepta CDF **	pg	<1.9	1.9	20	N/A	N/A	N/A	0	4765806
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	7.44	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKB907							
Sampling Date		2016/11/04				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161104-01-BL-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
C13-123478 HexaCDD *	%	117	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	75	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	63	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	58	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC586							
Sampling Date		2016/11/01				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161101-01-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	20.1 (1)	2.2	20	4.0	1.00	20.1	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	76.2	2.3	20	4.0	1.00	76.2	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	65.1	2.3	20	4.0	0.100	6.51	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	171	2.3	20	4.0	0.100	17.1	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	175 (2)	2.1	20	4.0	0.100	17.5	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	358	2.1	20	6.0	0.0100	3.58	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	238	2.2	200	6.0	0.000300	0.0714	N/A	4765806
Total Tetra CDD *	pg	1910	2.2	20	N/A	N/A	N/A	13	4765806
Total Penta CDD *	pg	4150	2.3	20	N/A	N/A	N/A	12	4765806
Total Hexa CDD *	pg	3210	2.2	20	N/A	N/A	N/A	7	4765806
Total Hepta CDD *	pg	771	2.1	20	N/A	N/A	N/A	2	4765806
1,2,3,7,8-Penta CDF **	pg	52.6	5.8	20	4.0	0.0300	1.58	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	134	5.8	20	4.0	0.300	40.2	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	148 (2)	2.5	20	4.0	0.100	14.8	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	74.4	2.4	20	4.0	0.100	7.44	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	84.3	2.6	20	4.0	0.100	8.43	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	<3.9 (3)	3.9	20	4.0	0.100	0.390	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	136	2.1	20	6.0	0.0100	1.36	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	19.1	2.4	20	4.0	0.0100	0.191	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<36 (4)	36	200	10	0.000300	0.0108	N/A	4765806
Total Tetra CDF **	pg	1230	2.2	20	N/A	N/A	N/A	17	4765806
Total Penta CDF **	pg	1470	5.8	20	N/A	N/A	N/A	13	4765806
Total Hexa CDF **	pg	721	2.6	20	N/A	N/A	N/A	10	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.
(4) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC586							
Sampling Date		2016/11/01				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161101-01-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	238	2.2	20	N/A	N/A	N/A	4	4765806
Confirmation 2,3,7,8-Tetra CDF **	pg	19.1	2.5	20	N/A	0.100	1.91	N/A	4769645
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	217	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDD *	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	92	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	103	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	113	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC588							
Sampling Date		2016/11/02				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161102-02-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	21.3 (1)	2.4	20	4.0	1.00	21.3	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	83.3	2.4	20	4.0	1.00	83.3	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	54.9	2.3	20	4.0	0.100	5.49	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	135	2.3	20	4.0	0.100	13.5	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	139 (2)	2.1	20	4.0	0.100	13.9	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	291	2.4	20	6.0	0.0100	2.91	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	148	2.0	200	6.0	0.000300	0.0444	N/A	4765806
Total Tetra CDD *	pg	1610	2.4	20	N/A	N/A	N/A	12	4765806
Total Penta CDD *	pg	3660	2.4	20	N/A	N/A	N/A	12	4765806
Total Hexa CDD *	pg	2610	2.2	20	N/A	N/A	N/A	7	4765806
Total Hepta CDD *	pg	615	2.4	20	N/A	N/A	N/A	2	4765806
1,2,3,7,8-Penta CDF **	pg	41.0	6.6	20	4.0	0.0300	1.23	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	114	6.7	20	4.0	0.300	34.2	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	122 (2)	2.5	20	4.0	0.100	12.2	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	64.4	2.4	20	4.0	0.100	6.44	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	64.0	2.6	20	4.0	0.100	6.40	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	<3.1 (3)	3.1	20	4.0	0.100	0.310	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	100	2.0	20	6.0	0.0100	1.00	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	14.8	2.4	20	4.0	0.0100	0.148	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<23 (4)	23	200	10	0.000300	0.00690	N/A	4765806
Total Tetra CDF **	pg	1060	2.2	20	N/A	N/A	N/A	18	4765806
Total Penta CDF **	pg	1220	6.7	20	N/A	N/A	N/A	16	4765806
Total Hexa CDF **	pg	614	2.5	20	N/A	N/A	N/A	11	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.
(4) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC588							
Sampling Date		2016/11/02				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161102-02-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Hepta CDF **	pg	164	2.2	20	N/A	N/A	N/A	4	4765806
Confirmation 2,3,7,8-Tetra CDF **	pg	22.1	2.7	20	N/A	0.100	2.21	N/A	4769645
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	205	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	67	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDD *	%	114	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	97	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	94	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	62	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	95	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	63	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	96	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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Report Date: 2016/12/01

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC592							
Sampling Date		2016/11/03				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161103-03-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	15.1 (1)	2.0	20	4.0	1.00	15.1	N/A	4765806
1,2,3,7,8-Penta CDD *	pg	50.6	2.5	20	4.0	1.00	50.6	N/A	4765806
1,2,3,4,7,8-Hexa CDD *	pg	31.9	2.4	20	4.0	0.100	3.19	N/A	4765806
1,2,3,6,7,8-Hexa CDD *	pg	84.6	2.4	20	4.0	0.100	8.46	N/A	4765806
1,2,3,7,8,9-Hexa CDD *	pg	80.1 (2)	2.2	20	4.0	0.100	8.01	N/A	4765806
1,2,3,4,6,7,8-Hepta CDD *	pg	199	2.4	20	6.0	0.0100	1.99	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDD *	pg	112	2.2	200	6.0	0.000300	0.0336	N/A	4765806
Total Tetra CDD *	pg	1020	2.0	20	N/A	N/A	N/A	12	4765806
Total Penta CDD *	pg	2000	2.5	20	N/A	N/A	N/A	11	4765806
Total Hexa CDD *	pg	1560	2.3	20	N/A	N/A	N/A	7	4765806
Total Hepta CDD *	pg	424	2.4	20	N/A	N/A	N/A	2	4765806
1,2,3,7,8-Penta CDF **	pg	30.1	4.3	20	4.0	0.0300	0.903	N/A	4765806
2,3,4,7,8-Penta CDF **	pg	72.7	4.3	20	4.0	0.300	21.8	N/A	4765806
1,2,3,4,7,8-Hexa CDF **	pg	76.6 (2)	2.3	20	4.0	0.100	7.66	N/A	4765806
1,2,3,6,7,8-Hexa CDF **	pg	41.7	2.2	20	4.0	0.100	4.17	N/A	4765806
2,3,4,6,7,8-Hexa CDF **	pg	44.6	2.5	20	4.0	0.100	4.46	N/A	4765806
1,2,3,7,8,9-Hexa CDF **	pg	<3.4 (3)	3.4	20	4.0	0.100	0.340	N/A	4765806
1,2,3,4,6,7,8-Hepta CDF **	pg	64.9	2.0	20	6.0	0.0100	0.649	N/A	4765806
1,2,3,4,7,8,9-Hepta CDF **	pg	10.2	2.4	20	4.0	0.0100	0.102	N/A	4765806
1,2,3,4,6,7,8,9-Octa CDF **	pg	<17 (3)	17	200	10	0.000300	0.00510	N/A	4765806
Total Tetra CDF **	pg	665	2.1	20	N/A	N/A	N/A	19	4765806
Total Penta CDF **	pg	730	4.3	20	N/A	N/A	N/A	13	4765806
Total Hexa CDF **	pg	374	2.4	20	N/A	N/A	N/A	10	4765806
Total Hepta CDF **	pg	111	2.2	20	N/A	N/A	N/A	4	4765806
Confirmation 2,3,7,8-Tetra CDF **	pg	16.5	2.1	20	N/A	0.100	1.65	N/A	4769645
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	129	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical
(2) EMPC / Merged Peak
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC592							
Sampling Date		2016/11/03				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161103-03-XAD	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4769645
C13-1234678 HeptaCDD *	%	64	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234678 HeptaCDF **	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDD *	%	102	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123478 HexaCDF **	%	98	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-1234789 HeptaCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDD *	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123678 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDD *	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-12378 PentaCDF **	%	86	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-123789 HexaCDF **	%	58	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-23478 PentaCDF **	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-2378 TetraCDF **	%	89	N/A	N/A	N/A	N/A	N/A	N/A	4765806
C13-Octachlorodibenzo-p-Dioxin	%	62	N/A	N/A	N/A	N/A	N/A	N/A	4765806
Cl37-2378 TetraCDD *	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4765806

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC599							
Sampling Date		2016/11/04				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161104-01-BL-RINSE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	<2.4	2.4	20	4.0	1.00	2.40	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	<2.2	2.2	20	4.0	1.00	2.20	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	<2.1	2.1	20	4.0	0.100	0.210	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	10.9	2.0	20	6.0	0.0100	0.109	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	23.1	2.4	200	6.0	0.000300	0.00693	N/A	4767219
Total Tetra CDD *	pg	<3.5 (1)	3.5	20	N/A	N/A	N/A	0	4767219
Total Penta CDD *	pg	<3.6 (1)	3.6	20	N/A	N/A	N/A	0	4767219
Total Hexa CDD *	pg	8.5	2.2	20	N/A	N/A	N/A	2	4767219
Total Hepta CDD *	pg	24.7	2.0	20	N/A	N/A	N/A	2	4767219
2,3,7,8-Tetra CDF **	pg	<2.2	2.2	20	4.0	0.100	0.220	N/A	4767219
1,2,3,7,8-Penta CDF **	pg	<2.2	2.2	20	4.0	0.0300	0.0660	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	<2.2	2.2	20	4.0	0.300	0.660	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	3.3	2.2	20	4.0	0.100	0.330	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	<2.1	2.1	20	4.0	0.100	0.210	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	<2.3	2.3	20	4.0	0.100	0.230	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<2.4	2.4	20	4.0	0.100	0.240	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	7.6	2.0	20	6.0	0.0100	0.0760	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	<2.4	2.4	20	4.0	0.0100	0.0240	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	2.6 (2)	2.2	200	10	0.000300	0.000780	N/A	4767219
Total Tetra CDF **	pg	<2.2	2.2	20	N/A	N/A	N/A	0	4767219
Total Penta CDF **	pg	<2.2	2.2	20	N/A	N/A	N/A	0	4767219
Total Hexa CDF **	pg	3.3	2.2	20	N/A	N/A	N/A	1	4767219
Total Hepta CDF **	pg	7.6	2.2	20	N/A	N/A	N/A	1	4767219
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	7.44	N/A	N/A
Surrogate Recovery (%)									
C13-1234678 HeptaCDD *	%	65	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.
(2) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC599							
Sampling Date		2016/11/04				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161104-01-BL-RINSE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
C13-1234678 HeptaCDF **	%	68	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	76	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	69	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	93	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	91	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	62	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC601							
Sampling Date		2016/11/01				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161101-01-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	86.5	2.7	20	4.0	1.00	86.5	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	764	4.1	20	4.0	1.00	764	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	1320	2.4	20	4.0	0.100	132	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	3070	2.4	20	4.0	0.100	307	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	1420	2.2	20	4.0	0.100	142	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	9380 (1)	22	200	6.0	0.0100	93.8	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	4320	2.1	200	6.0	0.000300	1.30	N/A	4767219
Total Tetra CDD *	pg	5400	2.7	20	N/A	N/A	N/A	13	4767219
Total Penta CDD *	pg	26800	4.1	20	N/A	N/A	N/A	12	4767219
Total Hexa CDD *	pg	49400	2.3	20	N/A	N/A	N/A	8	4767219
Total Hepta CDD *	pg	20000 (1)	22	200	N/A	N/A	N/A	2	4767219
1,2,3,7,8-Penta CDF **	pg	272	11	20	4.0	0.0300	8.16	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	1090	11	20	4.0	0.300	327	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	1850 (2)	15	20	4.0	0.100	185	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	953	15	20	4.0	0.100	95.3	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	1780	16	20	4.0	0.100	178	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<85 (3)	85	20	4.0	0.100	8.50	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	2530	6.6	20	6.0	0.0100	25.3	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	447	7.8	20	4.0	0.0100	4.47	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	<670 (3)	670	200	10	0.000300	0.201	N/A	4767219
Total Tetra CDF **	pg	2380	2.3	20	N/A	N/A	N/A	18	4767219
Total Penta CDF **	pg	8590	11	20	N/A	N/A	N/A	16	4767219
Total Hexa CDF **	pg	8860	16	20	N/A	N/A	N/A	12	4767219
Total Hepta CDF **	pg	4390	7.1	20	N/A	N/A	N/A	4	4767219
Confirmation 2,3,7,8-Tetra CDF **	pg	89.6	3.1	20	N/A	0.100	8.96	N/A	4769607
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	2370	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
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WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) Results from 10xdiln
(2) EMPC / Merged Peak
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC601							
Sampling Date		2016/11/01				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161101-01-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4769607
C13-1234678 HeptaCDD *	%	90 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-1234678 HeptaCDF **	%	79	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	82	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	88	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	105	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	101	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
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TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
(1) Results from 10xdiln

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC602							
Sampling Date		2016/11/02				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161102-02-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
2,3,7,8-Tetra CDD *	pg	47.6	2.1	20	4.0	1.00	47.6	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	640	4.5	20	4.0	1.00	640	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	921	2.9	20	4.0	0.100	92.1	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	2370	3.0	20	4.0	0.100	237	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	1450	2.7	20	4.0	0.100	145	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	7110 (1)	21	200	6.0	0.0100	71.1	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	3510	2.3	200	6.0	0.000300	1.05	N/A	4767219
Total Tetra CDD *	pg	4000	2.1	20	N/A	N/A	N/A	13	4767219
Total Penta CDD *	pg	21100	4.5	20	N/A	N/A	N/A	12	4767219
Total Hexa CDD *	pg	36700	2.9	20	N/A	N/A	N/A	8	4767219
Total Hepta CDD *	pg	14600 (1)	21	200	N/A	N/A	N/A	2	4767219
1,2,3,7,8-Penta CDF **	pg	230	12	20	4.0	0.0300	6.90	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	841	12	20	4.0	0.300	252	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	1430 (2)	12	20	4.0	0.100	143	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	750	12	20	4.0	0.100	75.0	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	1450	13	20	4.0	0.100	145	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<68 (3)	68	20	4.0	0.100	6.80	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	1930	5.5	20	6.0	0.0100	19.3	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	340	6.5	20	4.0	0.0100	3.40	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	<550 (3)	550	200	10	0.000300	0.165	N/A	4767219
Total Tetra CDF **	pg	2460	2.4	20	N/A	N/A	N/A	20	4767219
Total Penta CDF **	pg	6660	12	20	N/A	N/A	N/A	15	4767219
Total Hexa CDF **	pg	6830	13	20	N/A	N/A	N/A	12	4767219
Total Hepta CDF **	pg	3340	5.9	20	N/A	N/A	N/A	4	4767219
Confirmation 2,3,7,8-Tetra CDF **	pg	75.8	3.4	20	N/A	0.100	7.58	N/A	4769607
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1890	N/A	N/A

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
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WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) Results from 10xdiln
(2) EMPC / Merged Peak
(3) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC602							
Sampling Date		2016/11/02				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161102-02-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4769607
C13-1234678 HeptaCDD *	%	81 (1)	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-1234678 HeptaCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	83	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	81	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	85	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	100	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	72	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	107	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	71	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
(1) Results from 10xdiln

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC603							
Sampling Date		2016/11/03				**TOXIC EQUIVALENCY**		# of	
	UNITS	**M23 - U2, 161103-03-RINSE+TUBE**	**EDL**	**RDL**	**MDL**	**TEF (2005 WHO)**	**TEQ(DL)**	**Isomers**	**QC Batch**
2,3,7,8-Tetra CDD *	pg	38.1	2.3	20	4.0	1.00	38.1	N/A	4767219
1,2,3,7,8-Penta CDD *	pg	410	3.3	20	4.0	1.00	410	N/A	4767219
1,2,3,4,7,8-Hexa CDD *	pg	511	2.9	20	4.0	0.100	51.1	N/A	4767219
1,2,3,6,7,8-Hexa CDD *	pg	1310	2.9	20	4.0	0.100	131	N/A	4767219
1,2,3,7,8,9-Hexa CDD *	pg	792	2.7	20	4.0	0.100	79.2	N/A	4767219
1,2,3,4,6,7,8-Hepta CDD *	pg	3900	7.2	20	6.0	0.0100	39.0	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDD *	pg	2090	2.2	200	6.0	0.000300	0.627	N/A	4767219
Total Tetra CDD *	pg	3260	2.3	20	N/A	N/A	N/A	14	4767219
Total Penta CDD *	pg	12000	3.3	20	N/A	N/A	N/A	12	4767219
Total Hexa CDD *	pg	19600	2.8	20	N/A	N/A	N/A	8	4767219
Total Hepta CDD *	pg	7750	7.2	20	N/A	N/A	N/A	2	4767219
1,2,3,7,8-Penta CDF **	pg	153	7.5	20	4.0	0.0300	4.59	N/A	4767219
2,3,4,7,8-Penta CDF **	pg	<510 (1)	510	20	4.0	0.300	153	N/A	4767219
1,2,3,4,7,8-Hexa CDF **	pg	818 (2)	8.3	20	4.0	0.100	81.8	N/A	4767219
1,2,3,6,7,8-Hexa CDF **	pg	436	7.9	20	4.0	0.100	43.6	N/A	4767219
2,3,4,6,7,8-Hexa CDF **	pg	758	8.7	20	4.0	0.100	75.8	N/A	4767219
1,2,3,7,8,9-Hexa CDF **	pg	<53 (1)	53	20	4.0	0.100	5.30	N/A	4767219
1,2,3,4,6,7,8-Hepta CDF **	pg	1040	2.2	20	6.0	0.0100	10.4	N/A	4767219
1,2,3,4,7,8,9-Hepta CDF **	pg	209	2.6	20	4.0	0.0100	2.09	N/A	4767219
1,2,3,4,6,7,8,9-Octa CDF **	pg	<340 (1)	340	200	10	0.000300	0.102	N/A	4767219
Total Tetra CDF **	pg	2020	2.3	20	N/A	N/A	N/A	19	4767219
Total Penta CDF **	pg	3510	7.5	20	N/A	N/A	N/A	14	4767219
Total Hexa CDF **	pg	3750	8.5	20	N/A	N/A	N/A	12	4767219
Total Hepta CDF **	pg	1790	2.4	20	N/A	N/A	N/A	4	4767219
Confirmation 2,3,7,8-Tetra CDF **	pg	65.6	3.9	20	N/A	0.100	6.56	N/A	4769607
TOTAL TOXIC EQUIVALENCY	pg	N/A	N/A	N/A	N/A	N/A	1130	N/A	N/A
Surrogate Recovery (%)									
Confirmation C13-2378 TetraCDF **	%	106	N/A	N/A	N/A	N/A	N/A	N/A	4769607

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan
(1) EMPC / DPE - Diphenylether interference present caused dibenzofuran detected to become a "non-detect" with an elevated detection limit.
(2) EMPC / Merged Peak

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EPA M23 DIOXINS AND FURANS (STACK SAMPLING TRAIN)

Maxxam ID		DKC603							
Sampling Date		2016/11/03				TOXIC EQUIVALENCY		# of	
	UNITS	M23 - U2, 161103-03-RINSE+TUBE	EDL	RDL	MDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
C13-1234678 HeptaCDD *	%	78	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-1234678 HeptaCDF **	%	80	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDD *	%	87	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123678 HexaCDF **	%	84	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDD *	%	99	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-12378 PentaCDF **	%	109	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-123789 HexaCDF **	%	74	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDD *	%	111	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-2378 TetraCDF **	%	110	N/A	N/A	N/A	N/A	N/A	N/A	4767219
C13-Octachlorodibenzo-p-Dioxin	%	77	N/A	N/A	N/A	N/A	N/A	N/A	4767219

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
N/A = Not Applicable
** CDF = Chloro Dibenzo-p-Furan

TEST SUMMARY

Maxxam ID: DKB907
Sample ID: M23 - U2, 161104-01-BL-XAD
Matrix: Stack Sampling Train

Collected: 2016/11/04
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC586
Sample ID: M23 - U2, 161101-01-XAD
Matrix: Stack Sampling Train

Collected: 2016/11/01
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC588
Sample ID: M23 - U2, 161102-02-XAD
Matrix: Stack Sampling Train

Collected: 2016/11/02
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC592
Sample ID: M23 - U2, 161103-03-XAD
Matrix: Stack Sampling Train

Collected: 2016/11/03
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769645	N/A	2016/11/29	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4765806	2016/11/22	2016/11/26	Owen Cosby

Maxxam ID: DKC599
Sample ID: M23 - U2, 161104-01-BL-RINSE
Matrix: Stack Sampling Train

Collected: 2016/11/04
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

Maxxam ID: DKC601
Sample ID: M23 - U2, 161101-01-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/11/01
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769607	N/A	2016/11/28	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

Maxxam ID: DKC602
Sample ID: M23 - U2, 161102-02-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/11/02
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769607	N/A	2016/11/28	Vica Cioranic

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TEST SUMMARY

Maxxam ID: DKC602
Sample ID: M23 - U2, 161102-02-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/11/02
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

Maxxam ID: DKC603
Sample ID: M23 - U2, 161103-03-RINSE+TUBE
Matrix: Stack Sampling Train

Collected: 2016/11/03
Shipped:
Received: 2016/11/07

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
2,3,7,8-TCDF Confirmation (M23)	HRMS/MS	4769607	N/A	2016/11/28	Vica Cioranic
Dioxins/Furans in Air (Method 23)	HRMS/MS	4767219	2016/11/23	2016/11/27	Owen Cosby

GENERAL COMMENTS

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4765806	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/25		81	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/25		87	%	25 - 130
			C13-123678 HexaCDD	2016/11/25		90	%	40 - 130
			C13-123678 HexaCDF	2016/11/25		88	%	40 - 130
			C13-12378 PentaCDD	2016/11/25		96	%	40 - 130
			C13-12378 PentaCDF	2016/11/25		110	%	40 - 130
			C13-123789 HexaCDF	2016/11/25		75	%	40 - 130
			C13-2378 TetraCDD	2016/11/25		115	%	40 - 130
			C13-2378 TetraCDF	2016/11/25		110	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/25		83	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/25		99	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/25		118	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/25		98	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/25		102	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/25		103	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/25		97	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/25		100	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/25		115	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/25		117	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/25		119	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/25		103	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/25		113	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/25		114	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/25		109	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/25		99	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/25		96	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/25		106	%	80 - 140
4765806	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/26		71	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/26		66	%	25 - 130
			C13-123678 HexaCDD	2016/11/26		76	%	40 - 130
			C13-123678 HexaCDF	2016/11/26		70	%	40 - 130
			C13-12378 PentaCDD	2016/11/26		75	%	40 - 130
			C13-12378 PentaCDF	2016/11/26		85	%	40 - 130
			C13-123789 HexaCDF	2016/11/26		61	%	40 - 130
			C13-2378 TetraCDD	2016/11/26		95	%	40 - 130
			C13-2378 TetraCDF	2016/11/26		99	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/26		61	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/26		104	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/26		119	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/26		92	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/26		98	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/26		98	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/26		93	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/26		101	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/26		106	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/26		118	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/26		123	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/26		105	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/26		119	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/26		116	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/26		110	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/26		104	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/26		104	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/26		107	%	80 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4765806	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/26	4.9		%	20
			1,2,3,7,8-Penta CDD	2016/11/26	0.84		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/26	6.3		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/26	4.0		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/26	5.0		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/26	4.2		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/26	1.0		%	20
			2,3,7,8-Tetra CDF	2016/11/26	8.1		%	20
			1,2,3,7,8-Penta CDF	2016/11/26	0.85		%	20
			2,3,4,7,8-Penta CDF	2016/11/26	3.3		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/26	1.9		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/26	5.2		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/26	1.7		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/26	0.91		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/26	4.9		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/26	8.0		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/26	0.94		%	20
4765806	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/26		67	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/26		72	%	25 - 130
			C13-123678 HexaCDD	2016/11/26		82	%	40 - 130
			C13-123678 HexaCDF	2016/11/26		77	%	40 - 130
			C13-12378 PentaCDD	2016/11/26		82	%	40 - 130
			C13-12378 PentaCDF	2016/11/26		88	%	40 - 130
			C13-123789 HexaCDF	2016/11/26		64	%	40 - 130
			C13-2378 TetraCDD	2016/11/26		100	%	40 - 130
			C13-2378 TetraCDF	2016/11/26		98	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/26		63	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8-Penta CDD	2016/11/26	<2.4, EDL=2.4		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/26	<2.1, EDL=2.1		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/26	<2.3, EDL=2.3		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/26	6.0, EDL=2.4		pg	
			Total Tetra CDD	2016/11/26	<4.8, EDL=4.8 (1)		pg	
			Total Penta CDD	2016/11/26	<3.3, EDL=3.3 (1)		pg	
			Total Hexa CDD	2016/11/26	<6.6, EDL=6.6 (1)		pg	
			Total Hepta CDD	2016/11/26	<2.3, EDL=2.3		pg	
			2,3,7,8-Tetra CDF	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8-Penta CDF	2016/11/26	<2.4, EDL=2.4		pg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			2,3,4,7,8-Penta CDF	2016/11/26	<2.4, EDL=2.4		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/26	<2.1, EDL=2.1		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/26	<2.0, EDL=2.0		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/26	<2.2, EDL=2.2		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/26	<2.3, EDL=2.3		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/26	2.3, EDL=2.1		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/26	<2.5, EDL=2.5		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/26	3.1, EDL=2.3		pg	
			Total Tetra CDF	2016/11/26	<2.9, EDL=2.9 (1)		pg	
			Total Penta CDF	2016/11/26	<2.4, EDL=2.4		pg	
			Total Hexa CDF	2016/11/26	<2.2, EDL=2.2		pg	
			Total Hepta CDF	2016/11/26	<2.3, EDL=2.3		pg	
4767219	OBC	Spiked Blank	C13-1234678 HeptaCDD	2016/11/27		83	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/27		79	%	25 - 130
			C13-123678 HexaCDD	2016/11/27		87	%	40 - 130
			C13-123678 HexaCDF	2016/11/27		83	%	40 - 130
			C13-12378 PentaCDD	2016/11/27		88	%	40 - 130
			C13-12378 PentaCDF	2016/11/27		98	%	40 - 130
			C13-123789 HexaCDF	2016/11/27		70	%	40 - 130
			C13-2378 TetraCDD	2016/11/27		107	%	40 - 130
			C13-2378 TetraCDF	2016/11/27		99	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/27		81	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/27		113	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/27		111	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/27		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/27		101	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/27		105	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27		103	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27		112	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/27		114	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/27		121	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/27		128	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/27		136	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/27		99	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/27		120	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/27		117	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27		124	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27		131	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27		112	%	80 - 140
4767219	OBC	Spiked Blank DUP	C13-1234678 HeptaCDD	2016/11/27		77	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/27		76	%	25 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			C13-123678 HexaCDD	2016/11/27		87	%	40 - 130
			C13-123678 HexaCDF	2016/11/27		86	%	40 - 130
			C13-12378 PentaCDD	2016/11/27		96	%	40 - 130
			C13-12378 PentaCDF	2016/11/27		100	%	40 - 130
			C13-123789 HexaCDF	2016/11/27		72	%	40 - 130
			C13-2378 TetraCDD	2016/11/27		105	%	40 - 130
			C13-2378 TetraCDF	2016/11/27		101	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/27		73	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/27		122	%	80 - 140
			1,2,3,7,8-Penta CDD	2016/11/27		107	%	80 - 140
			1,2,3,4,7,8-Hexa CDD	2016/11/27		138	%	80 - 140
			1,2,3,6,7,8-Hexa CDD	2016/11/27		102	%	80 - 140
			1,2,3,7,8,9-Hexa CDD	2016/11/27		103	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27		115	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27		118	%	80 - 140
			2,3,7,8-Tetra CDF	2016/11/27		115	%	80 - 140
			1,2,3,7,8-Penta CDF	2016/11/27		127	%	80 - 140
			2,3,4,7,8-Penta CDF	2016/11/27		135	%	80 - 140
			1,2,3,4,7,8-Hexa CDF	2016/11/27		135	%	80 - 140
			1,2,3,6,7,8-Hexa CDF	2016/11/27		105	%	80 - 140
			2,3,4,6,7,8-Hexa CDF	2016/11/27		121	%	80 - 140
			1,2,3,7,8,9-Hexa CDF	2016/11/27		118	%	80 - 140
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27		132	%	80 - 140
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27		133	%	80 - 140
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27		114	%	80 - 140
4767219	OBC	RPD	2,3,7,8-Tetra CDD	2016/11/27	7.7		%	20
			1,2,3,7,8-Penta CDD	2016/11/27	3.7		%	20
			1,2,3,4,7,8-Hexa CDD	2016/11/27	1.5		%	20
			1,2,3,6,7,8-Hexa CDD	2016/11/27	0.99		%	20
			1,2,3,7,8,9-Hexa CDD	2016/11/27	1.9		%	20
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27	11		%	20
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27	5.2		%	20
			2,3,7,8-Tetra CDF	2016/11/27	0.87		%	20
			1,2,3,7,8-Penta CDF	2016/11/27	4.8		%	20
			2,3,4,7,8-Penta CDF	2016/11/27	5.3		%	20
			1,2,3,4,7,8-Hexa CDF	2016/11/27	0.74		%	20
			1,2,3,6,7,8-Hexa CDF	2016/11/27	5.9		%	20
			2,3,4,6,7,8-Hexa CDF	2016/11/27	0.83		%	20
			1,2,3,7,8,9-Hexa CDF	2016/11/27	0.85		%	20
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27	6.3		%	20
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27	1.5		%	20
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27	1.8		%	20
4767219	OBC	Method Blank	C13-1234678 HeptaCDD	2016/11/27		82	%	25 - 130
			C13-1234678 HeptaCDF	2016/11/27		86	%	25 - 130
			C13-123678 HexaCDD	2016/11/27		94	%	40 - 130
			C13-123678 HexaCDF	2016/11/27		92	%	40 - 130
			C13-12378 PentaCDD	2016/11/27		100	%	40 - 130
			C13-12378 PentaCDF	2016/11/27		112	%	40 - 130
			C13-123789 HexaCDF	2016/11/27		79	%	40 - 130
			C13-2378 TetraCDD	2016/11/27		116	%	40 - 130
			C13-2378 TetraCDF	2016/11/27		108	%	40 - 130
			C13-Octachlorodibenzo-p-Dioxin	2016/11/27		83	%	25 - 130
			2,3,7,8-Tetra CDD	2016/11/27	<2.3, EDL=2.3		pg	

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Maxxam Job #: B6O1617
Report Date: 2016/12/01

ORTECH Environmental
Your P.O. #: 469

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			1,2,3,7,8-Penta CDD	2016/11/27	<2.4, EDL=2.4		pg	
			1,2,3,4,7,8-Hexa CDD	2016/11/27	<2.1, EDL=2.1		pg	
			1,2,3,6,7,8-Hexa CDD	2016/11/27	<2.1, EDL=2.1		pg	
			1,2,3,7,8,9-Hexa CDD	2016/11/27	<2.0, EDL=2.0		pg	
			1,2,3,4,6,7,8-Hepta CDD	2016/11/27	<2.2, EDL=2.2		pg	
			1,2,3,4,6,7,8,9-Octa CDD	2016/11/27	6.2, EDL=2.1		pg	
			Total Tetra CDD	2016/11/27	<3.7, EDL=3.7 (1)		pg	
			Total Penta CDD	2016/11/27	<3.2, EDL=3.2 (1)		pg	
			Total Hexa CDD	2016/11/27	<7.1, EDL=7.1 (1)		pg	
			Total Hepta CDD	2016/11/27	<2.2, EDL=2.2		pg	
			2,3,7,8-Tetra CDF	2016/11/27	<2.3, EDL=2.3		pg	
			1,2,3,7,8-Penta CDF	2016/11/27	<2.3, EDL=2.3		pg	
			2,3,4,7,8-Penta CDF	2016/11/27	<2.3, EDL=2.3		pg	
			1,2,3,4,7,8-Hexa CDF	2016/11/27	<2.2, EDL=2.2		pg	
			1,2,3,6,7,8-Hexa CDF	2016/11/27	<2.1, EDL=2.1		pg	
			2,3,4,6,7,8-Hexa CDF	2016/11/27	<2.3, EDL=2.3		pg	
			1,2,3,7,8,9-Hexa CDF	2016/11/27	<2.4, EDL=2.4		pg	
			1,2,3,4,6,7,8-Hepta CDF	2016/11/27	4.1, EDL=2.0 (2)		pg	
			1,2,3,4,7,8,9-Hepta CDF	2016/11/27	<2.4, EDL=2.4		pg	
			1,2,3,4,6,7,8,9-Octa CDF	2016/11/27	2.3, EDL=2.1		pg	
			Total Tetra CDF	2016/11/27	<2.3, EDL=2.3		pg	
			Total Penta CDF	2016/11/27	<2.3, EDL=2.3		pg	
			Total Hexa CDF	2016/11/27	<2.3, EDL=2.3		pg	
			Total Hepta CDF	2016/11/27	4.1, EDL=2.2 (2)		pg	
4769607	VCI	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2016/11/28	<2.6, EDL=2.6		pg	
			Confirmation C13-2378 TetraCDF	2016/11/28		101	%	40 - 135

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4769645	VCI	Method Blank	Confirmation 2,3,7,8-Tetra CDF	2016/11/29	<2.1, EDL=2.1		pg	
			Confirmation C13-2378 TetraCDF	2016/11/29		112	%	40 - 135

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

(2) EMPC / Ratio - Isotopic ratio adjusted to meet theoretical

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Owen Cosby, BSc.C.Chem, Supervisor, HRMS Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

AMESA Run Summary Data
(6 pages)

SUM_161027_1535

AMESA measurement summary

COVANTA CANADA - STACK UNIT 1

Ident: Amesa_860142_CB1_1_161027_0820 P86.020.6

Cartridge box no. 1 - COVANTA - STACK 1   Measurement no. 1

Start: 27.10.2016-08:20 End: 27.10.2016-14:44

Measurement duration ....MDurat:	6:20	h:min
Sample gas volume norm mass flow meter TGVN MDM:	4.756	m^3
Sample gas volume norm gasmeter .... TGVN GU:	4.653	m^3
Condensate volume of sampling .... CONVOL:	0.41	l
Operating density factor .... BDFAKT:	0.776	
Mean H2O in flue gas .... MH2O RG:	94.116	g/m^3
Mean O2 .... MO2:	8.6	%
Mean CO2 .... MCO2:	10.1	%
Substitutes ....:	....	
Last parameter access time .... PARAMACCTIME:	27.10.2016-11:59	
Events during measurement.....................:	2	

161028_0805_S

AMESA measurement summary

COVANTA CANADA - STACK UNIT 1

File ident: Amesa_860142-P86.020.6-28.10.2016-15:33
Sampled using P86.020.6

Cartridge box no. 1 - COVANTA - STACK 1   Measurement no. 2

Start: 28.10.2016/08:05   Leakage rate (134.2hPa) 0.000m³/h
End..: 28.10.2016/14:32   Leakage rate (134.4hPa) 0.000m³/h

Measurement duration ....MDurat:	6:24	h:min
Sample gas volume norm MFM dry .... TGVN MDM:	4.818	m³
Sample gas volume norm MFM humid ..... TGVN MDM:	5.412	m³
Sample gas volume norm gasmeter dry ... TGVN GU:	4.807	m³
Sample gas volume norm gasmeter humid.. TGVN GU:	5.401	m³
Condensate volume of sampling .... CONVOL:	0.45	l
Operating density factor .... BDFAKT:	0.764	
Mean H2O in flue gas MH2O:	99.2	g/m³
Mean O2 .... MO2:	8.2	%
Mean CO2 .... MCO2:	10.4	%
Mean PSTAT ....MPSTAT:	987.7	hPa
Mean TRG .... MTRG:	139.6	°C
Mean vH .... MVH:	18.52	m/s
Maximum TKT .... MAXTKT:	24.1	°C
Mean TKT .... MTKT:	22.6	°C
Stack cross section ....QRK:	1.48	m²
Stack diameter ....DRK:	1.37	m
Substitutes ....:	....	
Last parameter access time .... PARAMACCTIME:	28.10.2016/14:27	

Events during measurement 2:

28-10-16/14:29 X   Manual command
28-10-16/14:29 X   Shutdown command

FA events during measurement: 0

Total FA time .....:   0:00 h:min
Total Fire on time :   6:27 h:min

AMESA measurement summary

COVANTA CANADA - STACK UNIT 1

Ident: Amesa_860142_CB1_3_161031_1015 P86.020.6

Cartridge box no. 1 - COVANTA - STACK 1 Measurement no. 3

Start: 31.10.2016-10:15 End: 31.10.2016-16:38

Measurement duration ....MDurat:	6:19	h:min
Sample gas volume norm mass flow meter TGVN MDM:	4.770	m^3
Sample gas volume norm gasmeter .... TGVN GU:	4.779	m^3
Condensate volume of sampling .... CONVOL:	0.43	l
Operating density factor .... BDFAKT:	0.770	
Mean H2O in flue gas .... MH2O RG:	96.704	g/m^3
Mean O2 .... MO2:	9.7	%
Mean CO2 .... MCO2:	10.2	%
Substitutes ....:	....	
Last parameter access time .... PARAMACCTIME:	31.10.2016-14:37	
Events during measurement......................:	2	

SUM_161102_1535

AMESA measurement summary

COVANTA CANADA - STACK UNIT 2

Ident: Amesa_860154_CB1_1_161101_0936 P86.020.6

Cartridge box no. 1 - COVANTA - STACK 2   Measurement no. 1

Start: 01.11.2016-09:36   End: 01.11.2016-15:51

Measurement duration ....MDurat:	6:11	h:min
Sample gas volume norm mass flow meter TGVN MDM:	4.595	m^3
Sample gas volume norm gasmeter .... TGVN GU:	4.333	m^3
Condensate volume of sampling .... CONVOL:	0.39	l
Operating density factor .... BDFAKT:	0.742	
Mean H2O in flue gas .... MH2O RG:	96.582	g/m^3
Mean O2 .... MO2:	7.6	%
Mean CO2 .... MCO2:	10.2	%
Substitutes ....:	....	
Last parameter access time .... PARAMACCTIME:	01.11.2016-13:32	
Events during measurement.....................:	2	

AMESA measurement summary

COVANTA CANADA - STACK UNIT 2

Ident: Amesa_860154_CB1_2_161102_0808 P86.020.6

Cartridge box no. 1 - COVANTA - STACK 2 Measurement no. 2

Start: 02.11.2016-08:08 End: 02.11.2016-14:25

Measurement duration ....MDurat:	6:13	h:min
Sample gas volume norm mass flow meter TGVN MDM:	4.501	m³
Sample gas volume norm gasmeter .... TGVN GU:	4.418	m³
Condensate volume of sampling .... CONVOL:	0.40	l
Operating density factor .... BDFAKT:	0.750	
Mean H2O in flue gas .... MH2O RG:	96.737	g/m³
Mean O2 .... MO2:	7.5	%
Mean CO2 .... MCO2:	10.3	%
Substitutes ....:	....	
Last parameter access time .... PARAMACCTIME:	02.11.2016-14:12	
Events during measurement.....................:	2	

AMESA measurement summary

COVANTA CANADA - STACK UNIT 2

Ident: Amesa_860154_CB1_3_161103_0814 P86.020.6

Cartridge box no. 1 - COVANTA - STACK 2 Measurement no. 3

Start: 03.11.2016-08:14 End: 03.11.2016-14:24

Measurement duration ....MDurat:	6:06 h:min
Sample gas volume norm mass flow meter TGVN MDM:	4.420 m³
Sample gas volume norm gasmeter .... TGVN GU:	4.336 m³
Condensate volume of sampling .... CONVOL:	0.40 l
Operating density factor .... BDFAKT:	0.741
Mean H2O in flue gas .... MH2O RG:	98.678 g/m³
Mean O2 .... MO2:	8.3 %
Mean CO2 .... MCO2:	10.4 %
Substitutes ....:	....
Last parameter access time .... PARAMACCTIME:	03.11.2016-13:23
Events during measurement.......................:	2