



Specialists in Odour
and VOC Issues

**Source Test Report
Odour Test at
Durham York Energy Centre**

Prepared for: **Durham York Renewable Energy LP**
1835 Energy Drive
Courtice, Ontario L7E 2R2

Prepared by: Michael R. E. Rix, B.Sc., QEP
Specialist in Odour Impact Assessments
and
Tom Vallarino, A.Sc.T., EPT
Project Technologist

Report No.: **14-290-R1.1**

Date: November 23, 2015

R E P O R T

Table of Contents

1	INTRODUCTION.....	1
2	Key Personnel	2
3	Facility Description.....	3
4	Odour Source Test Program.....	4
5	METHODOLOGY	4
5.1	Odour Sampling.....	5
5.1.1	Sample Collection Methodology	5
5.1.2	Odour Evaluation (Olfactometry) Methodology.....	6
5.2	Volumetric Flow Rate Determination	9
6	RESULTS.....	10
7	CLOSURE.....	13

List of Tables

Table 1 - Facility Description.....	4
Table 2 - Test Matrix	4
Table 3 - Odour Concentration Results.....	11
Table 4 - Odour Emission Rate.....	12

List of Figures

Figure 1 - Sampling Equipment and Location on Charging Deck.....	6
--	---

Appendices

- Appendix A – Environmental Compliance Approval (ECA) No. 7306-8FDKNX
- Appendix B – Pre Test Plan Approval
- Appendix C – Sampling Datasheets
- Appendix D – Raw Odour Panel Responses

1 INTRODUCTION

The Durham York Energy Centre (DYEC) is an energy-from-waste (EFW) facility located in Clarington, Ontario, in Durham Region. The facility accepts municipal solid waste (MSW) from the Regional Municipalities of Durham and York, and uses the MSW as fuel to generate electricity. One of many tests required by the Environmental Compliance Approval (ECA) at the DYEC is a test for potential odour emissions. This requirement was included as an element of the Odour Management and Mitigation Plan, which was required to meet conditions in the ECA and in the Environmental Assessment (EA) Approval for the project. A copy of the ECA is included in Appendix A.

The odour testing requirement is described in Section 6.2 of the Odour Management and Mitigation Plan. This states that triplicate samples will be collected from the charging floor during normal operation. A Test Plan was submitted to the MOECC based on this requirement, and this plan further stated that two tests will be conducted on consecutive days, the first day being at the beginning of a delivery period (i.e. after a weekend). Triplicate samples will be collected on each day. Tests will be conducted as per Method ON-6; collection in gas sample bags followed by analysis by an 8-member odour panel.

The sampling location was chosen to represent the only significant odour source at the facility - odours from the tipping area and storage pit. However, the building is designed so that these odours should not be released directly to the outside environment. Air from this area is exclusively used as combustion air for the furnaces, and by design the air flow to the furnaces is sufficient to contain odours and dust by induced air flow. The design ensures that any odours in the tipping building cannot escape, but are drawn through the combustion process, which then will completely destroy the odours due to the high temperatures and residence time of the combustion system. The untreated odour emissions from the building were used to calculate a hypothetical worst-case odour emission which could occur if both combustion trains at the facility are not in operation, but the fans remain on to ventilate the boiler for outage work. Under this scenario, the untreated odour emissions would be dispersed from the stack.

Testing was conducted following methodologies outlined in the Ontario Source Testing Code (OSTC) dated 2010, PIBs#1310e03 where applicable.

A Pre-Test Plan was submitted to the Source Assessment group, Technology Standards Section, Standards Development Branch on September 17, 2014, and test methods were accepted by the MOE in a letter (TSS File No.: CR:SA:109194:14) dated September 19, 2014. A copy of the Pre-Test Plan review is in Appendix B. Odour Source Testing was conducted on October 8 and 9, 2015 and was witnessed by Guillermo Azocar of the MOECC Standards Development Branch. Although sampling was conducted later in the week of waste receipts this was deemed an acceptable deviation from the pre-test plan.

Triplicate samples for odour were collected from the indoor ambient air in the charging area of the tipping building. The maximum air flow rate for the system during outages was used to calculate an odour emission rate for the facility for the hypothetical worst-case emission scenario.

2 Key Personnel

The following identifies key personnel who will be involved with the odour source testing program:

Organization	Contact	Contact Details
Durham York Renewable Energy, L.P.	Matt Neild, Facility Manager	Tel: (905) 404-4030 Fax (905) 404-6745 Email: htitus@covanta.com
	Amanda Huxter, Environmental Specialist	Tel: (905) 404-4041 Fax: (905) 404-6745 Email: ahuxter@covanta.com
Durham York Energy Centre	Leon Brasowski, Project Coordinator	Tel: (862) 345-5306 Fax: (862) 345-5210 Email: lbrasowski@covanta.com
ZORIX Environmental	Michael Rix, Odour Assessment Specialist	Tel: (905) 829-3939 Fax: (905) 829-3935 Email: mrix@zorix.ca
	Tom Vallarino, Senior Technologist	Email: tvallarino@zorix.ca

3 Facility Description

The Facility is operated by Covanta Durham York Renewable Energy Limited Partnership (DYRE) under contract from the Regions of Durham and York. The Facility accepts waste from the Regions of Durham and York. The sources of waste are post-diversion residual waste collected by the Regions' municipal curbside collection programs, municipal public drop-off centers and transfer stations or from Regional operations where the Regions' have waste management procedures in place.

The maximum waste processing rate for the facility established by the ECA is 140,000 tonnes/year of waste. The Facility is permitted to operate on a continuous basis; 24 hours/day, seven (7) days/week, 365 days/year. Waste may be delivered six (6) days per week between 7:00 am to 7:00 pm. The proposed receiving schedule may vary within these limits, depending on demand and Facility needs.

Waste will only be accepted from approved haulers that have a valid waste licence as per Section 16(2)(a) of O.Reg. 347. All incoming waste vehicles must proceed to a weigh scale to allow the vehicle weight, waste type and source to be determined and recorded by the scale operator. A maximum of 7,350 cubic metres of waste storage will be provided in the storage pit with waste stored above and below the tipping floor level.

The Facility Tipping Building is designed to draw all combustion air from above the storage pit. Induced air flow through the building helps to prevent the escape of dust and odour from the Facility. Combustion air is admitted to the tipping area from outside the building either through the entrance/exit doors when opened, or manually operable louvers in the tipping building walls.

The Facility consists of two (2) thermal treatment trains, each equipped with independently operated boilers/furnaces and air pollution control equipment. Table 1 presents general information about the Facility relevant to this Plan.

Table 1 - Facility Description

Facility:	Durham-York Energy Centre
Location:	1835 Energy Drive, Courtice, Ontario, L1E 2R2 Clarington Energy Business Park Clarington, Ontario
Main activities / equipment used:	Thermal Treatment of Solid Waste
Production:	140,000 tonnes/year (MCR) 218 tonnes/day per unit @ 13 MJ/kg.
Predominant wind direction:	Northwest

4 Odour Source Test Program

Samples were collected from one location in the facility, the charging floor in the tipping building, on two consecutive days, October 8 and 9, 2015.

Table 2 below provides a test matrix for Odour Source Testing of the facility.

Table 2 - Test Matrix

Plant Operation	Sample Location	Parameter	No. of Samples	Sample Method	Analytical Method
1 st day	Charging Floor	Odour	3	OSTC Method ON-6	EN-13725
2 nd day	Charging Floor	Odour	3	OSTC Method ON-6	EN-13725

5 METHODOLOGY

Sampling was conducted in accordance with the methodologies outlined in the Ontario Source Testing Code (OSTC) dated June 2010, PIBs#1310e03 and described in the Pre-Test Plan as well as communications with the Ontario Ministry of Environment. These methodologies are described in more detail in the following sections.

5.1 Odour Sampling

The odour sampling procedure is designed to provide a representative sample of the air at the odour source, without loss of the chemical constituents of that may contribute to the odour. The time required to collect samples needs to be brief (approximately 10 minutes per sample) and results therefore provide a “snap-shot” of emissions at a given time.

5.1.1 Sample Collection Methodology

OSTC Method ON-6 requires selection of sampling methods based on the moisture content and temperature of the source, and the ambient temperatures that the sample will experience before it is analysed. A dilution sampling methodology is required if moisture content of the air stream is high. This approach is used to prevent the possibility of condensation of water vapour in the gas sample bag. Condensed water in the sample bag can absorb odorant compounds and negatively bias results.

Since the sampling location was at ambient temperature and humidity, a dilution sampling methodology was not required for the sampling at the charging floor. Samples were therefore collected using an evacuated lung sampling procedure as described in Section 6.0 of Method ON-6. The apparatus, shown in Figure 1, consisted of a length of Teflon tubing, connected to a sample bag within a rigid, air-tight case. A pump is used to evacuate the case, which then causes the sample bag to be filled through the Teflon tubing.

Tedlar gas sample bags (40 litre capacity) were used as sample containers. All bags were baked out before use and checked to ensure there was no background odour.

Each sample bag was purged once with sample and then evacuated in order to precondition the bag with the sample gas. The sample was then collected over a period of approximately 10 minutes.

Three samples were collected at each sampling location on each test day. One field blank was collected on the second day. The field blank was a sample collected at the same location using the same apparatus as described above, but with an activated carbon filter on the end of the Teflon sampling tube.

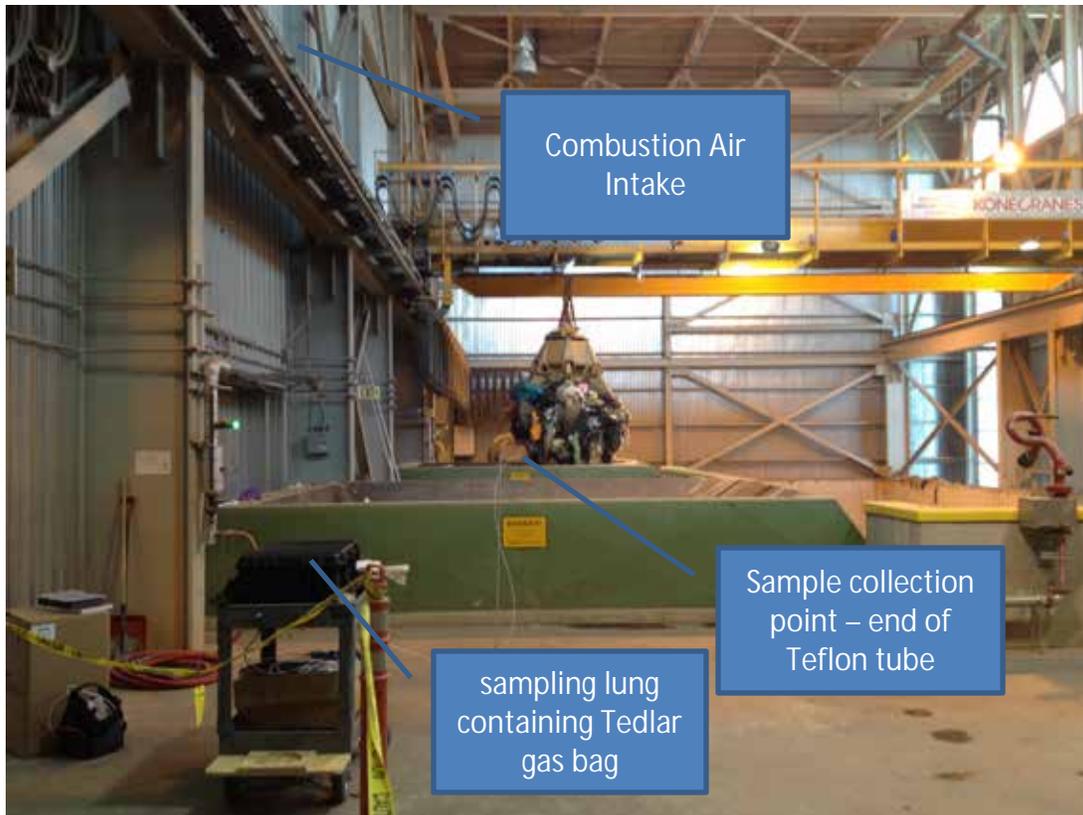


Figure 1 - Sampling Equipment and Location on Charging Deck

Sampling conditions were recorded on a field data sheet. Sample bags were identified by a numeric code. Samples were stored in opaque containers, and were transported the same day to the olfactometry laboratory.

5.1.2 Odour Evaluation (Olfactometry) Methodology

The primary purpose of the odour measurement process is to determine the odour detection threshold for each sample, expressed in odour units (OU) or odour units per cubic metre (OU/m³). Odour units may be considered a measure of the “concentration” of the odour in a sample. In general the olfactometry methodology followed the European Standard EN 13725:2003 – *Air Quality – Determination of Odour Concentration by Dynamic Olfactometry*.

The emission samples were evaluated by an eight person panel within 24 hours of sampling, on October 9, 2015. The odour evaluation process involved obtaining responses from eight pre-screened, qualified and independent panelists to the sample presented to them at various dilutions. The apparatus used to dilute the samples and present them to the panelists is

referred to as a dynamic dilution olfactometer. The evaluations all took place in ZORIX's odour evaluation laboratory, which is enclosed in a specialized room, designed to provide odour-free environment for accurate and reliable evaluation. Details of the system are as follows:

Olfactometry Lab – ZORIX's odour laboratory consists of a specially constructed evaluation room with stations for eight panelists. The operator's console and other related equipment are located in a separate area adjacent to the evaluation room. Fittings, furnishings, and materials of construction used in the odour laboratory were chosen to minimize the potential for odour emission (off-gassing) and adsorption.

Ventilation System – The ventilation air supplied to the evaluation room is air conditioned and filtered through a series of activated carbon filters as well as a fine particulate filter to maintain an odourless background environment in the odour laboratory. The room is kept under a positive pressure so that any odours from the surrounding environment cannot enter the room. The supply air to the odour laboratory provides about 50 air changes per hour. The air flow pattern in the room is designed to provide an even air flow from ceiling to floor, to ensure that any odours released into the room during an evaluation session are quickly removed from the breathing zone.

Olfactometer – An olfactometer is a device or system for presenting accurate dilutions of a sample to a panel of people, incorporating a means to record the responses of these "assessors" or "panelists". ZORIX's olfactometer was designed to present odour samples to eight panelists simultaneously. Each panelist is thus responding to the identical sample under the same conditions. The olfactometer flow system is constructed of Teflon® tubing with Teflon® fittings, and glass "sniff ports". The olfactometer/nose interface or "sniff ports" have been custom designed and manufactured to provide a uniform face velocity. The flow rate for each "sniff port" is 20 litres per minute, and the ports have been sized to allow the panelist to easily sniff from the ports without the sample being diluted by ambient air.

Each of the eight evaluation booths has two ports. One of these ports is always a reference port (odourless air only) available for comparison to the odorous sample. The sample port and

reference port are randomly switched, and the panelists are required to identify the port bearing the odorous sample.

A custom software program controls most aspects of the operation of the olfactometer. The olfactometer operator monitors the responses of the panelists, and controls the pace of the evaluation session, to ensure the panelists remain focused and do not become de-sensitized, and to monitor potential problems such as contamination of the olfactometer by high strength odour samples.

The olfactometer supply air is filtered through a series of high capacity activated carbon filtrations. At the beginning of the day the panel operator checks the odour from the system to ensure that it is odourless.

Panelists (Odour Assessors) – Panelists are the “sensors” in an olfactometry system. The maintenance of the pool of screened, trained, and motivated panelists is essential to obtaining reliable odour threshold data. The panelists employed by ZORIX Consultants have been drawn from the community, and have been selected based on a demonstration of a “normal” sense of smell, as shown by their response to test odorants, primarily n-butanol, and a comparison of their responses to the established acceptable range of detection as specified in EN13725.

Olfactometry Protocol - ZORIX's olfactometer was operated in a “non-forced choice” mode, with an ascending presentation sequence (low concentration to high concentration). “Non-forced choice” means that the panelists are not required to identify which port contains the odour if they are unsure, i.e. if they think there is “no difference” between the two ports. An ascending presentation sequence, i.e. from most dilute (weakest) presentation to progressively stronger presentations, minimizes the possibility for “adaptation” or “olfactometry fatigue”, by which exposure to odour causes a reduction in sensitivity. Occasionally during the evaluation of a new sample, the initial dilution chosen as the starting point for a presentation sequence may be too low (concentration too high). In that case, the presentation sequence will be restarted at a higher dilution level, after a sufficient period of time to allow recovery from any possible temporary desensitization.

At each presentation the panelists were given about 20 seconds to evaluate the air from the two ports and make responses. The presentation protocol ensures that there is a rest period between presentations of at least 1 minute. The odorant concentration was increased by a factor of 2 or less at each presentation step.

Olfactometry Data Recording and Processing – The responses of the odour panelists to each odour presentation were logged by a data acquisition system with other olfactometer data such as dilution factors and flow rates. The responses were subsequently processed to obtain an odour detection threshold based on the geometric mean of the individual detection thresholds.

Odour calculations were based on determination of individual odour detection thresholds for each panelist as described in EN 13725:2003. A sample of n-butanol in nitrogen was also evaluated by the odour panelists on October 9 to determine if the response of the panel is consistent with the n-butanol detection criterion in EN 13725:2003.

5.2 Volumetric Flow Rate Determination

As already discussed, the odour emission rate being determined by this program is not an actual odour emission rate but is a theoretical emission rate assuming a worst-case scenario in which the furnaces are not operating to perform system maintenance. Under normal operating conditions, odours in the tipping building would be destroyed by as the air from the area is drawn into the furnaces and treated at high temperatures. Under the theoretical worst-case scenario, the furnaces would be off, but fans would continue to run and untreated emissions would be conveyed to the stack for dispersion.

The DYEC has developed and successfully implemented a Fugitive Dust and Odour Control Standard Operating Procedure (SOP) to minimize the potential of the DYEC to generate offsite odours. Included in this SOP is a procedure to mist the MSW storage area with a micro-nutrient product during periods of boiler outage. During the outage, combustion fan load is reduced to approximately 15-30% of design load, dependent on the type of maintenance work being conducted in the boiler. A variable frequency drive allows these fans to operate at a wide range of set points.

The micronutrients significantly reduce odors by biologically promoting the consumption of odour generating organics. Implementation of the Odour SOP in combination with the reduction of air flow to the stack significantly reduces actual untreated odours emissions released from the stack. To conservatively estimate the rate of untreated odour emission release from the stack a maximum outage air flow of 11 cubic meters per second (approximately 30% of the design flow of 38.7 cubic meters per second) was utilized.

6 RESULTS

Emissions from the DYEC tipping building were sampled on October 8 and October 9, 2015. All samples were evaluated in odour panel sessions on the morning of October 9.

Odour concentrations as determined by the odour panel for all samples are shown in Table 3. The “blank” or “zero” sample collected on October 9 had no measureable odour (< 11 OU/m³). The certified standard n-butanol standard (49.9 ppm in nitrogen), was determined to have an odour concentration of 939 OU/m³, corresponding to a detection threshold for n-butanol of 0.053 ppm, which is in the acceptable range of 0.020 to 0.080 ppm.

The total odour emission rate from the stack was calculated using the formula shown below.

$$\begin{aligned} \text{Geom. Mean Odour Conc. (OU/m}^3\text{)} \times \text{Max. Outage Flow Rate (wet, ref. basis) (m}^3\text{/s)} \\ = \text{Odour Emission Rate (OU/s)} \end{aligned}$$

Table 4 summarizes the odour emission rates calculated on this basis for each of the two test days. Based on these results the worst-case result was 10,000 OU/s, based on the results on the first day. This odour emission rate may be used to calculate off-property odour concentrations at nearby sensitive receptors as described in Schedule “B” of the ECA for the facility. It should be emphasized again that the modelling results would show the predicted impacts for a hypothetical worst-case scenario of untreated emissions being released when furnaces are not in operation, and would not represent the impact of the facility under normal operating conditions.

Table 3 - Odour Concentration Results

Date	Test ID	Test Location	Test Condition	Sample Time	Bag No.	Sample ID	Pre-Dilution	raw OTV (odour units)	net OTV (odour units)	Geometric Mean (odour units)
8-Oct-15	1	Mezzanine of Charging Floor	Maximum Capacity on Charging Floor (1st Day)	10:38 AM	261A	3418	1	861	861	912
	2			10:48 AM	255A	3419	1	939	939	
	3			10:58 AM	260A	3420	1	939	939	
9-Oct-15	4	Mezzanine of Charging Floor	Maximum Capacity on Charging Floor (2nd Day)	8:19 AM	268	3425	1	664	664	861
	5			8:28 AM	262A	3426	1	1117	1,117	
	6			8:37 AM	276	2727	1	861	861	
	7	A/C Filtered Air (field blank)	8:52 AM	266A	3428	1	<11	<11	<11	
9-Oct-15	8	Laboratory	n-butanol (49.9ppm)	11:08 AM	143A	3429	1	939	939	939

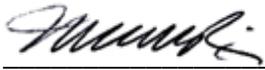
Table 4 - Odour Emission Rate

Date	Operating Condition	Odour Concentration (OU/m ³)	Geometric Mean (OU/m ³)	Maximum Outage Flow Rate (30% of Design)* (m ³ /s)	Total Odour Emission Rate (OU/s)
8-Oct-15	Maximum Capacity on Charging Floor (1st Day)	861	912	11	10,000
		939			
		939			
9-Oct-15	Maximum Capacity on Charging Floor (2nd Day)	664	861	11	9,500
		1,117			
		861			
Highest odour emission rate of the two days/conditions:					10,000

* based on design flow of 38.7m³/s from Golder Report No. 10-1151-0343 EMRP (DYEC Air Emission Monitoring Plan),

7 CLOSURE

Should there be any questions regarding the contents of this report, please contact the undersigned.



Michael R. E. Rix, B.Sc., QEP
Project Manager
Specialist – Odour Assessments

Appendix A

Environmental Compliance Approval (ECA) No. 7306-8FDKNX

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*

MW/

c: District Manager, MOE York-Durham
Leon Brasowski, Covanta Energy Corporation



AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7306-8FDKNX

Notice No. 1

Issue Date: August 12, 2014

The Regional Municipality of Durham
605 Rossland Rd E 5th Floor
Whitby, Ontario
L1N 6A3

and

The Regional Municipality of York
17250 Yonge Street
Newmarket, Ontario
L3Y 6Z1

and

Covanta Durham York Renewable Energy Limited Partnership
445 South Street
Morristown, New Jersey
United States of America
07960

Site Location: Durham York Energy Centre
72 Osbourne Rd Lot 27, Concession Broken Front, Part 1
Clarington Municipality, Regional Municipality of Durham
L1E 2R2

You are hereby notified that I have amended Approval No. 7306-8FDKNX issued on June 28, 2011 for Waste Disposal Site (Incineration), complete with an Energy from Waste Facility and associated equipment,, as follows:

1. The following definition has been added:

“Contingency and Emergency Response Plan” also means the document entitled “Spill Contingency and Emergency Response Plan”;

2. The following Conditions are amended to read as follows:

2.(5)(b)(iii) The Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.

4.(5)(e) A maximum of 630 tonnes of the Residual Waste, limited to the bottom ash shall be stored in two (2) dedicated bunkers, located within the confines of the Residue Building, described in the Supporting Documentation. The storage duration is as follows:

(i) The storage duration is limited to a maximum of seven (7) days.

(ii) Should longer storage duration be required to accommodate the duration of the required compliance testing, a minimum of forty eight (48) hours before the storage extension is commenced, the Owner shall notify the District Manager of the required extension. The

notification shall include the duration of the extension and the reasons.

3. The following Conditions are added:

7.(7) (e) The Owner shall carry out the required bottom and fly ash compliance testing in accordance with the document entitled "Ash Sampling and Testing Protocol", listed in the attached Schedule.

11.8 Containment evaluations performed under the Spill Contingency and Emergency Response Plan shall be conducted by the Owner in accordance to procedures agreed by the District Manager pursuant to Conditions 8.(7)(i),(ii) and (iii).

4. The following documents have been added to Schedule "A":

4. October 31, 2013 letter from Mirka Januszkiewicz, the Regional Municipality of Durham to Ian Parrott, Ministry of the Environment and Climate Change, requesting approval of the Ash Sampling and Testing Protocol and the document entitled "Durham York Energy Centre, Ash Sampling and Testing Protocol", prepared by 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;

CONTENT COPY OF ORIGINAL

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



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 Nijadlik / 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 than four (4) days.
 - (iii) Should there be public complaints about the extended incoming Waste storage, the Owner, in consultation with the District Manager, shall determine the cause of the complaints, propose appropriate abatement measures, including but not be limited to the removal and off-site disposal of the Waste contained in the tipping pit, and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.
- (9) In the event that Waste cannot be processed at the Site and the Site is at its approved storage capacity, the Owner shall cease accepting additional Waste. Receipt of additional Waste may be resumed once such receipt complies with the waste storage limitations approved in this Certificate.

3. **SIGNS and SITE SECURITY**

- (1) Prior to receipt of Waste at the Site, the Owner shall ensure that a sign is posted at the entrance to the Site. The sign shall be visible from the main road leading to the Site. The following information shall be included on the sign:
 - (a) name of the Owner;
 - (b) this Certificate number;
 - (c) hours during which the Site is open;
 - (d) waste types that are approved to be accepted at the Site;
 - (e) Owner's telephone number to which complaints may be directed;
 - (f) Owner's twenty-four hour emergency telephone number (if different from above);
 - (g) a warning against unauthorized access; and
 - (h) a warning against dumping at the Site.
- (2) The Owner shall ensure that appropriate and visible signs are posted at the Site clearly identifying the wastes and the process reagents and stating warnings about the nature and any possible hazards of the wastes and the reagents.
- (3) The Owner shall ensure that appropriate and visible signs are posted at the Site to prohibit smoking, open flames or sources of ignition from being allowed near any flammable materials storage areas.
- (4) The Owner shall install and maintain appropriate and visible signs at the Site to direct vehicles to the Waste receiving and Residual Waste removal areas and to the reagent unloading areas.
- (5) The Owner shall post appropriate and visible signs along the traffic route providing clear directions to the Site.

- (6) The Owner shall ensure that the Site is fenced in and that all entrances are secured by lockable gates to restrict access only to authorized personnel when the Site is not open.
- (7) The Owner shall ensure that access to the Site, with the exception of the area designated as a Public Information Centre, is regulated and that no unauthorized persons are permitted at the Site without the Trained Personnel escort.
- (8) The Owner shall ensure that the Site is operated in a safe and secure manner, and that Waste, the Residual Waste and the Unacceptable Waste are properly handled, packaged or contained and stored so as not to pose any threat to the general public and the Site personnel.

4. **SITE OPERATIONS**

(1) **Operating hours:**

- (a) The Site is approved to operate twenty-four (24) hours per day three hundred and sixty-five (365) days per year.
- (b) Notwithstanding Condition 4.(1)(a), Waste shall only be received at the Site and the Residual Waste shall only be transferred from the Site between 7:00 a.m. and 7:00 p.m. Monday to Saturday. No receipt of the Waste or transfer of the Residual Waste shall be undertaken on statutory holidays.
- (c) Emergency Receipt of Waste:
 - (i) The Owner may receive Waste at the Site outside of the operating hours specified in Condition 4.(1)(b), above, on an emergency basis only.
 - (ii) Within twenty four (24) hours from the receipt of Waste outside of the approved receiving hours, the Owner shall notify, in writing, the District Manager that Waste was received outside of the approved receiving hours.
 - (iii) Should there be complaints about Waste shipments outside of the approved hours, the Owner, in consultation with the District Manager, shall determine the cause of the complaint, propose appropriate abatement measures and implement the said measures upon receiving written concurrence from the District Manager within the time frame acceptable to the District Manager.

(2) **Incoming Waste receipt:**

- (a) At the weigh scale, the Trained Personnel shall:
 - (i) inspect the required documentation prior to acceptance of the incoming Waste at the Site; and

- (ii) inspect the incoming Waste with radiation detection equipment.
- (b) In the Tipping Building, the Trained Personnel shall:
 - (i) visually inspect all incoming Waste being unloaded into the Waste pit; and
 - (ii) once per hour, or as accepted by the District Manager, unload the incoming Waste on the tipping floor for a manual visual inspection and sorting of the incoming Waste.
- (c) The Owner shall only accept the incoming Waste that is delivered in vehicles that have been approved by the Ministry.
- (d) The Owner shall ensure that all unloading of incoming Waste at the Site takes place entirely within the confines of the Tipping Building.

(3) Unacceptable Waste handling:

- (a) In the event that waste that is not approved under this Certificate is inadvertently accepted at the Site, the Owner shall ensure that the Unacceptable Waste:
 - (i) is stored in a way that ensures that no adverse effects result from its storage;
 - (ii) is segregated from all other waste;
 - (iii) is handled and removed from the Site in accordance with the *O. Reg. 347* and the *EPA*; and
 - (iv) is removed from the Site within (4) days of its receipt or as acceptable to the District Manager.
- (b) The Owner shall ensure that all loading of the Unacceptable Waste into transport vehicles is carried out entirely within the confines of the Tipping Building.

(4) Waste Sorting:

- (a) The Trained Personnel shall remove the Bulky Unprocessable Items and Unacceptable Waste from the incoming Waste prior to charging of the Waste to the Boilers.
- (b) All sorting of the incoming Waste at the Site shall be undertaken indoors, within the confines of the Tipping Building and/or the Refuse Building.

(5) Residual Waste Handling and Disposal:

- (a) (i) Except for transportation of the Residual Waste between the Grizzly Building and the Residue Building, the Owner shall ensure that all

handling of the bottom ash and its segregated constituents, and of the fly ash, is undertaken within the confines of enclosed conveyors and enclosed buildings.

- (ii) The Owner shall ensure that all loading of the Residual Waste into vehicles for its transport from the Site is carried out entirely within the confines of the Residue Building.
- (b) (i) Different constituents of the Residual Waste shall not be comingled prior to the required compliance testing, unless all Residual Waste is to be disposed of at a Waste Disposal Site that is approved to accept hazardous waste.
- (ii) The Owner shall ensure that the equipment used in handling of the hazardous wastes or that came in direct contact with the hazardous wastes is not used to handle other wastes.
- (iii) On an emergency basis, the Owner may use equipment used to handle the hazardous wastes to handle other wastes provided that prior to such use the equipment has been thoroughly cleaned first.
- (c) (i) Only haulers approved by the Ministry shall be used to transport the Residual Waste from the Site.
- (ii) The Residual Waste shall be transported from the Site in appropriately covered vehicles that will not allow fugitive dust emissions to be emitted into the natural environment during the said transport.
- d) Residual Waste generated at the Site shall be disposed of shall only be disposed of at an approved waste disposal site in accordance with the requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.
- (e) Should the Residual Waste limited to the conditioned fly ash and/or the bottom ash be deemed a hazardous waste, the ash shall be disposed of at an approved waste disposal site in accordance with the Land Disposal Restrictions requirements in the *EPA* and the *O. Reg. 347* or at a location with the appropriate jurisdictional approval or a license, if required.

(6) **Wastewater Management**

- (a) The Owner shall ensure that all wastewater generated at the Site is contained within enclosed buildings, tanks, pipes and conveyors at the Site and the approved outdoor Wastewater Settling Basin.
- (b) The Owner shall ensure that all wastewater generated at the Site is collected in leak-proof and sufficiently designed wastewater storage facilities:

- (i) Wastewater Holding Tank, to collect the continuous reject water flow from the Boiler make-up water treatment system and the Boiler blowdown, having an approximate holding capacity of 100 cubic metres, located within the confines of the Boiler Building and venting to the atmosphere; and
 - (ii) Wastewater Settling Basin, to collect the wastewater from the floor drains in the buildings at the Site, except for the Tipping Building and the Residue Building, the ash discharger overflow and drain water, the Boiler and turbine-generator washdown water and the APC Equipment area washdown water, having an approximate holding capacity of 38 cubic metres, located outdoors, open to the atmosphere and equipped with a filter basket and an oil skimmer board.
- (c) The wastewater pumps shall be located in the area designed in accordance with the Supporting Documentation to ensure that any potential leaks or drips are contained and directed to the Wastewater Settling Basin.
- (d) (i) The wastewater level in the Wastewater Holding Tank shall be monitored and controlled to ensure that the wastewater inflow to the Tank does not cause the Tank overflow.
- (ii) The wastewater level in the Wastewater Settling Basin shall be monitored and controlled to ensure that the atmospheric precipitation does not cause an overflow from the Basin.
- (e) The Owner shall regularly empty, and clean as necessary, all sumps, wastewater storage/holding areas and equipment that are used to contain, collect and handling the wastewater generated at the Site.
- (f) Should the Owner find it necessary to remove the wastewater from the Site, the wastewater shall only be disposed of at a Ministry-approved site in accordance with the site's certificate of approval or be discharged to the sanitary sewer in accordance with the agreement with the municipality accepting the discharge.
- (g) The floors of the Tipping Building and the Residue Building shall be sufficiently sloped to facilitate the flow of the wastewater generated from the floor cleaning activities and from the truck washdown towards the designated wastewater collection area.
- (h) The Owner shall ensure that the Wastewater Settling Basin is regularly cleaned out and that it does not become a source of odour emissions.
- (7) All activities approved under this Certificate shall only be carried out by appropriately Trained Personnel.

5. EQUIPMENT and SITE INSPECTIONS and MAINTENANCE

Operation and Maintenance

- (1) Prior to the receipt of the Waste at the Site, the Owner shall prepare and update as necessary, an Operation and Maintenance Manual for all the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility. The Manual shall be prepared in accordance with the written manufacturer's and/or supplier's specifications and good engineering practice.

As a minimum, the Operation and Maintenance Manual shall specify:

- (a) operation procedures of the Equipment, the APC Equipment, the CEM Systems, the Works, and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility, in accordance with manufacturers' recommendations and good engineering practices to achieve compliance with this Certificate, the *EPA*, the *OWRA* and their Regulations;
 - (b) calibration procedures for the CEM Systems as required by this Certificate;
 - (c) procedures for start-up and shutdown, including Controlled Shutdown and Emergency Shutdown;
 - (d) quality assurance procedures for the operation and calibration of the CEM Systems in accordance with *40 CFR 60*, Appendix F or *Report EPS I/PG/7*, as appropriate;
 - (e) Waste receiving and screening procedures;
 - (f) Waste, Rejected Waste and Residual Waste handling procedures;
 - (g) testing and monitoring procedures as required by this Certificate;
 - (h) maintenance and preventative maintenance procedures as required by this Certificate;
 - (i) Facility inspection, including frequency of inspections, procedures;
 - (j) procedure for handling complaints as required by this Certificate.
 - (k) contingency measures to resolve upset conditions and/or minimize the environmental impacts from the Facility;
 - (l) emergency response procedures, including procedures for dealing with power failure, fire, explosion, spills and any other potential emergencies;
 - (m) procedures for record keeping activities as required by this Certificate;
 - (n) description of the responsibilities of the Site personnel and the personnel training protocols; and
 - (o) a list of personnel positions responsible for operation and maintenance, including supervisory personnel and personnel responsible for handling of the emergency situations, recording and reporting pursuant to the requirements of this Certificate, along with the training and experience required for the positions and a description of the responsibilities.
- (2) A copy of this Operations and Maintenance Manual shall be kept at the Site, be accessible to the Site personnel at all times and be updated, as required. The Operations and Maintenance Manual shall be available for inspection by a Provincial Officer upon request.

- (3) The Owner shall implement the operation, maintenance, preventative maintenance and calibration procedures set out in the Operations and Maintenance Manual required by this Certificate.

Critical Spare Parts

- (4)
 - (a) The Owner shall prepare a list of critical spare parts, update this list annually or more frequently, if necessary, to ensure that this list is maintained up-to-date and shall be available for inspection by a Provincial Officer upon request.
 - (b) The Owner shall ensure that the critical spare parts are available at the Site at all times or are immediately available from an off-Site supplier.

Inspections

- (5) Prior to receipt of the Waste at the Site, the Owner shall prepare a comprehensive written inspection program which includes inspections of all aspects of the Site's operations including, but not limited to the following:
 - (a) buildings and the indoor waste storage facilities and presence of dust and odour and leaks in or near any openings, such as doorways, window, vent, louver or any other opening;
 - (b) outdoor Residual Waste transport equipment, and the presence of dust and leaks at or near transfer points or the equipment seams;
 - (c) the Equipment, the APC Equipment, the CEM Systems, the Works and any other equipment associated with managing of the Waste and with the control of environmental impacts from the Facility;
 - (d) spill containment areas, loading areas and the conditions around the Wastewater Settling Basin;
 - (e) security fencing, gates, barriers and signs;
 - (f) off-site nuisance impacts such as odour, dust, litter, etc.
 - (g) presence of stormwater pooling at the Site; and
 - (h) condition of the on-Site roads for presence of leaks and drips from the waste delivery trucks or excessive dust emissions.
- (6) The inspections, except for the inspection of the Works, are to be undertaken daily by the Trained Personnel in accordance with the inspection program to ensure that the Facility is maintained in good working order at all times and that no off-Site impacts are occurring. Any deficiencies detected during these regular inspections must be promptly corrected.

Inspections and Maintenance of the Works

- (7) The Owner shall inspect the Works at least once a year and, if necessary, clean and maintain the Works to prevent the excessive build-up of sediments and/or vegetation.

6. PERFORMANCE REQUIREMENTS

- (1) The Owner shall, ensure that the Facility/Equipment is designed and operated in such a manner as to ensure that the following Performance Requirements are met:
 - (a) the maximum 10-minute average concentration of odour at the most impacted Sensitive Receptor, resulting from the operation of the Facility/Equipment, calculated in accordance with the procedures outlined in the attached Schedule "B", shall not exceed 1 odour unit;
 - (b) the noise emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-205*;
 - (c) the vibration emissions from the Facility shall comply with the limits set out in Ministry *Publication NPC-207*.

- (2) The Owner shall ensure that the Boilers and the associated APC Equipment and the CEM Systems are designed and operated in such a manner as to ensure that the following Performance Requirements are met:
 - (a)
 - (i) The temperature in the combustion zone of each Boiler shall reach a minimum of 1000 degrees Celsius (°C) for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed.
 - (ii) Compliance with the minimum temperature requirement shall be demonstrated by direct measurement at the location where the combustion gases have achieved the residence time of one second at a minimum temperature of 1000°C (the Target Location) or by correlation of the required temperature of 1000°C for one second to the temperature measured downstream of the Target Location as proven by a method acceptable to the Director.
 - (b) The concentration of residual oxygen in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be less than 6 percent by volume on a dry basis.
 - (c)
 - (i) The operational target for the concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler is 40 milligrams per dry cubic metre, as a 4-hour rolling average, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, as measured and recorded by the CEM System, for the period from and including initial commissioning of the facility to twelve months following the completion of the first Source Testing program.

- (ii) The 4-hour average concentration of carbon monoxide in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler, as measured and recorded by the CEM System, shall not be more than 40 milligrams per dry cubic metre, normalized to 11 percent oxygen at a reference temperature of 25°C and a reference pressure of 101.3 kilopascals, after the first twelve months following the completion of the first Source Testing program.
 - (d) The emissions from the Boilers after those emissions have been controlled by the associated APC Equipment for discharge into the atmosphere via the Stack shall comply with the emission concentration limits listed in the attached Schedule "C", as measured by a CEM System or by Source Testing as applicable.
 - (e) The Boilers shall include combustion air control systems, which are capable of automatically adjusting the distribution and the quantity of combustion air, in such a manner that changes in the Waste Processing Rate and/or Waste composition or irregularities in the loading and/or combustion shall not adversely affect the performance of the Boilers.
 - (f) The Boilers shall provide and maintain a high degree of gas turbulence and mixing in the combustion chamber.
 - (g) The Boilers shall achieve the temperature, oxygen availability and turbulence requirements over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heat losses.
 - (h) The inlet temperature into each baghouse of the APC Equipment of the Boilers shall not be less than 120°C and not more than 185°C.
- (3) The Owner shall install and maintain visual and audible alarm systems to alert the Facility/Equipment operators of any potential deviation from the above Performance Requirements for parameters that are continuously monitored by applicable CEM Systems and shall forthwith take all reasonable actions to bring the Equipment/Facility into compliance with all Performance Conditions.
- (4) In the event that the CEM Systems indicate that emissions from the Boilers and the Stack exceed any Performance Requirements in the attached Schedule "C" for a continuous three (3) hour period, the Owner shall forthwith cut-off all Waste feed into the affected Boiler and initiate an Emergency Shutdown, while maintaining a temperature of 1000°C, as practicable, in the combustion zone of the Boiler.

Residual Waste Compliance Criteria

- (5) (a) The Residual Waste generated at the Site and destined for a non-hazardous waste disposal site in Ontario shall not meet any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347*.

(b) The Residual Waste that meets any of the criteria from the definition of "hazardous waste" set out in the *O. Reg. 347* shall be handled and disposed of in accordance with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.

(6) The Residual Waste, limited to the bottom ash, destined for a non-hazardous waste disposal site shall meet the definition of "incinerator ash" set out in the *O. Reg. 347*.

7. **TESTING, MONITORING and AUDITING**

Source Testing

(1) The Owner shall perform annual Source Testing in accordance with the procedures and schedule outlined in the attached Schedule "E", to determine the rate of emission of the Test Contaminants from the Stack. The first Source Testing program shall be conducted not later than six (6) months after the Commencement Date of Operation of the Facility/Equipment and subsequent Source Testing program shall be conducted once (1) every calendar year thereafter.

Continuous Monitoring

- (2) The Owner shall select, test and install appropriate CEM Systems and continuous recording devices in accordance with the requirements outlined in the attached Schedule "F" to conduct and maintain a program to continuously monitor, as a minimum, the following parameters prior to commencement of operation of the Boilers:
- (a) the temperature at one (1) second downstream of the combustion zone of each Boiler where most of the combustion has been completed and the combustion temperature is fully developed;
 - (b) the inlet temperature of the gases into each baghouse of the APC Equipment of each Boiler;
 - (c) the concentration of carbon monoxide, oxygen and organic matter (as methane) in the Undiluted Gases leaving the combustion zone via the economizer outlet of each Boiler;
 - (d) the opacity and moisture content of the flue gas and the concentration of oxygen, nitrogen oxides, sulphur dioxide, hydrogen chloride, hydrogen fluoride and ammonia in the Undiluted Gases leaving the baghouse of the APC Equipment of each Boiler.

Long-Term Sampling for Dioxins and Furans

- (3) (a) The Owner shall develop, install, maintain and update as necessary a long-term sampling system, with a minimum monthly sampling frequency, to measure the concentration of Dioxins and Furans in the Undiluted Gases leaving the APC Equipment associated with each Boiler. The performance of

this sampling system will be evaluated during the annual Source Testing programs in accordance with the principles outlined by 40 CFR 60, Appendix B, Specification 4.

- (b) The Owner shall evaluate the performance of the long-term sampling system in determining Dioxins and Furans emission trends and/or fluctuations as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers.

Ambient Air Monitoring

- (4) (a) The Regions shall develop and implement the Ambient Air Monitoring and Reporting Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable by the Regional Director.
- (b) The Regions shall report the results of the Ambient Air Monitoring program to the Regional Director in accordance with the Ambient Air Monitoring and Reporting Plan and in accordance with the requirements of Condition 14.
- (c) The Regions shall post the Ambient Air Monitoring and Reporting Plan and the results of the Ambient Air Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

Noise Monitoring - Acoustic Audit

- (5) The Owner:
 - (a) shall carry out Acoustic Audit measurements on the actual noise emissions due to the operation of the Facility. The Acoustic Audit measurements shall be carried out in accordance with the procedures in *Publication NPC-103* and in accordance to the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director;
 - (b) shall submit an Acoustic Audit Report on the results of the Acoustic Audit, prepared by an Independent Acoustical Consultant, in accordance with the requirements of *Publication NPC-233* and the Noise Monitoring and Reporting Plan prepared in accordance with the requirements set out in the EA Approval and as approved by the Director, to the District Manager and the Director, not later than three (3) months after the commencement of operation of the Facility.
- (6) The Director:
 - (a) may not accept the results of the Acoustic Audit if the requirements of *Publication NPC-233* or the approved Noise Monitoring and Reporting Plan were not followed;

- (b) may require the Owner to repeat the Acoustic Audit if the results of the Acoustic Audit are found unacceptable to the Director.

Residual Waste Testing

- (7)
 - (a) A minimum of six (6) months prior to the Commencement Date of Operation, the Owner shall submit to the Director for approval, a Testing Protocol for testing of the bottom ash for compliance with the criteria set out in the "incinerator ash" definition from the *O. Reg. 347* and for testing of the Residual Waste for compliance with the criteria set out in this Certificate.
 - (b) As a minimum, the Testing Protocol shall comply with the Ministry's regulatory requirements for sampling and testing of waste, including the requirements set out in the Ministry's document entitled "Principles of Sampling and Analysis of Waste for TCLP under Ontario Regulation 347", dated February 2002, as amended.
 - (c) The Testing Protocol shall include the rationale for the proposed methods and the following:
 - (i) a sampling protocol, including the proposed number of samples to be taken and their locations, to ensure that representative sample(s) are being tested for compliance with this Certificate;
 - (ii) sample(s) handling and preserving procedures;
 - (iii) analytical protocol for the applicable contaminants to ensure that appropriate analytical method(s) are being used for compliance testing required by this Certificate; and
 - (iv) a testing protocol for the bottom ash during the Site commissioning period.
 - (d) The Owner shall implement the Testing Protocol on the Commencement Date of Operation.
- (8) For handling of the bottom ash as a solid non-hazardous waste, the Owner shall follow the following schedule for compliance testing:
 - (a) for the Site commissioning period, the bottom ash shall be tested in accordance with the Testing Protocol approved by the Director;
 - (b) for the period following the Site commissioning period, the bottom ash shall be tested for the content of the combustible materials on an annual basis, until the compliance testing results indicate that the bottom ash meets the "incinerator ash" definition from the *O. Reg. 347* for three (3) consecutive years, following which a triennial compliance testing event may be carried out;

- (c) should any annual or triennial compliance testing event indicate that the bottom ash does not meet the “incinerator ash” definition, prior to each of the next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the “incinerator ash” definition from the *O. Reg. 347* and that the bottom ash does not exceed the Leachate Toxicity Criteria, the compliance testing schedule set out in Condition 7.(8)(b) may be resumed; and
 - (d) should the results of any compliance testing of the bottom ash indicate that the concentrations of the leachate toxic contaminants in the bottom ash equal to or exceed the Leachate Toxicity Criteria, the bottom ash shall be handled as a hazardous waste. Once three (3) consecutive tests re - establish that the bottom ash does not exceed the Leachate Toxicity Criteria, the bottom ash compliance testing schedule set out in Condition 7.(8)(b) may be resumed.
- (9) (a) For handling of the bottom ash as a hazardous waste and for handling of the fly ash, prior to final disposal at a hazardous waste landfill site in Ontario, the Owner shall undertake any sampling and testing that would be required to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347*.
- (b) The Owner shall follow the following schedule for compliance testing:
- (i) prior to each of the first three (3) shipments of the ash from the Site, the ash shall be tested so that for the compliance with the LDR requirements can be demonstrated;
 - (ii) following the three (3) initial compliance testing events, the ash shall be tested on an annual basis, until the compliance testing results indicate that the ash meets the LDR requirements during the three (3) consecutive years, following which a triennial compliance testing may be carried out; and
 - (iii) should any annual or triennial compliance testing event indicate that the ash does not meet the LDR requirements, prior to next three (3) shipments from the Site, compliance testing of each of the three (3) shipments shall be carried out. Once three (3) consecutive tests re - establish compliance with the LDR requirements, the compliance testing schedule set out in Condition 7.(9)(b)(ii) may be resumed.

Soil Testing:

- (10) (a) Within one hundred and twenty (120) days from the date of this Certificate, the Regions shall undertake the soil testing in accordance with the Soil Testing Plan required by this Certificate.
- (b) The soil testing shall be repeated every three (3) years or as agreed upon in writing by the Regional Director.

Disposal of Residual Waste

- (11) The Owners shall ensure that no portion of the Residual Waste undergoing compliance testing is transferred from the Site until the results of the compliance testing required by this Certificate demonstrate compliance with the relevant Ministry's requirements.
- (12) Bottom ash that is not a hazardous waste, as defined in the *O. Reg. 347*, may be disposed of at an approved non-hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.
- (13) Residual Waste shall be treated to comply with the LDR requirements set out in the *EPA* and the *O. Reg. 347* prior to disposal of at an approved hazardous waste landfill site or at a site approved to accept such waste by an appropriate government agency of equivalent jurisdiction.

Groundwater and Surface Water Monitoring

- (14) (a) The Regions shall develop and implement the Groundwater and Surface Water Monitoring Plan, in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.
- (b) The Regions shall report the results of the Groundwater and Surface Water Monitoring program to the Regional Director and to the Director in accordance with the schedule set out in the EA Approval and in accordance with the requirements of Condition 14.
- (c) The Regions shall post the Groundwater and Surface Water Monitoring Plan and the results of the Groundwater and Surface Water Monitoring program on the Owner's web site for the Facility in accordance with the requirements of the EA Approval and Condition 15.

8. NUISANCE IMPACT CONTROL and HOUSEKEEPING

Odour Management

- (1) (a) The Owner shall maintain a negative air pressure atmosphere in the Tipping Building at all times to contain any potential odours within the confines of the Tipping Building.
- (b) (i) Once per year, or as required by the District Manager, the Owner shall undertake a test to measure the worse case scenario negative air pressure atmosphere throughout the Tipping Building, while the activities approved in this Certificate are carried out in the Tipping Building.
- (ii) Notwithstanding the requirements set out in Condition 8.(1)(b)(i), the Owner shall install sufficient instrumentation to measure the air flow into the Boilers and demonstrate that adequate air flow is maintained

to maintain a negative air pressure atmosphere throughout the Tipping Building.

- (c) In the event that adequate negative air pressure cannot be maintained, the Owner shall implement any necessary additional odour containment and control measures, including, but not necessarily limited to, those in the required Contingency and Emergency Response Plan.
- (2) The Owner shall ensure that the entrance and exit doors into the Tipping Building, the Residue Building and the Grizzly Building are kept closed at all times except to permit the entry or exit of the respective waste transport vehicles and waste handling equipment into and out of these Buildings.
- (3) The Owner shall ensure that, at all times, the air from the Tipping Building, the Residue Building, the Grizzly Building and from the Equipment is exhausted through an appropriate and fully functional APC Equipment approved by this Certificate.
- (4) The Owner shall undertake appropriate housekeeping activities, including regular cleaning of the tipping floor to control potential sources of fugitive odour emissions.
- (5) The Owner shall ensure that no Waste handling equipment or empty storage containers are stored outside, unless they have been washed to prevent fugitive odour emissions.
- (6) The Owner shall regularly clean all equipment and storage areas that are used to handle, process and store waste at the Site, including the surfaces of the outdoor spill containment areas, as required.
- (7)
 - (i) Prior to the receipt of Waste at the Site, the Owner shall provide documentation which outlines the testing carried out by a licensed structural engineer to confirm the effectiveness of the containment in the buildings, conveyors and tanks and silos at the Site.
 - (ii) The testing shall be carried out and repeated as directed by the District Manager in accordance with the test protocol prepared in consultation with and approved by the District Manager.
 - (iii) These tests shall be repeated as directed or agreed by the District Manager.
- (8) The Owner shall prepare and implement an Odour Management and Mitigation Plan in accordance with the requirements set out in the EA Approval and as determined to be acceptable to the Regional Director.
- (9)
 - (a) In addition to the requirements set out in the EA Approval, the Odour Management and Mitigation Plan shall include the following:
 - (i) identification of all potential sources of odourous emissions;

- (ii) description of the preventative and control measures to minimize odourous emissions from the identified sources;
 - (iii) procedures for the implementation of the Odour Management and Mitigation Plan;
 - (iv) inspection and maintenance procedures to ensure effective implementation of the Odour Management and Mitigation Plan; and
 - (v) procedures for verification and recording the progress of the implementation of the Odour Management and Mitigation Plan.
- (b) The Owner shall continue to submit an updated Odour Management and Mitigation Plan until such time as the Regional Director notifies the Owner in writing that further submissions are no longer required.

Vehicles and Traffic

- (10) (a) The Owner shall ensure that all vehicles transporting waste to and from the Site are not leaking or dripping waste when arriving at or leaving the Site.
- (b) Should the Owner become aware that the truck(s) delivering waste to the Site have leaked wastewater on the municipal roadways, the Owner shall immediately report the violation to the owner of the vehicle(s) and to the District Manager.
- (c) The Owner shall ensure that the exterior of all vehicles delivering Waste to the Site or hauling waste from the Site is washed prior to the trucks' departure from the Site, if necessary.
- (d) Any necessary truck washing shall occur only in the designated wash down area of the Tipping Building or the Residue Building.
- (11) The Owner shall ensure that there is no queuing or parking of vehicles that are waiting to enter the Site on any roadway that is not a distinct part of the Site.

Litter

- (12) The Owner shall:
- (a) take all practical steps to prevent the escape of litter from the Site;
 - (b) pick up litter around the Site on a daily basis, or more frequently if necessary; and
 - (c) if necessary, erect litter fences around the areas causing a litter problem.

Dust

- (13) The Owner shall ensure that all on-site roads and operations/yard areas are regularly swept/washed to prevent dust impacts off-Site.

Vermin and Vectors

(14) The Owner shall:

- (a) implement necessary housekeeping procedures to eliminate sources and potential sources of attraction for vermin and vectors; and
- (b) hire a qualified, licensed pest control professional to design and implement a pest control plan for the Site. The pest control plan shall remain in place, and be updated from time to time as necessary, until the Site has been closed and this Certificate has been revoked.

Visual Screening

(15) The Owner shall provide visual screening for the Site in accordance with the documentation included in the attached Schedule "A".

9. STAFF TRAINING

- (1) (a) The Owner shall ensure that all operators of the Site are trained with respect to the following, as per the specific job requirements of each individual operator:
 - (i) terms and conditions of this Certificate and the requirements of the EA Approval;
 - (ii) operation and management of the Site, or area(s) within the Site, as per the specific job requirements of each individual operator, and which may include procedures for receiving, screening and identifying Waste, refusal, handling, processing and temporarily storing wastes, operation of the Equipment, the APC Equipment, the CEM System and the Works;
 - (iii) testing, monitoring and operating requirements;
 - (iv) maintenance and inspection procedures;
 - (v) recording procedures;
 - (vi) nuisance impact control and housekeeping procedures;
 - (vii) procedures for recording and responding to public complaints;
 - (viii) an outline of the responsibilities of Site personnel including roles and responsibilities during emergency situations;
 - (ix) the Contingency and Emergency Response Plan including exit locations and evacuation routing, and location of relevant equipment available for emergency situations;
 - (x) environmental, and occupational health and safety concerns pertaining to the wastes to be handled;
 - (xi) emergency first-aid information; and
 - (xii) relevant waste management legislation and regulations, including the *EPA*, the *OWRA*, the *O. Reg. 347*, the *O. Reg. 419/05* and the Ministry guidelines affecting thermal treatment facilities.
- (2) The Owner shall ensure that all personnel are trained in the requirements of this Certificate relevant to the employee's position:

- (a) upon commencing employment at the Site in a particular position;
- (b) whenever items listed in Condition 9.(1) are changed or updated; and
- (c) during the planned refresher training.

10. **COMPLAINTS / ODOUR-CONTAMINANT EMISSIONS RESPONSE PROCEDURE**

- (1) The Owner or a designated representative of the Owner shall be available to receive public complaints caused by the operations at the Site twenty-four (24) hours per day, seven (7) days per week.
- (2) If at any time, the Owner or the Ministry receives a complaint or the Owner or the Provincial Officer detects an emission of odour or any contaminant, (Emission Event), from the Site, in addition to the requirements set out in the EA approval, the Owner shall record all relevant information in the computerized tracking system and shall respond to the complaint/Emission Event according to the following procedure:

Step 1: Record of Complaint/Emission Event

- (a) (i) The Owner shall record each complaint/Emission Event and each record shall include the following:
 - (A) name, address and the telephone number of the complainant, if known;
 - (B) time and date of the complaint/Emission Event;
 - (C) details of the complaint; and
- (ii) After the complaint/Emission Event has been recorded in the tracking system, the Owner shall immediately report to the District Manager by phone or e-mail during office hours and to the Ministry's Spills Actions Centre at 1-800-268-6060 after office hours on the receipt of the complaint or occurrence of the Emission Event.

Step 2: Investigation and Handling of Complaint/Emission Event

- (b) The Owner shall immediately initiate investigation of the complaint/Emission Event. As a minimum, the investigation shall include the following:
 - (i) determination of the activities being undertaken at the Site at the time of the complaint/Emission Event;
 - (ii) meteorological conditions including, but not limited to the ambient temperature, approximate wind speed and its direction.
 - (iii) determination if the complaint is attributed to activities being undertaken at the Site and if so, the possible cause(s) of the complaint/Emission Event; and

- (iv) determination of the remedial action(s) to address the cause(s) of the Complaint/Emission Event, and the schedule for the implementation of the necessary remedial action(s).
 - (c) The Owner shall respond to the complainant, if known, and the response shall include the results of the investigation of the Complaint, the action(s) taken or planned to be taken to address the cause(s) of the Complaint, and if any follow-up response(s) will be provided.
 - (d) Upon completed investigation of the Complaint/Emission event, the Owner shall, within three (3) business days, submit a report to the District Manager on the Complaint, on the action(s) taken or planned to be taken to address the cause(s) of the Complaint and on all proposed action(s) to prevent recurrence of the Complaint/Emission Event in the future.
- (3) If, in the opinion of the District Manager, failure of the APC Equipment and/or any other process or equipment upset or malfunction results in off-site Complaint/Emission Event, confirmed by the Owner or a Provincial Officer of the Ministry, the Owner shall, immediately upon notification from the District Manager, implement any necessary additional control measures, including, but not necessarily limited to, those in the Contingency and Emergency Response Plan required by this Certificate.
- (4) If the District Manager deems the additional control measures taken as per condition 10.(3) to be unsuitable, insufficient or ineffective, the District Manager may direct the Owner, in writing, to take further measures to address the noted failure, upset or malfunction including pursuant to section 39 of the *EPA* requiring a reduction in the receipt of Waste, cessation of the receipt of Waste, removal and off-site disposal of Waste from the Tipping Building as well as making repairs or modifications to equipment or processes.

11. **CONTINGENCY and EMERGENCY RESPONSE PLAN**

- (1) (a) The Owner shall develop and implement a Contingency and Emergency Response Plan in accordance with the requirements set out in the EA Approval.
- (b) Notwithstanding the requirements set out in the EA Approval, the Contingency and Emergency Response Plan shall be prepared in consultation with the District Manager or designate, the local Municipality and the Fire Department.
- (2) In addition to the requirements set out in the EA Approval, the Contingency and Emergency Response Plan, as a minimum, shall include the following:
 - (a) the Site plan clearly showing the equipment layout and all storage areas for wastes and reagents;

- (b) a list of Site personnel responsible for the implementation of the contingency measures and various emergency response tasks and their training requirements;
- (c) a list of equipment and materials required for the implementation of the contingency measures and the emergency situation response;
- (d) maintenance and testing program for equipment required for the implementation of the contingency measures and the emergency situation response;
- (e) procedures to be undertaken as part of the implementation of the contingency measures and the emergency situation response;
- (f) names and telephone numbers of waste management companies available for emergency response;
- (g) notification protocol, with names and telephone numbers of persons to be contacted, including the Owner, the Site personnel, the Ministry of the Environment Spills Action Centre and the York Durham District, the local Fire and Police Departments, the local Municipality, the local Medical Officer of Health, and the Ministry of Labour;
- (h) procedures and actions to be taken should the incoming Waste not meet the applicable quality criteria specified in this Certificate;
- (i) procedures and actions to be taken should the outgoing Residual Waste fail to meet the criteria specified in this Certificate;
- (j) procedures and actions to be taken should the current disposal options for the outgoing Residual Waste become unavailable;
- (k) design of the contingency measure, procedures and actions should the emissions from the Site, including the fugitive odour/dust emissions, cause occurrences of public Complaints;
- (l) procedures and actions to be taken should the Owner be unable to maintain the negative pressure in the Tipping Building;
- (m) procedures and actions to be taken should the occurrence of Complaints require the Owner to suspend the waste processing activities at the Site; and
- (n) identification and risk assessment of all reasonably foreseeable incidents that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate, including but not limited to:
 - (i) a breakdown of the Facility/Equipment or part of the Facility/Equipment, including the APC Equipment and the CEM Systems associated with the Boilers;
 - (ii) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements;
 - (iii) any change in process parameters which may result in non compliance with the Performance Requirements;
 - (iv) power failure resulting in the use of the Emergency Diesel Generator or Total Power Failure; and
 - (v) description of the preventative and control measures to minimize the occurrence or impacts of the above incidents; and
 - (vi) procedures for corrective measures and timelines to take to address the above incidents in a timely manner to effectively prevent or minimize the discharge of any contaminant into the natural environment and continue to maintain compliance with the *EPA* , the Regulations and

this Certificate, including procedures for Waste Processing Rate reduction, waste feed cut-off, Controlled Shutdown or Emergency Shutdown of the Boilers as applicable.

- (3) The Owner shall submit the finalized Contingency and Emergency Response Plan to the Director a minimum of one hundred and twenty (120) days prior to the Commencement Date of Operation, for approval.
- (4) An up-to-date version of the Contingency and Emergency Response Plan shall be kept at the Site at all times, in a central location available to all staff, and it shall be available for inspection by a Provincial Officer upon request.
- (5) The Owner shall ensure that the names and telephone numbers of the persons to be contacted in the event of an emergency situation are kept up-to-date, and that these numbers are prominently displayed at the Site and at all times available to all staff and emergency response personnel.
- (6) The Contingency and Emergency Response Plan shall be reviewed on a regular basis and updated, as necessary. The revised version of the Contingency and Emergency Response Plan shall be submitted to the local Municipality and the Fire Department for comments and to the District Manager for comments and concurrence.
- (7) The Owner shall implement the recommendations of the updated Contingency and Emergency Response Plan, immediately upon receipt of the written concurrence from the District Manager.

12. **EMERGENCY SITUATION RESPONSE and REPORTING**

- (1) The Owner shall immediately take all measures necessary to contain and clean up any spill or leak which may result from the operation at this Site and manage any emergency situation in accordance with the Contingency and Emergency Response Plan.
- (2) The Owner shall ensure that the equipment and materials listed in the Contingency and Emergency Response Plan are immediately available at the Site, are in a good state of repair, and fully operational at all times.
- (3) The Owner shall ensure that all Site personnel responsible for the emergency situation response are fully trained in the use of the equipment and related materials, and in the procedures to be employed in the event of an emergency.
- (4) All Spills as defined in the *EPA* shall be immediately reported to the **Ministry's Spills Action Centre at 1-800-268-6060** and shall be recorded in the log book as to the nature of the emergency situation, and the action taken for clean-up, correction and prevention of future occurrences.

13. **SUBMISSIONS to the REGIONAL DIRECTOR or DISTRICT MANAGER**

- (1) The Owner shall notify the District Manager in writing, at least six (60) days prior to the scheduled date for the first receipt of Waste at the Site, as to whether or not the construction of the Facility has been carried out in accordance with this Certificate to a point of Substantial Completion.
- (2) (a) The Owner shall forthwith notify the District Manager and the Spills Action Centre by telephone, when any of the following incidents occur that may result in a discharge into the natural environment of any contaminant in an amount, concentration or level in excess of that prescribed by the Regulations and/or imposed by this Certificate:
 - (i) CEM Systems indicate that the Boilers and associated APC Equipment have been out of compliance with the Performance Requirements triggering a Waste Processing Rate Reduction, Waste Feed cut-off, Controlled Shutdown or Emergency Shutdown as specified in the Emergency Response and Contingency Plan;
 - (ii) failure of the APC Equipment associated with the Boilers; and
 - (iii) power failure resulting in the use of the emergency diesel generator or Total Power Failure;
- (b) In addition to fulfilling the notification requirements from the *EPA*, the Owner shall prepare and submit a written report to the District Manager with respect to any of the above said occurrences, within five (5) calendar days of the occurrence, in the following format:
 - (i) date of the occurrence;
 - (ii) general description of the occurrence;
 - (iii) duration of the occurrence;
 - (iv) effect of the occurrence on the emissions from the Facility;
 - (v) measures taken to alleviate the effect of the occurrence on the emissions from the Facility; and
 - (vi) measures taken to prevent the occurrence of the same or similar occurrence in the future.
- (3) Should a Spill, as defined in the *EPA*, occur at the Site, in addition to fulfilling the requirements from the *EPA* and applicable regulations, the Owner shall submit to the District Manager a written report within three (3) calendar days outlining the nature of the Spill, remedial measure taken and the measures taken to prevent future occurrences at the Site.
- (4) (a) Within ninety (90) days from the date of this Certificate, the Regions shall prepare and submit to the District Manager for concurrence, a Soil Testing Plan to monitor the impact of the Site operations at the locations where the ambient air monitoring is proposed by the Owner in accordance with the requirements set out in the EA Approval.

- (b) (i) This Plan shall ensure that representative samples of the soil to be tested are collected in sufficient numbers and that the samples are properly preserved and tested so that reliable data on the soil characteristics is collected.
- (ii) As a minimum, the Plan shall include testing for cadmium, lead, chromium, nickel, cobalt, copper, molybdenum, selenium, zinc and mercury, Dioxins and Furans.
- (iii) This Plan shall comply with the Ministry's regulatory requirements for sampling and testing of soil and it shall include the rationale for the proposed methods.
- (iv) This Plan be kept at the Site at all times and be available for inspection by a Provincial Officer upon request.

14. **RECORDS KEEPING**

- (1) Any information requested by the Ministry concerning the Facility and its operation under this Certificate, including, but not limited to, any records required to be kept by this Certificate, shall be provided to the Ministry, upon request, in a timely manner.
- (2) The Owner shall retain, for a minimum of seven (7) years from the date of their creation, except as noted below, all reports, records and information described in this Certificate.

Daily Activities

- (3) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:
 - (a) date of record and the name and signature of the person completing the report;
 - (b) quantity and source of the incoming Waste received at the Site;
 - (c) records of the estimated quantity of Waste thermally treated in the Boilers;
 - (d) quantity of the Unacceptable Waste received at the Site by the end of the approved Waste receipt period and the type(s) of the Unacceptable Waste received;
 - (e) quantity and type of the Residual Waste shipped from the Site, including any required outgoing Residual Waste characterization results;
 - (f) destination and/or receiving site(s) for the Residual Waste shipped from the Site;
 - (g) quantity and type of any Rejected Waste accepted at the Site;
 - (h) destination and/or receiving site(s) for the Rejected Waste shipped from the Site;
 - (i) housekeeping activities, including litter collection and washing/cleaning activities, etc.
 - (j) amount of electricity produced;

- (k) amount of excess electricity exported to the electrical grid.

Monitoring and Testing Records

- (4) The Owner shall maintain an on-Site written or digital record of activities undertaken at the Site. All measurements shall be recorded in consistent metric units of measurement. As a minimum, the record shall include the following:
 - (a) day and time of the activity;
 - (b) all original records produced by the recording devices associated with the CEM Systems;
 - (c) a summary of daily records of readings of the CEM Systems, including:
 - (i) the daily minimum and maximum 4-hour average readings for carbon monoxide;
 - (ii) the daily minimum and maximum one hour average readings for oxygen;
 - (iii) the daily minimum and maximum 10-minute average readings for organic matter;
 - (iv) the daily minimum and maximum 24-hour average readings for sulphur dioxide;
 - (v) the daily minimum and maximum 24-hour average readings for nitrogen oxides;
 - (vi) the daily minimum and maximum 24-hour average readings for hydrogen chloride;
 - (vii) the daily minimum and maximum 6-minute average and 2-hour average opacity readings; and
 - (viii) the daily minimum and maximum one-hour average readings for temperature measurements.
 - (d) records of all excursions from the applicable Performance Requirements as measured by the CEM Systems, duration of the excursions, reasons for the excursions and corrective measures taken to eliminate the excursions;
 - (e) all records produced during any Acoustic Audit;
 - (f) all records produced during any Source Testing;
 - (g) all records produced by the long term sampling program for Dioxins and Furans required by this Certificate;
 - (h) all records produced during the Residual Waste compliance testing;
 - (i) all records produced during the Soil Testing;
 - (j) all records produced during the Groundwater and Surface Water Monitoring required by this Certificate;
 - (k) all records produced during the Ambient Air Monitoring required by this Certificate;
 - (l) all records associated with radiation monitoring of the incoming Waste, including but not limited to:
 - (i) transaction number;
 - (ii) hauler;
 - (iii) vehicle ID;
 - (iv) alarm level;
 - (v) maximum CPS;
 - (vi) uSv/hr;

- (vii) comment;
 - (viii) background CPS;
 - (ix) driver time in and out; and
 - (x) name of the Trainer Personnel that carried out the monitoring.
- (m) results of the containment testing carried out in the buildings, conveyors, tanks and silos, as required;
- (n) results the negative pressure in the Tipping Building carried out, as required.

Inspections/Maintenance/Repairs

- (5) The Owner shall maintain an on-Site written or digital record of inspections and maintenance as required by this Certificate. As a minimum, the record shall include the following:
- (a) the name and signature of the Trained Personnel that conducted the inspection;
 - (b) the date and time of the inspection;
 - (c) the list of any deficiencies discovered, including the need for a maintenance or repair activity;
 - (d) the recommendations for remedial action;
 - (e) the date, time and description of actions (repair or maintenance) undertaken;
 - (f) the name and signature of the Trained Personnel who undertook the remedial action; and
 - (g) an estimate of the quantity of any materials removed during cleaning of the Works.

Emergency Situations

- (6) The Owner shall maintain an on-Site written or digital record of the emergency situations. As a minimum, the record shall include the following:
- (a) the type of an emergency situation;
 - (b) description of how the emergency situation was handled;
 - (c) the type and amount of material spilled, if applicable;
 - (d) a description of how the material was cleaned up and stored, if generated; and
 - (e) the location and time of final disposal, if applicable; and
 - (f) description of the preventative and control measures undertaken to minimize the potential for re-occurrence of the emergency situation in the future.

Complaints Response Records

- (7) The Owner shall establish and maintain a written or digital record of complaints received and the responses made as required by this Certificate.

Training

- (8) The Owner shall maintain an on-Site written or digital record of training as required by this Certificate. As a minimum, the record shall include the following:

- (a) date of training;
- (b) name and signature of person who has been trained; and
- (c) description of the training provided.

Reports

- (9) The Owner shall keep at the Site the following reports required by this Certificate:
 - (a) the ESDM Report
 - (b) the Acoustic Assessment Report;
 - (c) the Annual Report; and
 - (d) the Third Party Audit.

15. **REPORTING**

Annual Report

- (1) By March 31st following the end of each operating year, the Owner shall prepare and submit to the District Manager and to the Advisory Committee, an Annual Report summarizing the operation of the Site covering the previous calendar year. This Annual Report shall include, as a minimum, the following information:
 - (a) a summary of the quality and the quantity of the Wastes accepted at the Site, including the maximum amount of the Waste received annually and daily and the sources of the Waste;
 - (b) a summary of the quality and the quantity of the Residual Waste shipped from the Site, including the analytical data required to characterize the Residual Waste, the off-Site destinations for the Residual Waste and its subsequent use, if known;
 - (c) estimated material balance for each month documenting the maximum amount of wastes stored at the Site;
 - (d) annual water usage;
 - (e) annual amount of the electricity produced and the annual amount of the electricity exported to the electrical grid;
 - (f) summaries and conclusions from the records required by Conditions 14.(3) through 14.(8) of this Certificate;
 - (g) the Emission Summary Table and the Acoustic Assessment Summary Table for the Facility as of December 31 from the previous calendar year;
 - (h) a summary of dates, duration and reasons for any environmental and operational problems, Boilers downtime, APC Equipment and CEM System malfunctions that may have negatively impacted the quality of the environment or any incidents triggered by the Emergency Response and

Contingency Plan and corrective measures taken to eliminate the environmental impacts of the incidents;

- (i) a summary of the dates, duration and reasons for all excursions from the applicable Performance Requirements as measured by the CEM Systems or as reported by the annual Source Testing, reasons for the excursions and corrective measures taken to eliminate the excursions;
- (j) results of the evaluation of the performance of the long-term sampling system in determining the Dioxins and Furans emission trends and/or fluctuations for the year reported on as well as demonstrating the ongoing performance of the APC Equipment associated with the Boilers;
- (k) dates of all environmental complaints relating to the Site together with cause of the Complaints and actions taken to prevent future Complaints and/or events that could lead to future Complaints;
- (l) any environmental and operational problems that could have negatively impacted the environment, discovered as a result of daily inspections or otherwise and any mitigative actions taken;
- (m) a summary of any emergency situations that have occurred at the Site and how they were handled;
- (n) the results and an interpretive analysis of the results of the groundwater and surface water, including an assessment of the need to amend the monitoring programs;
- (o) summaries of the Advisory Committee meetings, including the issues raised by the public and their current status;
- (p) any recommendations to improve the environmental and process performance of the Site in the future;
- (q) statement of compliance with this Certificate, including compliance with the *O. Reg. 419/05* and all air emission limits based on the results of source testing, continuous monitoring and engineering calculations, as may be appropriate; and
- (r) interpretation of the results and comparison to the results from previous Annual Reports to demonstrate the Facility's impact on the environment.

Third Party Audit

- (2) (a) The Regions shall ensure that an independent technical review of the operations at the Site is undertaken in accordance with the requirements of the EA Approval.
- (b) In addition to the Third Party Audit requirements set out in the EA approval, the Third Party Audit shall include the following:

- (i) a review of the data from the monitoring and testing required by this Certificate;
 - (ii) a review of all complaints received about the operation of the Facility;
 - (iii) any recommendations for improving the operation of the Facility received from the Advisory Committee; and
 - (iv) a recommendation of any improvements that could be made to ensure that the operation of the Facility is optimized and is protective of the health and safety of people and the environment.
- (3) The Regions shall submit a Written Audit Report on the results of the independent technical review to the Regional Director in accordance with the Audit Plan and retain a copy at the Site.

Soil Testing Report

- (4) Within one (1) month of completion of each Soil Testing event, the Regions shall submit to the District Manager a Soil Testing Report, which includes the details on the sampling/testing procedures, the results of the testing and a comparison with the results obtained during the previous Soil Testing.

16. PUBLIC ACCESS TO DOCUMENTATION

- (1) The Owner shall, at all times, maintain documentation that describes the current operations of the Facility. The Owner shall post the documentation at the website for the undertaking and during regular business hours, the Owner shall make the following documents available for inspection at the Site by any interested member of the public, upon submission to the Ministry for review:
- (a) a current ESDM Report that demonstrates compliance with the Performance Limits for the Facility regarding all Compounds of Concern;
 - (b) a current Acoustic Assessment Report that demonstrates compliance with the Performance Limits for the Facility regarding noise emissions;
 - (c) the most recent Annual Report;
 - (d) the most current Third Party Audit Report;
 - (e) Odour Management and Mitigation Plan, prepared in accordance with the requirements of the EA Approval;
 - (f) Noise Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval; and
 - (g) Groundwater and Surface Water Monitoring and Reporting Plan, prepared in accordance with the requirements of the EA Approval.

- (2) The Owner shall ensure that necessary hardware and software are provided at a location available to the public, to provide on-line real-time reporting of the operating parameter data for the Facility, including acceptable operating limits, stack emissions, and all other parameters for which continuous monitoring is required and that continuous records of the same be kept and made available to the public.

17. **ADVISORY COMMITTEE**

- (1) The Regions shall establish an Advisory Committee in accordance with the requirements set out in the EA Approval.

18. **CLOSURE of the SITE**

- (1) A minimum of nine (9) months prior to closure of the Site, the Owner shall submit, for approval by the Director, a written Closure Plan for the Site. This Plan shall include, as a minimum, a description of the work that will be done to facilitate closure of the Site and a schedule for completion of that work.
- (2) Within ten (10) days after closure of the Site, the Owner shall notify the Director and the District Manager, in writing, that the Site is closed and that the approved Closure Plan has been implemented.

SCHEDULE "A"

Supporting Documentation

- (1) Applications for a Certificate of Approval (Air) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:
 - (a) Emission Summary and Dispersion Modelling Report, dated March 2011, prepared by Golder Associates;
 - (b) Acoustic Assessment Report prepared by Golder Associates Ltd., dated March 2011 and signed by Paul Niejadlik.

- (2) Applications for a Provisional Certificate of Approval (Waste Disposal Site) dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of York and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:
 - (a) Attachment #1 containing the "Design and Operations Report", dated March 2011, prepared by Golder Associates Ltd.;
 - (b) Attachment #3 containing the "Public Consultation Report", dated March 2011, prepared by Golder Associates Ltd.;
 - (c) Attachment #4 containing the Host Community Agreement
 - (d) Attachment #5 containing the proof of legal name for Covanta Durham York Renewable Energy Limited Partnership; and
 - (e) A letter May 24, 2011 from Anthony Ciccone, Golder Associates Ltd., to Margaret Wojcik, Ontario Ministry of the Environment, providing additional technical information on the proposal and attaching a report entitled "Amendment #1 Durham York Energy Centre Design and Operations Report", dated May 2011;

- (3) Applications for a Certificate of Approval of Municipal and Private Sewage Works dated March 2, 2011, each signed by Cliff Curtis, Commissioner of Works, The Regional Municipality of Durham, by Erin Mahoney, Commissioner of Environmental Services, The Regional Municipality of Durham and by Matthew R. Mulcahy, Senior Vice President, Business Development, Covanta Durham York Renewable Energy Limited Partnership, and the following supporting documentation:

- (a) "Surface Water and Groundwater Technical Study Report" dated July 2009, prepared by Jacques Whitford, Markham, Ontario (CD Report).
- (b) "Stormwater Design Model Output" prepared by Sigma Energy, dated March 2001 (CD Report).
- (c) Clearance letter from Central Lake Ontario Conservation date February 22, 2011.
- (d) A letter dated March 23, 2011, from Brian Bahor, Covanta Energy Corporation, to Stefanos Habtom, Ontario Ministry of the Environment, providing additional technical design information on the proposed stormwater management ponds.

SCHEDULE "B"

Procedure to calculate and record the 10-minute average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor

- (a) Calculate and record one-hour average concentration of odour at the Point of Impingement and at the most impacted Sensitive Receptor, employing CALPUFF atmospheric dispersion model or the dispersion model acceptable to the Director that employs at least five (5) years of hourly local meteorological data and that can provide results reported as individual one-hour average odour concentrations.
- (b) Convert and record each of the one-hour average concentrations predicted over the five (5) years of hourly local meteorological data at the Point of Impingement and at the most impacted Sensitive Receptor to 10-minute average concentrations using the One-hour Average to 10-Minute Average Conversion described below; and
- (c) Record and present the 10-Minute Average concentrations predicted to occur over a five (5) year period at the Point of Impingement and at the most impacted Sensitive Receptor in a histogram. The histogram shall identify all predicted 10-minute average odour concentration occurrences in terms of frequency, identifying the number of occurrences over the entire range of predicted odour concentration in increments of not more than 1/10 of one odour unit. The maximum 10-minute average concentration of odour at the Sensitive Receptor will be considered to be the maximum odour concentration at the most impacted Sensitive Receptor that occurs and is represented in the histogram, disregarding outlying data points on the histogram as agreed to by the Director.

One-hour Average To 10-minute Average Conversion

1. Use the following formula to convert and record one-hour average concentrations predicted by the CALPUFF atmospheric dispersion model or by the dispersion model acceptable to the Director to 10-minute average concentrations:

$$\mathbf{X_{10min} = X_{60min} * 1.65}$$

where X_{10min} = 10-minute average concentration
X_{60min} = 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 ppm dv (33 mg/ Rm3)	Results from compliance source testing
carbon monoxide	35 ppm dv (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
<p>Monochlorobenzene (MCB)</p> <p>1,2-Dichlorobenzene (1,2-DCB)</p> <p>1,3-Dichlorobenzene (1,3-DCB)</p> <p>1,4-Dichlorobenzene (1,4-DCB)</p> <p>1,2,3-Trichlorobenzene (1,2,3-TCB)</p> <p>1,2,4-Trichlorobenzene (1,2,4-TCB)</p> <p>1,3,5-Trichlorobenzene (1,3,5-TCB)</p> <p>1,2,3,4-Tetrachlorobenzene (1,2,3,4-TeCB)</p> <p>1,2,3,5-Tetrachlorobenzene (1,2,3,5-TeCB)</p> <p>1,2,4,5-Tetrachlorobenzene (1,2,4,5-TeCB)</p> <p>Pentachlorobenzene (PeCB)</p> <p>Hexachlorobenzene (HxCB)</p>	<p>2-monochlorophenol (2-MCP)</p> <p>3-monochlorophenol (3-MCP)</p> <p>4-monochlorophenol (4-MCP)</p> <p>2,3-dichlorophenol (2,3-DCP)</p> <p>2,4-dichlorophenol (2,4-DCP)</p> <p>2,5-dichlorophenol (2,5-DCP)</p> <p>2,6-dichlorophenol (2,6-DCP)</p> <p>3,4-dichlorophenol (3,4-DCP)</p> <p>3,5-dichlorophenol (3,5-DCP)</p> <p>2,3,4-trichlorophenol (2,3,4-T3CP)</p> <p>2,3,5-trichlorophenol (2,3,5-T3CP)</p> <p>2,3,6-trichlorophenol (2,3,6-T3CP)</p> <p>2,4,5-trichlorophenol (2,4,5-T3CP)</p> <p>2,4,6-trichlorophenol (2,4,6-T3CP)</p> <p>3,4,5-trichlorophenol (3,4,5-T3CP)</p> <p>2,3,4,5-tetrachlorophenol (2,3,4,5-T4CP)</p> <p>2,3,4,6-tetrachlorophenol (2,3,4,6-T4CP)</p> <p>2,3,5,6-tetrachlorophenol (2,3,5,6-T4CP)</p> <p>Pentachlorophenol (PeCP)</p>

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	
Anthracene	2,3,7,8-Tetrachlorodibenzo-p-dioxin
Benzo(a)anthracene	1,2,3,7,8-Pentachlorodibenzo-p-dioxin
Benzo(b)fluoranthene	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
Benzo(k)fluoranthene	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
Benzo(a)fluorene	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
Benzo(b)fluorene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin
Benzo(ghi)perylene	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin
Benzo(a)pyrene	
Benzo(e)pyrene	2,3,7,8-Tetrachlorodibenzofuran
Biphenyl	2,3,4,7,8-Pentachlorodibenzofuran
2-Chloronaphthalene	1,2,3,7,8-Pentachlorodibenzofuran
Chrysene	1,2,3,4,7,8-Hexachlorodibenzofuran
Coronene	1,2,3,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,c)anthracene	1,2,3,7,8,9-Hexachlorodibenzofuran
Dibenzo(a,h)anthracene	2,3,4,6,7,8-Hexachlorodibenzofuran
Dibenzo(a,e)pyrene	1,2,3,4,6,7,8-Heptachlorodibenzofuran
9,10-Dimethylanthracene	1,2,3,4,7,8,9-Heptachlorodibenzofuran
7,12-Dimethylbenzo(a)anthracene	1,2,3,4,6,7,8,9-Octachlorodibenzofuran
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

- 1. Range (parts per million, ppm):
- 2. Calibration Gas Ports:

SPECIFICATION

0 to ≥ 100 ppm
close to the sample point

PERFORMANCE:

The Continuous Sulphur Dioxide Monitor shall meet the following minimum performance specifications for the following parameters.

PARAMETERS

- 1. Span Value (nearest ppm equivalent):
- 2. Relative Accuracy:
- 3. Calibration Error:
- 4. System Bias:
- 5. Procedure for Zero and Span Calibration Check:
- 6. Zero Calibration Drift (24-hour):
- 7. Span Calibration Drift (24-hour):
- 8. Response Time (90 percent response to a step change):
- 9. Operational Test Period:

SPECIFICATION

2 times the average normal concentration of the source

≤ 10 percent of the mean value of the reference method test data

≤ 2 percent of actual concentration

≤ 4 percent of the mean value of the reference method test data

all system components checked

≤ 2.5 percent of span value

≤ 2.5 percent of span value

≤ 200 seconds

≥ 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 m³ at elevation 95.0 m masl, an active storage capacity of 3,099 m³ at 96.70 m masl elevation, and total storage capacity of 4,107 m³, 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 m³ at elevation 95.0 m masl, an active storage capacity of 2,054 m³ at 96.50 m masl elevation, and total storage capacity of 2,677 m³, 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

Appendix B

Response to Test Plan from Guillermo Azocar, Technology Standards Section, Standards
Development Branch, MOECC, September 19, 2014, File No.: CR:SA:109194:14

Via email: lbrasowski@covanta.com
TSS File No.: CR:SA:109194:14

2014/09/19

Mr. Leon Brasowski, Director Environmental Engineering
Covanta
445 South St.
Morristown, New Jersey
07960

Dear Mr. Brasowski:

Subject: Pre-test plan for re-testing to be conducted at Durham-York Energy Centre (Courtice facility). Odour Management Mitigation Plan (April 2012).

We reviewed your pre-test plan (Covanta Project 11-1151-3943), dated 2014/09/17, 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 pre-test plan was submitted to fulfill requirement for odour measurements as outlined in the Odour Management and Mitigation Plan (OMMP), dated April 2012.

The OMMP was prepared in support of the EAA Notice to proceed with undertaking EA File No. 04-EA-02-08 (Section 18); as well as, for the Environmental Compliance Approval (ECA) No. 7306-8FD N , issued on 2011/06/28; and subsequent ECA Notice (No.1) dated 2014/08/12.

Target Source:

- Solid waste charging floor – Tipping Building (2 locations).

Notes: *The two sampling locations are not identified in the pre-test plan. The sampling locations need to be set (when possible) within the emissions envelope of the activity, equipment or process with the potential of generating the odorous emissions. A plant drawing showing the process, areas of activity and equipment (considered to be potential sources of odour) and the sampling locations shall be provided to this office to determine the suitability of such locations to represent worst case emissions scenario within the charging floor.*

Two primary potential odour emissions were identified; but only testing at the charging floor has been stated. Based on the pre-test plan, there is the expectation that there may be a queue of waste delivery trucks waiting to enter the plant. As truck transportation of waste onto the site has been identified as a primary potential

odour emission source, Covanta shall provide to the MOECC York-Durham District Office with the rationale for not undertaking odour measurements to address this primary potential source of odour.

Target Contaminants:

- Odour

Reference methodologies:

- Odour: ***OSTC – Method ON-6 for Odour.*** *The odour samples will be collected undiluted in Tedlar bags using a vacuum lung, samples will be collected in triplicate for each of the sources, evaluated within 24 hours by a panel of 8 members using a dynamic dilution olfactometer, with the sample presentation to the panel on an ascending concentration. In very general terms, it is stated that the strategy to be used for the determination of the exhaust gas flow characteristics will follow the requirements of the Ontario Source Testing Code.*

Notes: *As the sampling strategies to be used are similar to ambient sampling, the strategy to be used for the determination of the exhaust gas flow characteristics needs to be submitted by the selected source testing consultant to this office, for consensus.*

Brief Process Description:

The DYEC is an energy-from-waste facility was 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, each equipped with independent operated boilers/furnaces and air pollution control equipment. The treated exhaust gases from both lines are vented to a common stack and released to the atmosphere.

The source of waste are post-diversion residual waste collected at curbside; as well as, any residual waste material collected at public drop-off centers and transfer stations. The only industrial, commercial and industrial waste to be managed by this facility will be non-hazardous residual waste.

Target Process Condition during the Source Testing Program:

Not indicated in the pre-test plan, but it is expected that source testing will be conducted when the charging area is operating at its maximum capacity.

Process Data Monitoring:

It is assumed (not stated in the pre-test plan) that DYEC (or Covanta) personnel will be responsible for the monitoring, collection, compilation and reporting of relevant process parameters pertaining to the facility's operations, in order to establish production/processing levels.

The following process information will be recorded during the source testing program

- Power output (megawatts)
- Daily waste combusted
- Auxiliary fuel combusted
- Steam generated
- Details of any upset conditions during the source testing program
- Real time meteorological data

Notes: *As the sampling of odours is of short duration (10-minute), Covanta should make an effort at providing hourly rate of the process parameters of interest.*

Air flow, direction and temperature need to be monitored close to the odour sampling station during each of the test-runs.

Our review indicates that the proposed reference methodologies, sampling strategies, and process data monitoring/collection are acceptable; conditional on Covanta addressing our observations outlined in notes made throughout this letter, and the undertaking of actions stated in those notes, where actions are required to be undertaken.

We noted that the source testing is tentatively scheduled for not earlier than 2014/11/22. Please provide the schedule at least 15 days prior to conducting the source testing. The testing notification (with the scheduled sampling dates) needs to be sent (via email) to the MOECC's Standards Development Branch (Guillermo Azocar) and to the MOECC's York-Durham District Office (Sandra Thomas).

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 question with regards to this assessment, I can be reached by phone at 416-327-6403, or by email at guillermo.azocar@ontario.ca.

Sincerely yours,



Guillermo Azocar

cc: . Titus – Covanta (via email: htitus@covanta.com)
D. Fumerton – York-Durham District Office (via email: dave.fumerton@ontario.ca)
S. Thomas – York-Durham District Office (via email: Sandra.thomas@ontario.ca)
M. Wojcik – EAB (via email: margaret.wojcik@ontario.ca)
L. Hussain/C. Ruddy – SDB (via email)
File A -02 (Durham-York Energy Centre)

Appendix C

Sampling Datasheets

ZORIX Consultants Inc.
Odour Sampling Data Sheet/Chain of Custody Form

Client: COVENTRY
 Project: Source Test 2015
 Sampling Location: Whipping Slair
 Date: Oct 8/15
 Sampling Crew: MARTIN

Note: Protect samples from light and excessive heat.

Scheduled Evaluation Date: Oct 9/15

Check all fittings? Leak Check? Pa Correct calibration table? Manometer zeroed? N/A

Test ID No.	Start Time	End Time	Tedlar Bag No.	Control Box No.	Sampler Number	Umbilical ID	Sampler Parameters			Temp. °C	Dilution	Probe °C	Test Condition	Sample ID. (assigned by lab)	Laboratory	
							Nitrogen psig	Delta p Pa	Temp. °C						Time	Bag H ₂ S Conc. (ppm)
1	10:58	10:47	261A	-	1	1				1x	-	normal production	3418		N/A	
2	10:48	10:58	255A	-	1	1				1x	-	normal production	3419		N/A	
3	10:58	11:11	260A	-	1	1				1x	-	normal production	3420		N/A	

Pre-Dilution Determinations

Anticipated Ambient Conditions	Source Conditions
Bar. Pressure (Kpa)	Barometric Pressure (Kpa)
Temp. (°C)	Temperature (°C)
Sat. Vapour Conc. (g/m ³)	Saturated Vapour Conc. (g/m ³)
	Relative Humidity (%)
	Calculated Pre-Dilution Ratio:

Field Notes
 Using Testlon tubing ~ 5' above grade with a stand to sample behind the hoppers
 10:46, crane dumped into hopper behind sample point
 10:51, crane dumped into hopper behind sample point
 10:54, crane dumped into hopper behind sample point
 10:59, crane dumped into hopper behind sample point

Chain of Custody for All Samples Above

Delivered By: _____ Date and Time: _____ Received By: _____
 Delivered By: _____ Date and Time: _____ Received By: _____

w/m behind hopper is sample point.



ZORIX Consultants Inc.
Odour Sampling Data Sheet/Chain of Custody Form

Client: Carvanta Tent
 Project: Odour Test
 Sampling Location: Charging Deck
 Date: Oct. 9, 2015
 Scheduled Evaluation Date: Oct. 9, 2015
 Sampling Crew: MLL

Note: Protect samples from light and excessive heat.

Check all fittings? Leak Check? PA Correct calibration table? PA Manometer zeroed? NA
 Date: Oct 9, 2015

Test ID No.	Start Time	End Time	Tedlar Bag No.	Control Box No.	Sampler Number	Sampler Parameters				Dilution	Probe °C	Source H ₂ S Conc. (ppm)	Bag H ₂ S Conc. (ppm)	Sample ID. (assigned by lab)	Laboratory	
						Umbilical ID	Nitrogen psig	Delta p Pa	Temp. °C						Time	Bag H ₂ S Conc. (ppm)
1	08:19	08:27	268	lung									3425		N/A	
2	08:28	08:37	262A	lung									3426		N/A	
3	08:37	08:46	276	lung									3427		N/A	
4	08:52	09:02	266A	lung	+ AC filter								blank		N/A	

Pre-Dilution Determinations

Anticipated Ambient Conditions	Source Conditions
Bar. Pressure (Kpa)	Barometric Pressure (Kpa)
Temp. (°C)	Temperature (°C)
Sat. Vapour Conc. (g/m3)	Saturated Vapour Conc. (g/m3)
	Relative Humidity (%)
	Calculated Pre-Dilution Ratio:

Field Notes
 blank - with carbon filter at end of tubing
 8:31 - Load dropped into hopper (photos)
 - only Load dropped during collection of sample
 - one load down blank collection

Chain of Custody for All Samples Above

Delivered By: _____ Date and Time: _____ Received By: _____
 Delivered By: _____ Date and Time: _____ Received By: _____

Appendix D

Odour Panel Responses

ZORIX Environmental: Odour Lab Report

Session No: 697 **Date:** 09-Oct-15 **Session Start Time:** 9:01

Sample No: 3418 **Bag No:** 261a **Date:** 08-Oct-15 **Time:** 10:38 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	11585	1	1	1	1	1	1	1	1	8	0
2	5793	1	1	1	1	1	1	1	1	8	0
3	2896	1	4	1	1	1	1	1	1	8	0
4	1448	4	1	1	1	1	1	1	6	8	1
5	724	6	6	6	4	4	4	6	6	8	5
6	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3419 **Bag No:** 255a **Date:** 08-Oct-15 **Time:** 10:48 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1	1	1	1	1	1	1	1	8	0
3	1448	1	4	1	1	1	1	6	1	8	1
4	724	6	6	6	4	6	4	6	6	8	6
5	362	6	6	1	6	6	4	6	6	8	6
6	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3420 **Bag No:** 260a **Date:** 08-Oct-15 **Time:** 10:58 **Predilution:** 1 **Location:** tipping floor

TestCondition: normal production

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1		1	1	1	1	1	1	7	0
3	2896	1	1	1	1	1	1	1	6	8	1
4	1448	1	1	1	1	4	1	6	6	8	2
5	724	1	6	1	4	6	4	6	6	8	4
6	362	6	6	6	6	6	6	6	6	8	8

Panelist responses:

1="no detection" 3="uncertain, wrong port" 4="uncertain, correct port", 5="certain, wrong port", 6="certain, correct port"

ZORIX Environmental: Odour Lab Report

Sample No: 3425 Bag No: 268 Date 09-Oct-15 Time 8:19 Predilution: 1 Location: tipping floor

TestCondition: normal production, 2nd day

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	2896	1	1	1	1	1	1	1	1	8	0
2	1448	1	1	1	1	1	1	1	1	8	0
3	724	4	6	6	1	6	4	6	6	8	5
4	362	6	6	6	1	6	6	6	6	8	7
5	181	6	6	6	1	6	6	6	6	8	7
6	91	6	6	6	6	6	6	6	6	8	8

Sample No: 3426 Bag No: 268 Date 09-Oct-15 Time 8:28 Predilution: 1 Location: tipping floor

TestCondition: normal production, 2nd day

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	2896	1	1	1	1	1	1	1	1	8	0
2	1448	1	1	1		4	1	4	5	7	0
3	1448	1	1	1	4	6	1	6	6	8	3
4	724	4	6	6	6	6	1	6	6	8	6
5	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3427 Bag No: 276 Date 09-Oct-15 Time 8:37 Predilution: 1 Location: tipping floor

TestCondition: normal production, 2nd day

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	5793	1	1	1	1	1	1	1	1	8	0
2	2896	1	1	1	1	1	1	1	1	8	0
3	1448	1	1	1	1	4	4	6	1	8	1
4	724	1	1	6	4	6	6	6	6	8	5
5	362	6	6	6	6	6	6	6	6	8	8

Sample No: 3428 Bag No: 266a Date 09-Oct-15 Time 8:52 Predilution: 1 Location: tipping floor

TestCondition: ambient + a/c filter

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.
		1	2	3	4	5	6	7	8		
1	91	1	1	1	1	1	1	1	1	8	0
2	45	1	1	1	1	1	1	1	1	8	0
3	23	1	1	6	1	1	1	1	1	8	1
4	11	1	1	6	4	4	1	1	1	8	1

Panelist responses:

1="no detection" 3="uncertain, wrong port" 4="uncertain, correct port", 5="certain, wrong port", 6="certain, correct port"

ZORIX Environmental: Odour Lab Report

Sample No: 3429 Bag No: 143a Date 09-Oct-15 Time 11:08 Predilution: 1 Location: lab

TestCondition: qc n-butanol (49.9ppm)

Challenge No	Dilution	Panelists								No. of Panelists	Correct Resp.	
		1	2	3	4	5	6	7	8			
1	5793	1	1	1	1	1	1	1	1	1	8	0
2	2896	1	1	1	1	1	1	1	1	1	8	0
3	1448	1	1	6	1	4	1	6	1		8	2
4	724	6	1	6	1	6	4	6	6		8	5
5	362	6	6	6	6	6	6	6	6		8	8
6	181	6	6	6	6	6	6	6	6		8	8
7	91	6	6	6	6	6	6	6	6		8	8

Panelist responses:

1="no detection" 3="uncertain, wrong port" 4="uncertain, correct port", 5="certain, wrong port", 6="certain, correct port"