

**Verification Report for the
Development Authority of the North Country
(DANC) Landfill Gas Destruction Project
Rodman, New York**

**California Climate Action Registry
Landfill Project Reporting Protocol, Version 1.0**

December 2008

Prepared by: First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005



1. Introduction

This report is provided to EcoSecurities Group Plc (EcoSecurities) as a deliverable of the Climate Action Reserve (CAR) project verification process. This report covers the verification of the DANC Landfill Gas Destruction Project (the Project) for the period from January 1, 2008 to September 30, 2008 at Development Authority of the North Country Solid Waste Management Facility (DANC). First Environment, Inc. (First Environment) conducted the verification from September 2008 to November 2008.

2. Objectives

The purpose of this verification was, through review of appropriate evidence, to establish that:

- the Project conforms to the requirements of the verification criteria discussed in Section 4; and
- the data reported are accurate, complete, consistent, transparent and free of material error or omission.

3. Verification Scope

Specific scope metrics for the verification are outlined in the table below:

Geographic Boundaries	DANC Solid Waste Management Facility, Rodman, NY
Greenhouse Gases Verified	Emissions Reductions (expressed in units of Carbon Dioxide equivalents (CO ₂ -e)) resulting from the capture and destruction of landfill methane
Reporting Years	January 1, 2008 through September 30, 2008
Data Sources	Metered Data and Emissions Reduction Calculations

4. Standards Used to Verify Emissions (Criteria)

The following table outlines the guidance and protocols used to conduct this verification:

Standard of Verification	California Climate Action Registry Landfill Project Reporting Protocol, Version 1.0, November 2007 (CCAR Protocol)
Verification Process	California Climate Action Registry Landfill Verification Protocol, Version 1.0, November 2007
Level of Assurance	Reasonable Assurance
Materiality	Misstatements greater than 5 percent of the GHG assertion are considered material

5. Overview of the Verification Process

To review the Project's GHG information, the following verification process was used:

- conflict of interest review;
- selection of Audit Team;
- initial contact and kickoff meeting with primary EcoSecurities contact;
- development of the verification plan;
- site visit focusing on control procedures around data collection;
- review and evaluation of raw data and calculations for period under review;
- follow-up interaction with DANC contact for corrective action or supplemental data as needed; and
- final statement and report development.

The verification process was utilized to gain an understanding of the Project's emission sources and reductions (including the risk for leakage), to evaluate and verify the collection and handling of data, the calculations that lead to the results, and the means for reporting the associated data and results.

Conflict of Interest Review

Prior to beginning any verification project, First Environment conducts an evaluation to identify any potential conflicts of interest associated with the Project. No potential conflicts were found for this Project. First Environment also received a determination of a low potential for conflict of interest from CCAR prior to initiating verification activities.

Audit Team

First Environment's Audit Team consisted of the following individuals who were selected based on their verification experience as well as familiarity with landfill gas operations.

Christina Magerkurth – Lead Verifier
Michael Carim – Verification Specialist
Keith Dennis – Auditor
Chad Lipton – Auditor
James Wintergreen – Independent Internal Reviewer

Audit Kick-off

The verification audit was initiated with an exchange of emails between First Environment and the primary EcoSecurities contact, Amy Watson (Project Manager). The communication focused on confirming the scope and schedule, the data required for the verification, and making arrangements for the site visit. A kickoff meeting was held to review and confirm the verification criteria and other fundamentals.

Development of the Verification Plan

The verification team formally documented its verification plan as well as determined the data-sampling plan.

Site Visit

First Environment conducted a site visit in September 2008 to assess the project's data management systems and interview personnel relevant to the project.

Emissions Reduction Data and Calculation Assessment

This assessment used information and insights gained during the previous steps to evaluate the collected data and the reported emissions reduction quantities, and identify if either contained material or immaterial misstatements.

Corrective Actions and Supplemental Information

The team requested clarification and supplemental information as well as two corrective actions during the verification. The corrective action requests and the responses provided are summarized in Section 7.

Verification Reporting

Verification reporting, represented by this report, documents the verification process and identifies its findings and results. Verification reporting consists of this report for EcoSecurities.

6. Site's Conformance with Verification Criteria

Site Overview

The DANC Solid Waste Management Facility (DANC) is an active municipal landfill located in Rodman, New York. The landfill covers an area of approximately 75 acres and will expand 100 acres more during 2008 to 2009. It started accepting waste in 1992 and by the end of 2007 had approximately 3,548,208 tons of waste in place.

DANC installed a landfill gas collection system and began flaring gas in April 2001. An invoice for the purchase of the flare, provided as evidence of the project's start date, is included as Attachment A. Continuously developed since the project's inception, the current gas control system consists of 64 gas extraction points that draw gas from vertical and horizontal wells, and leachate tie-ins. Two blowers actively collect gas from the extraction points, routing it through a header pipe and two condensate-knockout tanks to remove moisture from the gas. The first knockout is buried in the ground and uses a baffle plate to separate out droplets of moisture and pump it into the facility leachate removal system. A second knockout rests above ground at the blower skid. Landfill gas then passes through the blowers and past the flow meter where it is delivered to a candlestick flare.

The landfill is not subject to NSPS regulations requiring it to collect its landfill gas, because the NMOC emission rate recorded at its most recent Tier II test was 3.96 Mg/yr, as evidenced in Attachment B. The site is also in compliance with all provisions of its state solid waste permit. The site's permit from the New York State Department of Environmental Conservation Part 360 permit was reviewed to confirm compliance.

DANC and EcoSecurities entered into a voluntary emission reductions purchase agreement on May 5, 2008 whereby the rights to all emission reduction credits were transferred to EcoSecurities. Evidence attesting to the ownership of the environmental attributes associated with the LFG destruction project is included in Attachment C.

Data Collection and Monitoring Processes

The Audit Team discussed the following topics with site staff during the site visit and confirmed the information during this verification process:

- the data collection process; and
- internal documents and protocols that set guidelines for the data collection process.

Information gathered during these discussions was used to assess the Project's GHG information system and its controls for sources of potential errors and omissions.

Total landfill gas flow was monitored continuously by flow meter during the verification period. From January 1, 2008 through April 23, 2008, the site used a Thermal Instrument 62-9 thermal flow meter; from April 23, 2008 to September 30, 2008 gas flow was measured using a Veris Verabar V100 flow meter. The flow meter location remained the same following the equipment change and is downstream of the blowers and upstream of the flare, sufficiently placed to ensure laminar flow at the point of measurement. A SCADA system compiles two-second data information into a database for both gas flow and flare temperature. The site's Environmental Coordinator exports data in roughly 12-minute intervals from the SCADA system to a *.DAT file format on a monthly basis. Additionally, a field technician records the weekly totalized flow value from the flow meter display at the same time weekly measurements of gas quality are taken and recorded into field logs. This value is then transcribed from field logs to a summary spreadsheet.

After September 2, 2008, the SCADA system calculated daily flow totalized value, which is logged electronically each day at midnight. Each month the Environmental Coordinator conducts quality checks and transfers data files to EcoSecurities.

During the period where the Thermal Instruments meter was used, DANC personnel performed almost daily LFG flow meter validation tests, which consisted of a single-point test using a Pitot tube and manometer. Field tests showed the meter to consistently underreport gas flow making the resultant emission reduction estimates conservative. A sample form used to record and calculate gas flow rate in field testing is provided in Attachment D. The Veris Verabar V100 flow meter instrument, installed April 23, 2008, was calibrated by the manufacturer prior to delivery and again by a third party on August 26. Evidence of these calibrations is provided in Attachment E.

A hand-held GEM-500 is used to take weekly measurements of the methane content of the landfill gas through a sampling port in the main header pipe near the flow meter. All data results are manually recorded on daily log sheets by DANC, which are then transferred to an Excel summary spreadsheet. The GEM-500 gas analyzer is calibrated prior to each use. Site personnel log calibration events, an example of which is provided in Attachment F. The calibrator performs two tests against reference gases of known concentrations. The GEM-500 was also calibrated by the manufacturer on January 3, 2008 and July 7, 2008. Evidence of factory calibrations is provided in Attachment G. During periods where the GEM-500 is undergoing calibration by the manufacturer, the site uses either a GEM GA-90 or GEM-2000 to monitor methane concentration in the LFG. Alternate gas analyzers are also calibrated against a reference gas sample prior to each use.

Two thermocouples are used to monitor the temperature within the flare shroud in order to detect flame presence and determine operating hours of the flare. The project's operating system has several alarms and an auto-dialer that alerts field personnel if an alarm is triggered. Alarms trigger if the flame is extinguished and fails to relight after three attempts. The system automatically shuts down and gas is prevented from flowing to the flare if the flame remains extinguished.

Two sources of project emissions are identified within the project boundaries. Indirect emissions of CO₂ occur from purchased electricity used to power project equipment. Activity data is obtained from monthly utility invoices. Additionally, the site uses a propane tank to assist in igniting the flare. The site archives propane purchase records in order to estimate project emissions from this source.

Emissions Reduction Calculation Assessment

As part of the emissions reduction calculation assessment, the Project's assumptions and calculations were reviewed. The Project used justifiable assumptions when defining the baseline scenario as the partial or total release of LFG to the atmosphere.

The emission reduction calculations, summarized in Attachment H, were reviewed to ensure accuracy in the formulas used and the raw data used as inputs. The formulas were tested to ensure they were consistent with the calculation methodology described in the CCAR Protocol. In accordance with the protocol, a 10 percent discount is applied to the emission reduction calculations because the site employs weekly methane monitoring. No correction factor was applied for methane oxidation in the baseline scenario because the landfill has a synthetic liner. A 96 percent destruction efficiency is assigned to the project's combustion device and applied accordingly in emission reduction calculations. Although open flares are an ineligible combustion device under Version 1.0 of the CCAR Protocol, a variance allowing the Project to employ an open flare was granted by CCAR. Evidence of the approval of this variance is provided in Attachment I.

The amount of methane destroyed was calculated from metered data for landfill gas collected. From January 1 through April 21, 2008 emission reduction calculations used weekly, totalized flows obtained from field logs to compute the total quantity of landfill gas destroyed. From April 21 through May 27, 2008, data was obtained in approximately 12-minute intervals from the SCADA system. Total flow in a given interval was computed by averaging the flow rate at the beginning and end and multiplying the result by the length of the interval. Data obtained from

the SCADA system was substituted during this period because a totalizer was not yet operational with the new Veris flow meter that was installed on April 23. During May 27 through September 2, 2008, weekly flow totals from field logs were used again. In September 2007, the SCADA system became able to transmit and archive a daily totalized flow in a spreadsheet. From September 2 through September 30, 2008, weekly totalized flows used in calculations are pulled from this spreadsheet. This combination of data provided the most accurate data set available for the calculations.

The fraction of methane in landfill gas during a given interval was determined by averaging the two nearest weekly gas quality measurements taken before and after that interval. This volume is converted to a mass flow using the density of methane at 60°F and one atmosphere of pressure. Total volume of gas flow during a given interval metered by the Thermal Instruments flow meter was corrected from a temperature of 70°F and one atmosphere of pressure to 60°F and one atmosphere of pressure; total volume of gas flow during a given interval metered by the Veris flow meter was corrected from a temperature of 59°F and one atmosphere of pressure to 60°F and one atmosphere of pressure. The total volume of methane destroyed by the Project is computed in monthly intervals.

Project emissions were subtracted from total volume of methane destroyed. Project emissions for DANC consisted of indirect emissions of CO₂ from electricity consumption and direct emissions of CO₂ from the combustion of propane to assist the flare.

For data control and quality purposes, any measurements when flare temperature recorded below 200°F or gas flow rate fell below 300 standard cubic feet per minute were excluded from emission reduction calculations.

Copies of the raw data used in the calculations, including flow data, methane content data, and utility and other fossil fuel invoices, were compared with the data used in the final calculations and tested for transcription or mathematical errors. The short timeframe being verified allowed for inclusion of all raw data sources over the entire verification period. The calculations for the entire period were reviewed as well.

7. Verification Results

EcoSecurities provided good documentation for their emissions estimates as well as its programs around the data collection process. The verification process focused on verifying the data and quantification methodology used by EcoSecurities to calculate emissions reductions. No transcription errors from raw data to calculation spreadsheet were identified during the data assessment.

To complete the verification process, First Environment requested several clarification or supplemental document requests, as well as two corrective action requests. The corrective action requests and EcoSecurities' responses are detailed below:

Corrective Action Request	Response
Ensure most accurate gas flow data is used in emission reduction calculations.	EcoSecurities amended its emission reductions calculations to replace LFG flow totals from January 1 through April 21 and May 27 through September 30 based data obtained in roughly 12-minute intervals from the SCADA system with data taken from totalized flow readings.
Methane concentration measurements applied in emission reduction calculations from June 2 through September 30 are inconsistent with data obtained from field logs. Please correct the calculation to ensure consistency with activity data.	EcoSecurities corrected the formula used to transcribe methane concentration values in its calculation spreadsheet to resolve the issue.

All responses were found sufficient to satisfy First Environment's requests.

8. Verification Conclusion

Based on the assessments performed and the evidence collected, First Environment concludes that the Project GHG emissions reductions, due to the capture and combustion of methane gas for the period of January 1, 2008 to September 30, 2008, can be considered to a reasonable level of assurance:

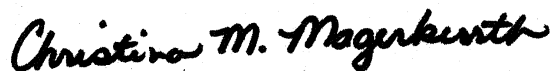
- consistent with the Project Methodology,
- without material discrepancy, and
- meeting the minimum level of accuracy of at least 95 percent.

Verified results show:

Reporting Period: January 1, 2008 to September 30, 2008	
Baseline Emissions (tCO ₂ -e)	88,072
Project Emissions (tCO ₂ -e)	160
Emissions Reductions* (tCO ₂ -e)	87,912

* as measured and calculated in accordance with the Project Methodology.

9. Lead Verifier Signatures



Christina M. Magerkurth

10. Independent Internal Reviewer Signature

A handwritten signature in black ink, appearing to read "Jay Wintergreen", written over a horizontal line.

James Wintergreen

ATTACHMENT A



Original SO #	929393	New SO #	929393
Customer	Development with NHTA	P.O. #	
Invoice Address		Site Address	
Invoice City	Redman	Site City	
State, Zip	NY	State, Zip	
Requested by		Site Contact & Phone Number	

Field Service Engineer:
An. Levinski

Are T&C's in place? ☒ Yes ☐ No If No, have the Customer sign KJZ T&C's prior to the start of ANY work. If Yes, what type of T&C's?
☐ Technical Asst Agmt ☐ PM Contract @ (rate) ☐ Blanket Contract @ (rate) ☐ Warranty ☐ Other

Type of Work:

(Check ☒ at least one in each section)

- | | | | |
|--|--|---|---------------------------------------|
| ☐ Internal | ☐ TOSG | ☐ Inspection | ☐ PM |
| ☒ External | ☐ Burners | ☒ Startup | ☐ Sales Call |
| | ☒ Flares | ☐ Callout | ☐ Non-JZ Equip |
| | ☐ Vapor | ☐ Training | ☐ |

Date	Time Interval	Chargeable Hours			Warranty Hours	Non Rev	Description of Work Performed
		Reg.	Wknd	OT			
3/26							Travel To Site From NH.
3/27	8:00						Check Flare installation - corrected problems. Installation - OK.
3/28	8:00						Ran Flare overnight - NO problems.
							Training on Flare operation and maintenance on Flare components.
							Unit operating properly.
							A New program chip will be sent to correct problem on PLC.
							Travel Back To NH.
Sub-Total Hours							
Total Hours Worked:							

RATE INFORMATION:

Regular Days @ \$ _____ Weekend Days @ \$ _____
 Reg OT Hours @ \$ _____ Wknd OT Hours @ \$ _____

Required Parts and Sales Price
 Comments or Recommendations

Work Verified By: _____

Work Submitted By: _____

John Zink Representative

Date 3/25/01

Phone (Fax)

☐ Add'l Info. Attached

Trip Expenses:

Air Fare:	
Mileage:	
Tolls/Taxi:	
Car Rental:	
Hotel:	
Phone/Tips:	
Fuel/Parking:	
Meals:	
Misc.:	
Sub-Total:	

Meals:

Date	Amount	Date	Amount

Leave Open ☐
 Close ☒

(_____ Miles @ _____ /mile)

Failure Codes: _____
 Repair Codes: _____

Refer to Code List for Valid Codes

Labor Total: _____
 Expenses Total: _____
 Parts Total: _____
 Grand Total: _____

ATTACHMENT B

January 30, 2008

RECEIVED

JAN 31 2008

**DANC - Solid Waste
Management Facility**

Director
Division of Enforcement and Compliance Assistance
United States Environmental Protection Agency
Region 2
290 Broadway, 21st Floor
New York, New York 10007-1886

Re: 2007 NMOC Emission Rate Report
Development Authority of the North Country
Solid Waste Management Facility, Rodman, New York
Title V Facility Permit # 6-2252-00007/00015

File: 394.066-S

Dear Director:

In accordance with the requirements of 40 CFR 60.757(b) of the Municipal Solid Waste Landfill New Source Performance Standards (NSPS), and on behalf of the Development Authority of the North Country (DANC), we are submitting the annual non-methane organic compound (NMOC) emission rate report for the Solid Waste Management Facility in Rodman, New York. DANC also began taking the putrescible discount for the waste in place as of the 2003 NMOC report. This report presents the NMOC emission rates based on the quantity of putrescible waste accepted through December 31, 2007. **Utilizing the putrescible discount, the NMOC emission rate for 2007 is estimated at 3.96 Mg/yr.**

The DANC Rodman Landfill began accepting waste in November 1992. The initial calculation of NMOC emissions, based on Tier 1 procedures of 40 CFR 60.754, were submitted to the Agency in June 1996, and estimated 99.7 megagrams (Mg) of NMOC per year. Site specific testing to determine the actual landfill NMOC concentration in accordance with the Tier 2 methods of 40 CFR 60.754 was completed in December 1996 and October 2001 which identified a NMOC concentrations as hexane of 129 ppmv and 372 ppmv, respectively. As required by rule, the site-specific NMOC concentration Tier 2 testing must be conducted every five years. The most recent Tier 2 testing was completed in August 2006, and identified a specific concentration of 46 ppmv of NMOC as hexane. DANC is required to update this emission estimate annually, and the site-specific NMOC concentration every five years.

The waste quantities used to calculate the NMOC emission rates are based on total putrescible waste received. Starting in reporting year 2003, DANC began exercising the right to discount

The experience to **listen.**
The power to **solve.**



Director
Division of Enforcement and Compliance Assistance
USEPA - Region 2
January 30, 2008
Page 2

non-degradable waste from the waste mass. The waste in place utilized for this report is for putrescible (degradable) wastes accepted through December 31, 2007.

The NMOC emission estimates were calculated utilizing the Landfill Gas Emissions Model (LandGEM), version 3.02. The Model was executed utilizing a NMOC concentration of 46 ppmv for the DANC Rodman Landfill (based on 2006 Tier 2 testing), with NSPS default constants for methane generation rate ($k = 0.05$ L/yr) and methane generation potential ($Lo = 170$ m³/Mg). The putrescible waste in place reported for the landfill is presented in Table 1. The Landfill Gas Emissions Model output is shown in Attachment 1.

Table 1	
Development Authority of the North Country Solid Waste Management Facility Putrescible Waste in Place Per Year	
Year	Cumulative Waste in Place at End of Year (Mg)
1992	4,926
1993	90,686
1994	218,273
1995	319,403
1996	424,447
1997	538,147
1998	665,436
1999	810,759
2000	978,777
2001	1,155,039
2002	1,326,376
2003	1,506,255
2004	1,677,385
2005	1,846,448
2006	2,064,545
2007	2,288,546





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Division of Enforcement and Compliance Assistance
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Based on the putrescible waste in place, and the site-specific NMOC concentration, the estimated emission rate of NMOC using the NSPS default constants is 3.96 Mg/year. The Authority will be required to submit an updated emission rate report for the 2008 reporting period in January 2009. No further action is required in accordance with 40 CFR 60 subpart WWW at this time.

Please contact me at (315) 457-5200 should you have any questions.

Very truly yours,

BARTON & LOGUIDICE, P.C.

Kyle C. Williams, I.E.
Engineer II

KCW/akg
Attachments

cc: Thomas Morgan, RAPCE, NYSDEC Region 6
NYSDEC, Regional Permit Administrator
NYSDEC, Bureau of Quality Assurance
Chief of Stationary Source Section, USEPA Region 2
E. William Seifried, Development Authority of the North Country



ATTACHMENT C

Project Developer's Attestation of Title

The undersigned, on behalf of EcoSecurities Group Plc, (the "Project Developer"), represents and warrants to the California Climate Action Registry ("California Registry"), as of the date set forth below, and throughout the period during which the Carbon Reduction Tons ("CRTs") related to DANC Landfill Gas Destruction Project (the "Project") are posted on the California Registry's Climate Action Reserve ("Reserve"), that:

1. it is the owner of full, unencumbered legal and beneficial title to CRTs registered in its name;
2. it has the right to sell and shall convey good title to the CRTs and will transfer the CRTs to a buyer via the Reserve only;
3. it agrees that all emission reductions related to the Project that are submitted for registration on the Reserve will be independently verified by a California Registry accredited third party verifier ("Verifier"), and will meet all the California Registry's requirements and protocols;
4. it has not made or provided knowingly false, fraudulent or misleading statements or information to the Verifier or the California Registry;
5. the Project has not been required to be implemented and maintained by any law, statute, regulation, court order, or other preexisting legally binding mandate;
6. for all vintage years that the Project is registered with the Reserve by the Project Developer, any CRTs issued by the California Registry for the Project, or the greenhouse gas emission reductions or removals associated with the CRTs issued for the Project, have not been, nor will be, registered with or claimed by other registries or under a different project title or location or previously sold to any third party prior to registration with the Reserve; and
7. for all vintage years that the Project is registered with the Reserve by the Project Developer, it has not, and will not in the future, retire, sell, claim, represent elsewhere, or use to satisfy obligations outside of the Reserve any of the CRTs issued by the California Registry for the Project or the greenhouse gas emission reductions or removals associated with the CRTs issued for the Project that would create the relevant CRTs unless retired through the Reserve for that purpose.

The following attestations apply to projects that: (a) have previously been registered with other registries, registry entities or similar systems; or (b) have generated emission reductions that were previously sold to a third party:

8. it will complete and sign the Project Transfer Form.
9. it agrees that the Project and all emission reductions must be verified by a Verifier per the relevant California Registry project protocol in order to be registered on the Reserve.

I declare that all statements contained herein are true and correct, to the best of my knowledge, and are made with full knowledge that the California Registry and all users of the Reserve rely upon the truth of the statements contained in this attestation. I am authorized to make this declaration on behalf of Project Developer. I understand and acknowledge that if any of the above representations made by or on behalf of the Project Developer in or pursuant to this Attestation of Title is false in any material respect when made or deemed repeated upon the making of each request for the CRTs to be issued for the Project or posted on the Reserve, Project Developer may be subject to penalties and potential indemnification damages under the Terms of Use, and that the California Registry would have the right to close Project Developer's account on the Reserve.

PROJECT DEVELOPER¹

Signature: _____

Name: _____

Patrick James Browne
Company Secretary
EcoSecurities Group Plc

Title: _____

Address: _____

DUBLIN DUBLIN

Date: _____

20 SEPTEMBER 2005

¹ If Project Developer is a corporation, partnership or other legal entity, this Consent must be executed by a company officer of the Project Developer. If Project Developer is an individual, this Consent must be executed by the individual.



Dulles State Office Building • 317 Washington Street, Suite 414 • Watertown, New York 13601 • Telephone (315) 785-2593 • Telefax (315) 785-2591 • TDD (800) 662-1220

Water and Wastewater Facilities
Warneck Pump Station
23557 NYS Route 37
Watertown, New York 13601

Telephone (315) 782-8661
Telefax (315) 786-2971
Emergency Telephone (315) 786-4000

Open Access Telecom Network
Dulles State Office Building
317 Washington Street, Suite 406
Watertown, New York 13601

Telephone (315) 785-2593
Telefax (315) 785-2591
Emergency Telephone (866) 669-3262

Solid Waste Management Facility
23400 NYS Route 177
Rodman, New York 13682

Telephone (315) 232-3236
Telefax (315) 232-3019

W W W . D A N C . O R G

November 13, 2008

First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005

Re: Proof of Title to Emissions Reductions Generated through Methane Capture and Destruction by the Development Authority of the North Country Landfill Gas Destruction Project from January 1, 2008, up to and Including September 30, 2008

Dear Sirs:

I am writing to inform you that the Development Authority of the North Country (DANC) and EcoSecurities Group plc (EcoSecurities) have entered into a verified emissions reduction purchase agreement effective May 5, 2008, (the "VERPA"). Pursuant to the VERPA, DANC agrees to transfer to EcoSecurities Group plc, the entire legal and beneficial title, all rights to and interests in, and all Verified Emission Reductions (VERS). VERS are defined as any right, interest, credit, entitlement, benefit or allowance to emit (present or future) arising from or in connection with any greenhouse gas emission reduction generated by DANC's Landfill Gas Destruction Project (the "Project") and subsequently verified. Title to all VERS shall vest free and clear of all liens, taxes, claims, security interests or other encumbrances of any kind whatsoever upon delivery to EcoSecurities. The VERPA applies to all such greenhouse gas emission reductions generated by DANC's Project from January 1, 2008, up to and including July 1, 2011, submitted by EcoSecurities to a third party verifier for Verification.

Very truly yours,

Robert S. Juravich
Executive Director

RSJ/aba

ATTACHMENT D

DEVELOPMENT AUTHORITY OF THE NORTH COUNTRY
Solid Waste Management Facility

Quarterly LFG Flow Verification Form

Mark T40
Name of person obtaining data

2/11/08
Date

This form shall be completed quarterly to verify that the Totalizing Flowmeter is reading within specifications.

GAS QUALITY

Readings obtained from the GEM 500 LFG meter after field calibration.

CH₄ 49.4 % CO₂ 34.9 % O₂ 2.2 %

TEMPERATURES

Air and Gas Temperatures

Air Temperature 10 °F

Gas Temperature 69 °F

PRESSURES

Barometric Pressure and Velocity and Static Pressures from Manometer

Barometric Pressure 29.78 InHg Velocity Pressure 1.32 InH₂O

Static Pressure .85 InH₂O

RESULTS

Input data above into Calculation Spreadsheet located at X:\LFG\Forms\Flow Verification.xls

Gas Flow Rate from Calculation spreadsheet

1495

Gas Flow Rate from Flowmeter at Skid

1100

% difference (less than 5% suggested)

395 / 30.4%

Directions

Only input data into area with blue values.

Red indicates calculations, **do not input data**.

AIR FLOW AND MASS EMISSION RATE CALCULATION SPREADSHEET

Data Input		
Sample Location :	Blower /Flare Skid	
Date :	2/11/2008	
Velocity Pressure (inches of water) ΔP =	1.37	Sqrt. ΔP = 1.1705
Static Pressure (inches of water) P_{static} =	0.9	
Pitot Tube Coefficient C_p =	0.700	
Gas Temperature (degrees F) =	69.0	Temp ($^{\circ}R$) T_r = 529
Barometric Pressure (inches of mercury) P_{bar} =	29.78	
Duct Diameter (inches) =	9.3	Pipe Area (sqft) A_s = 0.4666
% Moisture (H_2O) =	5.0	
% Oxygen (O_2) =	2.2	Pressure P_s = 29.84
% Carbon Dioxide (CO_2) =	34.9	
% Methane (CH_4) =	49.4	Gas Mol. Wt. = 27.26
Total Hydrocarbon Concentration (ppm) =		
Calculations		
Gas Velocity V_s =	56.49	feet per second
Gas Flow Rate =	1581.6	acfm
	1495.7	dscfm
Stack Gas Concentration =	0.0	parts per million
Mass Emission Rate =	0.0	pounds per hour

acfm = gas flow rate in actual cubic feet per minute

dscfm = gas flow rate in dry standard cubic feet per minute

Formulas:

$$\text{Pressure } P_s = P_{bar} + (P_{static} / 13.6)$$

$$\text{Gas Molecular Weight} = [(\%O_2 \times 0.32) + (\%N_2 \times 0.28) + (\%CO_2 \times 0.44) + (\%CH_4 \times 0.16)] \times (1 - \%H_2O / 100) + (18 \times \%H_2O / 100)$$

$$\text{Gas Velocity} = \sqrt{T_r / (P_s \times \text{Mol.Wt.})} \times 85.49 \times C_p \times \sqrt{\Delta P}$$

$$\text{Gas Flow Rate (acfm)} = V_s \times 60 \times A_s$$

$$(\text{dscfm}) = \text{acfm} \times 17.647 \times P_s / T_r \times (1 - (\%H_2O / 100))$$

$$\text{Mass Emission Rate (lb/hr)} = ((C_s \times \text{Mol Wt}) / 24.45) \times 62.43 \times 10^{-9} \times \text{dscfm} \times 60$$

ATTACHMENT E



ABB Inc. - Instrumentation
125 East Country Line Road
Warminster, PA 18974 USA

PRINT DATE
07/30/2008

PAGE
1

SERIAL NUMBER
08W007399

SHIP TO

RL STONE CO., INC.
115 AINSLEY DIRVE
PO ABB-028-3956
SYRACUSE
NY
13210
USA

SHIP TO CUSTOMER
RLS13210 1

PRODUCT NUMBER
267CS

PRODUCT DESCRIPTION
[267CS]MULTI PRSS XMTR MASSFLO

QTY
SHIPPED
1

267CSC2FA3A1V1EBL1

SENSOR:
0.8 TO 24 IN H2O
STATIC PRESS RG:
0 TO 290 PSI
DIAPH MATL/FILL:
HASTELLOY-C / INERT FLUID
PROCESS FLG&ADP:
AISI 316L SS, 1/4"NPT DIRECT
BOLTS/GASKETS:
AISI 316 SS(NACE)BOLT/VITON GK
HOUSING/CONN:
ALUMINUM HOUSING/ 1/2" NPT
OUTPUT/ADDTL OP:
HART COMM./ADDTL.OPTIONS REQ'D
DRAIN/VENT VALV:
AISI 316L SS/ ON PROCESS AXIS
ELECT.CERTS:
FM-EXPLOSION PROOF
INTEGRAL LCD:
DIGITAL LCD INTEGRAL DISPLAY
MOUNTING BRACKT:
NONE
OPERATING MANUL:
STD-ENGLISH
LABELS & TAG:
STD-ENGLISH
ADDTL TAG:
NONE
PREP.PROCEDURE:
NONE
CERTIFICATES:
NONE
MATL.TRACEABILT:
NONE
CONNECTOR:



NONE
SIZING DATA:
CALIBRATION:
CALIBRATION
AT SPECIFIED RANGE

** Calibrate to customer **
** specified range. **

CALIB.RANGE.:
.572"WC MIN TO 5.162"WC MAX
LCD OUT IND.:
1000 SCFM MIN TO 3000 SCFM MAX
SPCL INSTR:
15 PSIG LANDFILL GAS

*Per Flow Calc
Attached*

 Back  Print

VERIS Verabar.**Flow Calculation**

VeraCalc

Version: VP190-REV 6.2.0

Model No.: V100 (10 in EXACT)
-10-H-G-F3HS-JCM-403
Serial No.: V13615-01.1

Tag No.:

Pipe Size: 10 in EXACT
ID = 9.25 Wall = 0.375

Process: Land fill Gas

Customer: RL STONE

Customer PO: VER-028-3956

Processed By: Ian Asher

Veris Ref.:

Process Date: 02-25-2008 14:04:03

File Name: V13615-01.1.vfc

Fluid Name: Land Fill Gas

I. Flow Equation**Standard Volumetric Flow Rate for Gases**

$$Q_v = C' \cdot \sqrt{\frac{h_w \cdot P_{fa}}{T_{fa} \cdot Z_f}} \quad h_w = \left[\frac{Q_v}{C'} \right]^2 \cdot \left[\frac{T_{fa} \cdot Z_f}{P_{fa}} \right]$$

$$C' = \frac{N \cdot K \cdot Y_v \cdot F_a \cdot D^2}{\sqrt{M_w}} \cdot \left[\frac{T_{ba} \cdot Z_b}{P_b} \right]$$

$$T_{fa} = T_f + 459.67$$

$$T_{ba} = T_b + 459.67$$

$$P_{fa} = P_f + 407.52$$

II. Constants

Term	Description	Value	Units
N	Numeric Constant	3.7214307	
K	Flow Coefficient	0.7479	
D	Pipe ID	9.25	in
P _a	Atmos Pressure	14.70	psi
Z _b	Base Compress	1	
T _b	Base Temperature	59.00	F
P _b	Base Pressure	14.70	psi

III. Flow Rate and Differential Pressure

Term	Description	Maximum	Nominal	Minimum	Units
Q _v	Standard Volumetric Flow Rate	3000	1600	1000	SCFM
C'	Flow Constant	1573.01	1574.68	1575.09	
P _f	Flowing Pressure	15	15	15	in H2O(68F) G
T _f	Flowing Temperature	140	140	140	F
M _w	Molecular Weight	28.52	28.52	28.52	Mol Weight
Y _v	Expansion Factor	0.9985	0.9996	1.0000	
Z _f	Flowing Compressibility	1	1	1	
F _a	Thermal Expansion Factor	1.001	1.001	1.001	
h _w	Differential Pressure	5.162	1.465	0.572	in H2O(68F)

IV. Structural Limits

Term	ANSI Eq	at User's Maximum	Ultimate Maximum	Limiting Component at Ultimate
Max Temp	ANSI 600	450 F at 1 PSI G	450 F at 618 PSI G	Instrument Head
Max Press	ANSI 300	714 PSI G at 140 F	740 PSI G at 100 F	Sensor

Maximum Allowable Flow Rate at Maximum Column: 20216.87 SCFM (273.22 in H2O(68F))

Maximum Insert/Retract Flow Rate at Maximum Column:

V. Notes



RL Stone company inc

115 Ainsley Dr, Syracuse, NY 13210-4284 • Tel: 315-479-7979 • Fax: 315-479-5402



Representatives & Distributors

VERIFICATION OF CALIBRATION

Date of Calibration:

8/26/08

Name/Employer of Individual(s) Calibrating:

Bill Wells

RL Stone Co.

Instrument Manufacturer:

ABB

Instrument Model Numbers:

267CS

Instrument Serial Numbers:

267CS6502008358

Project:

Solid Waste management Facility
Rochester NY

Contact:

Pete Cheresnoski

This verifies that field calibration was performed against a standard to validate that the instruments met or exceeded its published accuracy. This calibration included a zero and span adjustment and operation in a closed loop with actual field conditions.

Remarks:

No zero or span adjustment
required at this time

W. Wells
Name of Technician

Acceptance:

Mark Tye

Contractor's Representative

Date:

8/26/08

winwordwerlibrev4-97b

ATTACHMENT F

DEVELOPMENT AUTHORITY OF THE NORTH COUNTRY

CALIBRATION LOG FOR THE GEM 500 LFG METER

Date Calibrated	Individual Calibrating	Calibration Gas Used				Full Span Reading				Calibration Result			
		Oxygen	LEL	H ₂ S	CO	Oxygen	LEL	H ₂ S	CO	Oxygen	LEL	H ₂ S	CO
3/5/08	MST	4.0%	50%	—	35%	4.0	50.1	—	34.8	4.0	49.8	—	34.7
3/6/08	MST	4.0%	50%	—	35%	4.0	49.9	—	33.9	3.9	50.0	—	34.1
3/7/08	MST	4.0%	50%	—	35%	4.0	49.9	—	35.4	3.9	49.9	—	35.1
3/10/08	MST	4.0%	50%	—	35%	4.0	52.1	—	37.4	3.9	50.0	—	34.5
3/12/08	MST	4.0%	50%	—	35%	4.0	48.3	—	32.1	4.0	49.9	—	34.7
3/13/08	MST	4.0%	50%		35%	3.9	49.8		34.4	3.9	50.1		35.1
3/14/08	MST	4.0%	50%		35%	4.1	49.2		35.7	4.0	50.0		34.8
3/17/08	MST	4.0%	50%		35%	4.0	50.9		34.4	3.9	49.6		35.1
3/18/08	MST	4.0%	50%		35%	4.0	49.2		34.9	3.9	49.6		34.7
3/19/08	MST	4.0%	50%		35%	3.9	50.5		35.2	4.0	49.7		35.1
3/20/08	MST	4.0%	50%		35%	4.0	49.3		34.5	4.0	50.0		34.7
3/21/08	MST	4.0%	50%		35%	3.7	50.2		34.5	3.9	49.8		34.9
3/23/08	MST	4.0%	50%		35%	4.0	50.7		35.0	3.9	49.3		35.0
3/24/08	MST	4.0%	50%		35%	4.2	50.3		36.2	3.9	49.9		35.0
3/25/08	MST	4.0%	50%		36%	3.9	49.2		33.6	3.9	49.9		35.1
3/26/08	MST	4.0%	50%		35%	4.0	49.6		34.5	3.9	50.1		35.1
3/27/08	MST	4.0%	50%		35%	3.9	49.3		34.1	3.9	49.9		34.8
3/31/08	Rec	4.0%	50%		35%	3.9	51.2		35.1	3.9	49.9		34.9
4/2/08	MST	4.0%	50%		35%	4.1	50.0		35.2	3.9	50.0		35.4
4/3/08	MST	4.0%	50%		35%	3.9	49.6		35.1	3.9	50.4		35.0
4/4/08	MST	4.0%	50%		35%	4.0	49.2		35.3	3.9	50.3		34.2
4/7/08	MST	4.0%	50%		35%	3.9	50.5		34.1	3.9	50.2		34.6
4/8/08	MST	4.0%	50%		35%	4.0	50.4		34.8	3.9	50.1		35.0
4/9/08	MST	4.0%	50%		35%	3.9	50.0		34.3	3.9	50.1		35.1

NOTES / COMMENTS

ATTACHMENT G



CERTIFICATE OF CALIBRATION

Certificate number: E0777_2/508
Date of check: Thursday, January 03, 2008
Product: GEM500
Serial number: E0777
Calibration checked at: 71.8°F to 89.0°F

Primary Gas Channels

Methane (CH ₄)		Carbon Dioxide (CO ₂)	
Certified Gas (%)	Reading (%)	Certified Gas (%)	Reading (%)
50.00	49.3	50.00	49.6
15.05	15.3	14.98	14.4
4.99	5.3	5.00	4.7

Oxygen (O ₂)	
Certified Gas (%)	Reading (%)
20.95	21.0

Barometer	
Certified (mb / "Hg)	Reading (mb / "Hg)
983 / 29.04	982 / 29.00

Approved by:

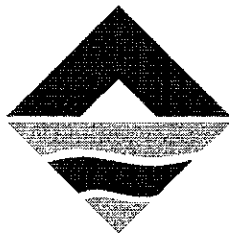
DORIAN VENDITTO
[Signature]

(Name)

All gases are traceable to certified National Standards

(Signature)

This unit must be serviced at regular 6 monthly intervals by a Landtec approved service facility.



LANDTEC

CERTIFICATE OF CALIBRATION

Certificate number:

E0777_2/1099

Date of check:

Monday, July 07, 2008

Product:

GEM500

Serial number:

E0777

Calibration checked at:

74.4°F to 92.1°F

Primary Gas Channels

Methane (CH4)		Carbon Dioxide (CO2)	
Certified Gas (%)	Reading (%)	Certified Gas (%)	Reading (%)
50.01	50.4	49.99	49.9
15.18	15.5	15.00	14.3
5.02	5.3	4.98	4.6

Oxygen (O2)	
Certified Gas (%)	Reading (%)
20.95	20.8

Barometer	
Certified (mb / "/hg)	Reading (mb / "/hg)
972 / 28.69	972 / 28.70

Approved by:

DORIAN VENDITTO

(Name)

[Handwritten Signature]

(Signature)

All gases are traceable to certified National Standards

This unit must be serviced at regular 6 monthly intervals by a Landtec approved service facility.

ATTACHMENT H

Equation 1: Project GHG Emission Reductions		
CH ₄ DEST _{PR}	4,660	tCH ₄ /yr
GWP	21	-
OX	1.00	%
Radius of Influence (ERO _{discount})	0	ft ³ CH ₄ /ft ³ LFG
Discount Factor (DF)	0.9	-
Fossil Fuel Emissions (FFCO ₂)	6	tCO ₂ /yr
Total Fossil Fuel Consumed (FF _{diesel})	599	gal
Fuel Emission Factor (EF _{diesel})	10	kgCO ₂ /gal
Total Fossil Fuel Consumed (FF _{propane})	14	gal
Fuel Emission Factor (EF _{propane})	6	kgCO ₂ /gal
Electricity Emissions (ELCO ₂)	154	tCO ₂ /yr
Annual Electricity Consumption (EL _{PR})	404	MWh
Emission Factor for Electricity (EF _{EL})	0.382	tCO ₂ /MWh
Emission Reductions (ER_y)	87,912	tCO ₂ e/yr

Data Source
From Equation 2
IPCC
Synthetic cap
No pre-existing collection
Weekly methane reading
Diesel & Propane
Diesel generator
GRP V. 2.2, Appendix C, Table C.5
Propane pilot
GRP V. 2.2, Appendix C, Table C.5
Calculated from C13 and C14
Invoices
eGRID2002: NYUP
Calculated

Equation 2: Total Annual Methane Emissions Destroyed		
Flare		
Total Quantity of Gas (LFG flare)	499,984,567	ft ³
Ave Methane Fraction (PR _{CH4})	50.55%	ft ³ CH ₄ /ft ³ LFG
Density of Methane (D _{CH4})	0.000019	tCH ₄ /ft ³ CH ₄
Destruction Efficiency (DE)	0.96	%
Incomplete Combustion (FFCH ₄)	0	tCH ₄ /yr
CH₄DEST_{flare}	4,660	tCH₄/yr
Electricity		
Total Quantity of Gas (LFG electricity)	0	ft ³
Default Destruction Efficiency (DE)	0.995	%
CH₄DEST_{electricity}	0	tCH₄/yr
Thermal		
Total Quantity of Gas (LFG thermal)	0	ft ³
Destruction Efficiency (DE)	0.98	%
CH₄DEST_{thermal}	0	tCH₄/yr
Pipeline		
Total Quantity of Gas (LFG upgrade)	0	ft ³
Destruction Efficiency (DE)	0.98	%
CH₄DEST_{pipeline}	0	tCH₄/yr
Total Project		
CH ₄ DEST _{flare}	4,660	tCH ₄ /yr
CH ₄ DEST _{electricity}	0	tCH ₄ /yr
CH ₄ DEST _{thermal}	0	tCH ₄ /yr
CH ₄ DEST _{pipeline}	0	tCH ₄ /yr
CH₄DEST_{PR}	4,660	tCH₄/yr

Data Source
Continuous Monitoring
Continuous Monitoring
CCAR Protocol, V.2
CCAR Protocol, V.2
N/A
Calculated
N/A
N/A
Calculated
N/A
N/A
Calculated
Continuous Monitoring
CCAR Protocol, V.2
Calculated
Calculated
Calculated
Calculated
Calculated
Calculated

Equation 2a: Emissions from Incomplete Combustion of Natural Gas

Natural Gas Combusted (FF _x)	N/A	ft ³ /yr
Ave Methane Fraction (FF _{GCH4})	N/A	ft ³ CH ₄ /ft ³ FFG
Density of Methane (D _{CH4})	N/A	tCH ₄ /ft ³ CH ₄
Methane Destruction Efficiency (DE _x)	N/A	%
Incomplete Combustion (FF_{CH4})	0	tCH₄/yr

Equation 3: Adjustment for Overlap of LFG Collection Well Effective Radius of Influence

Pre Project LFG (LFG _{OR1})	N/A	ft ³ /yr
Pre Project Methane Fraction (OR _{1CH4})	N/A	ft ³ CH ₄ /ft ³ LFG
Denstiy of Methane (D _{CH4})	N/A	tCH ₄ /ft ³ CH ₄
Post Project LFG (LFG _{OR2})	N/A	ft ³ /yr
Post Project Methane Fraction (OR _{2CH4})	N/A	ft ³ CH ₄ /ft ³ LFG
Overlap Adjustment (EROI_{discount})	0	ft³ CH₄/ft³ LFG

Data Source

N/A
N/A
N/A
N/A
Calculated

Data Source

N/A
N/A
N/A
N/A
N/A
Calculated

ATTACHMENT I



Variance Approval

The California Climate Action Registry (California Registry) received a request for variance in September 2008 for the Development Authority of North County (DANC) Landfill Gas Destruction Project and the Granger Decatur Landfill Gas Destruction Project. The two landfill projects are using Version 1 of the Landfill Project Reporting Protocol (Landfill Protocol) which does not allow for the use of open flares in the project activity. At the time of the variance request the California Registry was in the process of updating the Landfill Protocol to allow for the use of open flares with a default methane destruction efficiency of 96%.

The California Registry granted a variance for the DANC and Granger Decatur Landfill Gas Destruction Projects allowing for the use of open flares under Version 1 of the Landfill Protocol with the application of a 96% destruction efficiency, contingent on the adoption of this project activity under Version 2 of the Landfill Protocol.

The California Registry board of directors adopted Version 2 of the Landfill Protocol in November 2008. The use of open flares with a default methane destruction efficiency of 96% is allowed for in Version 2 of the Landfill Protocol. The California Registry approved the variance for the DANC and Granger Decatur Landfill Gas Destruction Projects in December 2008.

Signed:

Derek Markolf
Senior Policy Manager, California Registry

Date: December 18, 2008

