



DET NORSKE VERITAS

CLIMATE ACTION RESERVE VERIFICATION REPORT

Anson County Landfill

CAR Project ID: CAR517

Report Period: 23 December, 2009 to 4 December, 2010

Report for:
Element Markets, LLC

DNV report number
2010-9514



Date of first issue: 13 December 2010		Project No.: PRJC-279938-2010-CCS-USA	
Approved by: Barbara Toole O'Neil Principal Consultant		Organizational unit: Sustainability and Innovation Climate Change and Environmental Services	
Client: Element Markets, LLC		Client ref.: Zach Eyler	
Summary: Det Norske Veritas (U.S.A.), Inc (DNV) has performed the verification of the GHG emission reductions achieved by the project “<i>Anson County Landfill</i>” for the period of 23 December 2009 to 4 December 2010. In DNV’s opinion, the GHG emission reductions reported to the Climate Action Reserve (CAR) are fairly stated. The GHG emission reductions were calculated correctly on the basis of the approved CAR “Landfill Project Protocol v2.1” (the protocol current at the time the project was first implemented) and the supporting documentation. Det Norske Veritas (U.S.A.), Inc. is able to certify that the emission reductions from the “<i>Anson County Landfill</i>” during the period of 23 December, 2009 to 4 December, 2010 equate to 21,896 tCO₂e.			
Report No.: 2010-9514	Subject group: Environment	Indexing terms:	
Report title:		Key words:	Service:
Climate Action Reserve Verification Report of Anson County Landfill		Emission reductions Climate Action Reserve	Verification
			Market sector: Landfill
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Work reviewed by: Shruthi P Bachamanda			
Date of this revision:	Revision No:		
22 December 2010	01	18	
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ABBREVIATIONS

ACLF	Anson County Landfill
CAR	Climate Action Reserve
CDNC	Chambers Development of North Carolina, Inc.
CH ₄	Methane
COI	Conflict of Interest
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide Equivalent
CRTs	Climate Reserve Tonnes
DENR	Department of Environment and Natural Resources
DNV	Det Norske Veritas
EM	Element Markets, LLC
GHG	Greenhouse Gas(es)
LFG	Landfill Gas
Mg	Million Mega-Grams
NCDENR	North Carolina Department of Environment and Natural Resources
NMOC	Non-methane Organic Compounds
NSPS	New Source Performance Standard
SCS	SCS Field Services
WCN	Waste Connections, Inc.



1. INTRODUCTION

Det Norske Veritas (U.S.A), Inc (DNV) has been contracted by Element Markets, LLC (EM) to verify the emission reductions generated by the Anson County Landfill (ACLF) project (hereafter called “the project”) for the period from 23 December, 2009 to 4 December, 2010. The verification was completed according to requirements contained in the Climate Action Reserve Verification Program Manual. This report contains the findings from the verification and a statement for the verified emission reductions. This is an initial verification and is the first report period for the project.

1.1 Verification Objective

Verification is the process through which a verification body assesses a project developer’s greenhouse gas (GHG) reduction assertions against verification criteria and standards that are defined by the Climate Action Reserve (CAR) GHG program. The purpose of verification is to provide an independent, third-party review of project data and information being submitted to the CAR, to ensure that the project is eligible as defined in the relevant project protocols and that the reported emission reductions meet the appropriate materiality threshold.

CAR requires third-party verification of all GHG projects, as specified in each project protocol. Climate Reserve Tonnes (CRTs) are issued only after a Verification Report and a Verification Opinion attesting to their accuracy have been submitted by the verifier and accepted by CAR. DNV is a verification body under CAR and meets additional sector-specific accreditation requirements to which this project is subject.

The objective of this verification was to verify the voluntary emission reductions reported for the ACLF for the period from 23 December, 2009 to 4 December, 2010.

1.2 Scope and Criteria

1.2.1 Scope of the Verification

The scope of the verification includes:

- Ensuring that the project is eligible according to the specific eligibility rules in the general and landfill protocols, and that the project developer has designed, measured and monitored baseline and project emissions, per the protocol.
- Reviewing the data reported to the CAR, the project monitoring plan, and record keeping and quantification methodologies to ensure that the reported GHG reductions are accurate and calculated in line with the general and landfill protocols.

1.2.2 Verification Criteria

According to the CAR, the criteria to be applied during this verification include those contained in the following protocols:

- Landfill Project Protocol v2.1 and the Errata and Clarifications for Landfill Project Protocol v2.1¹;
- CAR Program Manual²;



- ISO 14064-3:2006³;
- CAR Verification Program Manual⁴;
- Landfill Project Verification Protocol 2.0⁵; and

The ACLF project was submitted to the CAR on 22 October, 2009 and accepted by the CAR on 28 October, 2009. The project was developed prior to the publication of the Landfill Project Protocol v. 3.0, and therefore Landfill Project Protocol v. 2.1 was referred to for this project.

1.3 Level of Assurance

During the verification, DNV has focused on providing a reasonable level of assurance that:

- The emission reduction calculation methodology used is appropriate and correctly applied.
- The emission reductions have been accurately monitored, calculated and reported.
- The emission reductions met the materiality threshold of $\pm 5\%$

2. PROJECT INFORMATION

2.1.1 Project Background

The ACLF is a municipal solid waste landfill located near Polkton Township, Anson County, North Carolina. The landfill began operation in 2001 and is owned by Chambers Development of North Carolina Inc., (CDNC), a wholly owned subsidiary of Waste Connections, Inc. (WCI).⁶

The total design capacity of the site is approximately 27.2 million cubic yards (approximately 20.8 million cubic meters). The landfill gas (LFG) collection and control system was planned in November 2007⁶ and consists of four separate phases of LFG collection and control development. Phase 1 consists of five cells labeled A through E with a total airspace of 2.6 million cubic yards (approximately 2.0 million cubic meters). Currently, Phase 1 Cell 1E is being filled.⁶

2.1.2 Project Activities

The ACLF project began operation on 7 February, 2008, as confirmed during the site visit interviews with SCS Field Services, Inc. (the GHG monitoring service provider for the project)⁷ and documentation showing the records of flare operations.⁸ The permit to construct and operate the flare was evidenced by the North Carolina Department of Environment and Natural Resources (NCDENR) Air Permit dated October 30, 2007.⁹ The ACLF project consists of implementation of a landfill gas collection and control system and open flare to facilitate the destruction of methane contained in the landfill gas. The LFG collection and control system consists of gas header and collection piping, vertical gas extraction wells and gas vents, condensate management structures, and a blower/flare skid.



The project reporting start date is 23 December, 2009. Before that date the necessary equipment were not installed or operational to provide adequate data for emission reduction estimates to meet the requirements of the Landfill Project Protocol 2.1⁶.

The daily operation of the project is undertaken by personnel of ACLF with support from independent service provider “SCS Field Services”.

EM is the project developer¹⁰ and has exclusive rights and title to any carbon emission reduction credits resulting from this activity, as confirmed by reviewing the Project Developer’s Attestation of Title and the Carbon Credits Management Agreement.^{11, 12} The ACLF is owned by Chambers Development of North Carolina Inc., (CDNC), that is a wholly owned subsidiary of Waste Connections, Inc. (WCI).

3. VERIFICATION ACTIVITIES

DNV has undertaken verification activities and compiled the verification team and tasks based on the complexity of the project developers’ GHG emission reductions and the underlying data supporting them. The verification team and process are summarized below.

Verification Team:

Weidong Yang	Lead Verifier / Project Manager
Sheryl Lawry	Verifier
Shruthi P. Bachamanda	Senior Internal Reviewer

Duration of Verification:

Table 1: Verification Timetable

Task	Activities	Completion Date
1	Conflict of Interest form approved by the CAR	2 December, 2010
2	Kick-off meeting	3 December, 2010
3	Document review	3 – 9 December, 2010
4	Site visit	8 – 9 December, 2010
5	Report preparation	9 – 13 December, 2010
6	Quality assurance review	22 December, 2010
7	Submission of verification report to EM	29 December, 2010
8	Verification opinion uploaded to the CAR project site	4 January, 2011

3.1 Desk Review

The documents provided by EM, including the project design document, emission reduction spreadsheets, and operation management and control documents^{6,13,14} were assessed by DNV.



Initial risk areas related to the emission reduction estimates were identified through the document review and consist of emissions related to the destruction of landfill gas by flare. The on-site visit agenda was prepared according to items noted during the initial desk review.

3.2 Site Visit and Data Sampling

On 8-9 December, 2010, DNV performed a site visit at ACLF. Attendees at the site visit were Element Markets Project Managers Cassandra Stacey and Zach Eyler, ACLF Landfill Manager Tyler Fitzgerald, ACLF Landfill Gas Technician William Melton, and SCS Field Services technician Tony Cartee.¹⁵ During the site visit, DNV verified the project facility operation, including the monitoring practices related to the emission reduction estimate, by observation, record review and interview with personnel related to the operation of the project. Based on the site visit, DNV was able to confirm that the actual implementation of the project conforms to the description contained in the project design document.⁶

During the site visit, DNV was also able to confirm the emission sources related to the project activity and the risk areas identified during the desk review. A final sampling plan was determined during the site visit and emission reductions were re-calculated accordingly.

As shown in Table 2, the emissions related to the destruction of landfill gas by the flare (Source A) are the primary emissions related to emission reduction estimates; the emissions are thus determined as the major risk related to the total emission reduction estimates. Therefore, a sampling plan for re-calculating the emission reductions was developed only for Source A. The sampling plan is described in “**Data Collection, Aggregation, and Calculation**” in Section 4.5.2.

Table 2: Emission Sources Identified

Emission Sources Identified	Ranked by Magnitude
Emissions related to the destruction of landfill gas by flare (Source A)	1. more than 99.5% of the emission reductions
Emissions related to the electricity consumed by the project activity (Source B)	2. less than 0.5% of the emission reductions
Emissions related to the propane consumed by the project activity (Source C)	3. less than 0.5% of the emission reductions

4. VERIFICATION FINDINGS

4.1 Summary

DNV was able to verify that the GHG emission reductions reported for the ACLF project are fairly stated.

Clarification requests were identified during the verification. Responses were provided by EM to the satisfaction of DNV.

DNV was able to confirm that there were no variances that would affect the verification activities and that the referenced Errata and Clarification to the Landfill Project Protocol v2.1 were not significant to affect the verification activities.



4.2 Project Definition

The project is the installation of a qualifying device for destroying methane gas collected at an eligible landfill, as shown below.

1. ACLF is not subject to regulations or other legal requirements requiring the destruction of methane gas, as described in Section 4.3.3.
2. There is no other liquid being added to the waste mass in ACLF, as confirmed during the site visit.¹⁵ Therefore, ACLF does not meet the U.S. Environmental Protection Agency's definition of a "bioreactor."
3. An open flare is used in the project for destruction of the LFG, as observed during the site visit.

4.3 Project Eligibility

The Landfill Project Protocol 2.1 establishes that a project must satisfy four eligibility rules to meet the definition of a GHG reduction project. DNV verified that the project is in conformance with these four eligibility requirements for the report period of 23 December, 2009 to 4 December, 2010.

4.3.1 Eligibility Rule I – Project Location

On 8-9 December, 2010, a qualified DNV lead verifier conducted a site visit at ACLF in Polkton Township, Anson County, North Carolina. DNV verified that the project is located in Anson County as stated, and hence eligible to register with the CAR.

4.3.2 Eligibility Rule II – Project Operation Start Date

DNV verified the project's conformance with this eligibility rule. The project started operation on 7 February, 2008, as evidenced by field notes provided by SCS and confirmed during the site visit interview with SCS and the Air Permit issued by NCDENR permitting construction and operation of air cleaning devices and discharge of air contaminants into the atmosphere.^{16,17} Reference is also made to documentation provided by SCS regarding the start of project construction.¹⁸ The project was submitted to the CAR on 22 October, 2009, which is within the first 12 months following the date of adoption of Version 2.0 of the Landfill Project Protocol by the CAR board (November 17, 2008).¹⁹

The project claims emission reductions starting from 23 December, 2009. Before that date parameters required for emission reduction estimates were not available or did not meet the requirements of the Landfill Project Protocol 2.1⁶.

4.3.3 Eligibility Rule III – Additionality

The Performance Standard Test

DNV verified that the project conforms with this eligibility rule by meeting option 1 of the performance threshold, as there is no collection and destruction of landfill gas prior to the project start date, as evidenced by interviews during the on-site visit.⁸



The Legal Requirement Test

DNV verified the project's conformance with this eligibility rule, as detailed below.

- ACLF is subject to the New Source Performance Standard (NSPS) for the control of non-methane organic compounds (NMOC). Based upon the results of the 2009 Tier II Report,²⁰ ACLF had a NMOC emission level estimated at 43.9 Mg (million mega-grams) in 2009 and 47.7 Mg in 2010, and was expected to exceed 50 Mg towards the end of 2011.⁵ As per 40 CFR 60.757(b)(1), the Tier II report will serve as the 5-year report for NSPS compliance. These values do not require ACLF to capture the landfill gas under the regulation until 2011, as the compliance limit in the regulation is 50 Mg per year.
- CDNC is not required to manage its landfill gas under either NCDENR or local regulations, as confirmed by the Project Developer's Attestation of Voluntary Implementation²¹ submitted to the CAR.
- This is further confirmed by reviewing the relevant permits for CDNC, which are listed as follows:²²
 - 1) NCDENR, Permit to Construct and Permit to Operate, Municipal Solid Waste Landfill Facility Permit no. 04-03-MSWLF-2009, dated September, 2009.
 - 2) NCDENR Division of Air Quality, Air Permit with authorization to construct and operate a flare – Permit # 09835R00 issued 30 October, 2007 with Expiry 30 September, 2012.
 - 3) NCDENR, Confirmation letter of receipt of Title V application with submission from SCS on behalf of ACLF, dated 20 September, 2010. No requirements for installing a flare were found in these permits.

4.3.4 Eligibility Rule IV – Regulatory Compliance

- EM has submitted the Attestation of Regulatory Compliance to the CAR prior to this verification.²³ Through interviews during the site-visit, DNV can confirm that there is no non-compliance related to the project for this reporting period.¹² In addition, as per the monitoring plan for the project,⁶ CDNC is required to notify EM of any notice of violation, potential violation, or violations of any environmental laws, whether caused by or relating to the project facilities; there is no such notice during this report period as confirmed during the site visit.¹²
- In addition, DNV verified the air quality requirements for the state and local area on the EPA website. DNV also verified the permit status for all of the CDNC permits while onsite at the EPA Envirofacts Warehouse²⁴ and online at the Enforcement and Compliance History Online (ECHO) EPA website.

4.4 Monitoring

4.4.1 Monitoring Plan

The monitoring plan in the project design document⁶ is in accordance with the Landfill Project Protocol 2.1¹ and allows for the accurate measurement of actual emission reductions.

Monitoring Parameter

All of the necessary data to estimate emission reductions are included in the monitoring plan, as shown in Table 3. The installation of monitoring meters and the monitoring frequency are in accordance with the Landfill Project Protocol 2.1.¹ In addition, landfill regulations are also to be monitored through permit application/renewal, website research, and email lists throughout the report period.

Table 3: Monitoring Data

Parameter	Measuring Method / Installation Location	Required Frequency
Landfill gas flow	Flow meter * Located in a straight section of pipe upstream from the flare	Every 15 minutes (recorded at 8 minute intervals)
Methane content	Portable methane analyser Sampling/installation point located in a straight section of pipe upstream from the flare	Weekly (performed every business day)
Flare temperature	Temperature meter / flare skid	Continuously
Electricity consumption	Receipts of supplier	Monthly
Propane consumption	Gauge	Each report period

Note: * Automatically adjusts for temperature and pressure of the gas stream.

QA/QC Procedures

Calibration of the monitoring meters is defined in accordance with requirements contained in the Landfill Project Protocol 2.1¹ as below:

1) For the flow meter:

- The flow meter used is a Thermal Instruments thermal mass flow meter, Model # 62-9/9500 with SN#2005468. This was originally factory calibrated on 18 November, 2005, after the date of manufacture, as evidenced by the calibration certificate.²⁵
- The flow meter was factory calibrated 27 January, 2010, as evidenced by the calibration certificate.²⁶
- The flow meter was inspected and cleaned by SCS Field Services on 26 March, 2010, 21 June, 2010 and 23 August, 2010, as evidenced by reports from SCS Field Services.²⁷



- A pitot tube is used to cross-check the gas flow to verify that the flow meter is properly calibrated; the cross-check by the pitot tube was carried out on December 1, 2010; test result showed the accuracy of the flow meter was acceptable (3.2%)²⁸. The procedure for using a pitot tube was confirmed during the interview with SCS Field Services Staff as well as a further email confirmation provided from Landtec (calibration service provider for the flow meter).^{17, 29}
- The factory calibration will be conducted every 5 years.

2) For the portable analyzers:

- Two sets of the same model of analyzer are used by the ACLF technician.
- The main analyzer used by ACLF is a GEM2000 with SN#GM11804, which is inspected and field checked for calibration accuracy approximately weekly.³⁰
- The main analyzer with SN#GM11804 was factory calibrated on 22 September, 2009.³¹
- The back up analyzer with SN#GM12448 was factory calibrated on 26 April, 2010, and was being factory calibrated at the time of the site visit on 8 December, 2010.³²
- Field calibrations using a gas of known specifications (50% CH₄, 35% CO₂, and 15% balance gas) are performed on a regular basis on the GEM2000 to ensure that the device is measuring accurately.³³
- The factory calibration will be conducted at least annually.

3) For the data storage unit:

- The data is recorded using a Yokogawa Data Recorder model DX1006, which is self-calibrating and which is checked regularly by SCS Field services technicians at the time the data is downloaded.^{12,25}

All of the necessary QA/QC procedures to ensure the correct measurement, calculation, data retention and reporting of emissions reductions are properly defined. These include:

- Organization and Responsibility
- Data Management, Record Keeping, Missing Data and Data Substitution
- Operations and Maintenance
- Environmental Compliance and Violation

4.4.2 Implementation of Monitoring Plan

By reviewing the relevant records and on-site interview/observation^{14, 12, 25 - 32}, DNV verified that the monitoring plan was effectively implemented during this report period. All of the required data listed in Table 3 were monitored as planned, and all calibrations were conducted as specified in the QA/QC procedures described above. No data were determined to be missing, and all calibration records showed that the measurement instrument functioned properly.

In addition, all other QA/QC procedures to ensure the correct measurement, calculation and reporting of emissions reductions were properly implemented.¹⁴

ACLF and Waste Connections Inc. keep abreast of any new and updated solid waste regulations by way of the following:¹²

- ACLF employees regularly monitor local, state and national regulations and permit requirements for ACLF. Key personnel are registered on landfill regulation email lists maintained by the applicable regulatory authorities.
- The State of North Carolina - Department of Environment and Natural Resources routinely sends e-mails or memos to landfills notifying them of any solid waste regulations that are being updated or created.
- SCS also monitors for compliance with NSPS regulations, Tier II report testing, NMOC levels and other applicable regulations on behalf of ACLF.

4.5 Emission Reduction Estimates

4.5.1 The GHG Assessment Boundary

The GHG assessment boundary for the project includes all emission sources, from the operation of the landfill gas collection system to the ultimate destruction of the landfill gas, as shown in Table 4.

Table 4: GHG Sources Associated with the Project

GHG Source	Comments
CH ₄ in the LFG, which would have been vented to the atmosphere without the project activities	Calculated as baseline emissions
CO ₂ from combustion of propane by the project activities	Calculated as project emissions
CO ₂ from consumption of electricity by the project activities	Calculated as project emissions

4.5.2 GHG Emission Reduction Calculations

Equations

Equation 5.1 in the Landfill Project Protocol¹ is properly adapted for the emissions reduction calculations of the project, as shown in Table 5.

Table 5: Adaptation of Equation 5.1 with Properly Selected Parameter Values

Factor	Explanation	Value	Justification
OX	Factor for the oxidation of methane by soil	0.10	The landfill is not covered with a synthetic liner as

	bacteria.		part of the final cover.
DF	Discount factor to account for uncertainties associated with the project monitoring equipment.	0.10	During the period that methane content is measured weekly.
PRE _{discount}	Adjustment to account for pre-project LFG destruction device.	0	No pre-project LFG destruction system was in place prior to project implementation.
EF _{FF}	Fuel-specific emission factor for propane.	5.74 kgCO ₂ /gal	Landfill Project Protocol 2.1. Appendix C.
EF _{EL}	Carbon emission factor for electricity used.	1,537.82 lbCO ₂ /MWh	Landfill Project Protocol 2.1. Appendix C.

Equation 5.2 in the Landfill Project Protocol¹ is properly adapted for the total annual methane emissions destroyed by the project, as described below:

- The methane is destroyed only by flaring.
- No supplemental natural gas is used in the flare.
- The methane destruction efficiency for the flare is defined as 0.96, since an open flare is used in the project.¹

Data Collection, Aggregation, and Calculation

The data collection, aggregation and emission reduction calculations have been planned properly and implemented effectively, as detailed below.

1) For the period of 23 December, 2009 to 4 December, 2010 a portable methane analyzer was used and the following steps were followed:

- **Weekly methane content:**
 - ✓ The methane content was planned to be measured once a week. In practice, it is measured every business day.⁸ The average of the measured readings is used for emission reduction calculations in any given week.
 - ✓ The methane content is manually entered into the calculation spreadsheet. The raw data records for the methane content¹⁴ were checked by randomly sampling 10% of all the data used in the emission reduction calculation spreadsheet. No errors were found.
- **Weekly LFG cumulative flow:**



- ✓ The LFG flow-rate is measured continuously, with an automatic recording of the maximum and minimum values within each 8-minute interval. The average of the maximum and the minimum is used to calculate the cumulative LFG flow within each 8-minute interval. The minimum flare temperature within the same 8-minute interval is used to determine if the 8-minute cumulative flow measurement can be classified as flared – only when the minimum temperature at the flare is higher than 500°F is the 8-minute cumulative flow added into the total cumulative flow for the day.
 - ✓ The flow is corrected based on Equation 5.4 in the Landfill Project Protocol. The flow-rate meter used in the project measures the flow-rate with automatic pressure and temperature correction. The temperature set in the meter is 60°F²⁶, in accordance with the requirement in Equation 5.4. The daily cumulative flow is then calculated by adding together the flow for the day.
 - ✓ Weekly LFG cumulative flow is obtained by adding together the daily LFG cumulative flows within the week.
 - ✓ The raw LFG flow data is stored in the data storage unit installed on the control panel of the flare facility, from which data is transferred to EM's internal server and then converted and transferred to the spreadsheet for emission calculations. The input values in the emission reduction spreadsheets¹³ were cross-checked by sampling the data in four specific time points in the raw data records on the project site, with no errors being found. Since the data was transferred, converted and copied from one file to another file using software⁶, the sampling plan is deemed appropriate.
- **Weekly methane destruction:**
 - ✓ Weekly methane destruction volume is obtained by weekly methane content multiplied by weekly LFG cumulative flow. Although measurements are actually taken every business day, the 10% discount factor for weekly measurements is used throughout.^{6, 14}
 - ✓ There is no missing data in the verification period. All the calculation formulae used in the spreadsheet¹³ were correct, and no errors were found.

2) Emission reductions for year 2009 and 2010 within this report period:

- ✓ The emissions reductions were calculated based on Equation 5.1.
- ✓ The calculation was checked by reviewing all the formulae used in the spreadsheet and all the data linkage¹³, and no errors were found.
- ✓ The verified emission reductions are shown in Table 6.

The recalculations performed by DNV showed no material misstatements in the CRTs reported by the project developer.

Table 6: Emission Reduction Estimates



	Report Period: 23 - 31 December, 2009	Report Period: 1 January to 4 December, 2010
Baseline emissions (tonnes CO ₂ e)	394.59	21 516.23
Project emissions (tonnes CO ₂ e)	0.31	13.54
Emission reductions (tonnes CO ₂ e)	394	21 502
Total Emission Reductions (tonnes CO ₂ e)	21 896	



5. VERIFICATION OPINION

Det Norske Veritas (U.S.A), Inc (DNV) has performed a verification of emission reductions reported for the “Anson County Landfill” managed by Element Markets, LLC for the period from 23 December, 2009 to 4 December, 2010.

In DNV’s opinion, the GHG emission reductions reported for the project are fairly stated and the project meets all the verification criteria of the Climate Action Reserve.

The GHG emission reductions were calculated correctly, using methods and data contained in the Landfill Project Protocol 2.1 and the monitoring plan provided in the project design document.

DNV was able to verify that the emission reductions from the Anson County Landfill project CAR ID 517 for the period from 23 December 2009 to 4 December 2010 amount to 21 896 tCO₂e.



6. REFERENCES

- ¹ Climate Action Reserve, Landfill Project Protocol 2.1 and the Errata and Clarification for the Landfill Project Protocol v2.1, 14 October, 2009 and 25 June, 2010, respectively.
- ² Climate Action Reserve, Program Manual, 16 March, 2010.
- ³ ISO 14064-3:2006 – Greenhouse gases, Part 3. Specification with guidance for the validation and verification of greenhouse gas assertions.
- ⁴ Climate Action Reserve, Verification Program Manual, 17 June, 2009.
- ⁵ Climate Action Reserve, Landfill Project Verification Protocol 2.0, 18 November, 2008.
- ⁶ EM, Project Design Documents “Anson County Landfill”, version 1.2, 8 December, 2010, and version 1.3, 10 January, 2011.
- ⁷ The following persons were interviewed during the on-site visit:
 - 1) Cassandra Stacey, Project Manager, Element Markets, responsible for project documentation, data management and calculation.
 - 2) Zach Eyler, Project Manager, Element Markets, responsible for registration with CAR.
 - 3) Tyler Fitzgerald, Landfill Manager, ACLF, responsible for daily management of the project.
 - 4) William Melton, Landfill Gas Technician, ACLF, responsible for regular inspection and on-site monitoring and recording of collection system operations.
 - 5) Tony Cartee, Technical Services, SCS Field Services, responsible for well field management and maintenance and data transfer to EM.
- ⁸ SCS, field notes - confirmation data for flare start date of 7 February, 2008, data for period 1 February, 2008 – 7 December, 2010.
- ⁹ NCDENR, Air Permit No. 09835R00, dated October 30, 2007.
- ¹⁰ ACLF Landfill Gas Capture/Combustion Project Submittal Form, dated 22 October, 2009.
- ¹¹ EM, Project Developer’s Attestation of Title, dated 6 December, 2010.
- ¹² EM and CDNC, Carbon Credits Management Agreement, dated 7 July, 2009.
- ¹³ EM, Spreadsheets for emission reductions, document titles are below:
 - 1) ACLF - Emission Reductions 2009-2010_Final.xlsx.
 - 2) ACLF - Project Emissions Summary.xlsx.
 - 3) ACLF - Raw Data for Calc 2009-2010_Final.xls.
- ¹⁴ CDNC, Operation management and control documents as below:
 - 1) User Manual by manufacturer (John Zink) of flare for operation, control and maintenance.
 - 2) LFG carbon management report for the report period (including flare monitoring data).
- ¹⁵ The following persons were interviewed during the on-site visit:
 - 1) Cassandra Stacey, Project Manager, Element Markets, responsible for project documentation, data management and calculation.
 - 2) Zach Eyler, Project Manager, Element Markets, responsible for registration with CAR.
 - 3) Tyler Fitzgerald, Landfill Manager, ACLF, responsible for daily management of the project.
 - 4) William Melton, Landfill Gas Technician, ACLF, responsible for regular inspection and on-site monitoring and recording of collection system operations.



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- 5) Tony Cartee, Technical Services, SCS Field Services, responsible for well field management and maintenance and data transfer to EM.
- 16 NCDENR Division of Air Quality, Air Permit with authorization to construct and operate a flare – Permit # 09835R00 issued 30 October, 2007 with Expiry 30 September, 2012.
- 17 SCS, field notes - confirmation data for flare start date of 7 February, 2008, data for period 1 February, 2008 – 7 December, 2010
- 18 SCS letter on behalf of ACLF confirming project construction, dated 6 September, 2007.
- 19 ACLF Landfill Gas Capture/Combustion Project Submittal Form, dated 22 October, 2009.
- 20 SCS Engineers, PC, Tier II Testing Report for Anson County Landfill, October, 2009.
- 21 EM, Project Developer's Attestation of Voluntary Implementation, dated 6 December, 2010.
- 22 Permits issued for ACLF:
- 1) NCDENR, Permit to Construct and Permit to Operate, Municipal Solid Waste Landfill Facility Permit no. 04-03-MSWLF-2009, dated September, 2009.
 - 2) NCDENR Division of Air Quality, Air Permit with authorization to construct and operate a flare – Permit # 09835R00 issued 30 October, 2007 with Expiry 30 September, 2012.
 - 3) NCDENR, Confirmation letter of receipt of Title V application with submission from SCS on behalf of ACLF, dated 20 September, 2010.
- 23 EM, Project Developer's Attestation of Regulatory Compliance, dated 6 December, 2010.
- 24 <http://www.epa-echo.gov/echo/>.
- 25 Thermal Instrument Company Inc., Calibration Certificate for flow meter SN#2005468 dated 27 January, 2010.
- 26 Thermal Instrument Company Inc., Calibration Certificate for flow meter SN#2005468 dated 18 November, 2005.
- 27 Statements from SCS Field Services for quarterly flow meter inspection:
- 1) Inspection date: 26 March, 2010.
 - 2) Inspection date: 21 June, 2010.
 - 3) Inspection date: 23 August, 2010.
- 28 Tony Cartee of SCS Field Services, email to confirm the test result and test date for the flow meter, dated respectively 06 and 07 December 2010.
- 29 LANDTEC, GEM calibration for flow measurements using pitot tube, email dated 10 December, 2010.
- 30 Calibration log for the portable methane analyzer, covering the report period.
- 31 LANDTEC, Certificate of Calibration for portable methane analyzer, certification date: 22 September, 2009.
- 32 LANDTEC, Certificate of Calibration for portable methane analyzer, certification date: 26 April, 2010.
- 33 Logs of field calibrations, using bottles of known gas as labeled.