VERIFICATION REPORT FOR

BLUE SOURCE SPARTANBURG LANDFILL GAS COMBUSTION PROJECT

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Summary:

Perry Johnson Registrars Carbon Emissions Services, INC (PJRCES) conducted a verification of the Blue Source Spartanburg Landfill Gas Combustion Project. In this project, methane gas was collected from active and inactive portions of the Wellford landfill located in Spartanburg County, South Carolina. Landfill gas was destroyed in one of three destruction devices: 1) Landfill gas was used to generate electricity from a Caterpillar internal combustion engine that was coupled to an electricity generator ("generator set"), 2) was used in a beneficial project to produce thermal energy (i.e. boilers), and 3) landfill gas not consumed by the other two destruction devices was burned in an open flare. The Project also displaced fossil fuels consumed for baseline thermal energy generation. These activities resulted in a net reduction of CO_2-equivalent emissions.

Blue Source LLC engaged PJRCES to verify its emission reductions from June 15, 2010 to September 30, 2012. PJRCES verified the asserted emission reductions against criteria found in assertion against the criteria stated in the Verified Carbon Standard (VCS) Standard dated October 4, 2012, v3.3, and the Approved consolidated baseline methodology ACM0001: "Consolidated baseline and monitoring methodology for landfill gas project activities": Version 11.

PJRCES conducted an offsite document review and an on-site verification audit in Wellford, SC on October 11, 2012. The objective of the engagement with Blue Source was to determine, with reasonable assurance, that the calculated emission reductions for this project were, in all material respects, fairly stated. The PJRCES verification team conducted its verification in accordance with ISO 14064, Part 3, *Greenhouse gases – Specification with guidance for the validation and verification of greenhouse gas assertions.*

During the verification process, PJRCES issued several clarification and corrective action requests – all of which were addressed sufficiently by the project participants.On the basis of work conducted, PJRCES was able to conclude with reasonable assurance that Blue Source asserted vintage 2010, 2011 and vintage 2012 methane emission reductions were fairly stated. More detail concerning this conclusion is provided in Section V of this report.

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1 INTRODUCTION

1.1 Objective

The objective of this verification audit was to determine, with reasonable assurance, that Blue Source LLC (Blue Source) had quantified, monitored, and fairly reported to the Verified Carbon Standard its landfill gas emission reductions at the Wellford Landfill in Wellford, South Carolina in accordance with all applicable requirements of the CDM ACM0001, version 11, methodology in conformity with program rules established by the Verified Carbon Standard Version 3.2.

1.2 Scope and Criteria

The scope of the engagement included quantification, monitoring and reporting of greenhouse gas project emissions reductions associated with the voluntary destruction of landfill gas from an expanded landfill gas collection system at the Wellford Landfill in Spartanburg County, South Carolina. The project boundary is defined as the landfill, which is the site where landfill gas is collected via separate header and piping system from a pre-existing landfill gas conveyance and collection system, and the Milliken Dewey Chemical Plant facility located approximately six miles from the landfill site where landfill gas is consumed in boilers. Although there is electricity generated by the landfill gas in Phase 3 of the project, which would have been generated by power generation sources connected to the grid, emission reductions from this portion of the project are not claimed. Therefore, the project boundary does not include these grid-connected power generation sources. This exclusion is conservative as it reduces baseline emissions.

The Project consisted of three phases:
(1) Expansion of the existing landfill gas collection system and destruction of landfill gas in an existing flare;
(2) Implementation of a beneficial use project by which landfill gas is destroyed in off-site boilers at the Milliken Dewey Chemical plant; and
(3) Implementation of another beneficial use project by which landfill gas is used to generate electricity.

The project developers implemented its methane emission reduction project in accordance with the requirements of the CDM methodology ACM0001– *Consolidated baseline and monitoring methodology for landfill gas project activities,* Version 11 and the Verified Carbon Standard Version 3.2.

PJRCES conducted its verification of the reported emission reductions in accordance with the Verified Carbon Standard Version 3.3 (4 October, 2012), the Verified Carbon Standard Program Guidelines Version 3.3 (4 October, 2012), and ISO 14064:2006 Part 3, Greenhouse gases – *Specification with guidance for the validation and verification of greenhouse gas assertions.* PJRCES is a GHG verification body accredited by the American National Standards Institute in the project scope of waste management.

1.3 Level of assurance

This engagement was performed at the reasonable level of assurance. Emission reduction reports were considered fairly stated if they varied by no more than 5% from a complete statement of the project's emission reductions.

1.4 Summary Description of the Project

The Project consisted of the voluntary destruction of landfill gas from an expanded landfill gas collection system at the Wellford Landfill in Spartanburg County, South Carolina. The Project consisted of three phases: (1) expansion of the existing landfill gas collection system and destruction of landfill gas in an existing flare; (2) implementation of a beneficial use project by which landfill gas was destroyed in off-site boilers at the Milliken Dewey Chemical plant; and (3) implementation of another beneficial use project by which landfill gas was used to generate electricity. The phased in landfill gas piping systems and headers for the project LFG collection and control system (LFGCCS) were constructed separately from a pre-project system existing at the Wellford landfill. Greenhouse gas (GHG) emission reductions were claimed from the destruction of methane, which would have otherwise been emitted directly to the atmosphere, and also from the displacement of fossil fuels that were used for thermal energy generation at the Milliken Dewey Chemical plant prior to the project activities. GHG emission reductions are not claimed for the displacement of fossil fuel based electricity generation.

The VCS PD provides additional details regarding the project activities.

2 VALIDATION PROCESS, FINDINGS AND CONCLUSION

2.1 Validation Process

Not applicable. The scope of this verification does not include a validation.

2.2 Validation Findings

Not applicable. The scope of this verification does not include a validation.

2.2.1 Gap Validation

Not applicable. The scope of this verification does not include a gap validation.

2.2.2 Methodology Deviations

Not applicable. The scope of this verification does not include a validation.

2.2.3 Project Description Deviations

Not applicable. The scope of this verification does not include a project description deviation.

2.2.4 New Project Activity Instances

Not applicable. There are no new project activity instances.

2.3 Validation Conclusion

Not applicable. Validation was not part of the verification scope.

3 VERIFICATION PROCESS

3.1 Method and Criteria

The following is a summary of the verification process implemented by PJRCES:

- Conflict of Interest Review and Appointment of Team
- Kick-off meeting with Blue Source;
- Conduct a Documents Review including the Project Description (PD) and supporting data;
- Development of the verification and sampling plan;
- Site visit and execution of the sampling plan;
- Review and evaluation of raw data and emission reduction calculations for the period under review;
- Follow-up of Non-conformities and Clarification Requests as needed; and
- Final statement and report development.

Conflict of Interest Review

Conflict of Interest inquiries were completed for PJRCES and for the verification team and a finding of low COI risk was confirmed by PJRCES's internal COI process. The COI assessment was conducted to identify any potential conflict of interests with the verification/project.

Appointment of Verification Team

This verification was performed by Tina Sentner, PJRCES Lead Verifier, and reviewed by Zhang Xiaojun Johnsen and Ajay Verma, PJRCES Senior Internal Reviewer. Bilal Anwar has done the Final Approval. Tina Sentner as lead verifier is approved by PJRCES, to conduct landfill gas project verifications. The following table is a complete list of the team and team competencies for the verification:

ROLE OF THE VERIFICATION TEAM								
ASSESSMENT TEAM	ROLE	COMPETENCY COM			TASK PERFORMED TASK PERFORMED			
		METH EXPERT	TECHNICAL AREA	HOST COUNTRY EXP.	DESK REVIEW	SITE VISIT	REPORT PREPARATION	INDEPENDENT TECH. REVIEW
Tina Sentner	LV	☒	☐	☒	☒	☒	☒	
	TE	☒	☒	☒	☒	☒	☐	
Zhang Xiaojun Johnsen	ITR	☒	☐	☐	NA			☒
Ajay Verma	ITR	☒	☐	☐	NA			☒
Bilal Anwar	FA	☒	☐	☐	NA			☒

Project Kick off Meeting

A kick off meeting was conducted between the verification team and Blue Source. The purpose of the kick off meeting was to review the timeline of verification; confirm verification criteria; determine any changes in the site, sources, GHG management systems or personnel, and to begin gathering information.

Desk Review

PJRCES reviewed the Project Description Document, Project monitoring report, and supporting documentation. A detailed discussion is provided below.

Site Visit

Following the desk review, the verifier conducted an on-site audit of the project area on October 11, 2012. The purpose of the site visit was to verify the project equipment; to review and evaluate the project GHG management systems, data collection and handling; and to finalize the risk assessment and sampling plan.

Quantitative Review

An assessment of the emission reduction calculation inputs and procedures was performed to review the quantitative analyses undertaken by the Project Proponent, of converting the raw inventory data into emission reduction estimates.

Findings

Throughout the verification, there was an iterative exchange between PJRCES and the Project Proponent to gather additional information for review and examination. This exchange included

Findings—New Information Requests (NIR), Non-Conformity (NC) and Opportunities for Improvement (OFIs)—that were issued by PJRCES to the Project Proponent. For this project, eight NIRS, and five NCs were issued. The Project Proponent responded to all NIRs and NCs and subsequently all issues were closed by PJRCES. See section 3.5 below.

Final Report and Opinion

The last step in the verification process included a final review of the submitted data, completion of the Verification Report, and drafting of the Deed of Representation. The draft report is presented to an internal PJRCES Technical Reviewer who determines the Verification Opinion to be justified given the evidence presented. Once completed, the Verification Report and Deed of Representation are presented to the project proponent for approval and subsequent submittal to the VCS.

Exit meeting with client:

The exit meeting entails a review of the verification process, summary of the verification findings and to initiate scheduling for the next verification period.

3.2 Document Review

The verification team conducted a document review to inform the planning process in advance of performing verification activities. Documents reviewed included the VCS Monitoring Report and Verification Submittal, version 1, (dated October 5, 2012) against the project developer's Validated Project Design Document, version 3 (March 7, 2012) and ACM0001 Version 11 with the following associated tools:

- Tool to determine project emissions from flaring gases containing methane (version 1).
- Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 1).
- Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (version 2).

A risk assessment was conducted to identify key factors that impact the reported emission reductions and removals. As a result of the document review and correspondence with project management personnel, a verification plan and a sampling plan were developed for this engagement. The verification plan with an audit agenda was submitted prior to the site visit. Discrepancies between project documentation and the verification criteria were considered material and identified for corrective action. Monitoring deviations were reviewed and justification from Blue Source was assessed. In addition, PJRCES assessed the GHG emission reduction assertion and underlying monitoring data to determine if either contained material or immaterial misstatements. The results of these reviews are discussed in greater detail below.

3.3 Interviews

Throughout the course of verification activities and during the site visit, PJRCES interviewed the following project personnel:

Person	Title	Organization
Will Overly	Manager, Carbon Projects	Blue Source LLC
Travis Brown	Solid Waste Manager	Spartanburg County DPW (Wellford Landfill)
Bryan Stone	COO	Lockhart Power Co
Scott Thompson	LFG Technician	Lockhart Power Co

The purpose of the interviews were to assess and confirm information and data provided in the Project Description and monitoring report, identify relevant competencies to assigned roles and responsibilities, and to assess the GHG management systems implemented onsite.

3.4 Site Inspections

As a result of its planning process, on October 11, 2012, PJRCES conducted a site visit of the Wellford landfill, Lockhart Power facility and the Milliken Chemical Company in Spartanburg County, South Carolina. The nature of verification activities conducted included:

- Verification of the implementation of the landfill gas project to report emission reductions in accordance with the ACM 0001, Version 11, “Consolidated baseline and monitoring methodology for landfill gas project activities”;
- Verification of evidence presented by the various Project Proponents to demonstrate their knowledge of and assertion of compliance with applicable air and water regulations;
- Verification of applicable methane and carbon dioxide emission sources within the project boundary and their quantification as defined by the ACM 0001, Version 11, “Consolidated baseline and monitoring methodology for landfill gas project activities”;
- Verification of the Project’s compliance with monitoring of key operational parameters of its landfill gas collection and destruction project as noted in the project description;
- Assessment of the capability of the Project’s management system and procedures to produce accurate, reliable, and reproducible data and information;
- Determination of the Project’s conformity in all material respects with the requirements of the ACM 0001, Version 11, “Consolidated baseline and monitoring methodology for landfill gas project activities”;
- Visiting the selected work locations and interviewing personnel, observing operations, and reviewing relevant documents and records, and
- Reviewing the basis for and results achieved from the calculated methane emission reductions from its landfill gas collection and destruction project.

3.5 Resolution of Any Material Discrepancy

PJRCES issued requests for clarification and non conformities during the verification process. Blue Source responses were sufficient to resolve all clarification requests and non conformities. The findings with the responses provided are summarized in the tables below:

No.	Type	Issue	Reply by Responsible Party	Acceptance
1	NIR	Please provide an updated drawing showing the project well field and connections to leachate risers.	Updated drawing showing the project well field and connections to leachate risers uploaded to Drop box folder for Verifier review on 10/25/2012. File name "**Wellford Redlined.pdf.pdf"**	Response acceptable, issue closed.
2	NC	The schematic drawing in the Monitoring report does not reflect project conditions. Please clarify the diagram to reflect project conditions.	The schematic drawing in the Monitoring Report has been updated to reflect onsite conditions. File name is "**Spartanburg_Monitoring Report_June 2010-Sept 2012 version 3.0.doc"**	Response acceptable, issue closed.
3	NC	The project monitoring report does not accurately reflect the data management and recordkeeping of the project such as the discontinued use of the PLC and how data may be affected and stored.	The Monitoring Report has been updated to reflect the data management and recordkeeping of the project. File name is "**Spartanburg_Monitoring Report_June 2010-Sept 2012 version 5.0.doc"**	Response acceptable, issue closed.
4	NC	The project monitoring report and Calibration tab in the calculation worksheet do not reflect the correct instrument as noted in the field for the pipeline/Milliken flow meter (*LFG thermal,y)* . Please clarify in the monitoring report the make/model of the flow meter instruments used for the pipeline to Milliken and provide the manufacturer's requirement(s) for maintenance and calibration.	The Monitoring Report has been updated to reflect the Rosemount 2051 flow meter used to measure flow sent to the Milliken Facility. The Manufacturer's calibration certificate is provided as "Calibration Certs". File name is "**Flow meter to Milliken_SN0042055.pdf"**	Response acceptable, issue closed.
5	NIR	The Monitoring Report section 1.8 "Title and Reference of Methodology" states version 13 of the Approved Consolidated baseline methodology ACM0001 was used; however, the project was validated under version 11. Please clarify.	The Monitoring Report has been updated to reflect the correct version. Version 11 is the Approved Consolidated baseline methodology ACM0001 used.	Response acceptable, issue closed.

6	NIR	The project monitoring report indicates the flow meter for (*LFG flare,y)* was calibrated on Feb. 7, 2011 and on July 27, 2012 by the manufacturer. A certificate of calibration was provided however there is no "as found" condition noted to confirm the instrument was operating within Manufacturer drift tolerances. Please provide the "as found" condition both calibration events.	Documented "As-Found, As-Left" conditions is required by a different registry. VCS follows the QA/QC procedure set up in the PDD/Monitoring Report. The QA/QC for the Thermal Instruments flow meter is "The flow meter will be calibrated every 12 to 18 months following manufacturer recommendations." Thermal Instruments provided the "As-Found" condition of the July 27, 2012 calibration in file **"TI_62-9-926_SN98181_July 27,.2012.pdf"**	Response acceptable, issue closed.
7	NIR	The calibration record for flow meter (*LFG flare,y*) was calibrated on July 27, 2012 to the conditions of 0-100 scfm. Please explain how this is instrument is accurately reporting SCFM above 100?	Thermal Instruments indicated it was a typo and provided a corrected Calibration Certificate. File name is "**TI_62-9-926_SN98181_July 27,.2012.pdf**"	Response acceptable, issue closed.
8	NIR	Please provide the initial factory calibration records/data sheets for the Rosemont 2051 for the pipeline to Milliken boilers (SN:004255) showing the factory set limits of 60 deg and 1 atm.	The file name of the factory calibration for the Rosemount 2051 is "**Flow meter to Milliken_SN0042055.pdf**". As noted in the PDD deviation, the Factory set limits are 68 F and 1 atm, and the appropriate CH4 density is used in calculations	Response acceptable, issue closed.
9	NIR	For 2010 compiled data summary, please clarify the following: 1. There is no correction for flare temperature below 300 as identified in the PDD? 2. Please clarify why the formula in column "N" checks for "eligible flow" and discards data when over 14.5 min basis and not for "flare flow?"	**1.** The previous 2010 data file "Spartanburg_Compiled Data_2010.xls did not correct for the flare temperature below 300 F. This has been updated to include correction for checks for "eligible flow" for recording frequency above 15 mins, for flare flow checks for flare temperatures below 300F; Methane Content below 20%; and flare flow above 1000 SCFM. This file**,"2010 Data Combined from Raw Files_Calculated.xls"** is based on the Raw data files uploaded to the Drop box folder "Raw Data files", which is combined from Daily files into monthly files in "2010 Data Combined from Raw Files.xls" 2. The previous 2010 data file "Spartanburg_Compiled Data_2010.xls was inconsistent on what the time check was (14.5 mins or 15.5). This was corrected then the calculations were updated to include correction for checks for "eligible flow" for recording frequency above 15 mins, for flare flow checks for flare temperatures below 300F; Methane Content below 20%;	The revised files were confirmed with noted changes. Response acceptable, issue closed.

			and flare flow above 1000 SCFM. This file,"2010 Data Combined from Raw Files_Calculated.xls" is based on the Raw data files uploaded to the Drop box folder "Raw Data files", which is combined from Daily files into monthly files in "2010 Data Combined from Raw Files.xls"	
10	NC	For 2011 compiled data summary, the following was noted: 1. From Jan-May, there is no formula to check for eligible flow over 15 in interval until June. Please explain. 2. Starting in June, "eligible flow" is discarded when the time interval exceeds 15.5 mins and not for other destruction devices? This seems inconsistent with how flow was adjusted in 2010. 3. Lastly, why has the time interval changed from 14.5 as found in 2010 data to 15.5 for this data set when the PDD describes anything over 15 min interval will be ineligible for credit calculations? See June cell 749, 975, 1806, etc... 4. In the June tab: The Column "O" states *CH4 scf to Milliken,* however the data seems to represent *CH4 scf to Lockhart*. 5. May 20-31 data set is not included in eligible flow summary calculations. 6. There appear to be overlapping data points for June. Please explain.	#1-6 The previous 2011 & 2012 data file "Spartanburg_Jan 2011- Sept 2012.xls" was updated to reflect each of these findings. The updated and corrected file is called "2011 Data Combined from Raw Files_Calculated.xls" . 1. For the entire 2011 year (Jan-Dec) has been updated to include correction for checks for "eligible flow" for recording frequency above 15 mins, for flare flow checks for flare temperatures below 300F; Methane Content below 20%; and flare flow above 1000 SCFM. This file is based on the Raw data files uploaded to the Drop box folder "Raw Data files", which is combined from Daily files into monthly files in "2011 Data Combined from Raw Files.xls" 2. In the updated file **"2011 Data Combined from Raw Files_Calculated.xls"** has been set to use the 15 min time check interval. 3. In the updated file "2011 Data Combined from Raw Files_Calculated.xls" has been set to use the 15 min time check interval. 4. This was a typo, and was corrected in the updated file "2011 Data Combined from Raw Files_Calculated.xls". 5. The raw data files for May 20-31 have been uploaded to the Drop box folder and have been included in the calculations, found in the"2011 Data Combined from Raw Files_Calculated.xls". This data starts at row 26,864 and goes until row 43,738. 6. The reason for the overlapping data is because of the different PLC's & SCADA system recording and overlapping time that data was recorded by the different systems. Described on the Assumptions Notes Tab of the "**2011 Data Combined from Raw Files.xls**"	The file "2011 compiled data summary" has been replaced by the file "2011 Data Combined from Raw Files". The corrections to this spreadsheet were confirmed as noted and are further used in the emission reduction calculation workbook. Response acceptable, issue closed.

11	NIR	In the Emission reduction workbook, the project does not consistently calculate the quantity of methane destroyed for each destruction device as identified in the validated PDD for Eq. 6 for *MDflared,y,* Eq. 7 for *MDelectricity,y*, and Eq. 8 for *MDthermal,y .* In particular, the proportion of methane collected by the system vs. the methane combusted calculation technique is only applied for certain months. Please explain.	"**Spartanburg_VER Calculation_11.15.2012.xls"** has been updated to reflect the equations 6, 7,and 8 in the PDD. The methane combusted calculation technique is applied to all months. However the PDD was written under the assumption that eligible flow total would be less than total destroyed. Therefore for conservativeness a comparison of eligible vs. destroyed is taken into consideration so that emission reductions would not be overstated. This is taken into consideration on tabs "Project_Flaring, Project Milliken, Project_Lockhart" in column D. An IF statement is used to determine: If the eligible gas is greater than the amount destroyed:- if true, then the destroyed amount (which is lesser of the two) is used to multiply against the % proportion.- if eligible gas is less than the amount destroyed (false) then the eligible amount of gas (which is less than destroyed) is used to multiply the % proportion.	The revised calculations were observed to consistently calculate methane destroyed for each destruction device according to the validated PDD. Response acceptable, issue closed.
12	NIR	Please provide the annual calculation of amount of methane generated during the year *y (MGpr,y-)* of the project activity using the US EPA LandGEM model.	Waste receipts received for 2010, 2011 and 2012. Landgem model was re-run. Revised results provided in file **:Landgem Spartanburg_12-05-2012".**	Response acceptable, issue closed.
13	NC	The project has not compared the sum of quantities fed to the flare, Milliken and Lockhart with the total quantity of methane generated for year 2010, 2011, 2012 as required in ACM0001 Ver. 11	In the updated **"Spartanburg_VER Calculation _12.04.2012.xls"** the comparison of sum quantities fed to the 3 destruction devices vs. the eligible methane generated can be seen on tabs "Project_Flaring", "Project_Milliken", "Project_Lockhart" in the D Column	Response acceptable, issue closed.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

Project Implementation: The Blue Source Spartanburg Landfill Gas Combustion Project (the "Project") was implemented as indicated in the validated project description. During the site visit, it was confirmed that the project activities involved the expansion of an existing active gas collection system into Phases I through V of the Wellford Landfill. The expanded system consisted of 60 vertical wells and associated piping. Future expansion is expected in Phase VI of the active landfill. The piping systems and headers for the project LFG collection and control system (LFGCCS) were constructed separately from the pre-project system and the LFG collected from the pre-project and project LFGCCS does not meet until a point just before the existing blower/flare station. The landfill gas was initially directed solely to an existing flare.

Beginning on June 1, 2011, the landfill gas was also directed to a Caterpillar 3520 engine-generator unit for electricity generation. In addition, beginning on June 23, 2011, landfill gas was also transported by pipeline approximately 6.5 miles to the Milliken Dewey Chemical plant for use in its facility boilers.

The landfill is owned and operated by the Spartanburg County DPW in Spartanburg County, South Carolina. The County owns and operates the landfill gas collection system, gas treatment system, flare, and pipeline to the Milliken Dewey Chemical plant. Lockhart Power owns and operates the energy facility and also contracted with the County to maintain and operate the landfill gas monitoring equipment and pipeline activities. The Milliken Dewey Chemical Plant owns and operates the boilers and all associated equipment for thermal energy generation. Due to these shared responsibilities, all three entities, i.e., the County, Lockhart, and Milliken, are considered the project proponents. The carbon credit originator, purchaser, and preparer of the monitoring reports was Blue Source LLC.

The project baseline scenario is defined as the partial atmospheric release of landfill gas from Phases I through VI of the Wellford Landfill, the continued generation of electricity from grid-connected power plants, and the continued generation of thermal energy from existing fossil fuel-fired equipment at the Milliken Dewey Chemical plant. GHG emission reductions are claimed both for methane destruction and the displacement of fossil fuel sources of thermal energy but not for the displacement of fossil fuel sources of electricity generation. The Project start date of April 29, 2010 was verified by reference to the project validation report and the addition of the generator set and pipeline to Milliken through review of the of construction records and initial readings from the data acquisition device.

Project Monitoring. Project monitoring was performed by Lockhart Power technicians for the landfill gas monitoring system, flare skid, pre-treatment skid, pipeline activities and the production of energy through the Caterpillar generator set. Milliken Dewey Chemical Plant technicians conducted monitoring of the thermal production process through operation of the boilers. All monitoring results were reported to Blue Source LLC.

The piping systems and headers for the project LFG collection and control system (LFGCCS) were constructed separately from the pre-project system. The LFG collected from the pre-project and project LFGCCS does not meet until a point just before the existing blower/flare station.
The flow rate of LFG was metered at four locations; in the field prior to comingling with the pre-project gas stream, at the flare inlet, prior to delivery to the Lockhart Power facility and prior to delivery to Milliken Facility. The following is an overview of the metering and measurement:

Location 1: Flow measurement prior to comingling with pre-project system: Gas flow for the project is measured continuously on a wet basis prior to comingling with the pre-project gas stream. Landfill gas flow from the project system is monitored using an FCI Thermal Mass flow meter that measures flow on a wet basis and normalizes flow to standard temperature and pressure conditions of 60 degrees and 1 ATM. Composition is metered using a Siemens Ultramat 23 continuous gas analyzer. Gas flow and composition data are recorded at least once every fifteen minutes. The flow meter was observed to be factory calibrated prior to installation and again factory calibrated in September 2011 and September 2012 at the end of the verification period.

Location 2: Flow measurement at the Flare Inlet: Landfill gas flow is measured continuously at the flare blower/ flare station using a Thermal Instrument 62/9 Thermal Mass flow meter. Flow is measured on a wet basis. A Pyromation thermocouple is used to monitor temperature. Flow and temperature data from the flare is recorded at least once every fifteen minutes. Additionally, an ultraviolet flame detector is in place to monitor the presence of a flame and activate the safety interlock system. This flow meter was observed to be factory calibrated prior to installation and again in February 2011 and July of 2012 in line with the manufacturer specifications. Originally the instrument was calibrated to normalize flow to standard temperature and pressure conditions

of 75 degrees and 1 ATM; however, during the February 2011 calibration, the meter was reset to normalize flow to standard temperature and pressure conditions of 60 degrees and 1 ATM.

Location 3: Flow measurement to Lockhart Power, the electricity phase of the Project: Gas flow to Lockhart's 3250 Caterpillar Engine and generator set is metered continuously using a Rosemount 3051 SFC compact conditioning orifice plate mass flow meter with integrated pressure and temperature integration. Flow is measured on a wet basis and recorded at least once every fifteen minutes. The orifice plate and transmitter were observed to be calibrated prior to installation and are not required to be calibrated until April of 2013 according the manufacturer specifications. The instrument was calibrated to normalize flow to standard temperature and pressure conditions of 68 degrees and 1 ATM.

Location 4: **Flow measurement prior to delivery to Milliken Dewey Chemical Company:** Gas flow to the Milliken Facility is metered continuously using a Rosemount 2051 SFC compact conditioning orifice plate mass flow meter with integrated pressure and temperature integration. Flow is measured on a dry basis and is recorded at least once every fifteen minutes. The orifice plate and transmitter were observed to be calibrated prior to installation and are not required to be calibrated until April of 2013 according the manufacturer. The instrument was calibrated to normalize flow to standard temperature and pressure conditions of 68 degrees and 1 ATM.

PJRCES, Inc. has concluded from the evidence presented that the flow meters remained reliable during the reporting period and that no discount of emission reductions is warranted. Temperature and pressure were not separately monitored because the project used flow meters that automatically measured temperature and pressure, expressing LFG volumes in normalized scf. Refer to the PDD and monitoring report for a diagram of the metering.

Methane concentration for the Project was measured at location 1 using an in-line Siemens Ultramat 23 continuous gas analyzer. Gas composition for the project is measured prior to comingling with pre-project gas stream. Gas composition is also measured after comingling the project and pre-project gas. The gas analyzer was factory calibrated prior to installation and observed to be field calibrated to span gas on a quarterly basis. There is no manufacturer requirement for further factory calibration noted. PJRCES reviewed these calibration records which indicated the meter was operating accurately.

The operation hours of the engine/generator was monitored to ensure that methane is only flowing to the engines when operating. The operation of the flare was monitored through the flare's thermocouple temperature readings. Hours of operation of the boilers are not directly monitored, because the boilers are equipped with fail-safe values that automatically shut when the landfill gas line is switched off or the boiler(s) goes down.

The flow rate for all metering measurement point locations one through four above and methane concentration of the project are documented in a Supervisory Control and Data Acquisition system (SCADA) system. The SCADA operates Wonderware, Historian In-Touch, Active Factory, and Microsoft Terminal Server 2003 software on a Dell Power Edge server located at the Lockhart facility. Data was originally recorded on a PLC system every minute until the SCADA system was implemented when the electricity project came online. The data collected by the original PLC was being stored on an offsite SCS FTP site. Once the SCADA system came online the data is now stored on site on a separate server in the Lockhart switch gear facility. The data is also backed up on the technician's laptop. At least once per week, data from the PLC is uploaded to the server. The SCADA system uploads data to the on site server on a monthly basis and data will also be aggregated on a monthly and yearly basis.

There are no remaining issues from the previous validation.

The initial validation of the project identified seven methodology deviations between the monitoring or measurement requirements of the validation criteria and the Project's monitoring

plan. The methodology deviations were reviewed by the validation body and found to be acceptable, as summarized in the table below.

#	Parameter	ACM0001 Requirement	Deviation from Requirement	Validation Conclusion
1	$MD_{project,\ y}$ - Ex ante estimation of the amount of methane that would have been destroyed or combusted during the year.	Use a first order decay model per the CDM Annex 10 Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site.	Emission reductions for 2010 through 2020 are estimated using the quantity of waste disposed at the landfill and the EPA LandGEM model.	Deviation acceptable. The LFG volumes generated by LandGEM model are for illustrative purposes only, as emission reductions will be based on ex-post monitoring data of the Project performance. The LandGEM model provides a reasonable estimate of landfill gas volumes based on site-specific factors and engineering expertise.
2	$EF_{EL,j,y}$ – Emission factor for electricity generation for source j in year y.	Following option A2 of the Tool to calculation baseline, project, and/or leakage emissions from electricity consumption, a conservative default value of 1.3 tCO2/MWh may be used.	An emission factor for electricity generation ($EF_{EL,j,y}$) is assigned a value of 0.507 tonnes CO_2 per MWh based on US EPA's eGrid 2010 for the SRVC sub region. This value will be reviewed annually upon the release of updated eGrid data.	The 1.3 tCO2/MWh default value provided by the tool is not representative of the emission intensity of grid-connected electricity generation in the United States. Further, the Project does not consume a significant quantity of electricity and therefore electricity consumption does not represent a large emission source for the Project. As such, this approach is reasonable.
3	$\eta_{flare,h}$ – Flare efficiency	A default flare efficiency of 50% for open flares and 90% for enclosed flares must be applied in cases where methane composition is measured quarterly.	The flare efficiency has been fixed ex-ante as 98%.	For projects where gas composition is measured continuously, no such default values are specified in the tool. The regulation 40 CFR §60.18 specifies requirements for flare operating variables (i.e., Btu content, exit velocity) that must be met in order to achieve a 98% or higher flare destruction efficiency. Blue Source provided evidence that the flare onsite is designed and operated in accordance with 40 CFR

				§60.18 and has identified mechanisms for ensuring that the flare is operated accordingly throughout the crediting period. Therefore, 98% destruction efficiency is acceptable.
4	MD_{BL} – Amount of methane destroyed in the absence of the project	Per ACM0001, in situations where in the baseline landfill gas captured and destroyed, for reasons other than regulation and/or contract, historic data on actual amount captured shall be used as MD_{BL}. MD_{BL} is subtracted from $MD_{project,y}$ to determine the amount of methane destroyed above the baseline scenario.	MD_{BL} is considered zero. Landfill gas from the previously installed collection system is monitored separately, as well as the total quantity of landfill gas delivered to the flare, engine and boilers. The latter will be used as a ratio to assign the appropriate destruction efficiency to each quantity of landfill gas.	Deviation acceptable. Since the quantity of landfill gas from the project activity is directly measured, there is no need to separately account for landfill gas from the pre-existing system. The Audit Team also reviewed an analysis demonstrating that the potential for the project system to pull landfill gas that had been previously collected from the pre-project system is minimal.
5	$ET_{LFG,y}$ – Quantity of thermal energy produced utilizing landfill gas	Per ACM0001, $ET_{LFG,y}$ is monitored using a steam meter or temperature, pressure, and mass flow measurements.	$ET_{LFG,y}$ is determined using the quantity of landfill gas, methane content, default boiler efficiency, and net calorific value (NCV) of methane. The boiler efficiency is determined using the CDM *Tool to determine the baseline efficiency of thermal or electric energy generation systems (version 1)*.	Deviation acceptable. Direct measurement of the landfill gas used to fuel the boilers is more accurate than monitoring the total enthalpy generated by the equipment, because the boilers consume multiple fuel types. The default values applied for boiler efficiency and NCV represent conservative values and therefore should not negatively impact the conservativeness of the GHG emission reductions.
6	Operation of heat generating equipment	Per ACM0001, hours of operation of the heat generating equipment should be monitored in order to ensure that methane destruction is only claimed when the equipment is operational.	Hours of operation are not directly monitored, because the boilers are equipped with fail-safe values that automatically shut when the landfill gas line is switched off or the boiler(s) goes down.	Deviation acceptable. Due to the presence of the physical mechanism to ensure that landfill gas is not sent to the boilers when they are not operational, monitoring the hours of operation is not necessary.

7	$LFG_{thermal,y}$ and $W_{CH4,thermal,y}$ – Quantity of landfill gas and methane content of landfill gas sent to Milliken	Per ACM0001, methane content of the landfill gas and the landfill gas flow must be measured on the same basis (either wet or dry).	The methane content of the landfill gas sent to Milliken is measured on a wet basis prior to landfill gas treatment, while the flow is measured on a dry basis after landfill gas treatment.	Deviation acceptable. The proposed monitoring arrangement results in a conservative determination of the total quantity of methane destroyed by Milliken.

During this verification period, additional deviations were noted between the monitoring systems described in the validated PDD and those described in the monitoring report, as follows

Parameter	Monitoring	Deviation	Verifier conclusion
$LFG_{Project\ total,y}$	Alternative calibration method	The PDD states a "Delta R" check should occur every 12 months for the first two years as recommended by the OEM. After that period if no calibration corrections are required, the frequency of calibration can be extended to 24 months. For the first calibration interval, an 18 month schedule was implemented followed by an annual calibration.	Deviation acceptable. The calibrations were noted to be within the instrument tolerance range. Does not impact eligibility, conformance, or performance of Project against ACM0001
$LFG_{thermal,y}$	Alternative monitoring method	A Rosemount 2051 SFC compact conditioning orifice plate mass flow meter with integrated pressure and temperature integration used instead of a Rosemount 3051 SFC-Compact conditioning orifice plate mass flow meter to measure flow.	Deviation acceptable. The flow meter used is acceptable for the application. Does not impact eligibility, conformance, or performance of Project against ACM0001.
$LFG_{electricity,y}$ and $LFG_{thermal,y}$	Alternative monitoring method	The PDD states that the flow to Lockhart and Milliken would be measured and recorded at 60 deg F and 1 ATM, and therefore, the emission reduction calculations are based on this methane density. However, flow for these devices was measured at 68 deg F and 1 ATM as standard condition.	Deviation acceptable. The appropriate methane density for 68 F (20C) has been used in the calculations to accurately account for the methane destroyed at both Milliken and Lockhart.
EQ. (6-8) $MD_{flared,y}$ $MD_{electricity,y}$ $MD_{thermal,y}$	Alternative Calculation Method	The equations calculate methane destroyed based on $LFG_{Project\ total,y}$, which equals the quantity of LFG collected from the project system (eligible LFG) during the year (ft^3). Instead, the total landfill gas destroyed of all three destruction devices is compared to $LFG_{Project\ total,y}$ and the lesser of the two values was used in the methane destroyed calculations.	Deviation acceptable. The deviation results in conservativeness of the emission reduction calculations and reduces the possibility of overstating emission reductions.

Lastly, PJRCES reviewed various inspections and permits from local regulatory agencies for the Project. In addition, a review of the US EPA's Enforcement and Compliance History Online (ECHO) data base found no records of notices of violations or enforcement actions during the past five years. This data corroborated the statements of the Project personnel who informed PJRCES that the project remained in material compliance with all applicable environmental laws and regulations.

4.2 Accuracy of GHG Emission Reduction or Removal Calculations

The emission reduction calculation assessment included the review of project assumptions, raw data inputs and accuracy of calculations. The formulas and raw data inputs used to determine emission reduction calculations as described in the emission reduction calculation spreadsheets were first reviewed for compliance with ACM 0001, version 11 methodology and the validated Project Description document.

PJRCES reviewed emission reduction calculations for the reporting period, using the following specific tests and checks:

- Samples of raw data were tested for continuity and consistency of flow rates, methane content and for handling of outliers.
- Methane fraction readings were compared to the data used in the calculations.
- Excel formulas that transposed data from one worksheet to another were checked.
- All formulas used were tested to ACM 0001 v11 and to the validated PDD.
- Samples of raw data were examined and followed through to final calculations.
- Confirmation of operation and calculation of the flare, electricity generator and boilers to the required parameters (temperatures, flow rates, efficiency factors, etc…) defined in the validated PDD.
- Samples of spreadsheet aggregation formulas were checked for accuracy.
- Default factors were verified to the validated PDD.
- Data from project emissions were checked against samples of original invoices.
- Independent calculations, using aggregated spreadsheet data, were used to compare final results from Blue Source spreadsheets

Data was further assured by the proper monitoring and maintenance of the various flow meters and methane concentration analyzer. All calibrations for the flow meters and methane analyzer for the project were checked to verify that they were calibrated to manufacturers' specifications. The following is an overview of the accuracy of the project monitoring devices:

Parameter	Instrument	OEM Calibration	Calibration conducted	Comments
Location 1: Total amount of LFG collected from the project system.	FCI Thermal Mass Flow meter (Serial No. 324341)	12 months for first 2 year and 24 months thereafter.	1. Initial calibration: 03/29/2010, Installed 6/15/2010 2. 09/20/2011- Provided Delta R-ok	Meter performing within OEM specifications

			3. 09/27/2012- Delta R ok	
Location 2: Total amount of landfill gas sent to flare.	Thermal Instruments TI 62/9 thermal mass flow meter (Serial No. 98181)	12-18 months	1. Initial: 9/16/2009- installed June 15, 2010; set limit: 75 deg, 1 ATM by Thermal Instruments 2. 02/7/2011- 60 deg, 1ATM- 3. 07/27/2012-	Meter maintained to OEM specifications. Data adjusted in ER calcs to 60 deg and 1 atm up to Feb 7, 2011.
Location 3: Total amount of landfill gas sent to engine. (Energy-Lockhart)	Rosemount 3051 SFC compact conditioning mass flow meter (Sn: 3046770) with integrated pressure and temperature (SN: 0043190)	1. Orifice Plate-Rosemont every 3 years.	1. 3/11/2011- Rosemont 3051 orifice plate checked. Ok 2. 4/6/2011- SN: 0043190-Pressure transmitter and temp-Pass by Emerson	Meter maintained to OEM specifications. Data adjusted in ER Calcs to 60 deg and 1 atm.
Location 4: Total amount of landfill gas sent to the boilers. (Thermal-Milliken).	Veris Verabar DPSN (V17909-01.1) with Rosemont transmitter 2051- (SN:SN0042055)	1. Orifice checked every 3 years, 2. Calibration of Rosemont every 3 years.	Rosemont 2051- SN:0042055 3/1/2011- Press. Transmitter. -pass	Meter maintained to OEM specifications Data adjusted in ER Calcs to 60 deg and 1 atm.
Methane fraction in landfill gas sent to the flare, engine, and boilers.	Siemens Ultramat 23 Continuous Gas Analyzer	6-12 months	Initial: June 15, 2010- by Third party. July 22, 2010 August 17, 2011 6/11/2012 7/10/2012	Meter Roughly calibrated monthly by Lockhart and maintained according to OEM specifications

PJRCES reviewed the project monitoring data for methane fraction ($W_{CH4,}$) and LFG collected and Landfill gas destroyed as used to calculate the amount of methane destroyed by the project. Incremental flow was first calculated by taking the flare flow difference between the aggregated monitoring periods (1 and 15 min data intervals) from the raw data. The incremental methane destroyed flow was then calculated based on the above parameters with temperature and maximum flow capacity taken into consideration. Incremental methane destroyed from each destruction device was aggregated on a monthly basis and the annual monthly summaries were brought forward to the emission reduction calculation spreadsheet for further calculation. The methane destroyed by the Project ($MD_{project,y}$) was calculated based on the quantity of methane

flared, used to generate electricity or used to generate thermal energy as follows:

$$MD_{project,y} = MD_{flared,y} + MD_{electricity,y} + MD_{thermal,\ y}$$

Total methane destroyed was then proportionally calculated and converted from a volumetric to a mass flow using appropriate methane densities for the various destruction devices using the following equations:

$$MD_{flared,y} = LFG_{\ Project\ total,y} * w_{CH4,y} * D_{CH4} * Proportion_{\ Flared,y} - PE_{\ flare,y} / GWP_{CH4}$$
$$MD_{electricity,y} = LFG_{\ Project\ total,y} * w_{CH4,y} * D_{CH4} * Proportion_{\ Electricity,y}$$
$$MD_{thermal,\ y} = LFG_{\ Project\ total,y} * w_{CH4,y} * D_{CH4} * Proportion_{\ Thermal,y}$$

For conservativeness, the equations above were modified to first compare $LFG_{Project\ total,y}$ (eligible) to LFG destroyed by all three destruction devices. The lesser of two values was used to calculate methane destroyed for each destruction device. The modification eliminated the potential overstatement of emission reductions when instances of $LFG_{Project\ total,y}$ (eligible) was more than total LFG destroyed by all three destruction devices. The deviation was noted in section 4.1 above.

Baseline emissions were then further correctly calculated using the formula:

$$BE_y = (MD_{project,\ y} - MD_{BL,y}) * GWP_{CH4} + ET_{LFG,y} * CEF_{ther,BL,y}$$

As the flow of methane from the project system was metered prior to comingling with the pre-project collection system therefore the baseline deduction ($MD_{BL,y}$) was equal to zero.

Project emissions from electricity use and propane consumption were calculated and deducted from the overall emission reductions created by the Project in conformance with the validated Project Description using equation:

$$ER_y = BE_y - PE_y$$

Through examination of the calculations in the Excel spreadsheet provided by Blue Source LLC, and through an independent recalculation of the emission reductions from the verification period using the available raw flow, and methane data, PJRCES confirmed the emission reduction calculations were free from material misstatement.

4.3 Quality of Evidence to Determine GHG Emission Reductions or Removals

Documentation was provided by Blue Source LLC for emissions data, the data collection process and the quality systems associated with this project. Additional supplementary evidence was provided on-site consisting of both oral and documented evidence provided by Lockhart Power, and Spartanburg County regarding details of the landfill itself, monitoring equipment history, and maintenance and calibration details of the equipment on the gas collection system, the flare skid and the operation of the electricity generator. Supplementary oral and documented evidence was also provided by Milliken Chemical Company representatives regarding the operation, regulatory status, and maintenance of the boilers.

Documented evidence included electronic flow records, methane analyzer records, flow aggregation and calculation records, invoices and equipment/well field O&M records.

PJRCES reviewed evidence of the above data sources to develop a sampling plan and did an independent review of the factors associated with methodology and the calculations themselves.

The reliability of the evidence was demonstrated by the corroboration provided by Lockhart Power with the raw data submitted during the document review. In addition, the site visit to the landfill, electricity generator facility, and thermal generation facility to review project implementation, the various flow meters and the methane analyzer equipment and to spot check data and records affirmed the quality of data provided. Raw data collected for $MD_{flared,y}$, $MD_{electricity,y,}$ and $MD_{thermal,\ y}$ included landfill gas flow, operational hours, and methane fraction on a continuous electronic basis by an electronic data logger. This data corroborated well with the flows and methane content provided in the data records.

The verification process focused on the evaluation of quantification spreadsheets to ensure that they were consistent with the formulas and equations described in ACM0001 and the validated Project Description with no deviations noted. Copies of the raw data used in the calculations; including methane concentration and landfill flow were compared with the values used in the final calculations and tested for transcription and mathematical errors. Instrumentation was observed to be maintained according to manufacturer specifications with appropriate field logs and calibration records properly documented and maintained. The project emission reduction calculations were transparent and resulted in conservative baseline emissions calculation for the project.

The evidence provided was sufficient for verification of the project and consistent with the requirements of the VCS Standard, v3.3 (October 4, 2012), ACM0001 (Version 11), the validated PDD and the Project Monitoring Report and meets generally accepted evidentiary standards for best practice in GHG accounting.

4.4 Management and Operational System

PJRCES interviewed key personnel during its site visit to the Blue Source Spartanburg County Landfill Gas Combustion Project and assessed the management control environment of Spartanburg County, Lockhart Power, Milliken Dewey Chemical Company and Blue Source LLC. Controls include staffing key positions with competent personnel, exercising supervisory and management oversight, and managing data.

Spartanburg County, the landfill operator, provided personnel for maintaining the gas collection system. Lockhart provided personnel for inspecting and maintaining the monitoring devices at the flare, for maintaining and calibrating the flow meters and methane analyzer, for maintaining the treatment skids and pipeline activities. Lockhart Power is also responsible for managing the operations of the generator sets and monitoring operational data that feeds into its SCADA system. Milliken Chemical Company provided personnel for operation and maintenance of the thermal energy production (i.e. boilers). PJRCES concluded that the project participants were qualified for the functions that they performed. In addition, the project destruction devices were observed to be monitored and maintained in all aspects to manufacturer's recommendations.

Monitored data was available directly on the SCADA system in real time and a raw data is provided to Blue Source. Operating reports are internally checked within Lockhart Power weekly for any irregularities. Blue Source cross also checks the reported gas flow to the various destruction devices to identify irregularities in reporting.

Data permanence is assured through redundancy of computers running in separate buildings with separate power connections. The data is also backed up on the technician's laptop. At least once

per week, data from the PLC is uploaded to the Lockhart server. The SCADA system uploads data to the on site server on a monthly basis and data also be aggregated on a monthly and yearly basis.

Project monitoring is documented in the Project Design Document (version 3, March 7, 2011), and in "VCS Monitoring Report." For this project period, PJRCES reviewed several versions of the monitoring report with the final revised version stated as "Spartanburg_Monitoring Report_June 2010-Sept 2012 version 7.0."

5 VERIFICATION CONCLUSION

Blue Source LLC has supplied a Project Monitoring report, Validated Project Design Document and the necessary evidence requested during the verification process to enable PJRCES to arrive at an opinion on the Blue Source Spartanburg County Landfill Gas Combustion Project. The emission reductions generated from the capture and destruction of landfill gas methane via a flare, a beneficial use project consisting of thermal energy generation and electricity generation have been compiled in a transparent manner, the data was found to be accurate within the uncertainty limits of the measurement equipment and emission reduction calculations were found to include all the required sources. PJRCES has determined that the Blue Source Spartanburg County Landfill Gas Combustion Project, developed by Spartanburg County, Lockhart Power and Milliken Dewey Chemical Company, is in conformance with the Consolidated Baseline Methodology ACM001, version 11. Furthermore, the Project Plans and data are considered accurate, complete, transparent, and free of material misstatements. The GHG emission reductions are considered verified to a reasonable level of assurance.

Verified Results:

GHG Emission Reductions or Removals **15 June, 2010 to 31 December 2010**	tCO_2e
Baseline Emissions	32,909
Pre-Project Emissions Adjustment	0
Project Electricity and Fossil Fuel emissions	118
Net GHG emission reductions or removals	**32,791**

GHG Emission Reductions or Removals **01 January 2011 to 31 December 2011**	tCO_2e
Baseline Emissions	70,646
Pre-Project Emissions Adjustment	0

Leakage	391
Net GHG emission reductions or removals	**70,255**

GHG Emission Reductions or Removals **01 January 2012 to 30 September 2012**	tCO_2e
Baseline Emissions	63,973
Pre-Project Emissions Adjustment	0
Leakage	425
Net GHG emission reductions or removals	**63,548**

Verification Summary:

Project Developer	Blue Source., as credit originator for the Blue Source Spartanburg County Landfill Gas Combustion Project
Project Location	Spartanburg County, SC, USA
Project Type	Landfill gas destruction
Project Periods:	2010 (15 June – December 31, 2010) 2011 (1 January - December 31, 2011) 2012 (1 January – September 30, 2012)
Verification Objective	To determine, with reasonable assurance, that Blue Source LLC had quantified, monitored, and fairly reported to the Verified Carbon Standard its landfill gas emission reductions at the Wellford Landfill in accordance with all applicable criteria.
Verification Scope	The scope of the engagement included the quantification, monitoring and reporting of greenhouse gas project emissions reductions associated with the operation of 1) open flaring, 2) internal combustion engine with electricity generator set and 3) thermal energy production.
Nature of Data Verified	Historical
Protocol/Methodology	CDM ACM0001, version 11 Verified Carbon Standard Version 3.3 (October 4, 2012) Verified Carbon Standard Program Guidelines Version 3.3 (1 May, 2012),
Emissions/Removals	Vintage 2010: **32,791** metric tons of CO_2-equivalent

Verified	Vintage 2011: **70,255** metric tons of CO_2-equivalent Vintage 2012: **63,548** metric tons of CO_2-equivalent
Verification Conclusion, with Reasonable Assurance	Based upon the verification activities described above, PJRCES has concluded that the reported 2010, 2011 and 2012 vintage methane emission reductions are, in all material respects, fairly stated.
Representation	PJRCES represents that the Emission Reductions verified in this report have occurred in accordance with the applicable VCSA Rules.
Lead Verifier	Tina Sentner, December 11, 2012
Internal Reviewer	Zhang Xiaojun Johnsen December 14, 2012
Internal Reviewer	Ajay Verma December 19, 2012
Final Approver	*Bilal Anwar* December 20, 2012
This verification statement is valid when signed and dated by an NSF internal reviewer.	

6 REFERENCES

NO	Type	Description	Notes
1	Electronic	CoI VCS - _Spartanberg County Landfill Gas Combustion Project	
2	Electronic	F-71ces TerraPass -COI- Spartanburg - Tina Sentner	
3	Electronic	F-24ces Kick-off_Opening_Closing Mtg Spartanburg	
4	Electronic	Verification Plan_Spartanburg-Ver. 1	
5	Electronic	F-6ces-landfill workbook ver. 1_ Spartenburg 12-11-2012	
6	Electronic	Spartanburg_Monitoring Report_June 2010-Sept 2012 version 6 0	
7	Electronic	Spartanburg PD 3-07-2012_private	
8	Electronic	Validation Report_2012-03-13	
9	Electronic	Spartanburg_VER Calculation_12.04.2012	
10	Electronic	FCI- Total Flow Meter Calibrations	
11	Electronic	Thermal Instruments Calibrations	
12	Electronic	Flow meter to Milliken_SN0042055	
13	Electronic	flow meters	
14	Electronic	Ultramat Calibration Folder	
15	Electronic	Raw Data files for 2010, 2011, and 2012	
16	Electronic	Fossil Fuel Invoices	
17	Electronic	Wellford Redlined pdf pdf	
18	Electronic	ECHO Database review 2	
19	Electronic	Summary of Findings_Ver.3 12-10-2012	
20	Electronic	Verifier Work Copies	
21	Electronic	Site Visit Photos (10.11.2012)	