



VERIFICATION REPORT FOR THE HENRICO COUNTY LANDFILL GAS COMBUSTION PROJECT



Document Prepared by First Environment, Inc.

Project Title	Henrico County Landfill Gas Combustion Project
Version	1
Report ID	1
Report Title	Verification Report for the Henrico County Landfill Gas Combustion Project
Client	Blue Source, LLC
Pages	19
Date of Issue	15-February-2022
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Summary:

This report is provided to Blue Source, LLC (Blue Source), and the County of Henrico (Henrico County) as a deliverable of the Verified Carbon Standard (VCS) project verification process for the Henrico County Landfill Gas Combustion Project (the Project) located in Glen Allen, Virginia.

The landfill is divided into three separate and distinct areas: East Fill, West Fill, and the Expansion. Prior to the Project activity, landfill gas was collected from the East Fill area and destroyed in an open flare. The Project consists of gas collection from the Expansion area and was implemented in two stages. Stage One of the Project involved expansion of the pre-existing wellfield and installation of an open flare. Stage Two consists of a beneficial use application where landfill gas is collected and sent to an on-site power generating facility for destruction in engines to generate electricity. Both stages of the Project are currently active, and each achieves a net reduction in CO₂-equivalents through the avoidance of methane emissions that otherwise would have been released to the atmosphere.

The verification process and scope consist of the independent third-party assessment of the implementation of the project and emission reduction assertion against the criteria stated in the Verified Carbon Standard (VCS) Standard, 20 January 2022, v4.2; the approved Clean Development Mechanism (CDM) Methodology ACM0001 "Flaring or use of landfill gas" Version 19 and the validated VCS Project Description (VCS PD). The purpose of the verification is to ensure the project was implemented and monitored in accordance with the validated Project Description and underlying CDM Methodology.

During the verification process, First Environment, Inc. (First Environment) issued eight corrective action requests and three clarification requests, all of which were addressed sufficiently by Blue Source. No uncertainties were identified during the verification process. The Project claims emission reductions of 41,343 tonnes CO₂e for the period of January 1 through December 31, 2021. First Environment is reasonably assured that the Project meets all relevant VCS program requirements and correctly applies the CDM methodology ACM0001 (Version 19) and the validated VCS PD.

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1 Introduction

1.1 Objective

This report is provided to Blue Source, LLC (Blue Source), and the Project Proponent; County of Henrico (Henrico County) as a deliverable of the Verified Carbon Standard (VCS) project verification process for the Henrico County Landfill Gas Combustion Project (the Project) located in Glen Allen, Virginia. This report covers the verification of greenhouse gas (GHG) emission reductions from the avoidance of methane emissions from decomposing waste during the period from January 1 through December 31, 2021. First Environment, Inc. (First Environment) conducted the verification from November 2021 through February 2022.

During the verification process, Blue Source acted as the Project advisor for the Project Proponent. As such, First Environment communicated directly with Blue Source regarding most verification activities.

1.2 Scope and Criteria

The specific scope metrics for the verification are outlined in the table below:

Reporting Period	January 1 – December 31, 2021
Emission Sources Verified	<i>Baseline Sources</i> - CH₄ emission reductions resulting from the destruction of landfill gas. - CH₄ emission reductions resulting from the pre-project destruction of landfill gas. <i>Project Sources</i> - CO₂ emissions from on-site fossil fuel consumption in support of the project activity. - CO₂ emissions from electricity consumption by the project activity - CH₄ emissions from uncombusted methane
Definition of Materiality	- Misstatements of greater than five percent of the Project's GHG assertion. The Project activity generated less than 300,000 tonnes of CO₂e per year and therefore falls under the "Project" scale. - Qualitative non-conformities with Standards of Verification described below

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

Standards of Verification	- VCS Standard, 20 January 2022, v4.2 (VCS Standard) - Validated VCS Project Description (VCS PD), August 28, 2020 - Approved CDM Methodology ACM0001 "Flaring or use of landfill gas" Version 19
Verification Process	- VCS Standard - VCS Program Guide, Version 4.1, 20 January 2022 - ISO 14064-3: Specification with guidance for the validation and verification of greenhouse gas assertions, 2006

The Monitoring Report dated 14 February 2022; Version 1.5 titled "Henrico County Landfill Gas Combustion Project" was also reviewed to inform the verification assessment.

1.3 Level of Assurance

First Environment and Blue Source have agreed that a reasonable level of assurance be applied for the Project.

1.4 Summary Description of the Project

The Project is located at the Springfield Road Landfill (the Landfill) at 10600 Fords Country Lane (Latitude: 37°40'45", Longitude: 77°33'58"). Henrico County is the Project Proponent and is the owner and operator of the landfill and flare. Industrial Power Generating Company is the owner and operator of the power plant and per VCS guidance dated March 4, 2022, is designated in the Monitoring Report as "Other Entities Involved in the Project". The Project consists of two stages: (1) expansion of the existing landfill gas collection system and destruction of landfill gas in an open flare; (2) implementation of a beneficial use project by which landfill gas is destroyed in a series of engine-generator units at the Industrial Power Generating Company power facility with a total capacity of four megawatts. These activities result in a net reduction of CO₂e emissions.

The VCS PD provides additional details regarding the project activity.

2 Verification Process

The verification process consisted of an assessment of the Project's implementation, as described in the Monitoring Report, against the verification criteria described above, as well as an assessment of the GHG emission reduction assertion. Discrepancies between project documentation and the verification criteria were considered material and identified for corrective action. Deviations were evaluated on the basis of the requirements in ACM0001 and the VCS Standard and required appropriate justification.

2.1 Method and Criteria

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

- conflict of interest review;
- selection of Audit Team;
- kick-off meeting with Blue Source Team;
- review of the validated VCS PD;
- development of the verification plan and sampling plan;
- desktop review and evaluation of raw data, calculations, and supporting documentation for the period under review;
- follow-up interaction with Blue Source Team for corrective action or supplemental data as needed; and
- final statement and report development.

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

2.1.1 Conflict of Interest Review

Prior to beginning any verification project, First Environment conducts an evaluation to identify any potential conflicts of interest associated with the project. No potential conflicts were found for this Project.

2.1.2 Audit Team

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

Jeff Daley – Lead Verifier,

Logan Simpson – Verifier,

Jay Wintergreen – Internal Reviewer.

2.1.3 Audit Kick-off

The verification audit was initiated with a kick-off conference call on November 1, 2021 between First Environment and the Blue Source team. The communication focused on confirming the verification scope, objectives, criteria, schedule, and the data required for the verification.

2.1.4 Project Description Review

The Audit Team reviewed the VCS PD as a basis for developing the verification plan.

2.1.5 Development of the Verification Plan

The Audit Team formally documented its verification plan as well as determined the data-sampling plan. The verification plan was developed based on discussion of key elements of the verification process during the kick-off meeting. Blue Source was given the opportunity to comment on key elements of the plan for verification. Based on items discussed and agreed upon with Blue Source, the plan identified the First Environment team members, project level of assurance, materiality threshold, and standards of evaluation and reporting for the verification. It also provided an outline of the verification process and established project deliverables. A separate sampling plan was designed to review all project elements in areas of high risk of inaccuracy or non-conformance.

2.1.6 Site Visit

Mr. Jeff Daley performed a site visit on February 13, 2019 as part of a previous verification process. The site visit included interviews with relevant site personnel and project stakeholders; review of the Project's operations; data collection procedures and information management systems; as well as assessments of the Project's controls for sources of potential errors and omissions. The site inspection included a tour of the landfill, all destruction devices, and all associated ancillary equipment (i.e., metering and data recording systems). First Environment confirmed during the kick-off call and through the course of verification activities that no significant changes have occurred to the Project activity since the previous site visit; therefore, a repeat site visit during the current verification process was deemed unnecessary.

2.1.7 Desktop Review

The Audit Team performed a desktop review of the Monitoring Report, GHG emission reduction assertion, and supporting documentation, as further described in Section 2.2 below.

2.1.8 Corrective Actions and Supplemental Information

The Audit Team issued requests for supplemental information, corrective action, and clarification during the verification process. The corrective action and clarification requests and the responses provided by Blue Source are summarized in Appendix A.

2.1.9 Verification Reporting

Verification reporting documents the verification process and identifies its findings and results. Verification reporting consists of this report and a separate Deed of Representation to be submitted to Verra.

2.2 Document Review

During the verification process, First Environment reviewed the Project's Monitoring Report, GHG emission reduction assertion, and supporting documentation for the current verification period to ensure consistency with the VCS Standard, ACM0001, and the VCS PD. Discrepancies between project documentation and the verification criteria were considered material and identified for corrective action. Deviations required appropriate justification from Blue Source. Additionally, First Environment 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.

2.3 Interviews

Through the course of verification activities, First Environment interviewed the following project personnel to inform the verification process:

Lucy Huang – Blue Source

Andre Buiza – Blue Source; Manager, Carbon Solutions

2.4 Site Inspections

As described above, a site visit was performed on February 13, 2019 as part of the previous verification process.

2.5 Resolution of Findings

The Audit Team issued eight requests for corrective action and three requests for clarification during the verification process. There were no outstanding forward action requests from the validation or previous verification. Blue Source's responses were sufficient to resolve all requests. The corrective action and clarification requests and the responses provided are summarized in the table found in Appendix A.

2.5.1 Forward Action Requests

No forward action requests were issued during the verification process.

2.6 Eligibility for Validation Activities

First Environment is accredited to perform validation activities as described in Section 3 below for activities in Sectoral Scope 13 – Waste Handling and Disposal, and Sectoral Scope 1 – Energy industries (renewable - / non-renewable sources), which are the applicable scopes for the approved CDM methodology ACM0001.

3 Validation Findings

As described in Section 3.3 below, seven Project Description deviations were validated during the current reporting period. First Environment reviewed justification for all deviations, including supporting documentation, to confirm they were consistent with the underlying methodology and did

not negatively impact the conservativeness or accuracy of the emission reductions. The validation process for each deviation consisted of an assessment of the Project's implementation, as described in the Monitoring Report and from discussions with Blue Source, against the validation criteria. The validation criteria considered in the assessment of any deviations included the approved CDM methodology ACM0001, v19 and the VCS standard.

3.1 Participation under Other GHG Programs

During the verification process, First Environment reviewed written confirmation from Blue Source confirming that GHG emission reduction credits from the Project have not been registered under another GHG program.

First Environment concluded that the Project is eligible to participate under the VCS program.

3.2 Methodology Deviations

Section 4.1 identifies methodology deviations previously validated for the Project. No new methodology deviations were identified during the current reporting period.

3.3 Project Description Deviations

The following project description deviations are proposed in the Monitoring Report for the current reporting period:

- The VCS PD identifies that the continuous gas analyzer is an Ecotec FAU-TDL analyzer. This analyzer was replaced on May 28, 2020 with a Siemens Ultramat 23 gas analyzer (s/n: N1M4372). First Environment approved this deviation because the gas analyzer was replaced with an analyzer of similar type and is installed at the same location as the original analyzer. The installation of a new gas analyzer does not negatively impact the accuracy of the GHG assertion.
- The Siemens Ultramat continuous gas analyzer failed in July 2021 due to moisture issues in the sample line. As a result, the Project relied on daily methane concentration readings taken with a portable gas analyzer for the remainder of the reporting period. First Environment approved this deviation because it results in equivalent accuracy of the emission reduction assertion. Additionally, the application of methane concentration readings taken with a portable analyzer was applied in accordance with the requirements of CDM Tool08 - Appendix paragraph 7(d)
- The VCS PD requires that the engine flow meter will undergo calibration according to manufacturer recommendations. The manufacturer of the Rosemount meter at the engine skid requires calibration at least once every three years. The engine flow meter was past due for its annual calibration in 2021. First Environment approved this deviation because the flow meter was subsequently calibrated approximately two months past the three-year calibration frequency. The as-found and as-left conditions for the flow meter identified that the instrument was operating accurately and well within allowable accuracy specifications. Therefore, the data monitored was not adversely affected by the calibration frequency exceedance.
- The Landtec GEM-2000 Portable gas analyzer that was used from July 1 to December 31, 2021 was past due for its manufacturer recommended six-month calibration. The analyzer was subsequently calibrated after the end of the reporting period, with an as-found condition indicating a less than one percent drift. First Environment approved this deviation because the analyzer was subsequently calibrated, and the as-found condition indicated the analyzer was operating accurately and well within allowable accuracy specifications. Therefore, the data monitored by the GEM-2000 was not adversely affected by the calibration frequency exceedance.

- The flare flow meter was replaced during the reporting period with an identical make/model meter with the only difference being the set standard conditions of each meter. The original meter recorded flow readings at standard conditions of 68°F and one atmosphere of pressure. The new flare flow meter records flow readings at standard conditions of 60°F and one atmosphere of pressure. The original meter was replaced due to its age, and the facility decided to purchase a new meter. First Environment approved this deviation because the flow meter was replaced with an identical meter and is installed at the same location as the original meter. The installation of a new flow meter does not negatively impact the accuracy of the GHG assertion
- The VCS PD identifies only one methane density value corresponding to standard temperature conditions of 68°F, which is consistent with the standard temperature condition for landfill gas flow recorded by the flare flow meter. The engine plant flow meter records flow at standard temperature conditions of 60°F, while the pre-project monitoring used for the baseline discount measured flow at standard temperature conditions of 70°F. For this reason, two new methane density values have been applied in the emission reduction calculations to correspond to the standard temperature conditions of each meter. First Environment approved this deviation because it results in greater accuracy of the emission reduction assertion.
- The VCS PD identifies that the electricity meter measuring Project electricity generation will be calibrated every six months. Documentation of calibration is not available for this meter. The meter is the Utility's electricity revenue grade meter and therefore is assumed to be accurate. First Environment approved this deviation because the data from this meter is not directly used to quantify emission reductions. The data output from this meter is used to simply determine if the engines are on or off. Therefore, the emission reduction assertion is not adversely affected due to the lack of calibration record availability.

The project description deviations described above did not impact the applicability of the methodology, additionality, or the appropriateness of the baseline scenario, and the Project remained in conformance with all other ACM0001 and VCS requirements. In addition, Blue Source provided appropriate description and justification for each deviation. The deviations were deemed to be valid.

3.4 Grouped Project

Not Applicable. The Project is not a grouped project.

4 Verification Findings

4.1 Project Implementation Status

The Project is implemented according to the description provided in the VCS PD, except where noted in Section 3 above, and relative to previously validated deviations identified below. The Project became operational on June 3, 2005. The second 10-year Project crediting period began on January 1, 2019 and ends on December 31, 2028. First Environment previously confirmed the Project's start date during the Project's first validation. Emission reductions are claimed for landfill gas from the expanded gas collection system installed at the Landfill. The Project consists of two stages. Collected eligible landfill gas is destroyed in an open flare (Stage 1) or in a series of engine generators to produce electricity (Stage 2). Additionally, collection and destruction of landfill gas in a pre-existing open flare prior to the Project's start date occurred at the facility. As a result, methane destroyed in the pre-existing gas collection system is accounted for in the emission reduction assertion consistent with the VCS PD.

No data and/or variables presented in the Monitoring Report differ from those stated in the VCS PD, except where noted in Section 3.3 above or as described below. Similarly, the data collection and

recordkeeping procedures were found to be consistent with those outlined in the monitoring plan described by the VCS PD and meet the requirements of ACM0001. The Project has adequate management and operational systems in place with respect to monitoring and reporting, as determined through observation during the site visit and the desktop review of project documentation.

During the verification process, First Environment reviewed written confirmation from Blue Source confirming that GHG emission reduction credits for the current reporting period have not been registered under another GHG program.

The Project activity does not claim emission reduction credits for the displacement of fossil generated electricity. Therefore, no double counting of environmental attributes associated with electricity production and carbon credits has occurred.

The following topics were discussed with project personnel during the site visit:

- the data collection process used to generate reports, and
- internal documents and protocols that set guidelines for the data collection process.

The information gathered during these discussions was used to assess the Project's data management systems and its controls for sources of potential errors and omissions. The primary aspects of the Project's monitoring plan are described below.

The quantity of LFG sent to the flare is continuously measured using a Rosemount Orifice Plate flow meter. The quantity of LFG sent to the engine is also continuously measured using a Rosemount Orifice Plate flow meter. All flow data are recorded by the Project's Red Lion data logger every five minutes. Additionally, as a backup, engine totalized engine flow data is recorded daily by Industrial Power Generating Company. Flow data is also uploaded and stored on remote servers by Draper Aden Associates, the County's third-party engineering consultant.

Methane concentration data is recorded by the Project's Red Lion data logger every five minutes. Methane data is also uploaded and stored on remote servers by Draper Aden Associates, the County's third-party engineering consultant. Additionally, as a backup, Industrial Power Generating Company takes methane readings with a portable gas analyzer daily. Due to data logger communication issues, the daily methane readings taken with a portable gas analyzer were applied in the emission reduction calculations from July 1, 2021 onward.

The flow meters and continuous methane analyzer were calibrated in accordance with the requirements of the VCS PD, except as previously identified. Table 1 below identifies the dates each meter was calibrated:

TABLE 1: Meter QAQC

Meter	Location	Dates of Use	Calibration Date	VCS PD calibration frequency
Rosemount (s/n: 135079)	Flare	1/1/2021 – 7/20/2021	11/4/2020	Once every three years
Rosemount (s/n: 25855)	Flare	7/20/2021 – 12/31/2021	7/20/2021; 8/18/2021**	Once every three years
Rosemount (s/n: 306661)	Engine	Entire reporting period	10/7/2018; 12/10/2021	Once every three years
Thermocouple (K-type)	Flare	Entire reporting period	11/4/2020; 7/20/2021	Annually

Meter	Location	Dates of Use	Calibration Date	VCS PD calibration frequency
Siemens Ultramat 23 (s/n: N1M4372)	Header Line	1/1/2021 – 6/30/2021	5/28/2020 1/4/2021 * 2/2/2021 * 3/2/2021 * 4/12/2021 * 5/10/2021 * 6/9/2021 *	Annually
Landtec GEM-2000 Portable Gas Analyzer (s/n:12536)	Header Line	Daily from 7/1/2021 – 12/31/2021	1/6/2021; 1/20/2022	Once every six-Months

* Field calibration accuracy check performed by third party (Draper Aden Associates).

** Orifice Plate inspection.

First Environment reviewed the calibration records for all meters identified in Table 1 to confirm that each meter was operating within the five percent accuracy threshold established by the Standard.

The open flare uses a series of Type K thermocouples to continuously monitor flare temperature as well as a UV sensor to monitor the presence of a flame. The temperature is recorded by the Red Lion data logger every five minutes. First Environment confirmed that no emission reductions were claimed when flare temperature indicated the flare was non-operational.

The operation of the power plant is demonstrated by engine run time recorded every five minutes, and kilowatt production data which is monitored continuously and recorded daily by a SCADA system.

The Project imports electricity from the grid. Electricity consumption is monitored using monthly utility invoices. The Project also consumes propane for the flare pilot light system and diesel fuel by the power plant. Propane and diesel usage are determined from purchase invoices.

The data collection and recordkeeping procedures were found to be consistent with those outlined in the monitoring plan described by the PD and meet the requirements of the ACM0001.

The following methodology deviations identified in the VCS PD were previously validated for the Project during the Project's crediting period renewal validation:

- Project emissions resulting from purchased grid electricity are quantified by using an electricity emission factor sourced from the U.S. EPA eGRID database for the sub-region in which the Project is located, as opposed to quantifying a grid electricity emission factor by using Tool to calculate the emission factor for an electricity system, or by applying a default electricity emission factor. This deviation was approved during the Project's validation process.
- The ex-ante emission reduction estimates were not estimated using the CDM "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site." Instead, ex-ante emission reductions were estimated based on historical information and data from the Project's first 10-year crediting period. This deviation was approved during the Project's validation process.
- The default flare efficiency of the open flare was assigned a value of 98 percent as opposed to the 50 percent default efficiency for open flare as found in the CDM Tool "Project emissions from flaring," Version 3.0. This deviation was approved during the validation process because the 98 percent flare efficiency is representative of the typical flare efficiency for an open flare operated under United States (US) Environmental Protection Agency (EPA) 40CFR60.18, as

is the case for the project flare. Furthermore, the applied flare efficiency yields a more accurate representation of emission reductions.

The data collection and recordkeeping procedures utilized were found to be consistent with those outlined in the monitoring plan described in the VCS PD and meet the requirements of ACM0001, except where noted above.

The Project contributes to sustainable development contributions, specifically SDG 13.0 (Climate Action). The Project activity has implemented SDG 13.0 during the current monitoring period by its continued operation of a landfill gas collection and control system which actively collects landfill gas methane for destruction via an open flare or engines which results in a net reduction of CO₂ equivalent emissions. Additionally, the project activity produces renewable electricity which is sent to the local electrical grid thereby displacing fossil generated electricity.

Overall, the Project is implemented according to the description provided in the VCS PD (except where deviations are noted above), and the monitoring system implemented was found appropriate to the task of obtaining, recording, and compiling the monitored data and parameters.

4.2 Safeguards

4.2.1 No Net Harm

The Project creates no negative environmental or socio-economic impacts.

4.2.2 Local Stakeholder Consultation

The Project operates in accordance with several permits to ensure protection of the environment. The landfill is owned by a public entity and therefore local stakeholders can submit input at any time to the Landfill Manager or Public Works Department. No ongoing comments or concerns were submitted during the reporting period.

4.3 AFOLU-Specific Safeguards

Not Applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

Emission reductions are calculated ex-post using the approach indicated in ACM0001 and the VCS PD. First Environment reviewed the emission reduction calculations for the verification period to ensure accuracy in the formulas applied and the raw data and default factors used as inputs. First Environment's review assessed whether emission reductions were free of material misstatement. The formulas were tested and found to be consistent with the calculations described in ACM0001 and the VCS PD.

Landfill gas flow sent to the flare (LFG_{flare}) and engine ($LFG_{\text{electricity}}$) are measured continuously, and the methane fraction of the landfill gas (W_{CH_4}) measured by either the continuous gas analyzer or a portable Landtec GEM analyzer and are used to calculate the total amount of methane destroyed by the Project ($F_{\text{CH}_4, \text{PJ}, y}$).

Landfill gas combusted by the flare (LFG_{flare}) is measured continuously, and the methane fraction of the landfill gas (W_{CH_4}) measured by either the continuous gas analyzer or the portable gas analyzer are used to calculate the total amount of methane destroyed by the flare ($F_{\text{CH}_4, \text{flared}, y}$). The total monthly quantities of landfill gas are determined by taking the continuous flow readings and summing them over the reporting period. The original flare flow meter automatically corrects flow

data to standard conditions of 68°F and 14.70 psi, while the new flare flow meter automatically corrects flow data to standard conditions of 60°F and 14.70 psi. Methane density consistent with the metered flow standard conditions (0.000667 tCH₄/m³ CH₄ at 68°F and 14.70psi; and 0.000678 tCH₄/m³ CH₄ at 60°F) is multiplied by total methane flow to convert the methane destroyed from a volumetric flow to a mass flow. A thermocouple measures flare temperature to ensure methane destruction. Any flow data with associated flare temperatures below 110°F are excluded from emission reduction calculations.

Landfill gas combusted by the engine (LFG_{electricity}) is measured continuously, and the methane fraction of the landfill gas (W_{CH₄}) measured by either the continuous gas analyzer or the portable gas analyzer are used to calculate the total amount of methane destroyed by the engine (F_{CH₄,EL,y}). The total monthly quantities of landfill gas are determined by taking the continuous flow readings and summing them over the reporting period. The engine flow meter automatically correct flow data to standard conditions of 60°F and 14.70 psi. Methane density consistent with the metered flow standard conditions (0.000678 tCH₄/m³ CH₄ at 60°F) is multiplied by total methane flow to convert the methane destroyed from a volumetric flow to a mass flow.

Project emissions from uncombusted methane during flaring, fossil fuel usage, and grid purchased electricity consumption are deducted from the overall emission reductions created by the Project. Project emissions from uncombusted methane are calculated in accordance with the VCS PD. Project emissions from fossil fuel usage are quantified by multiplying the activity data by the appropriate emission factor. Project emissions from electricity consumption are quantified by multiplying the activity data by the appropriate emission factor and transmission and distribution loss factor.

Because landfill gas was collected and destroyed prior to the project activity, this amount of methane destroyed is (F_{CH₄,BL,y}) subtracted from baseline emissions in accordance with the VCS PD.

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 VCS PD. Copies of the raw data used in the calculations, including flow and methane concentration data and utility and other fossil fuel invoices, were compared with the values used in the final calculations and tested for transcription or mathematical errors. The calculations for the entire period were reviewed as well to determine whether they were free of material misstatement. All calculation methods and emission factors used to determine emission reductions were consistent with those outlined in the validated PD.

The Audit Team performed an independent recalculation of the emission reductions from the verification period using the available raw data. Material misstatements were identified for correction by Blue Source as described in Section 2.5.

No material misstatements were observed in the final GHG assertion.

Overall, the GHG emission reductions were quantified correctly in accordance with the VCS PD and the ACM0001 methodology

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

Blue Source provided adequate documentation for the emission reduction calculations as well as its management systems around the data collection process. Specifically, First Environment was provided a Monitoring Report prepared in accordance with the VCS program template, transparent calculation spreadsheets, calibration records, and data records associated with landfill gas flow,

methane concentration, electricity consumption, and fossil fuel consumption. Data was reviewed beginning from its original source of generation to confirm the accuracy of the information flow.

The evidence provided was consistent with the requirements of ACM0001 and the validated VCS PD and meets generally accepted evidentiary standards for best practice in GHG accounting.

4.6 Non-Permanence Risk Analysis

Not Applicable.

5 Verification Conclusion

First Environment was retained to provide verification services for the Project's GHG emission reductions assertion based on the following fundamentals:

Level of assurance: Reasonable assurance.

Objectives of verification: To assure project conformance with the VCS Standard, the CDM methodology ACM0001 and the VCS PD.

Verification criteria: VCS Standard, the CDM methodology ACM0001 and the VCS PD.

Definition of materiality: Misstatements of greater than five percent of the GHG assertion and qualitative non-conformities with the validated VCS PD are considered material.

Scope, including:

- *Boundaries of the assertion:* Operations at the Springfield Road Landfill, and Industrial Power Generating Company Plant;
- *The physical infrastructure, facilities, and activities within the assertion:* LFG collection and destruction operations, including the flare located at the Springfield Road Landfill, and engines at the Industrial Power Generating Company Plant; and
- *GHG sources, sinks, and reservoirs included within the assertion:* Methane emission reductions expressed as carbon dioxide-equivalents and carbon dioxide emissions from the operation of project equipment.

Based on the assessments performed and the historical evidence collected, First Environment concludes, with a reasonable level of assurance, that the emissions reductions of the Project resulting from the capture and combustion of methane gas are:

consistent with the VCS PD of August 28, 2020;

in conformance with the VCS Standard, the CDM methodology ACM0001 (Version 19);
without material discrepancy; and meeting the minimum level of accuracy of at least 95 percent.

Additionally, the deviations reviewed and approved during the current audit process are consistent with the VCS Standard and ACM0001 methodology, including all validation criteria therein.

Verification period: From 1-January-2021 to 31-December-2021.

Verified GHG emission reductions and removals in the above-verification period:

Year	Baseline Emissions or Removals (tCO ₂ e)	Project Emissions or Removals (tCO ₂ e)	Leakage Emissions (tCO ₂ e)	Net GHG Emission Reductions or Removals (tCO ₂ e)
2021	41,658	315	0	41,343
Total	41,658	315	0	41,343

APPENDIX A: Detailed Resolution of Findings

ID	Corrective Action Request	Participant Response	Verification Conclusion
1	The methane GWP applied in the emission reduction calculations is not consistent with the requirements of Section 3.14.4 of the VCS Standard, v4.1.	The methane GWP applied in the emission reduction calculations has been revised to apply the methane GWP from IPCC's Fifth Assessment Report (Methane GWP = 28t CO ₂ e / t CH ₄).	Response acceptable. is
2	Raw data is not being consistently applied in the data aggregation file and therefore the emission reduction calculations are not based off of solely raw data. As a result, data validation checks, and data filters are only correctly applied for the month of January 2021.	The data analysis has been revised and is now correctly applying the raw data.	Response acceptable. is
3	The 20% flow rate fluctuation analysis for application of non-continuous methane concentration is incorrectly based off of flow rates over the entire reporting period, instead of "...flow rates for the period during which the methane content is measured by sampling" as required per CDM Tool08 - Appendix paragraph 7(d).	This has been corrected and the data analysis is conducted in accordance with the requirements of the Tool.	Response acceptable. is
4	Flow to the engines is not being checked against engine operability (For example, 2/4/2021 shows no KWH production, however flow is being counted as eligible flow on this date).	The data analysis has been revised and now includes an operability check for engine flow.	Response acceptable. is
5	The engine flow meter (s/n: 306661) was not calibrated at the three-year frequency as specified in the VCS PD.	The engine meter was overdue for calibration by approximately two months. This issue has been identified and justified in the Monitoring Report as a project description deviation.	Response acceptable. is

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6	The following Monitoring Report issues were identified: - Section 3.2.2 of the Monitoring Report does not identify previous project description deviations that are still applicable for the current reporting period (i.e., relative to the continuous analyzer replacement). - Section 3.2.2 does not identify and justify the new flare flow meter as a project description deviation. - Section 4.3 Table 1 and Table 2, and Section 4.3 narrative identify and discuss the use of a Landtec GEM-2000 portable analyzer. However, Section 5.2 Data/Parameter table W_{CH_4} identifies an Elkins Envision portable analyzer was used during the reporting period. - The table numbering is off throughout Monitoring Report. - Section 1.11 / Table identifies an incorrect response relative to the "Contributions over project lifetime" column. - Several of the parameter boxes in Section 4.2 do not identify a correct source of data (i.e., "measured" is not a source of data.).	The Monitoring Report has been revised to address each of the identified issues.	Response acceptable. is
7	Methane concentration values applied in the emission reduction calculations for the period of January - June 2021, are not being sourced from the continuous gas analyzer.	The calculation workbook has been revised and now applies the correct methane concentration values for January through June, 2021.	Response acceptable. is
8	The calculation of project emissions from purchased grid electricity applies an outdated eGrid electricity emission factor and transmission distribution loss (TDL) factor. Additionally, the Monitoring Report does not identify the most recently available eGrid values for the grid emission factor and TDL factor.	The calculation of project emissions from purchased grid electricity has been revised and now applies the most recent eGrid emission factor and transmission distribution loss (TDL) factor.	Response acceptable. is

ID	Clarification Request	Participant Response	Verification Conclusion
1	Please clarify why a new Rosemount flow meter was needed/installed at the Flare.	The meter was aging as it was the original meter, and the facility decided to proactively replace it with a new flow meter.	Response acceptable. is
2	Please clarify what the standard temperature and pressure settings are for the Flare Rosemount flow meter serial number: 25855 (and provide supporting documentation).	The new flare flow meter automatically corrects flow readings to 60F and one atmosphere of pressure. Relevant documentation has been provided for review.	Response acceptable. is
3	Please clarify what the issue with the Siemens continuous analyzer was that prevented it from being used from July 2021 onward.	The Siemens unit failed due improper conditioning of the LFG before entering the analyzer, too much moisture was causing erroneous readings (i.e. zero's, negative values, etc.). All monthly field checks through June 2021 showed that the Siemens analyzer was operating accurately. We relied on the portable gas analyzer from July through December 2021 during the Siemen's outage	Response acceptable. is