

LANDFILL GAS PROJECT VERIFICATION REPORT

Verification under the Climate Action Reserve (CAR)

Project CAR #1696 Ciudad Juarez Landfill Gas to Energy Project

Reporting Period:

30 November 2021 to 29 November 2022

Prepared for:

Biogas de Juarez S.A. de C.V.

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CLIMATE ACTION RESERVE

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Table of Contents

Summary	1
Introduction.....	2
Verification Details	2
Verification Objectives.....	2
Verification Scope and Criteria	3
Level of Assurance	3
Treatment of Materiality	3
Verification Process	3
Verification Summary.....	3
Verification Team	5
CAR Landfill Project Requirements.....	5
Project Description.....	5
Project Eligibility.....	6
Location	6
The GHG Assessment Boundary	10
Review of Project GHG Management Systems.....	10
Quantitative Review of Carbon Reductions and Removals	12
Verification Results.....	15
Recommendation	17
Appendix A: SCS Certification Mark	19

Summary

This report presents the findings of the verification assessment of the Ciudad Juarez Landfill Gas to Energy Project (“the Project”) developed by Biogas de Juarez S.A. de C.V. (“the Project Proponent”). This assessment covers the Ciudad Juarez Landfill Gas to Energy Project’s greenhouse gas emission reductions reported to the Climate Action Reserve (the Reserve or CAR) for the verification period 30 November 2021 to 29 November 2022. The verification was undertaken to evaluate the Project Design Document and assess whether the compiled data conforms to the Climate Action Reserve Mexico Landfill Protocol, Version 2.0 (5 October 2022).

The evaluation was undertaken using the Climate Action Reserve Landfill Mexico Landfill Protocol, Version 2.0 (5 October 2022) as well as the verification methodology developed by SCS for carbon offset projects submitted to the Reserve.

In the course of the verification assessment, the SCS verifiers developed findings which included New Information Requests (NIRs), Non-Conformity Reports (NCRs) and Opportunities for Improvement (OFIs). The findings for all New Information Requests and Non-Conformity Reports have been adequately responded to, resulting in their closure.

On the basis of the information provided and the analyses completed, SCS was able to reach a decision on the emissions reduction reported by the Project Proponent to the Climate Action Reserve. SCS verified the adequacy of the information provided in the Project Design Document (“the Monitoring Plan”), confirming that this document meets the requirements of the Climate Action Reserve standards. Further, SCS was able to reach a positive opinion on the claimed emission reductions and removals presented in the Project Design Document and on the Reserve website for Biogas de Juarez S.A. de C.V.. Thus, SCS has verified 104,927 metric tonnes of CO₂e reductions and removals from the Ciudad Juarez Landfill Gas to Energy Project for 30 November 2021 to 29 November 2022.

Introduction

SCS Global Services (SCS) is a global leader in third-party certification, auditing, testing services, and standards. Established as an independent third-party certification firm in 1984, our goal is to recognize the highest levels of performance in environmental protection and social responsibility in the private and public sectors, and to stimulate continuous improvement in sustainable development. In 2012, Scientific Certification Systems, Inc. began doing business as SCS Global Services, communicating its global position with offices and representatives in over 20 countries. SCS is currently accredited to ISO 14065 for GHG Validation and Verification by the ANSI National Accreditation Board (ANAB) and offers carbon offset validation and verification under the Verified Carbon Standard (VCS) and the American Carbon Registry (ACR). SCS also offers carbon offset verification under the Climate Action Reserve (CAR). SCS also offers verification services for the American Carbon Registry (ACR) and the Climate, Community and Biodiversity (CCB) standards.

SCS was commissioned by Biogas de Juarez S.A. de C.V. to undertake the CAR #1696 annual project verification of the Ciudad Juarez Landfill Gas to Energy Project. The project consists of the collection of landfill gas (LFG) from the Relleno Sanitario Municipal landfill at Kilometer 27.5 of Federal Highway number 45 Ciudad Juarez, Chihuahua, Mexico and subsequent destruction through combustion in four identical combustion engines as destruction devices. This report covers the verification period of 30 November 2021 to 29 November 2022 as a project deliverable into the Climate Action Reserve.

Verification Details

Verification Objectives

The objective of the verification is to:

- Evaluate conformance with the Landfill project as defined in the criteria stated below.
- Determine with a reasonable level of assurance whether the Project has resulted in the GHG emissions reductions and/or removals as stated in the project documents.
- Evaluate the project planning information and documentation including the determination of project eligibility, project design, baseline and project emissions determination, management systems supporting the project, and methodologies employed for the calculation of GHG emission reductions.

Verification Scope and Criteria

The scope of the verification is defined as an independent and objective review of the project description document, the project's baseline study, monitoring plan and emissions reductions calculations. The information in these documents is reviewed against the following criteria:

- CAR Mexico Landfill Project Reporting Protocol Version 2.0 (October 5, 2022)
- Errata and Clarifications to Mexico Landfill Protocol Version 2.0 (July 19, 2023)
- CAR Reserve Offset Program Manual (November 2023)

As an ANAB-accredited verification body, SCS conducted the verification to the requirements of:

- Verification Program Manual (February 3, 2021)
- ISO 14064-3: 2019 Greenhouse Gases – Part 3: Specification with guidance for the validation and verification of GHG assertions

Level of Assurance

The level of assurance applied to this verification assessment is Reasonable Assurance as required by the Climate Action Reserve.

Treatment of Materiality

In consideration of the required level of assurance, the needs of the intended user and the requirements of the Climate Action Reserve Program, SCS applied a materiality threshold of **1%**. The data reviewed was considered to meet the principles of accuracy, completeness, transparency and is free of material error or omission.

Verification Process

Verification Summary

The verification process consisted of the following:

1. Project listed with the Climate Action Reserve

The Ciudad Juarez Landfill Gas to Energy Project is listed on the Climate Action Reserve (CAR) website. Biogas de Juarez S.A. de C.V. selected SCS as their verification body.

2. Conflict of Interest Review

A Notification of Verification Activities/ Conflict of Interest (NOVA/COI) form was submitted to CAR. The COI assessment was conducted to identify any potential conflicts interests with the verification/project. No conflicts were identified and a determination of low potential for conflict of interest was received from the Climate Action Reserve prior

to the commencement of verification activities in a determination letter dated 11 August 2023.

3. Introductory Meeting

A kick-off meeting was conducted between the verification team and of Biogas de Juarez S.A. de C.V. on 12 September 2022. The purpose of the kick-off meeting was to review the timeline of audit; confirm verification criteria; determine any changes in the site, sources, GHG management systems or personnel, and to begin gathering information.

4. Desk Review

SCS received and reviewed the Project Design Document, CAR submittals, and supporting documentation to assess initial conformance with the data requirements of the CAR Landfill Project Protocol. A risk assessment was conducted to identify key factors that impact the reported emission reductions and removals. A Verification Plan was created to focus on the critical elements presenting potential risk for errors with the project.

5. Site Visit

Following the desk review, the audit team conducted an on-site audit of the project area on 13 October 2023. The purpose of the site visit is to verify the project equipment, location and eligibility, to review and evaluate the project GHG management systems, data collection and handling, and emission reduction calculations and procedures in place, and to finalize the risk assessment and sampling plan.

The Verification Report must summarize the sampling techniques used, the verification plan, and risk assessment methodologies employed for calculations made within the GHG Assessment Boundary. The report must contain a discussion of the risk assessment, and manner in which this assessment informed the data and calculation sampling techniques. Relevant input parameters (e.g., destruction efficiency) must also be disclosed, and the appropriateness of the chosen parameters asserted.

6. Quantitative Review

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

7. Findings

Throughout the verification, there is an iterative exchange between SCS and the Project Proponent to gather additional information for review and examination. This exchange includes findings—New Information Requests (NIR), Non-Conformity Reports (NCR) and Opportunities for Improvement (OFI)—that are issued by SCS to the Project Proponent. The Project Proponent must respond to NIRs and NCRs for SCS to render a verification

opinion. At this time all findings have been appropriately addressed by Biogas de Juarez S.A. de C.V. and subsequently closed by SCS.

8. Draft Report and Statement

This step in the verification process includes a final review of the submitted data, completion of the Verification Report, and drafting of the Verification Statement. A draft Verification Report and Statement are completed based on the results of the verification assessment.

9. Technical Review

The draft report was presented to an SCS lead verifier, independent of the verification, who determined the Verification Statement to be justified given the evidence presented. The Verification Report and Verification Statement were then presented to Biogas de Juarez S.A. de C.V. for review and comment.

10. Final Report and Statement

Once the Biogas de Juarez S.A. de C.V. approved these documents, SCS uploaded them to the Reserve website for administrative review by CAR. Given a positive review, CAR will register the emissions reductions for the landfill gas project and issue carbon metric tonnes for the period of 30 November 2021 to 29 November 2022.

11. Exit meeting with Biogas de Juarez S.A. de C.V.:

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

Verification Team

The verification was undertaken by Mark Lutz, Lead Verifier. The technical review was performed by Carolin Judd of SCS.

CAR Landfill Project Requirements

SCS verified the Ciudad Juarez Landfill Gas to Energy Project against the requirements of the Climate Action Reserve Landfill Project Protocols. The following sections detail the most essential aspects of the verification of the Ciudad Juarez Landfill Gas to Energy Project.

Project Description

The Ciudad Juarez landfill started operating in 1994. The landfill is separated into three main areas consisting of three differentiated cells: A, B & C. The Ciudad Juarez Landfill Gas to Energy Project (the Project) developed by Biogas de Juarez, S.A. de C.V. (the Project Developer) is a landfill gas (LFG) collection and utilization project in the Ciudad Juarez landfill in the state of Chihuahua, Mexico. The project was originally registered as a CDM project activity on

30 November 2007. The project has recently transferred to The Climate Action Reserve for a second crediting period. This verification is the first verification under the Climate Action Reserve protocol.

The landfill has an estimated capacity of 30,000,000 cubic meters and is expected to be closed on 2040. Its footprint is 79 hectares. The collected landfill gas is used for electricity generation using a destruction device considered as “rich burn” internal combustion engine. The project also operates a landfill gas flaring device, which operates once per month as a system “purging” process. As a result, the project considers this to be outside of the project boundary and not a destruction device monitored according to the Protocol.

Project Eligibility

There are five eligibility rules the Project must meet in order to register reductions with the Climate Action Reserve.

Location

The project is a Mexico - based landfill located at Kilometer 27.5 of Federal Highway number 45, Juárez, Chihuahua, Mexico and therefore meets this eligibility requirement.

Project Start Date

As stated in the Landfill Gas Reporting Protocol, pre-existing projects must have a start date on or after 1 January 2001 and must be listed with the Reserve twelve months from the effective date of the protocol Mexico LFG Reporting Protocol Version CAR Mexico Landfill Project Reporting Protocol Version 2.0 (5 October 2022). The start date is defined as the date at which a qualifying destruction device becomes operational.

Biogas de Juarez S.A. de C.V. is listed the Project on the Climate Action Reserve website on 24 November 2022. The Project’s listing indicated the Project Proponent began flaring gas on 30 November 2007. Biogas de Juarez S.A. de C.V. provided various documents to support the evidence of completion of construction of the landfill gas project such as a letter from SmartSoil Énergie informing the project developer that the “SmartSoil Systems for the Juarez had been completed 22 November 2007.” This included “Configuration and Software activation of all of the system’s sensors, activation of project monitoring systems, operation of the flare and raw credit data acquisition, remote monitoring and control of all SmartSoil systems, training, etc.” These documents confirmed the project start date of 30 November 2022 and the project.

Additionality

Project Proponents must indicate that reductions are above and beyond business as usual. In order to do so, the Project must pass a Performance Standard test and the Legal Requirement test.

Performance Standard

For the Performance Standard test, a project developer may meet eligibility under three possible performance threshold scenarios. The following scenario applies to the Ciudad Juarez Landfill Gas to Energy Project: *Scenario 1 The landfill was not previously collecting and destroying any landfill gas in a qualifying destruction device prior to the project start date.*

This was verified by:

- 1) An interview with Hector Legaretta, the Director of Biogas de Juarez S.A. de C.V. who has been with this project since the beginning in 2007,
- 2) A review of a document showing the commissioning of the project: *Performance.Standard.Test_BDJ_Construction Starting Date.pdf* dated 23 November 2007,
- 3) A drawing of the flare system “as built”: *LFG.Flare.System_BDJ_Flare As Built.pdf* dated 7 February 2013.

Limits on Credit Stacking

The SCS Team verified that credit stacking does not apply in the project since there is no conversion of waste gas into high-Btu fuels or any other credit-stacking scheme.

Legal Requirements

For the Legal Requirements Test, Project Proponents must ensure that emission reductions achieved by the Project would not have occurred in the baseline case due to federal, state, or local regulations.

The SCS team found that there are no laws, statutes, regulations, court orders, environmental mitigation agreements, permitting conditions, or other legally binding mandates requiring the destruction of landfill gas. Reviewed the following:

- Local: *Regulatory.Compliance_BDJ_Municipal Land Use License 2022-2027.pdf*: This is the municipal permission to use this property with a specific land use, whether residential, services, commercial or industrial. There were no requirements to destroy landfill gas.

- Local and State: State.and.Local.Regulations_BDJ_Operating License-2021-2023.jpg: This operating license describes the conditions under which the landfill must operate. There were no requirements to destroy landfill gas.
- Regulatory.Compliance_BDJ_Municipal EIA Landfill Revalidation.pdf: The EIAR describes the conditions under which the Ciudad Juarez Landfill (where the Project is developed) is authorized to operate. Condition 15 of the document requires the site to guarantee extraction, capture, conduction, and control of the landfill gas generated on site according to the NOM-083-SEMARNAT-2003.
- Federal: Regulatory.Compliance_BDJ_Federal EIA Project 2007.pdf: This document describes a resolution of an Environmental Impact Assessment (EIA) submitted by Biogas de Juarez S.A. de C.V. The EIAR describes the conditions under which the Project is authorized to operate. There were no requirements to destroy landfill gas.

Biogas de Juarez S.A. de C.V. has also developed a procedure in the monitoring plan to ascertain and demonstrate that the project at all times passes the legal requirements test at all times. The audit team reviewed:

- Monitoring of Federal law, standard or regulatory mandate related to landfill gas control systems. The Mexico Federal Official Gazette (“Diario Oficial de la Federación”) is the official document where new laws, standards or regulatory mandate are published.
- Monitoring of NOM-083-SEMARNAT-2003 for any update or change on landfill gas control systems requirements.
- Monitoring of updates on the laws and standards of the state of Chihuahua which has its own State Official Gazette.
- Monitoring of changes in the municipality of Ciudad Juarez with its local regulations. Ciudad de Juarez has its own Local Official Gazette.

In addition, there is a federal standard that establishes the control of gas in a sanitary landfill in Mexico: “NOM-083-SEMARNAT-2003.” This standard does not establish the minimum amount of gas that must be captured and burned, nor the specific technologies to be used.

The verification team verified that a discount factor of 0.07 was correctly applied (in their calculations “GHG.ER_BDJ_REP.PERIOD_2021-2022.xlsx file) This was applied per the Climate Action Reserve’s Mexico Landfill Project Protocol, Version 2.0 requirements as recognition of non-compliance with this standard. (In the “Federal Regulations” section of the Mexico Landfill Project Protocol, footnote “9” describes the various technical and financial reasons why this standard has not yet been adopted and/or exceeded in landfills in Mexico.)

Lastly, the verification team reviewed the Attestation of Voluntary Implementation, signed on 10 August 2023, by an eligible signatory to attest for the Project. Biogas de Juarez S.A. de C.V. has affirmed that the Project was established and implemented voluntarily and continues to operate as such. Based on this evidence, the audit team concludes the Project passes the legal requirements test.

Regulatory Compliance

The Verification Team looked at other federal, state and local regulations by a review of the various permits required for this landfill. The latest updates to the following documents were reviewed:

- A regulatory review of the Project and the landfill were conducted by the audit team. The results of the regulatory review indicated the landfill is in compliance with Federal, State and Local regulations.
- SCS reviewed the Attestation of Regulatory Compliance submitted by Biogas de Juarez S.A. de C.V. dated 10 August 2023 affirming the Project's compliance status throughout the project 30 November 2021 to 29 November 2022.

Ownership

Biogas de Juarez S.A. de C.V. is the owner of the Ciudad Juarez Landfill Gas to Energy Project. Ownership was confirmed through review of various regulatory permits issued from federal, state and municipal governments as well as review of the legal property descriptions. Though the landfill (Relleno Sanitario) is owned by the City of Juarez, the gas collection wells, the gas collection plant and associated destruction devices are owned and operated by Biogas de Juarez S.A. de C.V..

SCS reviewed the Attestation of Title, dated 10 August 2023, to confirmed that Biogas de Juarez S.A. de C.V. retains full, legal, and beneficial title to the carbon offset credits being issued as a result of the collection and combustion of methane at the landfill facility. On 2 October 2006, Biogas de Juarez S.A. de C.V. signed an administrative contract (Gas Right Agreement) with the Municipality of Juarez, Chihuahua for the exploitation and use of methane gas emanating from the municipal landfill (*Reduction.Ownership_BDJ_Gas Right Agreement.pdf*).

The verification team also reviewed a number of documents (project installation documents, PROFEPA certifications, permits) that referenced Biogas de Juarez S.A. de C.V. as the owner of this project.

From this evidence, the verification team has concluded that the project developer, Biogas de Juarez S.A. de C.V., is entitled to receive the emission reduction credits that may be issued by the Climate Action Reserve for methane destroyed during this project period.

Non-Climate Action Reserve Reporting

CAR requires that project developers register specific emission reductions with one registry only. The project previously reported GHG emission reductions from this landfill project under the CDM standard from 30 November 2007 to 29 November 2021. SCS reviewed the Project Transfer Attestation to the Climate Action Reserve Program “230102 - Transfer Form V2 Signed.PDF” dated 2 January 2023. Based on this review, SCS determined that GHG reductions have not been registered with more than one crediting agency for the verification period.

The GHG Assessment Boundary

The Project includes all emission sources from the operation of the landfill gas collection system to the ultimate destruction of the landfill gas. The sources of GHG emissions reviewed include:

The GHG sources, sinks, and reservoirs associated with the baseline scenario are:

- CH₄ vented to the atmosphere.
- CO₂ from the oxidation of CH₄ by soil bacteria. As the landfills are not covered with a synthetic liner, the CAR Landfill Project Reporting Protocol assumption that 10 percent of the methane produced would be naturally oxidized by soil bacteria has been applied.

The GHG sources, sinks, and reservoirs associated with the project are:

- Un-combusted CH₄ from Landfill gas in the four internal combustion engines
- CO₂ resulting from the consumption of imported electricity.

The gases reviewed include CO₂ and CH₄. All gases are converted to CO₂ equivalents.

Review of Project GHG Management Systems

During the site visit, a review of the Project’s greenhouse gas management systems was detailed with the Project Proponent. This review included a detailed look at the Project’s data handling and processing procedures, recordkeeping and data storage, and the quality control and assurance procedures. The following is the result of this review:

The primary data gathered for the Project is landfill gas flow, pressure, temperature, methane content of the landfill gas and Kwh output from the electricity generation plant.

For landfill gas flow, a Foxboro 83-F (S/N: 10512227) Flow Meter continuously monitors flow after the blower and a knockout prior to combustion into the destruction device (gen-set). The position of the flow meter is adequate to ensure laminar flow. The calculations for the flow measurement device (FOXBORO Model 83-F) at the genset were adjusted to indicate actual flow through the flow device at the ambient temperature of the landfill gas each minute. In the project’s calculations, these flows were then adjusted to 0 C and 1 ATM to reflect the Mexico Landfill Protocol’s requirements.

This protocol provides an alternative for field calibration in section 6.2 (“Instrument QA/QC”). The Project had chosen to conduct calibration by the manufacturer instead of performing field checks every six months for the flow meter. However, the flow meter calibration was not within the +/- two months at the end of the reporting period (done in August 2022). A deviation was applied for and granted by the Reserve on 22 November 2023. See the “Deviations” section in this report.

Table 1. Flow Meter

Service Provider	Cleaning, Inspection, Field Checks	Calibrations/ Calibration Checks During Reporting Period
Internal Landfill Personnel	Weekly	-----
ECN Automation	-----	8/24/2021, 2/21/2022, 8/17/2022

For methane content tracking, an in-line Siemens Ultramat 23 Analyzer continuously (each minute) monitors the methane % and recorded minute. The analyzer was cleaned and inspected on a weekly basis by Project personnel. The manufacturer recommends that the analyzer be calibrated with test gases on an annual basis. A third party calibrated the analyzer monthly with the last calibration with the as left/as found conditions documented and within two months before or after the end of the reporting period. In addition, another factory-authorized third-party factory-calibrated the analyzer bi-annually. Calibrations in all cases showed that the methane analyzer read within +/- 5 % throughout the reporting period.

Table 2. Methane Analyzer

Service Provider	Cleaning, Inspection, Field Checks	Calibrations/ Calibration Checks During Reporting Period
Internal Landfill Personnel	Weekly	-----
GDM (Gases de Mentano)	Monthly	Monthly

MYASA	-----	06/23/2021, 06/20/2022
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Data Acquisition: Raw data is collected 24 hours / day from the PLC and stored at the on-site server (Juarez server) and in a remote server located at Chihuahua City (location of the MP Committee). The raw data consists of the gas flow, the fraction of methane in the landfill gas, the temperature of the landfill gas and the pressure of the landfill gas. The raw data is then extracted and pasted onto a monthly emission reductions calculation sheet. A weekly log is also maintained to verify that there is no problem with the monitoring equipment. In these weekly logs, notes are kept regarding any issues connected with monitoring and reviewed to prevent any future incidents. From the above, monthly reports are issued and compared to the operational records to assure there are no significant variations.

It was noted that the project operates a landfill gas flaring device, which operates once per month as a system purging procedures. This is not considered as part of the project and was only used for monthly purging of the lines. The verification team confirmed during the site visit that there is both a manual and electronic shutoff that personnel can use; and that the site is staffed (gen-set) who monitor operational status of the project continuously 24 hours/day, 7 days/week.

For the electric generation plant, total KWh is automatically recorded hourly for each of the four gen-sets. The data is aggregated monthly and pasted into the “Op Rec P” emission reduction calculation sheet. Also, an event log is maintained to report any extraordinary events in the plant. Notes are made every time there is a special event in daily shifts when power generators stop, problems in the electric grid, or other issues.

A Project Design Document and monitoring plan have been created for the Project. The contents of the monitoring plan were thoroughly reviewed and observed to meet the requirements of the Landfill Gas Project Protocol. The monitoring plan records are kept for a minimum of ten years when the information is first generated or seven years after the last verification per the project’s Monitoring Plan (*Monitoring.Report BDJ_Reporting Period 2021-2022.pdf*).

Quantitative Review of Carbon Reductions and Removals

SCS devoted a portion of the verification assessment to the review of the manner and propriety by which Biogas de Juarez S.A. de C.V. quantified their net GHG reductions and removals. This assessment included a review of the baseline determination, 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 Project Design Document and the calculation spreadsheets were first reviewed for compliance with the Landfill Project Reporting Protocol. The main parameters of Equation 5.1 were verified as follows:

Total Annual Methane Emissions Destroyed By The Project Landfill Gas Collection And Destruction System ($CH_4 Dest_{PR}$)

The amount of methane destroyed is calculated from the continuously metered landfill gas data. Data was collected continuously and aggregated on intervals of one minute for flows and methane content to the four engines at the electric generation plant. The main monitored parameters needed to calculate the amount of methane destroyed are:

$LFG_{i,t}$ = total quantity of landfill gas fed to the destruction devices and
 $PR_{CH_4 i,t}$ = the average methane fraction of the landfill gas in time interval t as measured.

Flow to the engines is then calculated by summing the flow for each interval period. The quantity of methane destroyed is calculated based on minute-by-minute flow and methane concentration values to monthly totals of landfill gas with temperature and pressure taken into consideration. Total emissions of destroyed methane are carried forward into further calculations to determine the total emission reductions for the project for the reporting period.

Adjustment For Landfill Gas Flow Metering Equipment For Temperature And Pressure

The flow meter does not internally correct for the temperature and pressure of the landfill gas. All flow data collected was corrected in the calculations for temperature and pressure at 0°C and 1 atm using temperature and pressure measurements collected by separate equipment.

Default Methane Destruction Efficiency For Device (Dei)

The project uses 4 identical engines that are all classified as “lean-burn” engine. The value applied was 0.936 represents the default Dei for a lean-burn engine as referenced in the protocol.

Factor For The Oxidation Of Methane By Soil Bacteria (OX)

The project does not incorporate a synthetic liner in its cover system; therefore a 10% methane soil oxidation factor was applied to the baseline scenario.

Discount Factor To Account For Uncertainties Associated With The Project Monitoring Equipment (DF)

As per the methodology, DF equals to zero if using continuous methane monitor with no missing data and all calibration tests are within a 5% margin of error. It was verified that measurement readings are continuous and that calibration certificates indicated that instruments were within

the thresholds for permissible error (see section above: Review of Project GHG Management Systems).

Adjustment To Account For Pre-Project LFG Destruction Device ($PRE_{discount}$)

The Project did not incorporate Pre-Project destruction devices, therefore there was not Pre-Project Discount.

Adjustment To Account for NOM-083

Equation 5.3 of the Mexico Landfill Project protocol of the Climate Action Reserve was used using a discount factor of 0.07 for the regulatory requirements of NOM-083.

Total Annual Indirect Carbon Dioxide Emissions from The Consumption Of Electricity From The Grid (EL_{CO_2}) and Total Annual Carbon Dioxide Emissions From The Destruction Of Fossil Fuel (FF_{CO_2})

CO₂ emissions result from consumption of electricity to power project equipment and activity data for this source was tracked by reviewing utility invoices from the power supplier. This activity data is taken from utility invoices. The Emission Factors for electricity were verified and no material errors were found. There were no fossil fuel emissions for this project.

Project emissions consisting of indirect emissions from electricity were subtracted from the total amount of methane destroyed. The values were presented in the final calculation spreadsheets for the verification period. The gases reviewed include CO₂ and CH₄. All gases are converted to CO₂ equivalents.

Missing Data Procedures

Missing Data calculation procedures were reviewed for consistency with the Landfill Gas Protocol requirements as part of this verification. Missing Data procedures were not applied to the data in this verification period.

Deviations (1)

The flow meter calibration was not within the +/- two months at the end of the reporting period as required by the protocol (performed August 2022). A variance was requested by the project developer and granted by the Reserve on 21 November 2023, per the following conditions:

1. *“The verifier confirms that the biogas flow meter calibration certificate from 31 October 2023 confirms as-found readings within the +/-5% threshold”.*

We confirmed that the flow meter calibration certificate from 31 October 2023 has as-found readings (flow pressure) that were within the +/- 5% threshold.

2. *“The monitoring plan is updated to ensure that the 2-month field check for calibration accuracy requirement is met in future reporting periods”*

Our verification team verified that the monitoring plan was updated with additional controls to ensure that the 2-month field check for calibration accuracy requirement is met in future reporting periods in the v1.1, November 2023 version of the monitoring plan.

3. *“The verifier confirms that the field check for calibration accuracy requirement is integrated into the monitoring plan.”*

Our verification team confirmed that the field check for calibration accuracy requirements was integrated into the monitoring plan (v1.1, November 2023).

Deviations (2)

Biogas de Juarez S.A. de C.V. had also requested an extension for Ciudad Landfill Project in order to meet the Reserve’s verification deadline.

The Reserve granted a 6-month extension on 6 December 2023 per the following conditions:

1. *The project must be submitted for final approval by 29 May 2024.*
Both the project developer and this verification team see no reason why this new deadline cannot be met.
2. *The project has commenced verification and has undergone a site visit for the current reporting period by the date of this determination: 30 November 2023.*
The verification team confirms that the verification has been well underway and that a site visit was conducted on 13 October 2023.

Verification Results

The verification of the Ciudad Juarez Landfill Gas to Energy Project focused on the accurate collection of data and quantification of emission reductions as implemented by Biogas de Juarez S.A. de C.V. in accordance with the Landfill Project Protocol. The raw data consisted of 52 data sets. A sample of raw flow data (consisting of landfill gas flow, and temperature) and methane concentration was selected and reviewed in order to identify material misstatements due to transcription mistakes, mathematical errors or malfunction of instruments. The verification team found no issues.

Checked that all factors and calculations are correct in their spreadsheets; they matched the protocol equations and found that all project parameters used were appropriate: “GHG.ER_BDJ_REP.PERIOD_2021-2022.xlsx” Also checked for the proper inclusion of the “NOM-083-SEMARNAT-2003” discount required in the Mexico Landfill Project Protocol.

The verification team entered all data inputs into an independent workbook and found that our independent calculations differed by .41% - well under the 1% materiality required by the protocol. The equation used for determining materiality was:

$$\%Error = abs \left(\frac{Stated\ reductions - Verified\ reductions}{Verified\ reductions} \right) \times 100$$

And finally, the verification team 1) took a sample of raw data from the electricity generation data to determine if hourly KWh output is documented and 2) took all monthly KWh totals and correlated to monthly flows. An “R” Pearson correlation coefficient of .95 was determined which indicated a very strong correlation of engine flows vs electricity KWh generation.



Vintage Emissions Verified	Baseline Emissions CO ₂ e (metric tons)	Project Emissions CO ₂ e (metric tons)	Pre- Project Emissions CO ₂ e (metric tons)	Emission Reductions CO ₂ e (metric tons)
2021	13,246.67	56.27	0	13,190.40
2022	92,152.32	415.30	0	91,737.02

Throughout the verification process, SCS made several supplemental documentation requests in the form of New Information requests, Non-Conformances and Opportunities for Improvements. These requests provided clarification regarding the project. The Findings from the verification of the Biogas de Juarez S.A. de C.V. are compiled in a separate “List of Findings” and are available under separate cover. The List of Findings is only shared between the Project Proponent and verifier and is not publicly available.

During this verification, two non-conformity reports were issued, and five new information requests were identified. All non-conformity reports and new information requests were adequately addressed in order to satisfy the standard and issue a positive verification opinion.

Recommendation

The Lead Verifier recommends that SCS Global Services issue a verification opinion for the following:

Name & Address	Biogas de Juarez S.A. de C.V. Kilometer 27.5 of Federal Highway number 45 Ciudad Juarez Chihuahua, Mexico
Scope of Verification	Emission reductions arising from the capture and destruction of Landfill Gas Methane from the Ciudad Juarez Landfill Gas to Energy Project.
Reporting Period	30 November 2021 to 29 November 2022
Total GHG Emission Reductions Verified	104,927 metric tonnes CO _{2e}
GHG Protocol(s) Used for Verification	<ul style="list-style-type: none"> ■ CAR Mexico Landfill Project Reporting Protocol Version 2.0 (October 5, 2022) ■ Errata and Clarifications to Mexico Landfill Protocol Version 2.0 (July 19, 2023) ■ CAR Reserve Offset Program Manual (November 2023) ■ Verification Program Manual (February 3, 2021) ■ ISO 14064-3: 2019 Greenhouse Gases – Part 3: Specification with guidance for the validation and verification of GHG assertions
Lead Verifier's Approval	 Mark Lutz, December 16, 2023
Technical Reviewer's Approval	 Carolin Judd, 22 December 2023

Date of Verification	The Verification Statement is to be dated when the technical reviewer accepts the recommendation to issue the statement.
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Appendix A: SCS Certification Mark

Congratulations on receiving a positive verification for the Ciudad Juarez Landfill Gas to Energy Project. Your project is now eligible to use the SCS Kingfisher Certification Mark B for Carbon Offset Project Verification, as represented on the cover page of this verification report. The SCS Kingfisher Certification Mark increases the recognition of your achievements with your verification carbon offset project.

Please refer to the *SCS Kingfisher Certification Mark Labeling and Language Guide: Mark B* provided to you by the GHG Verification Program staff for more information about your Mark and usage. Should you have any additional questions regarding your Mark, use, messaging, or other marketing opportunities, please contact the GHG Verification Team or SCS Marketing Staff at NRmarcom@scsglobalservices.com.