Verification Report

IESI-Trinity Timber Ridge Landfill Carbon Project - CAR838

January 2025

Prepared for:	Timber Ridge Landfill Company 12581 State Highway H Richwoods, Missouri 63071
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1.0 Introduction

This report is provided to Timber Ridge Landfill Company (Timber Ridge) as a deliverable of the Climate Action Reserve (CAR) project verification process. This report covers the verification of the IESI-Trinity Timber Ridge Landfill Carbon Project – CAR838 (the Project) for the period from March 1, 2023 through February 29, 2024.

During the verification process Trinity Carbon Management, LLC (TCM) acted as the project advisor for Timber Ridge Landfill Company and is the responsible party for the GHG statement under verification. Trinity Carbon Management, LLC was responsible for the preparation and fair presentation of the GHG statement. First Environment is responsible for expressing the opinion below on the GHG statement based on the outcome of the verification process.

First Environment conducted verification activities from the date of the kickoff meeting through December 17, 2024.

2.0 Objectives

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

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

Verification objectives also include reaching a conclusion about the accuracy of the GHG statement and the conformity of the statement with criteria.

3.0 Verification Scope

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

Geographic Boundaries	Timber Ridge Landfill, Richwoods, MO
Emission Reduction Sources, Project Emissions, and Greenhouse Gases	Emissions reductions (expressed in units of Carbon Dioxide equivalents (CO_2e)) resulting from methane destruction; Project emissions of CO_2 from fossil fuel combustion and purchased electricity.
Reporting Period	March 1, 2023 through February 29, 2024
Data Sources	Metered Data and Emissions Reduction Calculations

4.0 Standards Used to Verify Emissions (Criteria)

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

Standard of Verification	• Climate Action Reserve Landfill Project Protocol, Version 6.0, June 2022 (CAR Protocol) • U.S. Landfill Project Protocol, Version 6.0 Errata and Clarifications, April 13, 2023 • Reserve Offset Program Manual (April 2024, v9.2) • Applicable Climate Action Reserve Policy Memos
Verification Process	• Section 8 of the CAR Protocol, Version 6.0 • Climate Action Reserve Verification Program Manual, February 3, 2021 • ISO 14064-3: Specification with guidance for the verification and validation of greenhouse gas statements, 2019
Level of Assurance	• Reasonable assurance
Materiality	• Misstatements greater than three percent of the Project's emission reductions assertion are considered material for the current reporting period • Qualitative non-conformities with the CAR Protocol are also considered material

5.0 Overview of the Verification Process

The verification process was utilized to gain an understanding of the Project's 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.

The following verification process was used:

- Conflict of interest review
- Selection of audit team
- Initial interaction and kickoff meeting with TCM
- Verification preparations
- Development of the verification plan and evidence gathering plan
- Verification execution
- Site visit
- Review and evaluation of ghg information systems and data
- Follow-up interaction with the project developer for corrective action, clarification, or supplemental data as needed
- Independent review
- Final opinion and report submittal

5.1 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. First Environment received authorization to proceed with verification activities for the project developer from CAR in a notification dated August 23, 2024.

5.2 Audit Team

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

Lead Verifier – Jeff Daley
Verifier – Maya Wisotzki
Senior Internal Reviewer – Jay Wintergreen

5.3 Strategic Analysis and Verification Preparations

First Environment performed pre-engagement activities to confirm the type of engagement, level of assurance, materiality thresholds, the objectives, criteria, and scope for verification activities.

First Environment also performed a strategic analysis to understand the activities and complexity of the project and to determine the nature and extent of the verification activities required. The strategic analysis was also used to develop sufficient understanding of the GHG-related activity and its relevant sector information to plan and conduct the verification.

5.4 Audit Kick-off

The verification was initiated with a kick-off meeting on September 4, 2024 with the project developer. The meeting focused on confirming the scope, schedule, and data required for verification.

5.5 Development of the Verification and Evidence-Gathering Plans

The Audit Team formally documented the verification plan as well as determined the evidence gathering plan. The verification plan was informed by the kick-off meeting where key elements of the verification scope were discussed including project team members, project level of assurance, materiality threshold, and standards of reporting and evaluation. It also provided an outline of the verification processes and established project deliverables. Timber Ridge was afforded the opportunity to comment on the key elements of the plan for verification. A separate evidence gathering plan was designed to review all project elements in areas of potentially high risk of inaccuracy or non-conformance.

5.6 Execution of Verification

The Audit Team executed the evidence-gathering activities. The verification was conducted according to the verification plan and the evidence-gathering activities according to the evidence-gathering plan.

5.7 Site Visit

Mr. Jeff Daley conducted a site visit on June 2, 2023 as part of the verification process for the previous reporting period. During the previous site visit, the Project's data management system and monitoring processes were reviewed. Interviews were conducted with personnel relevant to Project implementation. Consistent with the requirements of Section 7.3.3 of the Protocol and because it was confirmed that no significant changes in data management, equipment or personnel have occurred since the previous site visit, a site visit for the current reporting period was not conducted.

5.8 Emissions Reduction Data and Calculation Assessment

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

5.9 Corrective Actions and Supplemental Information

The team issued corrective action and clarification requests during the verification process. Timber Ridge provided sufficient responses to all corrective action and clarification requests.

5.10 Independent Review

Before verification reporting is released to the client, a First Environment lead verifier, who has not participated in the verification activities, conducts an independent review to confirm that all verification activities have been completed and provide the agreed upon level of assurance.

5.11 Verification Reporting and Opinion Issuance

Verification reporting, represented by this report, documents the verification process and identifies its findings and results. Verification reporting consists of this report for Timber Ridge, an opinion statement, and a list of findings, all of which are submitted to the Climate Action Reserve.

6.0 Site's Conformance with Verification Criteria

6.1 Project Description

The Timber Ridge Landfill is located in Richwoods, Missouri. The landfill, which opened in 2003, accepts municipal solid waste and has a design capacity of approximately 10,886,160 Megagrams. The landfill is owned and operated by Timber Ridge.

The active landfill gas (LFG) collection and control system consists of a surficial gas collection system over a synthetically lined and capped area, additional vertical gas extraction wells outside of the synthetically capped area, condensate removal equipment, blowers, monitoring equipment, and an open flare. During the previous reporting period a new flare skid was purchased, installed, and came online in January 2023. The new open flare has a larger capacity of 2,350 scfm compared to the original flare. Leachate is stored in on-site tanks and is hauled off site for disposal. During the current reporting period, all collected landfill gas flow was directed to the flare for destruction.

The Project achieves a net reduction in CO_2-equvialent (CO_2e) emissions through the destruction of landfill gas, which would have otherwise been released to the atmosphere. The baseline scenario, defined as the total release of landfill gas to the atmosphere, was verified during the Project's initial reporting period.

6.2 Eligibility

Timber Ridge meets the eligibility requirements set forth in the CAR Protocol as described below.

6.2.1 Ownership and Title

Timber Ridge (a wholly owned Waste Connections Company) is the owner and developer of the landfill, and as such holds title to the associated emission reduction credits. The landfill was originally developed by Waco Landholding, Inc. Timber Ridge then subsequently purchased the landfill through acquisition of Waco Landholding, Inc. First Environment reviewed the original land deeds and evidence of the landfill sale to Timber Ridge, as well as the facility's Title V, Water Discharge and Solid Waste Permit, and the facility's Permit to Construct in order to confirm that Timber Ridge is the owner of the project and consequently owns the right to any emission reduction credits generated by it.

Additionally, First Environment relied on the Attestation of Title completed by Timber Ridge for the current reporting period. The Attestation is on file with CAR and was reviewed to confirm that it was completed correctly.

6.2.2 Project Start Date

First Environment confirmed that the Project meets CAR's start date requirements. The Project start date is March 1, 2011, which was confirmed during the initial verification through review of flare installation and start up records.

The Project is currently within its second crediting period which spans from March 1, 2021 through February 28, 2031.

6.2.3 Additionality

The Project passes both the Performance Standard Test and the Legal Requirements Test, as described below.

6.2.3.1 Performance Standard Test

The Project consists of the installation of a landfill gas collection and control system and therefore exceeds the performance standard defined by the CAR Protocol, specifically Scenario 1 from the list provided in Section 3.4.1 of the CAR Protocol, because landfill gas had never been collected or destroyed prior to the Project. It was also confirmed at the site visit that the landfill is not a bioreactor.

6.2.3.2 Limits on Credit Stacking

The project is not claiming any other credits or incentives for methane destruction activities and does not upgrade landfill gas into high-Btu fuel. Therefore, there is no stacking of credits relevant to Project activity during the current reporting period.

6.2.3.3 Legal Requirements Test

The landfill has a permitted capacity above the 2.5 million cubic meter threshold that triggers New Source Performance Standard (NSPS) requirements. As such, the landfill is required to conduct Tier II testing to determine non-methane organic compound (NMOC) emissions. The most recent Tier II testing event occurred on February 7, 2022. The most recent annual NMOC emissions rate report was submitted to the U.S. EPA on March 26, 2024, and the associated report identifies a NMOC emission rate of 11.55 Mg/year for 2023. This NMOC result is below the 34 Mg/yr. threshold established by the NSPS regulation (40CFR62, Subpart OOO). First Environment also confirmed, through interviews with project personnel, that no additional state or local requirements mandate the active LFG collection and control system. This cursory review of permits, laws, and regulations indicated the voluntary nature of the Project.

Additionally, First Environment relied on the Attestation of Voluntary Implementation completed by Timber Ridge for the current reporting period. The Attestation is on file with CAR and was reviewed to confirm that it was completed correctly.

6.2.4 Regulatory Compliance

First Environment reviewed the landfill's current NPDES/Operating permit, Title V permit, Missouri Department of Natural Resources (MDNR) compliance inspection reports and generated a compliance report on November 6, 2024 using the Environmental Protection Agency's (EPA) Enforcement and Compliance History Online (ECHO) database, as well as conducted interviews with site personnel to determine regulatory compliance.

The EPA ECHO database report identified a Facility-Level Clean Water Act (CWA) violation during the fourth quarter of 2023. First Environment reviewed two site inspection reports conducted by the Missouri Department of Natural Resources, one on August 18, 2023 and a second on January 24, 2024. Issues identified were related to surface water runoff, and lack of notification for installation of an intermediate cover system. No action was required relative to either issue. First Environment confirmed through review of the inspection reports that neither issue was related in any way to the Project activity or any of the Project equipment; therefore, it was determined that these issues do not impact the Project's eligibility under the CAR Landfill Protocol.

There was no other evidence of noncompliance identified during the reporting period.

Additionally, First Environment relied on the Attestation of Regulatory Compliance completed by Timber Ridge for the current reporting period. The Attestation is on file with CAR and was reviewed to confirm that it was completed correctly.

6.3 Project Performance Against CAR Protocol and Project Management System

The Project was implemented in conformity with the CAR Protocol. Timber Ridge and Trinity Carbon Management developed and implemented a Monitoring Plan to track relevant project parameters and data sources. The Monitoring Plan, including the Project Diagram, was reviewed to determine compliance with the protocol requirements. Based on observations made during the previous site visit and review of relevant project documentation, First Environment found the Monitoring Plan and Project Diagram to meet the requirements set forth by the CAR Protocol and the Project to be implemented in accordance with the Monitoring Plan. Additionally, First Environment confirmed during the course of verification activities and through previous site visit interviews that relevant individuals are properly trained to implement the Monitoring Plan.

6.3.1 Project Monitoring

The Project’s monitoring conforms to the requirements of the CAR Protocol, as discussed below.

A Thermal Instruments TI-9500 mass flow meter continuously measures landfill gas flow to the open flare. Data are transmitted to a Yokogawa datalogger that electronically records and archives all flow data. As a backup, flow data is also recorded by a FleetZOOM system. The flow meter standardizes flow readings to a pressure of one atmosphere and a temperature of 60°F.

The methane concentration of the landfill gas is measured weekly with Elkins Earthworks Envision-100 portable gas analyzers.

Both gas flow rates and methane concentration are measured on the same relative moisture basis.

Flare temperature is continuously monitored by thermocouples and recorded by the Yokogawa data logger.

Table 1 summarizes the Project monitoring system parameters and monitoring equipment utilized by the Project.

TABLE 1: Monitoring Equipment

Parameter	Monitoring Equipment	Frequency of Measurement	Frequency of Recording	Recording Device
Landfill gas flow	TI-9500 mass flow meter	Continuous	At least every fifteen minutes	Yokogawa Data Recorder, and FleetZOOM system
Methane Concentration	Portable gas analyzers	At least weekly	As measured	Field Logs
Flare Operation	Thermocouple	Continuous	At least hourly	Yokogawa Data Recorder, and FleetZOOM system

6.3.2 Instrument Quality Assurance/Quality Control

Timber Ridge and Trinity Carbon Management's instrument quality assurance/quality control (QA/QC) plan for the Project's monitoring equipment complies with CAR's requirements.

The Thermal Instruments Model TI 9500 flow meter is inspected and cleaned on a quarterly basis by landfill personnel with as-found/as-left conditions documented. It also undergoes routine field checks for calibration accuracy performed by a third-party (Weaver Consulting Group). Each field check performed during the current reporting period indicated the flow meter was operating within the five percent accuracy range required by the CAR Protocol. The manufacturer of the flow meter recommends calibrations every 18 months. The Project flow meter is calibrated according to manufacturer recommendations.

The Project used three Elkins Earthworks Envision-100 gas analyzers to measure methane concentration of the landfill gas during the entire reporting period. The manufacturer of the Elkins Envision requires annual calibration. The gas analyzers are calibrated annually according to the manufacturer recommended calibration interval and are also calibrated prior to each use. First Environment reviewed all calibration records and confirmed that the gas analyzers were operating within the five percent accuracy range required by the CAR Protocol.

Additionally, First Environment confirmed that the Thermo-anemometer straight probe instruments used to perform the third-party field calibration accuracy checks of the flow meter was calibrated and maintained per the manufacturers' requirements.

Table 2 shows the dates during the current reporting period when instrument QA/QC was performed.

TABLE 2: Instrument QA/QC				
Monitoring Equipment	Dates Used	Calibration	Field Checked	Inspected/Cleaned
TI 62-9500 Flow Meter S/N2013293	3/1/2023 – 2/29/2024	9/29/2022; 1/10/2023	1/10/2023; 6/29/2023; 3/26/2024	1/20/2023; 4/20/2023; 7/14/2023; 10/20/2023; 1/19/2024
Elkins Envision-100 (S/N: 1410201)	2/23/2024; 3/1/2024	12/14/2023	Prior to use	Prior to use
Elkins Envision-100 (S/N: 1212005)	3/3/2023; 3/10/2023; 3/17/2023; 3/24/2023; 3/31/2023; 4/7/2023; 4/14/2023; 4/20/2023; 4/28/2023; 5/5/2023; 5/12/2023; 5/19/2023; 6/2/2023; 6/8/2023; 6/16/2023; 6/23/2023; 6/30/2023; 7/7/2023; 7/14/2023; 7/21/2023; 7/28/2023; 8/18/2023; 12/20/2023; 1/5/2024; 1/12/2024; 1/19/2024; 1/26/2024; 2/2/2024; 2/10/2024	9/16/2022; 9/26/2023	Prior to use	Prior to use
Elkins Envision-100 (S/N: 1101015B)	8/4/2023; 8/11/2023; 8/25/2023; 9/1/2023; 9/8/2023; 9/15/2023; 9/22/2023; 9/29/2023; 10/5/2023; 10/20/2023; 10/27/2023; 11/3/2023; 11/10/2023; 11/17/2023; 11/24/2023; 12/1/2023; 12/8/2023	12/20/2022; 12/28/2023	Prior to use	Prior to use

6.3.3 Project Emissions

Project emissions sources and the associated monitoring methodology are summarized in Table 3.

TABLE 3: Project Emissions	
Project Emissions Source	Monitoring
Consumption of Purchased Electricity	Monthly electric utility invoices
Propane consumption	Purchase records

6.4 Emissions Reduction Calculation Assessment

The emission reduction calculations were reviewed to ensure accuracy in the formulas used and the raw data used as inputs. The formulas were tested to ensure consistency with the calculation methodology described in the CAR Protocol.

Total landfill gas flow in a given interval was computed by multiplying the flow rate by the length of the interval. Because the flow meter automatically corrected the flow to 60°F and one atmosphere of pressure, no temperature and pressure correction was required.

Project data recorded when flare temperature was below 501°F were excluded from emissions reduction calculations. The total volume of methane destroyed by the Project was computed in daily intervals by multiplying the daily landfill gas flow by the weekly average of methane concentration measurements and converted to a mass flow using the density of methane at 60°F and one atmosphere of pressure. The total quantity of methane destroyed by the Project is aggregated monthly and summed over the reporting period to obtain the total baseline emissions.

Project emissions were calculated by multiplying activity data by an appropriate emission factor. Project emissions sources consisted of purchased electricity to power Project equipment and stationary combustion of propane for the flare's pilot light and for the flare skid backup generator. The total emission reductions were determined by subtracting the project emissions from the baseline emissions.

There was one instance of weekly methane data substitution applied during the reporting period. First Environment confirmed that data substitution was performed in accordance with Appendix D of the Protocol.

No sources of leakage emissions are relevant under the Landfill Protocol.

Table 4 summarizes the input parameters used in the emission reduction calculations.

TABLE 4: Input parameters

Input Parameter	Name	Description/ Value
$LFG_{i,t}$	Total quantity of LFG	Summed daily from metered data, internally corrected to 60ºF and one atmosphere of pressure.
$PR_{CH4,t}$	Methane content	Averaged weekly from periodic handheld readings.
DE_i	Default destruction efficiency	96% - open flare
OX	Oxidation Factor	10%
DF	Discount Factor	10% for use of weekly measurements of methane concentration
Flare Temperature Cut-off	Metered data below corresponding temperature cut-off are excluded from calculations	500°F (Flare)
EF_{FF}	Propane emission factor	5.721 kg CO2/gallon
EF_{EL}	Purchased electricity emission factor	1,369.9 lb. CO_2/MWh (SRMW Region)
GWP_{CH4}	Global Warming Potential of Methane	28 (IPCC 5th Assessment Report)

Copies of the raw data used in the calculations, including flow data and methane concentration data, were compared with the data used in the final calculations and tested for transcription or mathematical errors. A representative sample of raw data sources and calculations over the verification period were reviewed. First Environment performed recalculations of emission reductions for the entire reporting period to assess

whether they were free of material misstatement. First Environment found the emission reduction calculations to be free of material misstatement.

Table 5 below contains a detailed comparison of Timber Ridge's reported emission reductions, and First Environment's recalculation based on the data and documentation reviewed during the verification process.

TABLE 5: Results of Data Checks Conducted and GHG Assertion Comparison		
Timber Ridge's emission reduction assertion (tCO2e)	First Environment's estimated emission reduction assertion (tCO2e)	Applicable Threshold
74,956	74,962	3%
$\%Error = abs\left(\frac{Stated\ reductions - Verified\ reductions}{Verified\ reductions}\right) \times 100$		**-0.008%**

6.5 Approved Variance or Deviations

N/A – No variances were requested or needed during the current reporting period.

7.0 Verification Conclusion

Based on the historical evidence collected and the assessments performed, First Environment concludes that the Project's GHG emissions reductions achieved through the collection and combustion of landfill gas for the period March 1, 2023 through February 29, 2024 can be considered with a reasonable level of assurance:

- In conformance with the verification criteria
- Without material discrepancy

Verified results show:

March 1 to December 31, 2023	Total
Baseline Emissions (tCO_2e)	64,129
Project Emissions (tCO_2e)	207
Emissions Reductions (tCO_2e)	**63,922**

January 1 to February 29, 2024	Total
Baseline Emissions (tCO_2e)	11,073
Project Emissions (tCO_2e)	39
Emissions Reductions (tCO_2e)	**11,034**

8.0 Lead Verifier Signature

Jeff Daley
Senior Associate

9.0 Senior Internal Reviewer Signature

Jay Wintergreen
Senior Associate