



Hernando Landfill Electric Generation Project, Greenhouse Gas Emissions Reduction Verification Report 1/1/2010-3/31/2010

Presented to:

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File No. 01207128.19, Task 3

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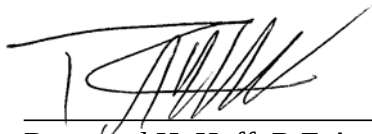
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This Greenhouse Gas Emissions Reductions Verification Report for January 1, 2010 through March 31, 2010 was prepared in accordance with the Climate Action Reserve Landfill Project Verification Protocol, Version 2.0, November 2008. This report developed for the Timberline Energy, LLC, Hernando Landfill Electric Generation Project located in Florida in the United States, dated March 2011, was prepared and reviewed by the following:



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1.0 INTRODUCTION

The Timberline Energy, LLC (Timberline) has retained SCS Engineers (SCS) to perform verification activities associated with the Hernando Landfill Electric Generation Project (Project) being submitted to the Climate Action Reserve (Reserve) for the period from January 1, 2010 through March 31, 2010. The Project is located at the Hernando County Northwest Landfill, Brooksville, Florida (Hernando Landfill). This verification report (report) was produced in accordance with the Reserve's Landfill Project Verification Protocol, Version 2.0, November 2008 (LPVP). SCS is a Reserve-approved verifier and is fully qualified to perform GHG verification activities for Timberline.

1.1 PROJECT OVERVIEW

The Hernando Landfill is an active landfill located northwest of Brooksville, Florida. The Hernando Landfill encompasses an area of 80 acres divided between municipal solid waste (MSW) disposal (27 acres) and construction and demolition (C&D) disposal (53 acres). The MSW portion of the landfill started accepting waste in 1990 and had approximately 1,700,000 tons of refuse in-place at the end of 2008.

In 2008, Timberline installed a gas collection and control system (GCCS) at the Hernando Landfill. The current GCCS consist of 16 landfill gas (LFG) extraction wells, which are connected to a blower station via a common header line. Prior to the blower station, the gas passes through a condensate knock-out tank located outside the blower station. Collected LFG is routed through the blower station. From the blower station the LFG is either sent to an engine or a flare.

LFG is routed past a Rosemont 3095 transmitter and Mass Probar Flowmeter, to a Caterpillar internal combustion (IC) engine Model # 3520 (1,600 kW), which generates electricity that is utilized on-site and sold back to the grid. On December 8, 2009, an open flare was installed allowing additional gas in excess of what is sent to engine, to be destroyed. Prior to the flare, the LFG passes through a Thermal Instruments flow meter Model # 9500 and a thermocouple. Only when the flare temperature is recorded above 500 degrees Fahrenheit is flow used for methane project credits.

1.2 LEVEL OF ASSURANCE

SCS adheres to the ISO 14064-3:2006 concept of two levels of assurance that a GHG verification process can provide; “reasonable,” and “limited.” A “reasonable” level of assurance provides a reasonable, but not absolute, level of assurance that the Project's GHG assertions are

1. Materially¹ correct and a fair representation of the GHG data and information, and
2. Prepared in accordance with the Reserve's Landfill Project Reporting Protocol (LPRP).

¹ Under Reserve, materiality is defined as a discrepancy of overall reported emissions (both direct and indirect) that differs from the verifier's estimated emissions by more than 5%.

A “limited” level of assurance provides a more limited/“qualified” level of assurance as compared to a reasonable level of assurance due to less emphasis on detailed GHG data testing and supporting information.

Timberline is seeking a level of assurance in the verification process that is consistent with the requirements of the Reserve. In accordance with these requirements, in order for SCS to verify Timberline’s GHG emission reductions assertions, a sample of the report data must be free of material misstatement. This constitutes a “reasonable level of assurance.”

1.3 OBJECTIVES

The objective of this verification report is to establish the Project's conformance with applicable verification criteria, including principles and requirements of relevant standards and the GHG program within the scope of the verification as outlined below.

1.4 SCOPE OF VERIFICATION PROCESS

The scope of this project encompasses the verification of Timberline’s January 1, through March 31, 2010 Reserve-reported GHG emission reductions, which include the following components:

- Geographic boundary – U.S. emission reductions only
- Project Start Date – October 7, 2008
- Additionality
 - Performance Standard Test
 - Legal Requirement Test
- Emissions Reductions
 - Biogas from the Hernando Landfill
- GHG Sources
 - Indirect emissions
 - purchased/consumed electricity
 - Direct emissions
 - stationary emissions from flare start up propane
- Time period – Partial calendar year 2010 (January 1 - March 31)

1.4.1 Project Start Date

SCS reviewed the following documents to confirm the reported project start-up date of October 2008:

- Certificate of Final Completion
- May 29, 2008 Florida Department of Environmental Protection Permit to construct an active gas collection system at the landfill in Cells 1 and 2

Review of the aforementioned forms document and cross-reference the project startup date as October 2008.

1.5 VERIFICATION CRITERIA

Criteria against which the verification assessments were undertaken are:

- Reserve LPRP, version 2.0 November 2008.²
- Reserve LPVP, version 2.0 November 2008.²
- Reserve Program Manual, March 2010.
- Reserve Verification Manual, June 2009.
- SCS *Greenhouse Gas Validation and Verification Program Manual (V/V Manual)*, version 1.6, August 2009.

1.5.1 Materiality

In accordance with the required level of assurance, the needs of Timberline, and the LPVP, a materiality threshold of 5% was applied to this verification project. Any misstatement greater than 5% will be considered material.

1.6 VERIFICATION CYCLE

Timberline has requested verification of their partial 2010 emission reductions. 2010 marks the third year of the project. Verification of the 2010 emissions reductions will put Timberline into the second year of reporting with the Reserve and their second year of reporting overall. The Reserve has a ten-year emission reductions reporting allowance for projects. The Reserve requires a full review of emission reductions, management systems, and verification of emission reductions annually.

2.0 PRE-VERIFICATION ACTIVITIES

2.1 CONFLICT OF INTEREST DETERMINATION

The LPVP requires that the Reserve make a determination of whether or not a conflict of interest (COI) exists between the verifier and the participant. This is done in order to ensure an objective review of a participant's AER by the verifier. On September 22, 2009 SCS submitted the initial *Project Form: Notification of Planned Verification Activities and Request for Evaluation of Potential for Conflict of Interest between Verifier and Project Developer* (COI form) was submitted to the Reserve. In accordance with the Reserve, a COI form is not required to be submitted for subsequent years of verification, but changes to the verifier and projects relationship must be submitted on the Reserve website before subsequent verification cycles may begin.

²The Reserve may issue Errata and Clarification to protocols after they are released, which become effective immediately for the version for the protocol to which they apply. At the time of this report, Errata and Clarifications had been issued by the Reserve on June 25, 2010 for LPRP version 2.0, and have been applied to the current reporting period. No Errata and Clarifications have been issued by the Reserve for the LPVP version 2.0.

At the end of July 2010, SCS determined that no changes had occurred between SCS and Timberline relationship and indicated this fact on the Reserve website. On July 28, 2010, SCS received a COI determination from the Reserve, which determined that there have been no significant changes in the relationship between SCS and Timberline. The initial COI determination stated that there was no pre-existing relationship between SCS and Timberline beyond construction activities, and that therefore the potential for COI was low. A copy of the initial submitted COI form and the COI determination letter has been posted to the Reserve's web site as a private document.

2.2 NOTIFICATION OF PLANNED VERIFICATION ACTIVITIES

The project COI/update of verifier and project relationship was submitted to the Reserve at the end of July 2010, which also provides the Reserve with a notification of planned verification activities at least ten business days prior to the beginning of verification activities. The notification includes scheduling and site selection information. The intent of this requirement is to allow the Reserve the opportunity to accompany the verifier on the site visit. The verification period is for the partial 2010 calendar year, from January 1, 2010 to March 31, 2010, and falls within the annual time frame of the previous site visit, from March 2010. As such, a desktop verification was conducted.

In accordance with the LPVP, the notification of planned verification activities stated an intended date for the start of verification activities past August 12th, the end of the 10-day notification period.

2.3 PROJECT DEFINITION

In accordance with the LPRP, only projects that meet the definition of a "GHG reduction project," as defined in the LPRP can be considered for GHG reduction credits with Reserve. A proposed "GHG reduction project" consists of the "installation of an LFG control system for capturing and destroying methane gas that commences operation on or after January 1, 2001."

As detailed in Section 1.1, the Project consists of an interconnected network of LFG collection wells installed in the Hernando Landfill. These wells are interconnected by a header line, which is in-turn connected to an on-site engine and an on-site flare. Therefore, the Project meets the definition of a "GHG reduction project," per Reserve guidelines.

2.4 GAS RIGHTS DETERMINATION

In order to register GHG reductions with the Reserve, the ownership of the reductions must be established by clear and explicit title. On February 8, 2010, Timberline completed an "Attestation of Title" document clearly documenting Timberline's ownership of the gas rights to the LFG recovered from the Hernando Landfill. Timberline uploaded the "Attestation of Title" document on to the Reserve Reporting Tool.

On March 20, 2009, SCS initial reviewed the LFG purchase agreement between Timberline Energy, LLC (the Developer), and Hernando County (the County), and on August 11, 2010, SCS reevaluated and confirmed that no changes had been made to the LFG purchase agreement. The

contract specified that the “Developer shall have exclusive right to claim and utilize any emissions allowances and reduction credits that may be associated with LFG.”

3.0 CORE VERIFICATION ACTIVITIES

In accordance with the LPVP, core verification activities are comprised of a four-step process by which Project GHG reduction assertions are subjected to risk assessment and data sampling efforts designed to ensure that the risk of a reporting error is addressed through appropriate sampling and review.

3.1 DETERMINATION OF PROJECT ELIGIBILITY

In order to register reduction projects with the Reserve, a project must meet three eligibility rules established by the reserve in the LPRP. The applicability of each of these rules to the Project is discussed below.

3.1.1 Eligibility Rule I - Location

Only GHG reductions associated with U.S.-based projects are eligible to register reductions with the Reserve. Since the Project is entirely based in Hernando County, Florida, the Project meets this eligibility requirement.

3.1.2 Eligibility Rule II - Project Start Date

Only GHG reduction projects that commenced operation after January 1, 2001 are eligible to register reductions with the Reserve. Since the Project commenced operation in 2008, the Project meets this eligibility requirement.

3.1.3 Eligibility Rule III - Additionality

The Reserve only registers reductions that are "additional" to what would have occurred without implementation of the Project. The Reserve implemented the additionality test to ensure that projects that yield surplus GHG reductions are above and beyond what is considered "business-as-usual," also designated as the baseline scenario. Projects are considered additional if they can pass the following two tests:

- Performance Standard Test
- Legal Requirement Test

Each of these tests are discussed below.

3.1.3.1 Performance Standard Test

According to the LPRP, a project must have installed a LFG collection and destruction system in a landfill that is not required to do so by regulation. The U.S. Environmental Protection Agency (EPA) threshold for installation of a LFG collection and destruction system is the 50 megagrams per year (Mg/yr) threshold of New Source Performance Standards (NSPS) and emission

guidelines (EG) regulations. The Hernando Landfill is under the 50 Mg/yr threshold and was not collecting and destructing any LFG prior to the implementation of the Project and falls under the first Performance Standard Test.

3.1.3.2 Legal Requirement Test

The Reserves subjects all projects to the Legal Requirement Test to ensure that reductions achieved are done so by projects that would not have occurred in the baseline case due to federal, state, or local government regulations. On July 19, 2010, Timberline completed the Project Developer's "Attestation of Voluntary Implementation" document which states that the project was implemented, established, operated, and conducted voluntarily. As previously stated, the Hernando Landfill is not subject to the federal NSPS or EG regulations, or the National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulation. In addition, there are no specific State of Florida or local regulations for the installation of a gas collection and destruction system. Through our evaluation process, SCS has concluded that the Hernando Landfill passes the Legal Requirement Test.

3.2 REGULATORY COMPLIANCE

On July 19, 2010, Timberline completed an "Attestation of Regulatory Compliance" document which states that the project was is in material compliance with all laws. During the prior site visit in March 2010, SCS reviewed on-site permits and interviewed onsite personnel on all applicable federal, state, and local regulations and ordinances which the Hernando Landfill is subject to, in order to confirm the attestation statement and to ensure that the project adheres to regulatory compliance requirement. Through our evaluation process, SCS has concluded that the Hernando Landfill adheres to the regulatory compliance requirement.

3.3 IDENTIFICATION OF EMISSION SOURCES

3.3.1 Baseline Emissions

Prior to the construction of the Project, the Hernando Landfill did not have a GCCS, therefore the baseline scenario assumes that all uncontrolled methane (CH₄) emissions were released into the atmosphere, with the exception of the amount of methane that would have been oxidized by soil bacteria in the absence of the project.

3.3.2 GHG Assessment Boundary

In accordance with the Table 4.1 of the LPRP, the following GHG sources should be included in the calculation of net emissions reductions associated with a LFG collection and destruction system similar to the landfill gas to energy (LFGTE) system that constitutes the Project.

- LFG Collection System
 - Emissions resulting from fossil fuel derived energy used by compressors, blowers, gathering, and upgrade systems (CO₂ only)
- LFG Combustion in a Engine

- Emissions resulting from destruction of LFG in the engine (uncombusted CH₄ pass-through)
- LFG Combustion in a Flare
 - Emissions resulting from the destruction of LFG in the flare (uncombusted CH₄ pass-through)
 - Emissions resulting from the destruction of fossil fuel in the flare (uncombusted CH₄ emissions and all CO₂ emissions from fossil fuel).

Note that displacement of GHG emissions from fossil fuel destruction from electricity generated using LFG is not included in the GHG assessment boundary.

3.3.3 Project Emission Sources

Timberline identified the following emissions sources associated with the Project:

Table 1. 2010 Emissions Sources

GHG Source Category	GHG Source
LFG System	CO ₂ emissions associated with indirect electricity usage from blowers and system (including flare).
Engine	CH ₄ emissions associated with un-destroyed LFG (based on engine destruction efficiency).
Flare	CH ₄ emissions associated with un-destroyed LFG (based on flare destruction efficiency). CO ₂ emissions associated with the propane usage from the flare start up.

During the site visits, SCS confirmed that there are no additional emissions sources that exist for these facilities that were not included in the inventory. The engine exclusively destroys LFG. The flare combusts LFG and propane.

3.3.4 GHG Gases Project Emissions

In accordance with the LPRP, Timberline has to report all emissions that may occur or increase as a result of the project activity, and therefore must be deducted from the overall project reductions. Currently emitted GHG include CO₂, CH₄, and nitrous oxide (N₂O) from electricity usage as well as CH₄ emissions associated with the portion of LFG that is sent through the flare but not combusted. Note that the Reserve has excluded N₂O emissions as a GHG source due to the limited amount and associated uncertainty in calculating these emissions. Thus, the Project emissions are limited to CO₂ and CH₄.

3.4 REVIEW OF GHG MANAGEMENT SYSTEMS AND ESTIMATION METHODOLOGIES

In accordance with the LPVP, SCS evaluated Timberline's methodologies and management systems for calculating the Project's emission reductions. This evaluation consisted of interviews with key personnel associated with reporting and calculation of the Project's GHG reductions, as well as an initial review of the Project's Monitoring Plan to evaluate its conformance to the requirements outlined in Section 6 of the LPRP. Timberline's management system meets the LPRP's requirements.

The Monitoring Plan provided by Timberline provides a written account of the frequency of data acquisition, a record keeping plan, frequency of instrument calibration activities, as well as quality assurance/quality control (QA/QC) provisions to ensure that meter calibration and data acquisition are carried out consistently. The instruments, flow meters and Landtec GEM units, calibration records showed that all instruments are operating within the threshold set forth in the LPRP. The flow meters correct for standard temperature and pressure and adjustments were not necessary.

Mr. Joe Collum, a supervisor technician with Timberline, is responsible for the day-to-day operation of the GCCS and LFGTE plant. Mr. Collum also collects and reports the monitoring data associated with the Project. Mr. Greg Tilden, president of Timberline, is responsible for QA/QC check of the data provided by Mr. Collum, as well as performing the calculations associated with the registration of GHG reductions from the Project.

During interviews and discussions with the above mentioned staff, both appeared to be knowledgeable with regard to their respective roles in the data acquisition and reporting processes.

Documentation of electricity usage, fuel consumption, and other related activities are retained in a manner appropriate for accurate GHG reduction reporting and are outlined in the Monitoring Plan. Documentation is retained through spreadsheets, internal databases, invoicing databases, purchase records, and other similar methods. Timberline's current GHG management system is appropriate for the emissions reductions identified in each emission source category as well as for the GHGs reported.

Timberline used the default emission factors and standardized estimation methods in the LPRP when available.

3.5 VARIANCE REVIEW

The Project did not apply, for nor was granted, any variances during this reporting period.

3.6 VERIFICATION OF EMISSIONS ESTIMATES

3.6.1 Initial Verification Review

The verification period is for the partial 2010 calendar year, from January 1, 2010 to March 31, 2010, and falls within the annual time frame of the prior site visit which was conducted on March 17, 2010. As such, the initial verification review consisted of a desktop verification. During the previous verification, SCS preformed a site visit to the Timberline Hernando Landfill facility on March 17, 2010. The purpose of the prior on-site inspection and desktop verification were to ensure that the collection and destruction devices were installed and operated correctly, the Monitoring Plan was being properly implemented, and that all emission sources (e.g., facility, source, and fuel) were identified by Timberline and correctly deducted. Discussions of the emission reductions and sources identified by Timberline are presented below.

In addition, based on Timberline's identified emission sources, management systems, and corresponding risk profile of GHG emissions, SCS selected the following emissions estimates for verification review:

- Review of electricity usage data using 3rd party utility bills
- GHG reduction recalculation

A discussion of the verification process for each of these emissions sources is presented below.

3.6.1.1 Review of Electrical Records

SCS reviewed Timberline's electricity data from 3rd party utility bills and spreadsheets. The spreadsheets are used to track monthly and annual utility expenses for each facility operated by Timberline and were reviewed by SCS for January through March 2010. In addition, individual electricity bills were reviewed for the project. From this information, SCS was able to verify Timberline's utility records are consistent with Timberline's emissions calculations.

3.6.1.2 Review and Recalculation of GHG Emissions

As a part of the verification process, SCS reviewed the data, deductions, and calculations that were used in the determination of requested emissions reductions for the Project. In accordance with the LPRP, the emissions reduction calculations included the following default factors:

- **10% discount** was applied to total quantity of CH₄ destroyed due to a daily CH₄ concentration interval.
- **93.6% destruction efficiency** for CH₄ destruction due to CH₄ destruction by a lean-burn IC engine.
- **96% destruction efficiency** for CH₄ destruction due to CH₄ destruction by an open flare.
- **10% methane oxidation factor** due to the lack of a synthetic cap on the landfill.

Additional to the requirements of the LPVP, SCS re-calculated all of the GHG reductions and emissions associated with the Project. SCS preformed independent calculations of the Project's

sources and reductions and compared the calculations to the emission levels reported by Timberline for the 2010 reporting period.

A comparison of the direct and indirect emission and the total emission reductions performed by SCS, with the original emissions totals as reported by Timberline was conducted. This comparison of emissions calculations is used to determine if there is a large difference (defined as greater than 5% difference of the total emissions) in calculations performed by SCS and Timberline.

3.6.2 Initial Verification Findings

Based on the results of our verification activities, the findings of our initial review were presented in a Verification Log and discussed with Mr. Greg Tilden of Timberline during a telephone conversation on August 10, 2010. The initial findings log identified several material misstatements and some potential material misstatements.

3.6.3 Final Verification

On August 10, 2010, Timberline submitted an updated version of their Monitoring Plan and associated GHG reduction calculations, in response to SCS' initial findings. As such, this section addresses the final emissions report for Timberline.

SCS performed a complete emissions data review, combined with weighted GHG emissions risk assessment in order to ensure that no material emissions sources were excluded and that the risk of error is assessed and addressed through the appropriate sampling and review. During this assessment, SCS determined that the 2010 emission reductions of GHG as well as all of the emissions factors used were consistent with the LPRP.

3.7 IDENTIFICATION OF MATERIAL/IMMATERIAL MISSTATEMENTS

In accordance with the LPVP, for SCS to verify a GHG emission reduction report, a sample of data must be free of material misstatement. As defined by the Reserve, material misstatements may be comprised of:

- 1) Any non-conformance with the LPRP or other pertinent Reserve requirements;
- 2) Emissions sources that are not reported, i.e., missed in the participant's inventory;
- 3) Use of inappropriate emissions factors;
- 4) An identified discrepancy which results in a difference between the verifier and the participant's calculated total emission of more than 5%. Note that a difference is considered immaterial if this difference is less than 5%;
- 5) Inconsistent records (e.g. fuel use does not match fuel purchased);
- 6) Exclusion of material GHG emissions;

- 7) Other issues/items identified by the verifier during verification process.

SCS's total combined (indirect and direct) emissions were within 5% of Timberline's combined calculated emissions. From this information as well as other components of our review, it can be concluded that no material misstatements exist.

4.0 FINDINGS

Based on the verification activities conducted by SCS, it has been determined that Timberline's Hernando Landfill Project's GHG emission reductions for the January 1, through March 31, 2010 reporting period are consistent with the project methodology, free of material misstatement, and can be considered to a reasonable level of assurance.

Table 2. 2010 Verified GHG Emission Reductions

Reporting Period: January 1 to March 31, 2010	
Baseline Emissions	8,643 tons CO ₂ e
Project Emissions	2tons CO ₂ e
TOTAL	8,641 tons CO₂e