

Landfill Gas Capture/Combustion Project Submittal Form

Instructions: Please complete all fields as thoroughly as possible. If the project in question is still in the planning/ development phase, all fields must be completed using best available data and estimates based on the proposed system design. This is an interactive Word form. Upon completion, please save this form as a PDF prior to uploading it to the Reserve. This will lock your answers and protect the document from any further changes. All fields must be completed, even if the answer is also provided elsewhere; if a field is not applicable insert N/A in the space provided.

Section 1: Project Contact Information

Project Name: **Greenville County Landfill Gas Utilization Project**

Project Developer: **Greenville Gas Producers, LLC**

Facility Owner: **Greenville Gas Producers, LLC (project), Greenville County (landfill)**

Technical Consultants: **EcoSecurities International Ltd (carbon advisor)**

Other Parties with a Material Interest: **Greenville County**

Date of Form Completion: **September 1, 2009**

Form Completed By (name, organization): **Amy Watson, EcoSecurities**

Section 2: General Project Site Information

1. Name of Landfill: **Enoree Landfill**
2. Project Description (Please provide one to two paragraphs): **The Greenville County Landfill Gas Utilization Project, built, owned, and operated by Greenville Gas Producers, LLC (GGP), is a landfill gas (LFG) collection and utilization project taking place at the Enoree Landfill in Greer, South Carolina. The Enoree Landfill is a municipal solid waste (MSW) landfill owned and operated by Greenville County. The County has transferred full title of the LFG and associated environmental attributes to GGP; therefore, ownership of the project and resulting CRTs rests with GGP.**

There are two distinct cells containing waste at the Enoree Landfill, named Phase I and Phase II. The Phase I cell is much smaller than Phase II and was only operational for three years (1991-1994). Detailed records of waste acceptance were not required at that time, but the amount of waste in place upon closure for Phase I is estimated to be

between 750,000-1,000,000 tons (680,000-907,000 tonnes). The Phase II landfill began accepting waste in 1996 and stopped accepting waste in January of 2007, when it was capped with a high-density polyethylene material. The amount of waste in place at the time of closure for Phase II was 2,573,786 tons (2,334,899 tonnes). Phase II includes a liner and leachate drainage system designed in compliance with Subtitle D of the Resource Conservation and Recovery Act (RCRA).

The project activity includes methane capture and destruction with an open flare and a modular electricity generation plant. The flare began operating in August 2007. Construction of the electricity generation plant, with an installed capacity of 3.2 MW, was completed in August, 2008.

3. Project Site Address (including county and country): **1311 Anderson Ridge Rd, Greer, SC, 29651**
4. Owner of Landfill (name and organization): **Greenville County**
5. Type of landfill (sanitary, controlled, or open dump): **sanitary**
6. Type of waste accepted (MSW, demolition debris, organic, etc.): **MSW**
7. Average annual quantity of waste accepted at landfill (cubic meters or tonnes): **195,000 tonnes**
8. Total waste in place (cubic meters or tonnes): **2,334,899 (Phase II) + 1,000,000 (Phase I, approximately) tonnes**
9. Designed landfill capacity (cubic meters or tonnes): **2,600,000 (Phase II) tonnes (Phase I did not have a detailed design plan)**
10. Year landfill opened: **1991**
11. Year landfill closed or estimated date of closure: **Phase I closed in 1994, Phase II closed in 2007**

Section 3: Project Eligibility and Monitoring

12. Project Start Date (Date project became operational; format MM/DD/YYYY): **08/01/2007**

13. Project Reporting Start Date (First date for which reductions will be reported on the Reserve; format: MM/DD/YYYY): **03/20/2009**

14. Have any vintage reduction tonnes from the project ever been registered with or claimed by another registry or program, or sold to another third party prior to registering with the Reserve? **Yes**

If the answer is yes, you must complete and return a "*Project Transfer*" form.

15. Is the landfill subject to NSPS Regulation? (greater than 2.5 million tonnes capacity)?

☐ YES ☒ NO

16. If applicable, date of most recent Tier I or Tier II NMOC test (format MM/DD/YYYY)?

11/2/2006 - For clarity, due to the older age of the Phase I cell, it is permitted separately from Phase II and not subject to NSPS regulation. Greenville County was only required to monitor Phase II's size in consideration of NSPS (excluding the older waste in Phase I), and although Phase II was closed before it exceeded 2.5 million tonnes of waste in place, the design capacity of the cell would have allowed for 2.6 million, so the County pro-actively conducted Tier II NMOC emission rate tests.

a. NMOC emissions per year (Mg/year): 11.69 Mg/year upon closure

b. Date at which landfill did or is expected to exceed 50 Mg NMOC per year (format MM/DD/YYYY): Never - landfill is closed

17. Description and citation of all local and state air and water quality, explosive gas, or other regulations pertinent to the landfill or project: **South Carolina and Greenville County law apply the federal NSPS regulation to landfills, no additional requirements.**

18. Is this project being implemented and maintained as the result of any law, statute, regulation, court order, or other preexisting legally binding mandate?

☐ Yes ☒ No

If yes, please explain. **NA**

19. Has a detailed monitoring plan been developed for this project? If not, what date will a monitoring plan be in place? **Yes**

20. What version of the Landfill Project Reporting Protocol is the project based upon? **2.1/3.0**

Section 4: Pre-project Information

21. Did the landfill ever collect and destroy landfill gas using a non-qualifying destruction device (e.g. passive flares)?

☐ YES ☒ NO

If yes:

a. What date was this system operational (MM/DD/YYYY): **NA**

b. Please describe (number of wells, destruction devices, etc.): **NA**

c. What deduction will be taken to account for this pre-project destruction? **NA**

d. What is the landfill gas flow rate (in scfm) and methane content? **NA**

22. Did the landfill ever collect and destroy landfill gas using a qualifying destruction device (e.g. candlestick flare, engine)?

☐ YES ☒ NO

If yes:

a. What date was this system operational (MM/DD/YYYY): **NA**

- b. Please describe (number of wells, destruction devices, etc.): NA
- c. What deduction will be taken to account for this pre-project destruction? NA
- d. What is the landfill gas flow rate (in scfm) and methane content? NA

Section 5: Landfill Gas Utilization Information for Project Activity

23. Landfill gas utilization (e.g., open-flared, enclosed flare, generation of electricity, use on-site as a boiler or furnace fuel, or sale to a third party): **open flare and generation of electricity**

24. If designed to generate electricity:

- a. Type of engine-generator set (e.g., internal combustion engine, micro turbine or fuel cell with the name of the manufacturer, model, power output rating (kW or MJ) for biogas, and nominal voltage : **Internal combustion engine, Caterpillar G3520C, 2 x 1600 ekW/2000 kVA, 60 Hz, 1200 RPM, 480 V**

- b. Pretreatment of landfill gas (e.g., none, condensate trap, dryer, hydrogen sulfide removal, etc. with the names of manufacturers, models, etc.):

Condensate traps (built on-site), siloxane removal system using PSA/TSA proprietary technology, designed and built by GGP & GC Environmental (one-off design built in fabrication shop, no serial numbers)

- c. Exhaust gas emission control (e.g., none, catalytic converter, etc.):

None required

- d. If interconnected with an electric utility:

- i) Name of the utility: **Duke Energy**

- ii) Type of utility contract (e.g., sell all/buy all, surplus sale, or net metering): **sell all**

- iii) If engine-generator set waste heat utilization:

- iv) Heat source (e.g., cooling system or exhaust gas or both) and heat recovery capacity (Btu or kJ/hr): **NA**
 - v) Waste heat utilization (e.g., water heating, space heating, etc.): **NA**
25. If designed to use on-site as a boiler or furnace fuel, a description of the boiler or furnace and rated capacity (Btu or kJ/hr): **NA**
26. If designed for biogas sale to a third party, a description of the methods of processing, transport, and end use: **NA**
- i) Pretreatment of Biogas (e.g., none, condensate trap, dryer, hydrogen sulfide removal, etc.) include names of manufacturer, model etc.: **NA**
 - ii) Exhaust gas emission controls from gas processing step: **NA**
27. Provide a summary and citation of the permits obtained to build and operate this Landfill Gas Utilization System): **Permit No. TV-1200-0414 (Enoree Landfill): this is the Title V air permit for the landfill, which demonstrates that upon closure the landfill was well beneath the 50 Mg/year NMOC emission rate threshold, demonstrating the project activity is additional.**
- Permit No. CM-1200-0467 (Project): this is the current Title V air permit for the project equipment, demonstrating that GGP has the right to operate the open flare and engine generator sets pursuant to the conditions defined by the Bureau of Air Quality, effective July 1, 2009 - June 30, 2014.**

Additional information: This project was originally validated and verified to the Voluntary Carbon Standard in May, 2008. Carbon credits from 2007, 2008, and 2009 have been or will soon be issued as VCUs. The project is being transferred from VCS to the Reserve such that no credits issued as VCUs will also be issued as CRTs (no double-counting). A "Project Transfer Form" has been completed and submitted along with this Submittal Form.
