

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: **Landfill Gas Methane Reduction Project**

Project Developer: **New River Resource Authority**

Facility Owner: **New River Resource Authority**

Technical Consultants: **SCS Engineers**

Other Parties with a Material Interest: **N/A**

Date of Form Completion: **11/12/2009**

Form Completed By (name, organization): **SCS Engineers**

Section 2: General Project Site Information

1. Name of Landfill: **New River Solid Waste Management Facility**
2. Project Description (Please provide one to two paragraphs): **(See Attachment A)**
3. Project Site Address (including county and country): **7100 Cloyd's Mountain Road, Dublin, VA 24084**
4. Owner of Landfill (name and organization): **New River Resource Authority**
5. Type of landfill (sanitary, controlled, or open dump): **Sanitary Landfill**
6. Type of waste accepted (MSW, demolition debris, organic, etc.): **MSW**
7. Average annual quantity of waste accepted at landfill (cubic meters or tonnes): **152,920 tonnes MSW (based on reported facility scale data - 2008)**



8. Total waste in place (cubic meters or tonnes): **1,184,187 tonnes as of December 31, 2008**
9. Designed landfill capacity (cubic meters or tonnes): **10,730,531 cubic meters based on SW Permit #548 and Title V Air Permit #21397**
10. Year landfill opened: **1997**
11. Year landfill closed or estimated date of closure: **2056**

Section 3: Project Eligibility and Monitoring

12. Project Start Date (Date project became operational; format MM/DD/YYYY): **01/14/2008**
13. Project Reporting Start Date (First date for which reductions will be reported on the Reserve; format: MM/DD/YYYY): **01/14/2008**
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? **No**

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)?
08/22/2008

- a. NMOC emissions per year (Mg/year): **39.15 in 2008**
- b. Date at which landfill did or is expected to exceed 50 Mg NMOC per year (format MM/DD/YYYY): **01/01/2012**

17. Description and citation of all local and state air and water quality, explosive gas, or other regulations pertinent to the landfill or project: **VA Solid Waste Management Regulations,**



Permit No. 548; VA Air Quality Control Regulations, Title V Permit No. 21397; VA VPDES General Stormwater Industrial Discharge, Permit No. 051283.

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.

19. Has a detailed monitoring plan been developed for this project? If not, what date will a monitoring plan be in place? **12/31/09**

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

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): **10/01/2006 to 11/30/2007**

b. Please describe (number of wells, destruction devices, etc.): **Passive flares located on two (2) leachate cleanout vent pipes.**

c. What deduction will be taken to account for this pre-project destruction? The developer is in the process of planning a non-qualifying test regime to quantify any deductions pursuant to the CAR Landfill Protocol 2.1, Section 5.3.

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

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

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**

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

N/A

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

N/A

- d. If interconnected with an electric utility:

- i) Name of the utility: **N/A**

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

- 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): **N/A**
 - v) Waste heat utilization (e.g., water heating, space heating, etc.): **N/A**
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): **N/A**
26. If designed for biogas sale to a third party, a description of the methods of processing, transport, and end use: **N/A**
- i) Pretreatment of Biogas (e.g., none, condensate trap, dryer, hydrogen sulfide removal, etc.) include names of manufacturer, model etc.: **N/A**
 - ii) Exhaust gas emission controls from gas processing step: **N/A**
27. Provide a summary and citation of the permits obtained to build and operate this Landfill Gas Utilization System): **Virginia Solid Waste Facility Permit No. 548**

Additional information: A detailed Project Description is provided as Attachment A. An LFG Collection and Control System As-built drawing, dated 11/13/08, is provided as Attachment B.

ATTACHMENT A
PROJECT DESCRIPTION

INTRODUCTION

The New River Resource Authority Regional Solid Waste Management Facility is owned and operated by the New River Resource Authority (NRRA) and is located approximately six miles north of the Town of Dublin, off of U.S. Route 100 along the southern slopes of Cloyd's Mountain. The Facility consists of approximately 552 acres of which 350 acres have been designated for landfilling purposes. The Virginia Department of Environmental Quality (VDEQ) issued a solid waste permit for the disposal areas A, B, C, D, which cover approximately 99 acres and have a capacity of 14,036,005 cubic yards.

The Facility commenced operations in May 1997. The Area "A" active landfill area consists of approximately 24.7 acres. The Area "B" waste disposal unit consists of approximately 12.4 acres, with initial waste placement commencing in July 2007.

The Facility constructed an active LFG collection and control system in Area A during Fall 2007. The LFG control system consists of 16 vertical extraction wells, two horizontal collectors, three leachate cleanout connections, a single 1,250 cfm VFD-controlled blower, and a 1,250 cfm utility flare. The LFG control system commenced operation on January 14, 2008.

LANDFILL GAS SYSTEM DESCRIPTION

Collection System Components

The initial phase of the LFG collection system at the Facility was installed during the fall of 2007 in conjunction with the installation of final cap on portions of Area A. The vertical extraction wells were drilled during August and September 2007 and the LFG collection piping was installed during December 2007. The wellfield currently consists of 16 operating vertical extraction wells, 2 horizontal collectors, and 3 leachate cleanout connections. Well depths range from 27 to 80 feet and average approximately 52 feet. The wells are connected via a network of buried HDPE collection piping and the main header pipes are equipped with butterfly isolation valves. Two condensate traps are located at the header pipe low points. The LFG collection piping actively transports the LFG from the wellfield to the blower/flare station.

Blower/Flare Station

The blower/flare station at the Facility consists of a single Perennial Energy (PEI) 1,250 scfm utility flare, a 1,250 scfm HSI blower powered by a 50 hp motor, an ABB variable frequency drive (VFD), and associated valves, piping, and other equipment. The blower/flare skid is equipped with a Varec 5000/5010 Series flame arrester, pneumatic shut-off valve and condensate knockout pot. Instrumentation and controls include thermocouples at the flare tip, a Veris Verabar flow measurement device, and a Yokogawa FX106 datalogger. The blower/flare station collects and combusts LFG as controlled by the Programmable Logic Controller (PLC), which monitors flow and flame temperature and controls the VFD, the shut-off valve, and the ignition start sequence. The flare station was installed in December 2007, and commenced operation on 1/14/08.

ATTACHMENT B

LFG COLLECTION AND CONTROL SYSTEM
AS-BUILT DRAWING

1. LOCATIONS OF LEACHATE CLEANOUTS, THE ASSOCIATED LEACHATE CLEANOUT CONNECTION WELLHEADS, AND THE CONDENSATE DRAIN PIPING FOR LC-2 AND LC-3 ARE BASED ON FIELD OBSERVATIONS (NOT INCLUDED IN AS-BUILT SURVEY DATA).

3. LOCATIONS OF CONDENSATE TRAPS ARE BASED ON FIELD OBSERVATIONS (NOT INCLUDED IN AS-BUILT SURVEY DATA).

1. TOPOGRAPHY OUTSIDE OF WASTE DISPOSAL UNIT LIMITS
BASED ON AERIAL PHOTOGRAPHY DATED FEBRUARY 28,
2006 OBTAINED FROM MCKENZIE SNYDER, INCORPORATED.

3. SURVEY POINTS RELATED TO LANDFILL GAS SYSTEM ARE BASED ON SURVEYS PERFORMED BY THOMPSON & LUTON ON SEPTEMBER 7, 2007, NOVEMBER 13, 2007, DECEMBER 12, 2007, AND JANUARY 18, 2008. TABULATIONS OF THE SURVEY DATA ARE INCLUDED IN THE LANDFILL GAS SYSTEM CONSTRUCTION CERTIFICATION REPORT PREPARED BY SCS ENGINEERS.

EW-4 LFG EXTRACTION WELL

LFG COLLECTION PIPING

✂ LFG ISOLATION VALVE

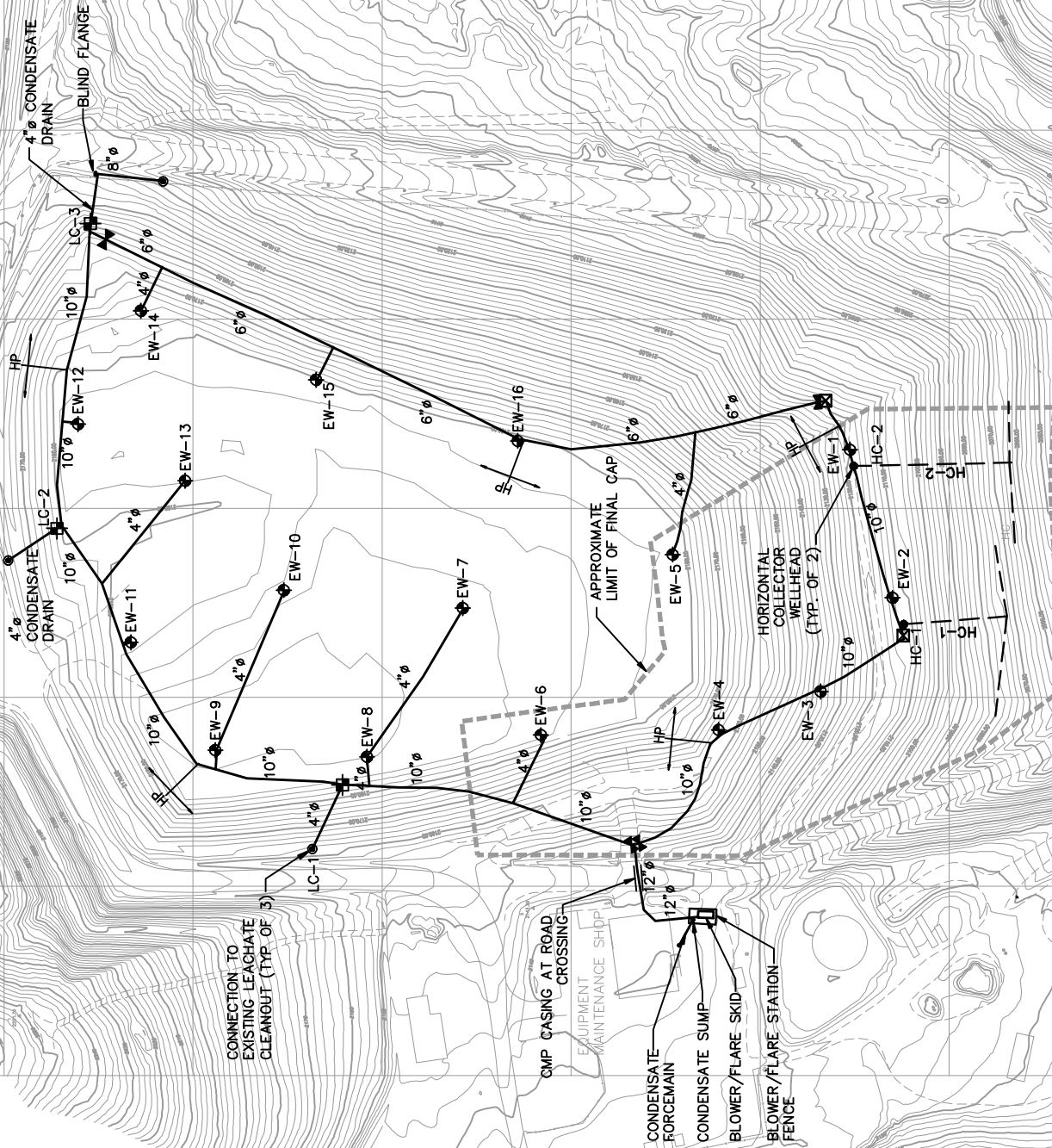
● HC-1 LFG HORIZONTAL COLLECTOR WELLHEAD

— — — — — LFG HORIZONTAL COLLECTOR

LC-2 LEACHATE CLEANOUT CONNECTION WELLHEAD

☒ CONDENSATE TRAP

AS-BUILT WELL SCHEDULE						
POINT #	NAME	NORTHING	EASTING	ACTUAL GROUND ELEV	WELL DEPTH "D"	SLOTTED LENGTH "P"
5052	EW-1	10131.10	20577.36	2122	59	40
5043	EW-2	10075.05	20381.43	2113	44	30
5028	EW-3	10170.14	20257.66	2143	38	25
5022	EW-4	10304.67	20206.84	2168	43	29
5073	EW-5	10365.43	20438.77	2193	81	59
5006	EW-6	10536.21	20192.52	2189	49	33
10054	EW-7	10643.33	20367.95	2212	84	60
10050	EW-8	10769.70	20171.23	2193	46	29
10039	EW-9	10970.31	20180.13	2203	37	24
-	EW-10	-	-	-	64	43
10034	EW-11	11082.25	20322.83	2190	31	18
10042	EW-12	11152.10	20611.26	2188	27	15
10040	EW-13	11010.15	20536.21	2204	50	36
10023	EW-14	11088.72	20761.04	2179	35	21
10019	EW-15	10837.29	20669.74	2179	69	48
10014	EW-16	10570.25	20589.04	2181	82	59



AS-BUILT 11-13-2008

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SCS ENGINEERS
TRAINING, CONSULT AND SCHAUBT
CONSULTING ENGINEERS, INC.
10000 MIDWAY #100 - COMMERCE
H. (909) 966-0000 FAX (909) 966-0001

NO.	DWN. B.Y.	GMA	RED
03018.06			
71	CHK. B.Y.		
GMA			
APP. B.Y.			

CADD FILE: KCSLFG-ASBUILT

DATE: 11/13/08

SCALE: 1"=100'

DRAWING NO.

1 of 1



PROJECT TITLE
LFQ SYSTEM AS-BUILT
 SHEET TITLE
**LANDFILL GAS COLLECTION
 AND CONTROL SYSTEM**

**NEW RIVER
RESOURCE AUTHORITY
7100 CLOUD'S MOUNTAIN ROAD
DUBLIN, VA 24084**

CLIENT