

November 21, 2012

Ms. Jaclynne Drummond
NCDENR DWM Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

RE: **Operations, Monitoring, and Maintenance Report – October 2012**
Avery County Closed MSW Landfill – Permit No. 06-91
Spruce Pine, North Carolina

Dear Ms. Drummond:

This brief report presents details for the operation and monitoring (O&M) of the Avery County Closed MSW Landfill (Permit No. 06-01) Landfill Gas Collection and Control System (LFGCCS). Mr. Britt Ransom with Smith Gardner, Inc. (S+G), performed the site visit on October 17, 2012, for the October 2012 monthly monitoring period.

LFGCCS ACTIVITIES

S+G performed the following actions during the October 17, 2012 site visit.

- **LFGCCS System:** The LFGCCS system was shut down prior to the October site visit due to a blower malfunction. The blower was replaced during this site visit and the system was restarted and is now operating normally.
- **Wellfield Monitoring:** S+G did not perform well field monitoring for this period because the system had been shut down and the wellfield required recalibration.
- **Flare Station:** As stated above, the blower unit was replaced by S+G personnel permitting the LFGCCS to resume operation.

LFG MONITORING WELL (PERIMETER) MONITORING

S+G personnel conducted perimeter LFG well monitoring on October 17, 2012. Results are included in **Attachment 1**. Monitoring wells P1, P3, P7 and P11 measured over the 100% LEL or 5% by volume of CH₄. Monitoring well P13 measured less than 50% LEL or 2.5% by volume of CH₄, while the remaining wells had no detectable CH₄ concentrations. Perimeter monitoring results are consistent with past site data. These wells will continue to be monitored and data will be submitted in this reporting format.

RECOMMENDATIONS AND CONCLUSIONS

S+G submitted an annual report¹ on November 9, 2012 summarizing suggested actions for improved LFGCCS operations. These recommendations, including the installation of two additional extraction wells as part of the first Phase of upgrades, were approved by NCDENR on November 15, 2012². S+G

¹ Annual Landfill Gas Monitoring Report, Avery County Closed MSW Landfill, Permit No. 06-91, Smith Gardner, Inc., November 2012, (DIN 17650)

² Letter to Buddy Norris from Jaclynne Drummond, November 15, 2012, (DIN 17664)

Ms. Jaclynne Drummond

November 21, 2012

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is working with Avery County to install system upgrades in accordance with the approved recommendations.

Routine monthly monitoring will continue until site conditions warrant a sampling schedule modification. Any proposed modifications will be submitted for approval by NDCER. If you have questions or require additional information, please contact us at 919-828-0577 or by e-mail (address below).

Sincerely,

SMITH GARDNER, INC.



Madeline German, PG
Project Geologist, ext. 222
madeline@smithgardnerinc.com



Joan A. Smyth, PG
Senior Hydrogeologist ext. 221
joan@smithgardnerinc.com

Attachments

CC: Buddy Norris – Avery County
Deb Aja – NCDENR
Stacey Smith, P.E. – S+G
File

FIGURE

**Operations Monitoring and Maintenance Report - LFGCCS
Avery County Closed MSW Landfill
Permit No. 06-91**

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© Smith Gardner Inc.

LEGEND

- EXISTING LANDFILL GAS PROBE
- ④ OFFSITE STRUCTURE TO BE MONITORED

REFERENCES

1. ADJACENT PROPERTIES ARE FROM AVERY COUNTY GIS MAPPING DEPARTMENT.
2. MONITORING WELL LOCATIONS FROM FIELD SURVEY DATED 1/14/08, BY SURVEYING SOLUTIONS, P.C.
3. PROPERTY LINE FROM FIELD SURVEY DATED APRIL 9, 2010, BY APPALACHIAN PROFESSIONAL LAND SURVEYORS & CONSULTANTS.
4. LFG PROBES LOCATIONS FROM FIELD SURVEY DATED APRIL 9, 2010, BY APPALACHIAN PROFESSIONAL LAND SURVEYORS & CONSULTANTS. PROBE P-2, P-3, AND P-9 THROUGH P-13 LOCATIONS WERE NOT SURVEYED AND ARE APPROXIMATE.

PREPARED BY: _____ NC LIC. NO. C-0828 (ENGINEERING)
SMITH+GARDNER
 14 N. Boylan Avenue, Raleigh NC 27603 | 919.828.0577

DRAWN:	W.R.B.	APPROVED:	D.M.M.	SCALE:	AS SHOWN	FIGURE NO.:	1
DATE:	Oct 2012	PROJECT NO.:	AVERY 12-6	FILENAME:	AVERY-B0192		

LANDFILL GAS MONITORING SYSTEM
AVERY COUNTY CLOSED MSWLF
SPRUCE PINE, NORTH CAROLINA

PREPARED FOR:

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Attachment 1

**Operations, Monitoring and Maintenance Report - LFGCCS
Avery County Closed MSW Landfill
Permit No. 06-91**

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NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Facility Name: Avery County Closed MSW Landfill Permit Number: 06-01

Date of Sampling: 10/17/12 NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: Britt Ransom

Type and Serial Number of Gas Meter: GEM 2000 Calibration Date of Gas Meter: _____

Date and Time of Field Calibration: 10/17/12 13:40

Type of Field Calibration Gas (15/15 or 35/50): 35/50 Expiration Date of Field Calibration Gas Canister: 5/13

Pump Rate of Gas Meter: .5 LPM

Ambient Air Temperature: 67° Barometric Pressure: 27.05 General Weather Conditions: SUNNY

Instructions: Under "Location or LFG Well" identify the monitoring wells or describe the location for other tests (e.g., inside buildings). A drawing showing the location of test must be attached. Report methane readings in both % LEL and % methane by volume. A reading in percent methane by volume can be converted to % LEL as follows: % methane by volume = % LEL/20

Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH4 by Volume	%O2	%CO2	Notes
P1	>60s	14:31	>60s	>100	>100	55.1	2.2	29.5	
P2	>60s	14:26	>60s	0	0	0	20.5	.1	
P3	>60s	14:22	>60s	>100	>100	63.6	1.5	33.8	
P4	>60s	14:17	>60s	0	0	0	18.3	4	
P5	>60s	14:13	>60s	0	0	0	20.1	.2	
P6	>60s	14:06	>60s	0	0	0	18.4	2.5	
P7	>60s	14:01	>60s	>100	>100	34.2	2.6	15.6	
P8	>60s	13:53	>60s	0	0	0%	19	3	
P9	>60s	14:57	>60s	0	0	0	18.8	1.7	
P10	>60s	14:53	>60s	0	0	0	9.5	11.2	

If your facility has more gas monitoring locations than there is room on this form, please attach additional sheets listing the same information as contained on this form.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Britt Ransom
SIGNATURE

Field Services Mgr.
TITLE

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Date and Time of Field Calibration: 10/17/12 13:40

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Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH ₄ by Volume	%O ₂	%CO ₂	Notes
P11	760s	15:01	760s	7100	7100	47.5	1.5	24.1	
P12	760s	13:58	760s	0	0	0	19.8	.9	
P13	760s	15:14	760s	48	48	2.4	9.3	9.3	

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Name and Position of Sample Collector: Britt RANSOM

Type and Serial Number of Gas Meter: GEM 2000 Calibration Date of Gas Meter: _____

Date and Time of Field Calibration: 10/17/12 13:40

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Pump Rate of Gas Meter: .5 LPM

Ambient Air Temperature: 67° Barometric Pressure: 27.05 General Weather Conditions: Sunny

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Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH4 by Volume	%O2	%CO2	Notes
AVERY COUNTY AIRPORT STRUCTURE #1									
NE Corner	>60s	15:20	>60s	0	0	0	20	.0	
NW Corner	>60s	15:23	>60s	0	0	0	20	0	
SE Corner	>60s	15:26	>60s	0	0	0	20	0	
SW Corner	>60s	15:29	>60s	0	0	0	20	.0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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Pump Rate of Gas Meter: .5 LPM

Ambient Air Temperature: 67° Barometric Pressure: 27.05 General Weather Conditions: SUNNY

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Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH4 by Volume	%O2	%CO2	Notes
AVERY COUNTY AIRPORT STRUCTURE #2									
NE Corner	760s	15:32	760s	0	0	0	20	0	
NW Corner	760s	15:35	760s	0	0	0	20	0	
SE Corner	760s	15:38	760s	0	0	0	20	0	
SW Corner	760	15:41	760s	0	0	0	20	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH4 by Volume	%O2	%CO2	Notes
AVERY COUNTY AIRPORT STRUCTURE #3									
NE Corner	760s	15:43	760s	0	0	0	20	0	
NW Corner	760s	15:46	760s	0	0	0	20	0	
SE Corner	760s	15:49	760s	0	0	0	20	0	
SW Corner	760s	15:52	760s	0	0	0	20	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH ₄ by Volume	%O ₂	%CO ₂	Notes
AVERY COUNTY AIRPORT STRUCTURE #4									
NE Corner	>60 s	15:56	>60 s	0	0	0	20	0	
NW Corner	>60 s	15:59	>60 s	0	0	0	20	0	
SE Corner	>60 s	16:02	>60 s	0	0	0	20	0	
SW Corner	>60 s	16:03	>60 s	0	0	0	20	0	
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Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH ₄ by Volume	%O ₂	%CO ₂	Notes
AVERY COUNTY AIRPORT STRUCTURE #5									
NE Corner	>60s	16:08	>60s	0	0	0	20	0	
NW Corner	>60s	16:11	>60s	0	0	0	20	0	
SE Corner	>60s	16:14	>60s	0	0	0	20	0	
SW Corner	>60s	16:17	>60s	0	0	0	20	0	
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AVERY COUNTY AIRPORT STRUCTURE #6									
NE Corner	>60 s	16:21	>60 s	0	0	0	20	0	
NW Corner	>60 s	16:24	>60 s	0	0	0	20	0	
SE Corner	>60 s	16:27	>60 s	0	0	0	20	0	
SW Corner	>60 s	16:30	>60 s	0	0	0	20	0	
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