

February 20, 2014

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

RE: **Operations, Monitoring, and Maintenance Report – January 2014**
Avery County Closed MSW Landfill
Spruce Pine, North Carolina

Dear Ms. Drummond:

Smith Gardner, Inc. (S+G) is pleased to present this report concerning the operation and maintenance (O&M) of the Avery County Closed MSW Landfill (Permit No. 06-01) Landfill Gas Collection and Control System (LFGCCS) and monitoring of the on- and off-site landfill gas probes for the January 2014 monitoring period. Mr. Don Misenheimer with S+G performed the site visit on January 31, 2014. Site visit details are provided below.

CURRENT STATUS

S+G previously identified the following items to be addressed for the LFGCCS to operate as designed:

1. **LFGCCS System:** An expansion of the LFGCCS system, as proposed in the *Annual Landfill Gas Monitoring Report*¹, was previously approved² by the division of Waste Management. Phase One of the expansion project has been completed and is currently being evaluated for effectiveness.

LFG EXTRACTION WELL MONITORING PROGRAM

Monthly monitoring of the LFGCCS will continue and shall include the following items:

- CH₄, O₂, CO₂, and pressure monitoring at each extraction well head;
- CH₄, O₂, CO₂, and pressure monitoring at the flare station; and
- Adjustment of the LFGCCS to balance recovery and ensure safe system operation.

The County will maintain this LFGCCS and will continue to evaluate the effectiveness of increased LFG recovery from the waste mass in alleviating off-site LFG migration. Results from monthly monitoring events will be reported in accordance with the approved LFG Monitoring Plan.

¹ *Annual Landfill Gas Monitoring Report*, Closed Avery County MSW Landfill. Submitted by Smith Gardner, Inc., November 2012.

² Approval response letter, Closed Avery County MSW Landfill (Annual Landfill Gas Monitoring Report). Sent by Jaclynne Drummond, Solid Waste Section, November 15, 2012.

LFG EXTRACTION WELL MONITORING ACTIVITIES

S+G personnel performed the flare station and well field monitoring January 31, 2014. Initial measurements indicated there was approximately 37 to 40 inches of available vacuum at each of the LFG wells across the well field. The results from this event are summarized below. Recommended actions are underlined. Well field data and flare station data are provided in the attached **Table 1**.

LFG Extraction Well Field

- **W-1 through W-10:** S+G performed CH₄, O₂, CO₂, and pressure monitoring. No adjustments were made to the extraction well heads during this monitoring event.

In general, liquid levels at the LFG extraction wells have slightly increased since 2011. Wells W-1 through W-4 continue to exhibit evidence that a majority of well perforations are partially or completely clogged. Liquid levels in newly installed wells W-9 and W-10 are at or just below the solid pipe, completely blocking all perforations. S+G will continue to evaluate this condition.

- **Orifice Plates:** S+G continues to evaluate orifice plate sizes at wells W-5, W-7, W-9, and W-10 during each site visit. As LFG flow potential at these locations is stable, the correct orifice plate sizes are currently installed.

Flare Station

- **Condensate Tank:** The condensate tank was observed during this site visit; the liquid was at an acceptable level. S+G will continue to monitor the liquid level of the condensate tank.
- **Filter Tank:** The filter tank was emptied during this site visit. S+G will continue to monitor the liquid level of the filter tank.
- **Flare operation:** Flare operation continues to be intermittent due to poor overall gas quality and low flow rate. S+G will continue to adjust the system to optimize gas flow and quality.

LFG MONITORING WELL (PERIMETER) MONITORING PROGRAM

S+G personnel also performed monitoring of the perimeter LFG monitoring network. Monitoring wells P1, P3, P7 and P11 each measured over the 100% LEL or 5% by volume of CH₄, while all other wells, monitored this event, had no detectable concentrations of CH₄. Results of this monitoring event are included in **Attachment 1**. **Attachment 2** provides a methane concentration graph over time for monitoring wells that have historically had

Ms. Drummond
February 20, 2014
Page 3 of 3

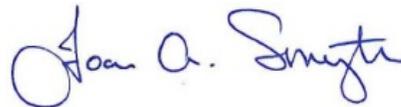
methane present. The current well network will continue to be monitored and data will be reported to NCDENR and the County.

The next routine monitoring event is scheduled for the last week of February 2014. If you have any questions, or require additional information, please contact us at your earliest convenience at 919-828-0577 or by e-mail (address below).

Sincerely,
SMITH GARDNER, INC.



Don Misenheimer
Project Scientist, ext. 224
don@smithgardnerinc.com



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

Attachments

CC: Buddy Norris – Avery County
Deb Aja – NCDENR
File

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FIGURE

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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:	K.C.B.	APPROVED:	D.M.M.	FIGURE NO.:	1
DATE:	Dec 2013	SCALE:	AS SHOWN	FILENAME:	AVERY-B0216
PROJECT NO.:			AVERY 13-6		

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

PREPARED FOR: _____

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TABLE

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TABLE 1
Avery County Closed MSW Landfill
Landfill Gas Collection and Control System Monitoring
January 2014

DataField CS - GEM Mode Data Output

Device ID	Date/Time mm/dd/yyyy	CH4 %	CO2 %	O2 %	Balance %	Adj. Temperature degF	Init. Static Pressure in H2O	Adj. Static Pressure in H2O	Adj. Diff. Pressure in H2O	Init. Flow Scfm	Adj. Flow Scfm	System Pressure in H2O
AVERY-W1	1/31/2014 7:52	71.4	28.2	0	0.4	60	-40.6	-39.1	-0.059	<<>>	<<>>	-40.37
AVERY-W2	1/31/2014 8:07	52.1	27.3	0.4	20.2	59	-39.5	-39.2	0.005	<<>>	2	-40.42
AVERY-W3	1/31/2014 8:14	58.6	26.3	0	15.1	52	-39.4	-39	-0.014	<<>>	<<>>	-39.56
AVERY-W4	1/31/2014 8:21	20.4	19.9	0.8	58.9	51	-27.9	-27.8	0.015	3	4	-38.51
AVERY-W5	1/31/2014 8:28	26.9	22.2	0.3	50.6	59	-36.7	-36.6	2.423	6	5	-40.05
AVERY-W6	1/31/2014 8:32	5	17.9	7.2	69.9	59	-10.6	-10.6	0.019	<<>>	<<>>	-39.01
AVERY-W7	1/31/2014 8:36	6.8	20.4	4.6	68.2	59	-2	-1.9	3.112	3	2	-40.28
AVERY-W8	1/31/2014 8:41	10.4	23.2	2.2	64.2	53	-11.1	-11.1	0	1	1	-40.31
Avery-W9	1/31/2014 8:00	8.2	12.8	8.4	70.6	46	-10.5	-10.4	0.021	<<>>	<<>>	-40.01
AveryW10	1/31/2014 8:18	22.6	13.5	13.4	50.5	59	-11.3	-11.2	0.041	<<>>	<<>>	-40.36
Av-Flare	1/31/2014 8:52	24.3	21.9	4.5	49.3	N/A	0.7	N/A	N/A	21	N/A	N/A

The differential pressure measurement should be positive. A negative differential pressure indicates no gas flow. Negative differential pressure may be the result of dirt or water obstructing the pitot tube perforations. Overpulling by adjacent extractions wells may also result in negative pressure being displayed.

<<>> = measurement out of range of GEM 2000 meter. The reading was likely too low for measurement by the instrument.

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ATTACHMENT 1

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NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting 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).

Instructions:

- Prepare one form for each individually monitored unit.
- Please type or print legibly.
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i)).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Smith Gardner, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Madeline German, P.G. Phone: 919-828-0577 x 222
E-mail: madeline@smithgardnerinc.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
Avery County Closed MSW Landfill	Brushy Creek Rd. Spruce Pine, NC	06-01	.0500	January 31, 2014

Environmental Status: (Check all that apply)

- Initial/Background Monitoring Detection Monitoring Assessment Monitoring Corrective Action

Type of data submitted: (Check all that apply)

- Groundwater monitoring data from monitoring wells Methane gas monitoring data
 Groundwater monitoring data from private water supply wells Corrective action data (specify) LFG System Monitoring
 Leachate monitoring data Other(specify) _____
 Surface water monitoring data

Notification attached?

- No. No groundwater or surface water standards were exceeded.
 Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
 Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Madeline German, P.G. Geologist 919-828-0577 x 222

Facility Representative Name (Print) Title (Area Code) Telephone Number
 Signature Date Affix NC Licensed Professional Geologist Seal

14 N. Boylan Avenue Raleigh, NC 27603

Facility Representative Address

C-0828

NC PE Firm License Number (if applicable effective May 1, 2009)



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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: 1-31-14 NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: DON MISENHEIMER (STW)

Type and Serial Number of Gas Meter: LEM 2000 (6m07002) Calibration Date of Gas Meter: 8-29-13

Date and Time of Field Calibration: 1-31-14 9:02 a

Type of Field Calibration Gas (15/15 or 35/50): 15/15 Expiration Date of Field Calibration Gas Canister: 2017

Pump Rate of Gas Meter: 0.5 y/min

Ambient Air Temperature: 39° Barometric Pressure: 27.21 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	7605	9:39a	7605	7100	7100	36.2	0.1	20.1	
P2	7605	9:35a	7605	0	0	0	21.0	0.0	
P3	7605	9:33a	7605	7100	7100	48	0.6	30.1	
P4	7605	9:30a	7605	0	0	0	16.8	6.8	
P5	7605	9:21a	7605	0	0	0	21.1	0.1	
P6	7605	9:13a	7605	0	0	0	15.9	4.6	
P7	7605	9:09a	7605	7100	7100	39.9	0	13.9	
P8	7605	9:04a	7605	0	0	0	18.7	4.0	
P9	7605	9:46a	7605	0	0	0	18.8	1.3	
P10	7605	9:48a	7605	0	0	0	15.8	4.0	

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.

 (STW)
SIGNATURE

PROJECT SCIENTIST
TITLE

NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

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

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [See page 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
P11	7605	9:56a	7605	7100	>100	44.7	1.2	23.1	
P12	7605	9:07a	7605	0	0	0	20.9	0.3	
P13	7605	10:10a	7005	0	0	0	2.1	9.7	

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.

SIGNATURE [Handwritten Signature] (S+G) TITLE PROJECT SCIENTIST

NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

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

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [See page 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
AVERY COUNTY AIRPORT STRUCTURE #1									
NE Corner	7605	10:14a	7605	0	0	0	21.0	0	
NW Corner	7605	10:14a	7605	0	0	0	20.9	0	
SE Corner	7605	10:18a	7605	0	0	0	21.2	0	
SW Corner	7605	10:20a	7605	0	0	0	21.2	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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.

[Signature]
SIGNATURE

PROJECT SCIENTIST
TITLE

NC Division of Waste Management - Solid Waste Section

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

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [See Page 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
AVERY COUNTY AIRPORT STRUCTURE #2									
NE Corner	760s	10:22a	760s	0	0	0	21.1	0	
NW Corner	760s	10:24a	760s	0	0	0	21.2	0	
SE Corner	760s	10:26a	760s	0	0	0	21.2	0	
SW Corner	760s	10:28a	760s	0	0	0	21.0	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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.

[Signature] (SIC) _____
 SIGNATURE PROJECT SCIENTIST
 TITLE

NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

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

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [SEE PAGE 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
AVERY COUNTY AIRPORT STRUCTURE #3									
NE Corner	7605	10:30a	7605	0	0	0	21.2	0	
NW Corner	7605	10:32a	7605	0	0	0	21.2	0	
SE Corner	7605	10:34a	7605	0	0	0	21.2	0	
SW Corner	7605	10:36a	7605	0	0	0	21.3	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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.

[Signature] (S+G)
SIGNATURE

PROJECT SCIENTIST
TITLE

NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

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

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [see page 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
AVERY COUNTY AIRPORT STRUCTURE #4									
NE Corner	760s	10:38g	760s	0	0	0	21.0	0	
NW Corner	760s	10:40g	760s	0	0	0	21.1	0	
SE Corner	760s	10:42g	760s	0	0	0	21.1	0	
SW Corner	760s	10:44g	760s	0	0	0	21.1	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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.

[Signature] (S+G)
SIGNATURE

PROJECT SCIENTIST
TITLE

NC Division of Waste Management - Solid Waste Section

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

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [SEE PAGE 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
AVERY COUNTY AIRPORT STRUCTURE #5									
NE Corner	760	10:40a	760s	0	0	0	21.2	0	
NW Corner	760	10:48a	760s	0	0	0	21.1	0	
SE Corner	760s	10:50a	760s	0	0	0	21.2	0	
SW Corner	760s	10:52a	760s	0	0	0	21.0	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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

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[Signature] (Sta) _____ PROJECT SCIENTIST
 SIGNATURE TITLE

NC Division of Waste Management - Solid Waste Section

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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: _____ NC Landfill Rule (.0500 or .1600): .0500

Name and Position of Sample Collector: [SEE PAGE 1]

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

Date and Time of Field Calibration: _____

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

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

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
AVERY COUNTY AIRPORT STRUCTURE #6									
NE Corner	7605	10:54a	7605	0	0	0	21.0	0	
NW Corner	7605	10:56a	7605	0	0	0	21.1	0	
SE Corner	7605	10:58a	7605	0	0	0	21.2	0	
SW Corner	7605	10:60a	7605	0	0	0	21.1	0	
ADD ANY ADDITIONAL LOCATIONS AT OR NEAR STRUCTURE WITH METHANE PRESENT BELOW OR ON ADDITIONAL SHEETS									

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.

[Signature] (S) PROJECT SCIENTIST
 SIGNATURE TITLE

ATTACHMENT 2

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TABLE 1
Avery County Closed MSW Landfill
Landfill Gas Collection and Control System Monitoring
May 2011 - January 2014

DATE	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13
May-11	21.8	0	54.8	0	0	0	31.8	0	NA	NA	NA	NA	NA
Jun-11	61.6	0	66.7	0	0	0	32.2	0	NA	NA	NA	NA	NA
Jul-11	56	0	64.8	0	0	0	34.9	0	NA	NA	NA	NA	NA
Aug-11	36.8	0	44.5	0	0	0	32.5	0	NA	NA	NA	NA	NA
Sep-11	29.9	0	45.5	0	0	0	33.4	0	NA	NA	NA	NA	NA
Oct-11	30	0	50.4	0	0	0	35	0	NA	NA	NA	NA	NA
Nov-11	43.8	0	54.2	0	0	0	42.3	0	0	0	36.2	0	0
Dec-11	36.8	0	44.1	0	0	0	36.7	0	0	0	39.3	0.2	1.6
Jan-12	49.4	0	0	0	0	0	36.6	0	0	0	26.8	0	2.1
Feb-12	27.3	0	36.4	0	0	0	34.4	0	0	0	41.4	0	0.6
Mar-12	65.7	0	62.9	0	0	0	35.6	0	0	0	38.2	0	1.7
Apr-12	58.1	0	51.1	0	0	0	34.2	0	0	0	45.1	0	1.9
May-12	54.5	0	2.8	0	0	0	33.1	0	0	0	34.2	0	2.3
Jun-12	56.3	0	2.3	0	0	0	36.9	0	0	0	34.9	0	1.3
Oct-12	55.1	0	63.6	0	0	0	34.2	0	0	0	47.5	0	2.4
Nov-12	56.2	0	66.3	0	0	0	37	0	0	0	41.7	0	0.1
Dec-12	52.6	0	59.7	0	0	0	42.9	0	0	0	45.7	0	0.3
Jan-13	45.9	0	49.8	0	0	0	42.7	0	0	0	39.6	0	0
Feb-13	65.6	0	64.1	0	0	0	32.3	0	0	0	53.8	0	0
Mar-13	33.6	0	58.9	0	0	0	32	0	0	0	58.4	0	1.8
Apr-13	36.7	0	59.9	0	0	0	31.4	0	0	0	59.9	0	0
May-13	28.1	0	56.2	0	0	0	24.9	0	0	0	49.1	0	0
Jun-13	17.7	0	51.9	0	0	0	28.2	0	0	0	41	0	6.5
Jul-13	27.4	0	55	0	0	0	24.2	0	0	0	46.2	0	0
Aug-13	9	0	60.8	0	0	0	26.1	0	0	0	41.7	0	0
Sep-13	7.3	0	63.7	0	0	0	33.3	0	0	0	58.2	0	0
Oct-13	8.1	0	50.4	0	0	0	32.1	0	0	0	54.2	0	0
Nov-13	4.1	0	19.2	0	0	0	33.1	0	0	0	41.4	0	0.8
Dec-13	34.8	0	47.7	0	0	0	32.2	0	0	0	39.7	0	1.8
Jan-14	36.2	0	48	0	0	0	39.9	0	0	0	44.7	0	0

Avery County MSW Landfill Landfill Gas Monitoring Well Network Methane Concentrations Between May 2011 and January 2014

% CH4 by
Volume

