

## APPENDIX E

### LANDFILL GAS DATA

(complete data not available at the time of report; historic summary data included in report, complete data available upon request)

**LFG Control Services, Inc.**  
**1208 Goldenrod CT.**  
**Yardley, PA 19067 Phone/Fax: (215) 321-4673**

October 14, 2006  
Mr. Brian McClung  
Maplewood Landfill  
20221 Maplewood Road  
Jetersville, VA 23083

Subject: **NSPS Surface Scan Report**  
**Maplewood Landfill**  
**3rd Quarter 2006**

Dear Mr. McClung,

Enclosed are the results of the 3rd Quarter 2006 NSPS surface emissions monitoring event performed at the Maplewood Landfill located in Amelia County, VA, by LFG Control Services, Inc. (LFGCS).

**Surface Scan Summary**

The survey was conducted in accordance with the published landfill performance sections: 40 CFR 60.753d - surface scan requirements, 40 CFR 60.755c - surface scan compliance provisions, and 40 CFR 60 Appendix A, Method 21 - equipment performance provisions.

Data was collected on August 29<sup>th</sup> (survey), September 8<sup>th</sup> (10-day follow-up), 18<sup>th</sup> (2<sup>nd</sup> 10-day follow-up) and 28<sup>th</sup> (one month follow-up), 2006. Instrument calibration and response factor determination were performed and logged prior to the collection of survey data. Performance results were consistent with 40 CFR 60 Appendix A, Method 21 requirements and are included as Tables 1 and 2 of this report.

A Photovac Mirofid I/S (S/N 126943) Organic Vapor Analyzer (OVA) with hydrogen flame ionization was utilized to determine surface methane levels on the areas of the landfill that incorporate full gas collection system components (5-year in-place active filling areas or 2-year in-place inactive or final grade areas). The survey path followed the maximum thirty (30) meter separation distance of the serpentine traverse required by section 40 CFR 60.753d. The monitoring route and OVA readings (exceedences only) are presented on the enclosed drawing titled "Maplewood Landfill - Surface Emissions Monitoring - 3rd Quarter 2006".

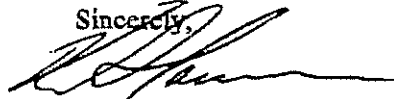
**Surface Scan Results**

The survey results identified six (6) exceedences along the survey route. Exceedence locations #1, #2, and #3 were evidenced by eroded soils or stressed vegetation requiring additional cover placement. Methane was detected venting from a partially buried four inch ADS pipe along the southern slope at Exceedence #4. Exceedence locations #5 and #6 were the result of methane emissions from the soils against the back walls and from the front doors of Sump Houses. All exceedence areas were addressed by site personnel, however only areas #1 through #4 provided follow-up readings below the 500 PPM limit at either 10-day and the one month remonitoring events. Accordingly, locations #5 and #6 require the additional actions addressed in section 40 CFR 60.755c4v (new collection device or alternate) within the specified 120 day schedule - which culminates December 27<sup>th</sup>, 2006.

Exceedence descriptions, emissions readings, and corrective measures performed by site personnel are outlined in the attached Table 3.

The survey route was not impeded by construction or filling operations during this event. If you have any questions or require any additional information concerning this report, please contact the undersigned at (215) 429-0710.

Sincerely,



Roy F. Carmasine  
LFG Control Services, Inc.

Enclosures  
cc: Matt Weeks w/enc.

Table 1

**Instrument Evaluation**  
40 CFR 60.755(d)(3) – Appendix A, Method 21, section 4.4

**Event:** Maplewood Landfill 3rd Quarter 2006 NSPS Fugitive Emissions Scan  
**Date:** August 29, 2006 **Time:** 6:30 AM - 11:00 AM  
**Technician:** Roy Carmasine, LFGCS  
**Instrument:** Photovac Microfid I/S s/n 126943 **Calibration Gas:** 500PPM methane in air

**1.) Response Factor (4.4.1):**

The response factor is the ratio of the observed meter reading of a known VOC compound other than the compound used for calibration, to the reading of the actual calibration compound. Because the compound being evaluated and the calibration compound are the same (methane), the response factor is one (1.0).

**2.) Calibration Precision (4.4.2):**

Calculate the average algebraic difference between the meter readings of the calibration gas and the known value with a total of three measurements. Divide this average difference by the known value and multiply by 100 to obtain the calibration precision as a percentage. The calibration precision must be equal to or less than 10 percent of the calibration gas value. Frequency: once per quarterly event.

<u>Test No.</u>	<u>Meter Reading</u>	<u>Known Value</u>	<u>Difference</u>	
1	500	500	0	
2	508	500	8	Average difference: 5
3	507	500	7	<b>Calibration Precision: 1%</b>

**3.) Response Time (4.4.3):**

Introduce zero gas into the instrument sample probe. When the meter reading has stabilized, switch quickly to the specified calibration gas. Measure the time from switching to when 90 percent of the final stable reading is attained. Perform this test sequence three times and record the results. Calculate the average response time. The response time must be equal to or less than 30 seconds. Frequency: once per quarterly event.

<u>Test No.</u>	<u>Time to attain 90% of known concentration (450 PPM)</u>	
1	14 seconds	
2	14 seconds	
3	15 seconds	<b>Average Response Time: 14 seconds</b>

**Table 2****Daily site conditions, background readings, calibration record****40 CFR 60.755(d)(4), 40 CFR 60.755(e)(2)**

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**Date: 8/29/06 Time: 6:30 AM – 11:00 AM****Site conditions:** Temperature: 80 F Wind Direction / Speed: W / 10 mph  
Precipitation: none Ground Condition: wet**Background Readings / Location:** Upwind: 2 PPM / western perimeter road  
Downwind: 2 PPM / eastern perimeter road**Calibration record:** Cal. Date: 8/29/06 Instrument: Photova Mirofid s/n. 126943 Technician: RFC  
Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM (internal zero set)

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**Date: 9/8/06 Time: 7:00 AM – 8:00 AM****Site conditions:** Temperature: 78 F Wind Direction / Speed: SW / 4 mph  
Precipitation: none Ground Condition: wet**Background Readings / Location:** Upwind: 1 PPM / western perimeter road  
Downwind: 1 PPM / eastern perimeter road**Calibration record:** Cal. Date: 8/29/06 Instrument: Photova Mirofid s/n. 126943 Technician: RFC  
Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM (internal zero set)

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**Date: 9/18/06 Time: 6:30 AM – 11:00 AM****Site conditions:** Temperature: 76 F Wind Direction / Speed: NW / 12 mph  
Precipitation: none Ground Condition: dry**Background Readings / Location:** Upwind: 0 PPM / western perimeter road  
Downwind: 0 PPM / eastern perimeter road**Calibration record:** Cal. Date: 8/29/06 Instrument: Photova Mirofid s/n. 126943 Technician: RFC  
Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM (internal zero set)

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**Date: 9/28/06 Time: 6:30 AM – 11:00 AM****Site conditions:** Temperature: 70 F Wind Direction / Speed: W / 4 mph  
Precipitation: none Ground Condition: dry**Background Readings / Location:** Upwind: 1 PPM / western perimeter road  
Downwind: 2 PPM / eastern perimeter road**Calibration record:** Cal. Date: 8/29/06 Instrument: Photova Mirofid s/n. 126943 Technician: RFC  
Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM (internal zero set)

Table 3

**Maplewood Landfill Surface Emission Monitoring  
3rd Quarter 2006 Data Record**

Exceed. #	Initial Date	Description / Corrective actions	Initial and follow-up readings*/ Time			
			Initial PPM	10-day 9/8/06	2nd 10-day one month 9/18/06	Time 9/28/06
1	8/29/06	Methane from a 60 ft. diameter area of eroded soils on the NW corner slope above the railroad tracks. / Site added and compacted additional cover soils.	1490	1511	37	185
2	8/29/06	Methane from a 50 ft. diameter area of eroded soils on the NW slope above the railroad tracks. / Site added and compacted additional cover soils.	1010	961	327	96
3	8/29/06	Methane from an 80 ft. diameter area of eroded soils on the NW slope above the railroad tracks. / Site added and compacted additional cover soils.	2680	2120	170	108
4	8/29/06	Methane from a 4" ADS pipe protruding through the slope between leachate Pill Boxes on lower portion of west slope.	2176	12	n/a	9
5	8/29/06	Methane from soils behind Cell #11 Sump House / Site increased vacuum to Sump House.	2240	1745	345	730
6	8/29/06	Methane from front doors and from soils behind Cell #12 Sump House / Site increased vacuum Sump House.	1831	2160	1044	955
			10:20 AM	7:39 AM	12:33	6:35 AM

\* Background reading on monitoring date subtracted from actual meter reading

**LFG Control Services, Inc.**  
**1208 Goldenrod CT.**  
**Yardley, PA 19067 Phone/Fax: (215) 321-4673**

December 15, 2006  
Mr. Brian McClung  
Maplewood Landfill  
20221 Maplewood Road  
Jetersville, VA 23083

**Subject: NSPS Surface Scan Report**  
**Maplewood Landfill**  
**4th Quarter 2006**

Dear Mr. McClung,

Enclosed are the results of the 4th Quarter 2006 NSPS surface emissions monitoring event performed at the Maplewood Landfill located in Amelia County, VA, by LFG Control Services, Inc. (LFGCS).

**Surface Scan Summary**

The survey was conducted in accordance with the published landfill performance sections: 40 CFR 60.753d - surface scan requirements, 40 CFR 60.755c - surface scan compliance provisions, and 40 CFR 60 Appendix A, Method 21 - equipment performance provisions.

Data was collected on October 17<sup>th</sup> (survey), 26<sup>th</sup> (10-day follow-up), November 3<sup>rd</sup> (2<sup>nd</sup> 10-day follow-up) and November 17<sup>th</sup> (one month follow-up), 2006. Instrument calibration and response factor determination were performed and logged prior to the collection of survey data. Performance results were consistent with 40 CFR 60 Appendix A, Method 21 requirements and are included as Tables 1 and 2 of this report.

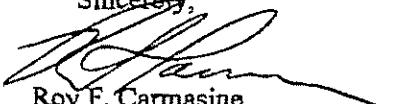
A Photovac Mirofid I/S (S/N 126943) Organic Vapor Analyzer (OVA) with hydrogen flame ionization was utilized to determine surface methane levels on the areas of the landfill that incorporate full gas collection system components (5-year in-place active filling areas or 2-year in-place inactive or final grade areas). The survey path followed the maximum thirty (30) meter separation distance of the serpentine traverse required by section 40 CFR 60.753d. The monitoring route and OVA readings (exceedences only) are presented on the enclosed drawing titled "Maplewood Landfill - Surface Emissions Monitoring - 4th Quarter 2006".

**Surface Scan Results**

The survey results identified eight (8) exceedences along the survey route. Exceedence locations #6, #7, and #8 were evidenced by methane emissions from exposed tire chips in the cover soils, the base soils at gas well GW-7, and an 80 ft.X 160 ft. stressed vegetation area respectively. Exceedence locations #1 through #5 were the result of methane emissions from the soils against the back walls and from the front doors of Sump Houses. All exceedence areas were addressed by site personnel, however only areas #1 and #6 through #8 provided follow-up readings below the 500 PPM limit at either 10-day and the one month remonitoring events. Accordingly, locations #2, #3, #4 and #5 (sumphouses) require the additional actions addressed in section 40 CFR 60.755c4v (new collection device or alternate) within the specified 120 day schedule - which culminates February 14<sup>th</sup>, 2007.

Exceedence descriptions, emissions readings, and corrective measures performed by site personnel are outlined in the attached Table 3. The survey route was not impeded by construction or filling operations during this event. If you have any questions or require any additional information concerning this report, please contact the undersigned at (215) 429-0710.

Sincerely,

  
Roy F. Carmasine  
LFG Control Services, Inc.

Enclosures  
cc: Matt Weeks w/enc.

**Table 1****Instrument Evaluation**

40 CFR 60.755(d)(3) – Appendix A, Method 21, section 4.4

**Event: Maplewood Landfill 4th Quarter 2006 NSPS Fugitive Emissions Scan****Date: October 17, 2006 Time: 7:00 AM - 11:30 AM****Technician: Roy Carmasine, LFGCS****Instrument: Photovac Microfid I/S s/n 126943 Calibration Gas: 500PPM methane in air****1.) Response Factor (4.4.1):**

The response factor is the ratio of the observed meter reading of a known VOC compound other than the compound used for calibration, to the reading of the actual calibration compound. Because the compound being evaluated and the calibration compound are the same (methane), the response factor is one (1.0).

**2.) Calibration Precision (4.4.2):**

Calculate the average algebraic difference between the meter readings of the calibration gas and the known value with a total of three measurements. Divide this average difference by the known value and multiply by 100 to obtain the calibration precision as a percentage. The calibration precision must be equal to or less than 10 percent of the calibration gas value. Frequency: once per quarterly event.

<u>Test No.</u>	<u>Meter Reading</u>	<u>Known Value</u>	<u>Difference</u>	
1	503	500	3	
2	505	500	5	Average difference: 4
3	505	500	5	<b>Calibration Precision: 1%</b>

**3.) Response Time (4.4.3):**

Introduce zero gas into the instrument sample probe. When the meter reading has stabilized, switch quickly to the specified calibration gas. Measure the time from switching to when 90 percent of the final stable reading is attained. Perform this test sequence three times and record the results. Calculate the average response time. The response time must be equal to or less than 30 seconds. Frequency: once per quarterly event.

<u>Test No.</u>	<u>Time to attain 90% of known concentration (450 PPM)</u>	
1	14 seconds	
2	15 seconds	
3	15 seconds	<b>Average Response Time: 15 seconds</b>

**Table 2****Daily site conditions, background readings, calibration record****40 CFR 60.755(d)(4), 40 CFR 60.755(c)(2)**


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<b>Date:</b> 10/17/06	<b>Time:</b> 6:30 AM – 11:00 AM
<b>Site conditions:</b> Temperature: 64 F    Wind Direction / Speed: W / 7 mph Precipitation: light    Ground Condition: wet	
<b>Background Readings / Location:</b> Upwind: 1 PPM / western perimeter road Downwind: 1 PPM / eastern perimeter road	
<b>Calibration record:</b> Cal. Date: 10/17/06    Instrument: Photova Mirofid s/n. 126943    Technician: RFC Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM    (internal zero set)	

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<b>Date:</b> 10/26/06	<b>Time:</b> 2:00 AM – 3:00 PM
<b>Site conditions:</b> Temperature: 60 F    Wind Direction / Speed: W / 10 mph Precipitation: none    Ground Condition: dry	
<b>Background Readings / Location:</b> Upwind: 0 PPM / western perimeter road Downwind: 0.5 PPM / eastern perimeter road	
<b>Calibration record:</b> Cal. Date: 10/17/06    Instrument: Photova Mirofid s/n. 126943    Technician: RFC Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM    (internal zero set)	

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<b>Date:</b> 11/3/06	<b>Time:</b> 6:30 AM – 8:00 AM
<b>Site conditions:</b> Temperature: 40 F    Wind Direction / Speed: W / 4 mph Precipitation: none    Ground Condition: dry	
<b>Background Readings / Location:</b> Upwind: 0 PPM / western perimeter road Downwind: 0 PPM / eastern perimeter road	
<b>Calibration record:</b> Cal. Date: 10/17/06    Instrument: Photova Mirofid s/n. 126943    Technician: RFC Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM    (internal zero set)	

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<b>Date:</b> 11/17/06	<b>Time:</b> 11:00 AM – 12:00 PM
<b>Site conditions:</b> Temperature: 62 F    Wind Direction / Speed: W / 6 mph Precipitation: none    Ground Condition: wet	
<b>Background Readings / Location:</b> Upwind: 1 PPM / western perimeter road Downwind: 1 PPM / eastern perimeter road	
<b>Calibration record:</b> Cal. Date: 10/17/06    Instrument: Photova Mirofid s/n. 126943    Technician: RFC Cal. Gas / Meter Setting: 500 PPM Methane in air / 500 PPM    (internal zero set)	

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Table 3

**Maplewood Landfill Surface Emission Monitoring  
4th Quarter 2006 Data Record**

Exceed. #	Initial Date	Description / Corrective actions	Initial and follow-up readings*/ Time			
			Initial PPM	10-day 10/26/06	2nd 11/3/06	10-day one month 11/17/06
1	10/17/06	Methane from soils behind Cell #4 Sump House / Site increased vacuum to sump house.	1023 7:51 AM	332 2:35 PM	n/a	460 11:04 AM
2	10/17/06	Methane from front doors and from soils behind Cell #11 Sump House / Site increased vacuum to sump house.	2747 8:09 AM	1210 2:39 PM	1714 7:43 AM	608 11:08 AM
3	10/17/06	Methane from soils behind Cell #13 Sump House / Site increased vacuum to sump house.	1522 8:15 AM	2433 2:45 PM	1854 7:47 AM	1670 11:13 AM
4	10/17/06	Methane from front doors of Cell #3 Sump House / Site increased vacuum to sump house.	1091 8:40 AM	1163 2:32 PM	409 7:38 AM	1318 11:15 AM
5	10/17/06	Methane from leachate pill box on cell #1 south / Site increased vacuum to pill box.	1310 8:45 AM	2106 2:29 PM	2364 7:30 AM	2026 11:18 AM
6	10/17/06	Methane from 2 ft diameter exposed fire chips with stake. / Site added and compacted additional cover soils.	945 9:50 AM	81 2:21 PM	n/a	0 11:22 AM
7	10/17/06	Methane from soils at base of gas well GW-7. / Site added and compacted additional cover soils.	1237 10:10 AM	447 2:19 PM	n/a	390 11:25 AM
8	10/17/06	Methane from 80 ft. X 160 ft. stressed vegetation area on top slope of northeast corner (next to ramp). / Site added and compacted additional cover soils.	1700 10:40 AM	40 2:15 PM	n/a	28 11:30 AM

\* Background reading on monitoring date subtracted from actual meter reading