

### 1501 Omni Way, St. Cloud, FL 34773

November 14, 2010

Mr. F. Thomas Lubozynski, P.E. Waste Program Administrator Florida Department of Environmental Protection Central District 3319 Maguire Boulevard, Suite 232 Orlando, Florida 32803-3767

Subject: Status Report of Methane Gas Migration Investigation

J.E.D. Solid Waste Management Facility

Osceola County, Florida

Permit Nos. SC-0197726-004 and SO49-0199726-005

Dear Mr. Lubozynski:

At the request of Ms. Kimberly Rush of your Department, Omni Waste of Osceola County, LLC (Omni) is submitting the enclosed status report updating activities related to the methane gas migration investigation at the J.E.D. Solid Waste Management Facility (facility). Provided below is a discussion of activities completed since receiving the comments and recommendations outlined in your letter dated July 6, 2010 (provided as reference in Attachment A). The information provided below is outlined in relation to the format of your letter.

### **Probe Pair Trending Analysis:**

Omni's engineering consultant, Golder Associates Inc., completed daily monitoring of the permanent and temporary gas probes during the period August 23<sup>rd</sup> through August 27<sup>th</sup>. Each probe was initially monitored for percent methane and then purged for an approximate ten minute period. The initial reading was recorded within a two minute period, typically when the reading appeared to stabilize. This procedure was repeated for each of the five days of monitoring. Monitoring results are provided in Attachment B. Please note that monitoring results for additional temporary probes are listed on the monitoring logs for August 24<sup>th</sup> through August 27<sup>th</sup>. Additional temporary probes were being installed at the same time the daily monitoring was performed and the additional probes were monitored as installation was completed. Installation details for the additional temporary probes are discussed later in this letter report.

Based on review of the monitoring results provided in Attachment B, there does not appear to be a significant indication that a "gas bubble" condition was occurring between the paired permanent and temporary gas probes that would explain periodic higher results in the outer permanent probes than that monitored in the temporary probes located closer to the waste mass. One possible condition that may have influenced the results were the saturated conditions noted within the storm water retention area during the monitoring event. Generally, the storm water retention area contained standing water in the vicinity of the probes as noted on the monitoring logs. Omni has schedule another round of daily monitoring to occur the week of November 15, 2010. This round of monitoring will be completed under dryer conditions (while the storm water retention areas are dry) to allow for comparison of results.

### **Gas Sampling and Analysis:**

Omni's engineering consultant, Mr. Dick Prosser of GC Environmental, spoke with Mr. Abu-Shaban about his paper titled Fingerprinting and Forensic Techniques for Landfill Gas Geochemical Assessment, 2006, and he indicated that his paper was written to provide information on distinguishing between biogenic (landfill gas and swamp/marsh gas) and thermogenic gas (pipeline gas and oil field gas), not between two biogenic sources. Omni does not believe there is thermogenic gas present at the facility, therefore, this analytical approach would not be appropriate. Omni wishes to continue with other sampling and corrective action measures as outlined in your recommendation letter and this status report before initiating further fingerprinting analysis efforts. Omni's recommended approach is to continue efforts in controlling gas migration nearer the waste limits and then follow with additional fingerprinting analysis to confirm other possible sources of methane gas near the property boundary.

### **Potential Migration Beneath Dry Retention Areas:**

See above comments and further discussion below.

### **Proposed Actions (Refer to FDEP Letter Attachment A):**

- 1. Omni requests to delay further fingerprinting analysis at the temporary and permanent probes until a suitable approach can be developed based on further evaluation of gas monitoring data and the effects of implemented corrective action measures.
- 2. Omni has submitted an intermediate permit modification application to your Department to connect the leachate sump manhole risers to the Gas Collection and Control System (GCCS). The application was deemed complete on October 26, 2010, and a final determination will be made by December 26, 2010. Omni anticipates the permit modification will be issued in late December and will be prepared to complete the sump tie-ins shortly thereafter.
- 3. Omni conducted an investigation of the cap integrity at the Cell 4 sump area and other areas at the base liner and closure liner tie-in locations in June and July. Several areas were discovered near the sump manholes of Cells 1, 2 & 3, at the tie-in location of the base and cap liner systems at Cells 1 through 4, and gas well boots in Cells through 4 that required repairs to eliminate landfill gas leakage and migration. Provided in Attachment C is a report by Environmental Planning

Specialists Inc, dated August 2, 2010, that summarizes the investigation and repair work. Omni will continue to monitor areas for possible leaks and perform repairs as necessary.

- 4. Total organic content sampling of subsurface soils near selected probes is scheduled for November 16, 2010. The presence of standing storm water runoff in the retention areas has prevented TOC sampling prior to this date. Laboratory analysis will be performed using Method SD1, S3 as approved by the FDEP via email correspondence dated August 25, 2010.
- 5. Over the past four months Omni has concentrated efforts on increasing the efficiency of the GCCS within Cells 1 through 4 (increasing vacuums at selected wells and well field balancing) and has seen an increase in the flow rate through the landfill flare system. Initially the flow rate at the flare averaged approximately 1,900 standard cubic feet per minute (sfcm), increased to approximately 2,400 scfm after initial GCCS balancing efforts, and then decreased over time to approximately 2,100 scfm. In August Omni completed installation of additional gas collection wells for the Sequence 3A project. When vacuum was applied to the new wells, the flow rate at the flare system increased to approximately 3,100 scfm and has since dropped to 2,500 scfm. Omni will continue efforts to balance the GCCS to increase the efficient to the extent possible while maintaining compliance with the facility's Title V permit.
- 6. In August Omni installed ten temporary ground water piezometers in the storm water retention area to monitor the ground water table elevation near selected permanent gas probes. Two 1-inch diameter PVC piezometers were installed at five locations near an adjacent permanent gas probe as shown on Figure 1 (see Attachment B). One piezometer was screened approximately 1-3 foot below ground surface and the second screened approximately 3-5 feet below ground surface. Well construction diagrams and recent monitoring data are provided in Attachment D. Initial monitoring results from August through November of this year indicate the possible presence of non-saturated zones between the two piezometer pairs. Omni will continue to monitor the piezometers and evaluate the results for any trends related to gas migration. Additionally, subsurface soil conditions evaluated during the forthcoming TOC field work may be useful in identifying subsurface soil conditions supporting the piezometer monitoring data.
- 7. In August Omni installed additional temporary gas monitoring probes (TGP 4 through TGP-13) on the backslope of the perimeter disposal berm, directly across from a permanent gas monitoring probe. These additional temporary probes were included in the monitoring network along with existing temporary probes TGP-1, TGP-2 and TGP-3. The temporary probes were screened from an elevation of approximately 80' below ground surface (BGS) to within one foot of ground surface (approximately 89' BGS). Elevation 80' BGS is the lowest elevation of waste placement within the disposal cells and meets the requirements of Rule 62-701.530(2)(a), Florida Administrative Code. The locations of the temporary probes are shown on Figure 1 provided in Attachment B. Well construction diagrams are being completed and will be submitted under separate cover.

8. Omni has continued with monitoring efforts for the temporary and permanent probes since August and has noted varying results. As shown in the latest round of monitoring completed on November 5, 2010 (provided in Attachment E), several of the temporary probes were reported at zero percent methane (TGP-4 through TPG-13). However, several permanent probes paired with the temporary probes continue to show elevated readings of methane (GP-14 through GP-22). Paired probes TGP-1/GP-10, TGP-12/GP-14 and TGP3/GP-18 are located near vertical sump manhole locations. Omni believes connection of the sump manholes to the GCCS will allow additional efficiency in controlling landfill gas migration in these locations.

# Additional Actions Proposed by the Department (Refer to FDEP Letter Attachment A):

- 9. Omni has further reviewed the idea of excavating a trench to groundwater along probes GP-18, GP-19, and GP-20 and is concerned about having an open trench that would allow direct contact of storm water run-off with the groundwater table. Omni is open to further discussion with the FDEP on alternative options, including geomembrane liners.
- 10. Completed as discussed above.

### **Additional Request by Omni**

Omni requests FDEP approval to abandon the existing permanent gas probes and replace them with new permanent gas probes in the same location, however, with a different screen interval. Due to different screen intervals between the permanent and temporary probes, it is believed the facility's water table may be influencing the monitoring results when comparing results between paired probes and seasonal variations. The existing permanent gas probes are screened from approximately 74' to 80' BGS and the temporary gas probes are screened from approximately 80' to 88' BGS. The bottom screened elevation of 80' BGS for the temporary probes represents the lowest elevation of waste fill in the disposal cells (top of protective cover elevation in the sump areas). Omni requests to install the new permanent probes with a bottom screen interval at 80' BGS.

I hope the information provided here-in meets with your approval. If you have any questions or require additional information, please contact me at (904) 673-0446 or <a href="mailto:mkaiser@wsii.us">mkaiser@wsii.us</a> at your earliest convenience.

Sincerely,

Mike Kaiser

Waste Services, Inc.

Mike Kain

## **ATTACHMENT A**



Florida Department of Environmental Protection Central District 3319 Maguire Boulevard, Suite 232 Orlando, Florida 32803-3767 Charlie Crist Governor

Jeff Kottkamp Lt. Governor

Michael W. Sole Secretary

ELECTRONIC MAIL
SMcCash@wasteservicesinc.com

Mr. Shawn McCash JED Solid Waste Management Facility 1501 Omni Way St. Cloud, Florida 34773 OCD-SW-10-0374

Osceola County - SW JED Solid Waste Management Facility Permit # SO49-0199726-005 and SC49-0199726-004 WACS # 89544 Response to Methane Gas Migration Investigation

Dear Mr. McCash:

As requested during the May 20, 2010 JED Landfill CH4 Exceedance meeting, the Department received the document titled Methane Gas Migration Investigation dated June 17, 2010. The document summarizes all actions taken regarding the issue to date, conclusions regarding the studies completed, and outlines further steps to be taken in efforts to better understand and control the methane gas migration issue. The following are the Department's questions and comments to the conclusions within the report.

### **General Questions/Comments:**

- 1. What is the distance in feet between the temporary gas probes and the permanent gas probes?
- 2. In the Subsurface Migration via Waste section of the report, Golder states that they have observed the lingering presence of landfill gas still present below ground at a similar facility. Based on Golder's experience at this other facility, how long did it take for the gas concentrations present below ground to diminish over time?

### **Monthly Monitoring:**

**Conclusion**: There does not appear to be strong correlation between seasonal or meteorological conditions and the methane content monitored in the probes.

**Department Comments:** The department agrees with this conclusion.

### **Probe Pair Trend Analysis:**

**Conclusion**: Engineering judgment indicates that if the landfill were the sole methane source (of the apparent migration), that the methane content in the probes closest to the landfill (temporary probes) should indicate higher methane content than those further from the disposal boundary (permanent probes).

Department Comments: The Department agrees that the temporary probes should have higher methane concentrations than the permanent probes (when accumulation is not a factor). We do not agree that this is what is being seen in the data outlined in Table 2. The data and conclusions do not take into account the gas flow rate of the methane migration. The 'gas bubble' takes time to travel from the temporary probe to the permanent probe; therefore, the measurement at the temporary probe on 'day 1' cannot be compared to the measurement taken at the corresponding permanent probe on 'day 1'. Instead, the temporary gas probe should be compared to a measurement taken at the permanent probe at a later date based upon the gas flow migration rate. As seen by the lack of correlation between the temporary probes and the permanent

probes, the time it takes for a 'gas bubble' to travel from the temporary probe to the corresponding permanent probe is not quarterly or monthly.

**Department Recommendation:** The Department recommends taking measurements on a daily basis in the six gas probes listed in Table 2 for a limited amount of time. This will allow for a more accurate correlation of the temporary probes to the permanent probes and the ability to determine a rough estimate of the gas flow rate. It is recommended to purge the probes after measurements are taken in these six probes in order to minimize the influence of gas accumulation on the results.

### Gas Sampling and Analysis:

**Conclusion**: Chlorinated VOCs tend to indicate a non-natural source and can be tracers of landfill gas.

**Department Comments:** The Department agrees that chlorinated VOCs can be a tracer of landfill gas but the effects of natural attenuation in soil and leaching into the groundwater of such VOCs must also be taken into account. The results outlined in the report are inconclusive because of the possibility for natural attenuation of chlorinated VOCs and the contamination of vinyl chloride seen in the ground water.

**Department Recommendations:** The Department recommends a fingerprint analysis of the flare gas and probe gas for constituents which are not impacted when moving through soil via adsorption, absorption or degradation. For example, the study Fingerprinting and Forensic Techniques for Landfill Gas Geochemical Assessment by Abu-Shaban and Centeno, 2006 recommends landfill gas fingerprinting by the analysis of H<sub>2</sub>S and/or <sup>13</sup>C/<sup>12</sup>C and <sup>2</sup>H/<sup>1</sup>H isotopes (see attached).

### Potential Migration beneath Dry Retention Areas:

**Conclusion**: Golder and Omni Waste theorize that the elevated methane concentrations measured within the perimeter probes comes partially from biological sources (wetlands, buried organic matter, etc.) outside of the waste disposal area.

**Department Comments:** The Department accepts the possibility of biological sources affecting the methane content in the monitoring probes. However, we are not convinced it is the only source of methane in the perimeter probes.

**Department Recommendations:** Conduct a fingerprint analysis for H<sub>2</sub>S and <sup>13</sup>C/<sup>12</sup>C and <sup>2</sup>H/<sup>1</sup>H isotopes. Through this analysis, the difference between the landfill gas isotopes and any gas resulting from swamp gas can be analyzed and compared (reference Fingerprinting and Forensic Techniques for Landfill Gas Geochemical Assessment, Abu-Shaban and Centeno, 2006).

### **SUMMARY – Landfill Gas Migration:**

**Conclusion:** Based upon site improvements, field monitoring data, and laboratory analysis, there does not appear to be a direct relationship in the methane content in the GMPs and landfill gas migration.

**Department Comments:** The analysis conducted to date is inconclusive. Additional data and analysis must be performed prior to concluding the source of methane in the monitoring probes.

### **Proposed Actions:**

1. Perform additional laboratory analysis of all of the probe pairs (i.e. TGP-1 and GP-10, TGP-2 and GP-14, TGP-3 and GP-18) for the full suite of organics monitored during the 2008 and 2009 sampling events. Additionally, samples from probes GP-11, GP-15, GP-19, GP-21, and GP-22 will be analyzed as well to compare the results from historical sampling. Research the available literature to determine if additional parameters that may be helpful in confirming whether another source of methane is impacting the probes should be added to the analysis.

**Department Comments:** The Department recommends a fingerprint analysis of the flare gas and probe gas for constituents which are not impacted when moving through soil via adsorption, absorption or degradation.

2. Connect the leachate collection sump manhole risers and any adjacent leachate cleanout risers to the GCCS.

**Department Comments:** Acceptable.

3. Investigate the cap integrity at the Cell 4 sump area and other areas at the base liner and closure cap liner tie-in locations.

Department Comments: Acceptable.

4. Determine the total organic content using method 415.1 in the soil (vadose/smear) upgradient and downgradient of the GMPs to trend TOC in relation to the probes.

Department Comments: Acceptable.

5. Increase the collection efficiency of the GCCS (increased vacuums at selected wells) and monitor for any influences at the temporary and permanent probes.

Department Comments: Acceptable.

6. Install a series of two temporary groundwater piezometers in various locations in the dry retention areas near selected GMPs. The temporary piezometers will be screened at different intervals to assist in determining whether saturated conditions exist in underlying soils when there is standing water in the dry retention area.

**Department Comments:** Acceptable.

7. Continue monitoring the temporary and permanent probes on a monthly basis and note any trends that develop.

**Department Comments:** The Department recommends taking measurements on a daily basis in the six gas probes listed in Table 2 for a limited amount of time. This will allow for a more accurate correlation of the temporary probes to the permanent probes and the ability to determine a rough estimate of the gas flow rate. It is recommended the probes be purged after measurements are taken in these six probes in order to minimize the influence of gas accumulation on the results.

8. Based on findings from the above listed activities, determine whether a new monitoring probe system or techniques should be proposed.

Department Comments: Acceptable.

### Additional Actions Proposed by the Department (as discussed in the meeting May 20, 2010):

- 9. Install a wet ditch which goes to the water table along GP18, GP19 and GP20.
- 10. Install the next series of gas wells in cells 1-4.

Mr. Shawn McCash OCD-SW-10-0374 Page #4

Please contact Gloria-Jean DePradine by telephone at (407) 893-3994 or by e-mail at <a href="mailto:gloria.depradine@dep.state.fl.us">gloria.depradine@dep.state.fl.us</a>, or contact Kim Rush at (407) 893-2312 or by e-mail at <a href="mailto:kim.rush@dep.state.fl.us">kim.rush@dep.state.fl.us</a> if you have any questions or need additional information.

Sincerely,

F. Thomas Lubozynski, P.E Waste Program Administrator

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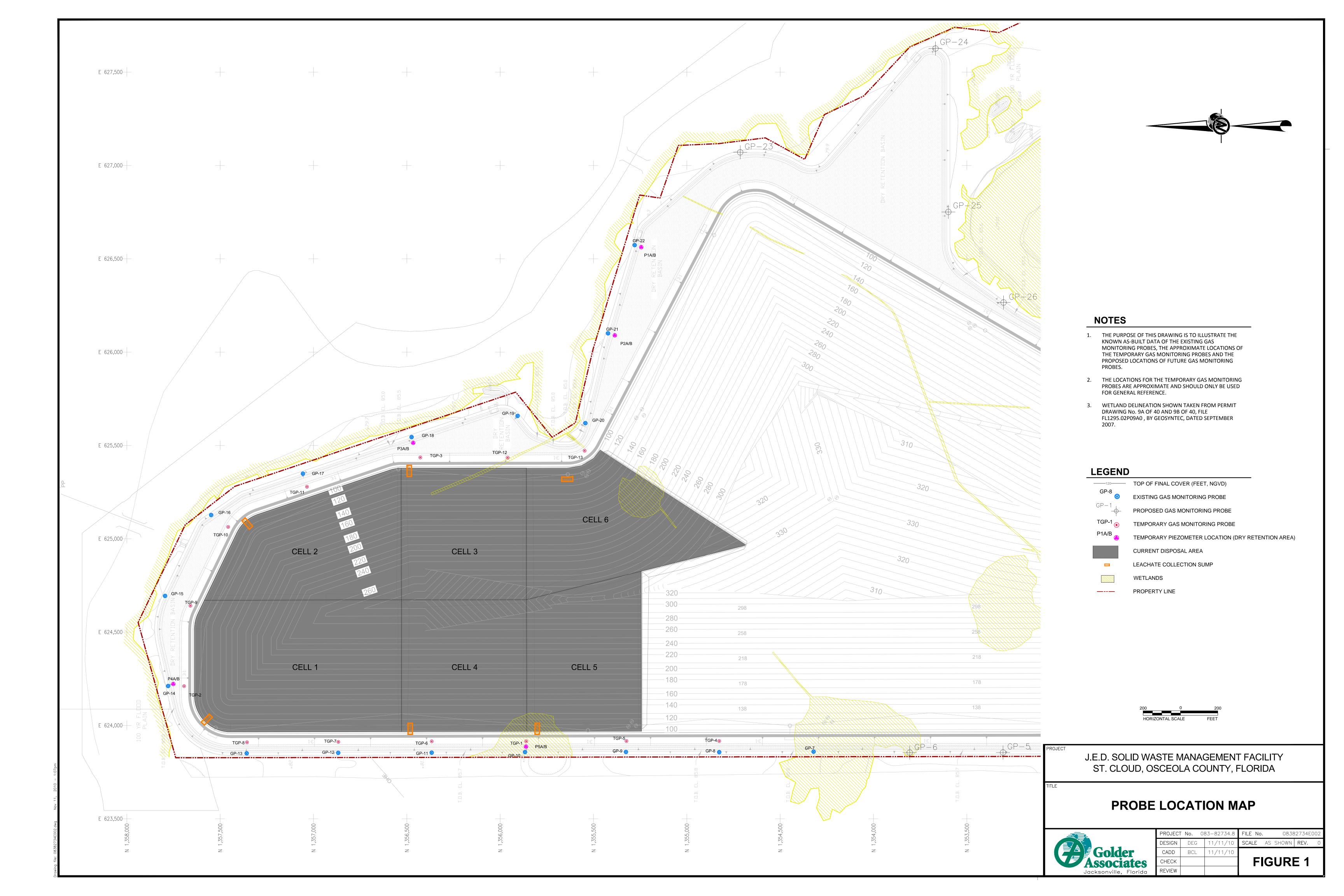
Date: July 6, 2010

Attachment: PowerPoint presentation: Fingerprinting and Forensic Techniques for Landfill Gas Geochemical Assessment, Abu-Shaban and Centeno, 2006

cc: Mike Kaiser, Omni Waste, MikeKaiser@wsii.us

FTL/gnd/kr

## ATTACHMENT B



### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date: 8/23/10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: Veronica Figueroa, Golder Associates Company: <u>Omni Waste of Osceola County LLC</u>

Weather Conditions: Temperature: <u>oF</u> M. Cloudy/P. Cloudy/Clear/<u>Overcast</u> Barometric Pressure: inch Hg Wind: 5-10 mph (from the south)

Humidity:

Landfill Gas Meter: LandTec Gem.2000 Serial No.GM11327/08

Gas Probe	Date & Time	% CH4	Comment
GP-7	8/23/10 9:45 AM	11.7	Approx. 25'E 4" standing water
GP-7	8/23/10 10:01 AM	35.3	Approx. 25'E 4" standing water
GP-8	8/23/10 10:17 AM	0	Approx. 30'E 2'standing water
GP-8	8/23/10 10:30 AM	0	Approx. 30'E 2'standing water
GP-9	8/23/10 10:41 AM	0	Approx. 60'NE 4" standing water
GP-9	8/23/10 10:54 AM	0.5	Approx. 60'NE 4" standing water
GP-10	8/23/10 11:05 AM	13	Approx. 20'E 1' standing water
GP-10	8/23/10 11:19 AM	41.5	Approx. 20'E 1' standing water
GP-11	8/23/10 11:29 AM	48.9	Approx. 25'E 1' standing water
GP-11	8/23/10 11:42 AM	48.8	Approx. 25'E 1' standing water
GP-12	8/23/10 11:54 AM	0.1	Approx. 25'E 1' standing water
GP-12	8/23/10 12:09 PM	0.2	Approx. 25'E 1' standing water
GP-13	8/23/10 12:18 PM	3.5	Approx. 25'E 2' standing water
GP-13	8/23/10 12:31 PM	3.7	Approx. 25'E 2' standing water
GP-14	8/23/10 12:42 PM	2	Approx. 30'S 2' standing water; Approx. 60'N 1' standing water
GP-14	8/23/10 1:02 PM	4.9	Approx. 30'S 2' standing water; approx. 60'N 1' standing water
GP-15	8/23/10 1:16 PM	15.6	Approx. 25'S 2'-3' standing water; approx. 50'N 2'-3' standing water
GP-15	8/23/10 1:32 PM	15.8	Approx. 25'S 2'-3' standing water; approx. 50'N 2'-3' standing water
GP-16	8/23/10 1:47 PM	10.4	Approx. 25'S 2'-3' standing water; approx. 50'N 1'-2' standing water
GP-16	8/23/10 3:23 PM	3.4	Approx. 25'S 2'-3' standing water; approx. 50'N 1'-2' standing water

Gas Probe	Date & Time	%СН4	Comment
			Approx. 20'W 1'-2' standing water;
GP-17	8/23/10 3:32 PM	2.5	approx. 50'E 1' standing water
			Approx. 20'W 1'-2' standing water;
GP-17	8/23/10 3:47 PM	1.9	approx. 50'E 1' standing water
GP-18	8/23/10 3:54 PM	5.2	Approx. 20'W 2'-3' standing water
GP-18	8/23/10 4:07 PM	15.5	Approx. 20'W 2'-3' standing water
GP-19	8/23/10 4:12 PM	28	Approx. 20'NW 2'-3' standing water
GP-19	8/23/10 4:26 PM	33.2	Approx. 20'NW 2'-3' standing water
GP-20	8/23/10 4:32 PM	0.1	Approx. 25'S 2'-3' standing water
GP-20	8/23/10 4:47 PM	0.1	Approx. 25'S 2'-3' standing water
			Approx. 20'S 4' standing water;
GP-21	8/23/10 4:53 PM	42.8	approx. 60'N 1' standing water
			Approx. 20'S 4' standing water;
GP-21	8/23/10 5:11 PM	32.3	approx. 60'N 1' standing water
			Approx. 20'S 4' standing water;
GP-22	8/23/10 5:21 PM	0.1	approx. 60'N 1' standing water
			Approx. 20'S 4' standing water;
GP-22	8/23/10 5:33 PM	0.1	approx. 60'N 1' standing water
TOD 1	0/22/10 ( 24 D) 4	4.5	Adjacent to GP-10. Approx. 20'W 2'-
TGP-1	8/23/10 6:34 PM	45	3' standing water
TGP-1	8/23/10 6:47 PM	46.7	Adjacent to GP-10. Approx. 20'W 2'-3' standing water
1GF-1	6/23/10 0.4/ FIVI	40.7	Adjacent to GP-14. Approx. 20'N 2'-
TGP-2	8/23/10 6:08 PM	11.7	3' standing water
101-2	6/25/10 0.00 1 W	11.7	Adjacent to GP-14. Approx. 20'N 2'-
TGP-2	8/23/10 6:24 PM	5.1	3' standing water
		1	Adjacent to GP-18. Approx. 20'E 3'-
TGP-3	8/23/10 5:44 PM	5.9	4' standing water
			Adjacent to GP-18. Approx. 20'E 3'-
TGP-3	8/23/10 6:01 PM	4	4' standing water

Notes: Initial reading taken after 2 minutes based on typical monitoring procedures. Additional reading taken at the time shown (approximately 10 minutes) in attempt to purge the probe.

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date: 8/24/10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: Veronica Figueroa, Golder Associates Company: <u>Omni Waste of Osceola County LLC</u>

Weather Conditions: Temperature: <u>oF</u> M. Cloudy/P. Cloudy/Clear/<u>Overcast</u> Barometric Pressure: inch Hg Wind: 5-10 mph (from the south)

Humidity:

Landfill Gas Meter: LandTec Gem.2000 Serial No.GM11327/08

Gas Probe	Date & Time	% CH4	Comment
GP-7	8/24/10 8:52 AM	1.4	Approx. 25'E 1' standing water
GP-7	8/24/10 9:03 AM	5.7	Approx. 25'E 1' standing water
GP-8	8/24/10 9:12 AM	0	Approx. 30'E 2'-3'standing water
GP-8	8/24/10 9:23 AM	0	Approx. 30'E 2'-3'standing water
GP-9	8/24/10 9:30 AM	2.6	Approx. 30'E 2'-3'standing water
GP-9	8/24/10 9:42 AM	2.6	Approx. 30'E 2'-3'standing water
GP-10	8/24/10 9:48 AM	24	Approx. 20'E 1'-2' standing water
GP-10	8/24/10 10:00 AM	43.2	Approx. 20'E 1'-2' standing water
GP-11	8/24/10 10:09 AM	41.7	Approx. 25'E 1'-2' standing water
GP-11	8/24/10 10:21 AM	49.9	Approx. 25'E 1'-2' standing water
GP-12	8/24/10 10:27 AM	1.3	Approx. 25'E 1'-2' standing water
GP-12	8/24/10 10:40 AM	1.3	Approx. 25'E 1'-2' standing water
GP-13	8/24/10 10:47 AM	4.1	Approx. 25'E 2'-2.5' standing water
GP-13	8/24/10 10:59 AM	4.5	Approx. 25'E 2'-2.5' standing water
GP-14	8/24/10 11:07 AM	0.2	Approx. 30'S 2' standing water; approx. 60'N 1' standing water
GP-14	8/24/10 11:20 AM	2.5	Approx. 30'S 2' standing water; Approx. 60'N 1' standing water
GP-15	8/24/10 11:32 AM	7.7	Approx. 25'S 2'-3' standing water; approx. 50'N 2'-3' standing water
GP-15	8/24/10 11:42 AM	2.7	Approx. 25'S 2'-3' standing water; approx. 50'N 2'-3' standing water
GP-16	8/24/10 11:55 AM	0.2	Approx. 25'S 2'-3' standing water; approx. 50'N 1'-2' standing water
GP-16	8/24/10 12:06 PM	0.1	Approx. 25'S 2'-3' standing water; approx. 50'N 1'-2' standing water

Gas Probe	Date & Time	%СН4	Comment
			Approx. 20'W 1'-2' standing water;
GP-17	8/24/10 12:15 PM	0.2	approx. 50'E 1' standing water
	,		Approx. 20'W 1'-2' standing water;
GP-17	8/24/10 12:26 PM	0.1	approx. 50'E 1' standing water
GP-18	8/24/10 12:35 PM	5	Approx. 20'W 2'-3' standing water
GP-18	8/24/10 12:46 PM	15.9	Approx. 20'W 2'-3' standing water
GP-19	8/24/10 12:55 PM	6.5	Approx. 20'NW 2'-3' standing water
GP-19	8/24/10 1:07 PM	30.9	Approx. 20'NW 2'-3' standing water
GP-20	8/24/10 1:17 PM	0	Approx. 25'S 2'-3' standing water
GP-20	8/24/10 1:28 PM	0	Approx. 25'S 2'-3' standing water
			Approx. 20'S 4' standing water;
GP-21	8/24/10 2:19 PM	10.8	approx. 60'N 1' standing water
			Approx. 20'S 4' standing water;
GP-21	8/24/10 2:30 PM	17	approx. 60'N 1' standing water
			Approx. 20'S 4' standing water;
GP-22	8/24/10 1:59 PM	0	approx. 60'N 1' standing water
			Approx. 20'S 4' standing water;
GP-22	8/24/10 2:10 PM	0	approx. 60'N 1' standing water
NOT STATE S		ere vien vicinia	Adjacent to GP-10. Approx. 20'W 2'-
TGP-1	8/24/10 4:26 PM	55.7	3' standing water
man 1	0/24/40 4 20 77 6		Adjacent to GP-10. Approx. 20'W 2'-
TGP-1	8/24/10 4:30 PM	52.7	3' standing water
TOD 0	0/04/10 4 24 DM	0.7	Adjacent to GP-14. Approx. 20'N 2'-
TGP-2	8/24/10 4:34 PM	8.5	3' standing water
TCD 2	9/24/10 4.41 DM	0.6	Adjacent to GP-14. Approx. 20'N 2'-
TGP-2	8/24/10 4:41 PM	9.6	3' standing water
TGP-3	8/24/10 3:36 PM	1.2	Adjacent to GP-18. Approx. 20'E 3'-4' standing water
101-3	6/24/10 3.30 1 W	1.2	Adjacent to GP-18. Approx. 20'E 3'-
TGP-3	8/24/10 3:47 PM	0.5	4' standing water
101 3	0/2 1/10 3.17 111	0.5	Adjacent to GP-20. Approx. 20'E 3'-
TGP-13	8/24/10 2:57 PM	0.1	4' standing water
101 13	0,2,,10,2,6,,11,1	0.1	Adjacent to GP-20. Approx. 20'E 3'-
TGP-13	8/24/10 3:10 PM	0.2	4' standing water
		. A service and	Adjacent to GP-19. Approx. 20'E 3'-
TGP-12	8/24/10 3:19 PM	34	4' standing water
			Adjacent to GP-19. Approx. 20'E 3'-
TGP-12	8/24/10 3:29 PM	42.1	4' standing water

Notes: Initial reading taken after 2 minutes based on typical monitoring procedures. Additional reading taken at the time shown (approximately 10 minutes) in attempt to purge the probe.

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date: 8/25/10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: Veronica Figueroa, Golder Associates Company: <u>Omni Waste of Osceola County LLC</u>

Weather Conditions: Temperature: <u>oF</u> M. Cloudy/P. Cloudy/Clear/<u>Overcast</u> Barometric Pressure: inch Hg Wind: 5-10 mph (from the south)

Humidity:

Landfill Gas Meter: LandTec Gem.2000 Serial No.GM11327/08

Gas Probe	Date & Time	%СН4	Comment
GP-7	8/25/2010 7:10	2.2	Approx. 25'E 1' standing water
GP-7	8/25/2010 7:22	2.2	Approx. 25'E 1' standing water
			Approx. 30'E 2'-3'standing
GP-8	8/25/2010 7:27	0	water
G	0/07/00/07 00		Approx. 30'E 2'-3'standing
GP-8	8/25/2010 7:39	0	water
			Approx. 30'E 2'-3'standing
GP-9	8/25/2010 7:45	2.7	water
	8 2		Approx. 30'E 2'-3'standing
GP-9	8/25/2010 7:55	2.7	water
			Approx. 20'E 1'-2' standing
GP-10	8/25/2010 8:01	19.2	water
			Approx. 20'E 1'-2' standing
GP-10	8/25/2010 8:12	40.4	water
			Approx. 25'E 1'-2' standing
GP-11	8/25/2010 8:19	45.3	water
			Approx. 25'E 1'-2' standing
GP-11	8/25/2010 8:30	51.6	water
			Approx. 25'E 1'-2' standing
GP-12	8/25/2010 8:36	0.3	water
			Approx. 25'E 1'-2' standing
GP-12	8/25/2010 8:47	1.5	water
			Approx. 25'E 2'-2.5' standing
GP-13	8/25/2010 8:53	1	water
			Approx. 25'E 2'-2.5' standing
GP-13	8/25/2010 9:04	4.6	water

Gas Probe	Date & Time	%СН4	Comment
			Approx. 30'S 2'-3' standing
			water; approx. 60'N 1'-2'
GP-14	8/25/2010 9:11	5.4	standing water
			Approx. 30'S 2'-3' standing
			water; approx. 60'N 1'-2'
GP-14	8/25/2010 9:21	10.5	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'-3'
GP-15	8/25/2010 9:28	1	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'-3'
GP-15	8/25/2010 9:39	3.1	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2' standing
GP-16	8/25/2010 9:46	0.2	water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2' standing
GP-16	8/25/2010 9:56	0.1	water
			Approx. 20'W 1'-2' standing
			water; approx. 50'E 1'-2'
GP-17	8/25/2010 10:02	0.3	standing water
			Approx. 20'W 1'-2' standing
			water; approx. 50'E 1'-2'
GP-17	8/25/2010 10:13	0.1	standing water
			Approx. 20'W 2'-3' standing
GP-18	8/25/2010 10:19	5.4	water
			Approx. 20'W 2'-3' standing
GP-18	8/25/2010 10:30	19.6	water
			Approx. 20'NW 2'-3' standing
GP-19	8/25/2010 10:36	15	water
			Approx. 20'NW 2'-3' standing
GP-19	8/25/2010 10:47	19	water
			Approx. 25'S 2'-3' standing
GP-20	8/25/2010 10:54	0	water
			Approx. 25'S 2'-3' standing
GP-20	8/25/2010 11:05	0	water
			Approx. 20'S 4' standing water;
GP-21	8/25/2010 11:14	6.1	approx. 60'N 2' standing water
			Approx. 20'S 4' standing water;
GP-21	8/25/2010 11:25	13.5	approx. 60'N 2' standing water

Gas	D 0 Ti	0/ 6114	
Probe	Date & Time	%CH4	Comment
			Approx. 20'S 4' standing water; approx. 60'N 1'-2' standing
GP-22	8/25/2010 11:30	0	water
G1 22	0/25/2010 11.50		Approx. 20'S 4' standing water;
			approx. 60'N 1'-2' standing
GP-22	8/25/2010 11:41	0	water
			Approx. 20'W 2'-3' standing
TGP-1	8/25/2010 12:54	54.1	water
TCD 1	9/25/2010 12:05	54.1	Approx. 20'W 2'-3' standing water
TGP-1	8/25/2010 13:05	34.1	Approx. 20'N 2'-3' standing
TGP-2	8/25/2010 14:07	7.3	water
101 2	0,20,201011107	,	Approx. 20'N 2'-3' standing
TGP-2	8/25/2010 14:18	2.5	water
			Approx. 20'E 3'-4' standing
TGP-3	8/25/2010 15:13	20.6	water
map 4	0/05/0010 15 04		Approx. 20'E 3'-4' standing
TGP-3	8/25/2010 15:24	8	water
TGP-4	8/25/2010 12:15	0	Adjacent to GP-8.
TGP-4	8/25/2010 12:26	0	Adjacent to GP-8.
TGP-5	8/25/2010 12:34	39.6	Adjacent to GP-9.
TGP-5	8/25/2010 12:47	36.9	Adjacent to GP-9.
TGP-6	8/25/2010 13:12	2.4	Adjacent to GP-11.
TGP-6	8/25/2010 13:25	1.5	Adjacent to GP-11.
TGP-7	8/25/2010 13:31	47.6	Adjacent to GP-12.
TGP-7	8/25/2010 13:42	47.7	Adjacent to GP-12.
TGP-8	8/25/2010 13:48	42.4	Adjacent to GP-13.
TGP-8	8/25/2010 14:01	42.1	Adjacent to GP-13.
TGP-9	8/25/2010 14:22	4.9	Adjacent to GP-15.
TGP-9	8/25/2010 14:33	3.8	Adjacent to GP-15.
TGP-10	8/25/2010 14:38	0	Adjacent to GP-16.
TGP-10	8/25/2010 14:39	0	Adjacent to GP-16.
TGP-10	8/25/2010 14:48	0	Adjacent to GP-16.
TGP-11	8/25/2010 14:56	3.9	Adjacent to GP-17.
TGP-11	8/25/2010 15:07	3.7	Adjacent to GP-17.

Gas Probe	Date & Time	%СН4	Comment
			Adjacent to GP-19. Approx.
TGP-12	8/25/2010 15:29	42.6	20'E 3'-4' standing water
			Adjacent to GP-19. Approx.
TGP-12	8/25/2010 15:40	42.8	20'E 3'-4' standing water
			Adjacent to GP-20. Approx.
TGP-13	8/25/2010 15:47	0.3	20'E 3'-4' standing water
			Adjacent to GP-20. Approx.
TGP-13	8/25/2010 15:58	0.2	20'E 3'-4' standing water

Notes: Initial reading taken after 2 minutes based on typical monitoring procedures. Additional reading taken at the time shown (approximately 10 minutes) in attempt to purge the probe.

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date: 8/26/10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: Veronica Figueroa, Golder Associates Company: <u>Omni Waste of Osceola County LLC</u>

Weather Conditions: Temperature: <u>oF</u> M. Cloudy/P. Cloudy/Clear/<u>Overcast</u> Barometric Pressure: inch Hg Wind: 5-10 mph (from the south)

Humidity:

Landfill Gas Meter: LandTec Gem.2000 Serial No.GM11327/08

Gas Probe	Date & Time	%СН4	Comment
		8 35	Approx. 25'E 1' standing
GP-7	8/26/2010 7:16	4.2	water
OD 7	0/26/2010 7 20	11.1	Approx. 25'E 1' standing
GP-7	8/26/2010 7:29	11.1	water
GP-8	8/26/2010 7:34	0	Approx. 30'E 2'- 3'standing water
01-0	0/20/2010 7.54	U	Approx. 30'E 2'-
GP-8	8/26/2010 7:44	0	3'standing water
01-0	0/20/2010 /.44	U	Approx. 30'E 2'-
GP-9	8/26/2010 7:49	0.7	3'standing water
GI-7	0/20/2010 /.47	0.7	Approx. 30'E 2'-
GP-9	8/26/2010 7:59	2.6	3'standing water
	0/20/2010 / 10/	2.0	Approx. 20'E 1'-2'
GP-10	8/26/2010 8:04	20.8	standing water
			Approx. 20'E 1'-2'
GP-10	8/26/2010 8:15	41.7	standing water
			Approx. 25'E 1'-2'
GP-11	8/26/2010 8:19	46	standing water
			Approx. 25'E 1'-2'
GP-11	8/26/2010 8:30	55.2	standing water
	2 15		Approx. 25'E 1'-2'
GP-12	8/26/2010 8:35	1.5	standing water
	25 (200 S. 2008) 25 (2 to the control of the		Approx. 25'E 1'-2'
GP-12	8/26/2010 8:48	1.8	standing water
			Approx. 25'E 2'-2.5'
GP-13	8/26/2010 8:53	2.1	standing water
GP-13	8/26/2010 9:03	4.8	Approx. 25'E 2'-2.5'
Gr-13	6/20/2010 9:03	4.8	standing water

Gas Probe	Date & Time	%CH4	Comment
Trobe	Date & Time	70C114	
			Approx. 30'S 2'-3' standing water; approx. 60'N 1'-2'
GP-14	8/26/2010 9:09	0.2	standing water
OI II	0/20/2010 9.09	0.2	Approx. 30'S 2'-3' standing
			water; approx. 60'N 1'-2'
GP-14	8/26/2010 9:19	9.1	standing water
OI II	0/20/2010 9:19	7.1	Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'-3'
GP-15	8/26/2010 9:24	0.2	standing water
		<del>                                     </del>	Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'-3'
GP-15	8/26/2010 9:35	0.3	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'
GP-16	8/26/2010 9:40	0	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'
GP-16	8/26/2010 9:50	0	standing water
			Approx. 20'W 1'-2'
			standing water; approx.
GP-17	8/26/2010 9:55	0	50'E 1'-2' standing water
İ			Approx. 20'W 1'-2'
		89	standing water; approx.
GP-17	8/26/2010 10:06	0	50'E 1'-2' standing water
			Approx. 20'W 2'-3'
GP-18	8/26/2010 10:11	8.4	standing water
GD 10	0/06/0010 10 00	21.5	Approx. 20'W 2'-3'
GP-18	8/26/2010 10:22	21.5	standing water
CD 10	0/26/2010 10 27	1.4	Approx. 20'NW 2'-3'
GP-19	8/26/2010 10:27	14	standing water
GP-19	8/26/2010 10:37	16.6	Approx. 20'NW 2'-3'
OF-19	0/20/2010 10:5/	10.0	standing water
GP-20	8/26/2010 10:42	0	Approx. 25'S 2'-3' standing water
01-20	0/20/2010 10.42	1 0	Approx. 25'S 2'-3' standing
GP-20	8/26/2010 10:52	0	water
01-20	0/20/2010 10.32	+ 0	Approx. 20'S 4' standing
			water; approx. 60'N 2'
GP-21	8/26/2010 10:57	10.2	standing water
<u> </u>	0.20.2010 10.07	10.2	Approx. 20'S 4' standing
			water; approx. 60'N 2'
GP-21	8/26/2010 11:07	18.8	standing water

Gas Probe	Date & Time	%СН4	Comment
11000	Date & Time	700114	Approx. 20'S 4' standing
			water; approx. 60'N 1'-2'
GP-22	8/26/2010 11:12	0	standing water
			Approx. 20'S 4' standing
GP-22	8/26/2010 11:24	0	water; approx. 60'N 1'-2' standing water
GI ZZ	0/20/2010 11:24	0	Approx. 20'W 2'-3' standing
TGP-1	8/26/2010 13:50	56.1	water
			Approx. 20'W 2'-3' standing
TGP-1	8/26/2010 14:01	55.9	water 2022 22 4 1
TGP-2	8/26/2010 15:53	3.3	Approx. 20'N 2'-3' standing water
101 2	0/20/2010 13.33	3.3	Approx. 20'N 2'-3' standing
TGP-2	8/26/2010 16:04	1.6	water
TOP 4			Approx. 20'E 3'-4' standing
TGP-3	8/26/2010 12:09	16.3	water
TGP-3	8/26/2010 12:20	6.1	Approx. 20'E 3'-4' standing water
TGP-4	8/26/2010 13:16	0	Adjacent to GP-8.
TGP-4	8/26/2010 13:27	0	Adjacent to GP-8.
TGP-5	8/26/2010 13:34	10.6	Adjacent to GP-9.
TGP-5	8/26/2010 13:45	35.8	Adjacent to GP-9.
TGP-6	8/26/2010 14:05	6.2	Adjacent to GP-11.
TGP-6	8/26/2010 14:22	4.1	Adjacent to GP-11.
TGP-7	8/26/2010 15:23	49.3	Adjacent to GP-12.
TGP-7	8/26/2010 15:33	49.5	Adjacent to GP-12.
TGP-8	8/26/2010 15:38	44	Adjacent to GP-13.
TGP-8	8/26/2010 15:49	44.1	Adjacent to GP-13.
TGP-9	8/26/2010 16:10	0.2	Adjacent to GP-15.
TGP-9	8/26/2010 16:23	0.2	Adjacent to GP-15.
TGP-10	8/26/2010 12:43	0	Adjacent to GP-16.
TGP-10	8/26/2010 12:54	0	Adjacent to GP-16.
TGP-10	8/26/2010 12:27	1.1	Adjacent to GP-16.
TGP-11	8/26/2010 12:37	1.1	Adjacent to GP-17.
TGP-11	8/26/2010 11:12	0	Adjacent to GP-17.

Gas Probe	Date & Time	%СН4	Comment
TGP-12	8/26/2010 11:49	42.7	Adjacent to GP-19. Approx. 20'E 3'-4' standing water
TGP-12	8/26/2010 12:00	43.3	Adjacent to GP-19. Approx. 20'E 3'-4' standing water
TGP-13	8/26/2010 11:32	0.2	Adjacent to GP-20. Approx. 20'E 3'-4' standing water
TGP-13	8/26/2010 11:43	0.2	Adjacent to GP-20. Approx. 20'E 3'-4' standing water

Notes: Initial reading taken after 2 minutes based on typical monitoring procedures. Additional reading taken at the time shown (approximately 10 minutes) in attempt to purge the probe.

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date: 8/27/10

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Technician: Veronica Figueroa, Golder Associates Company: <u>Omni Waste of Osceola County LLC</u>

Weather Conditions: Temperature: <u>oF</u> M. Cloudy/P. Cloudy/Clear/<u>Overcast</u> Barometric Pressure: inch Hg Wind: 5-10 mph (from the south)

Humidity:

Landfill Gas Meter: LandTec Gem.2000 Serial No.GM11327/08

Gas Probe	Date & Time	%СН4	Comment
			Approx. 25'E 1' standing
GP-7	8/27/2010 7:27	5.8	water
G 7 7	0/05/0010 5 00	20	Approx. 25'E 1' standing
GP-7	8/27/2010 7:38	20	water
0.00	0/07/0010 7 40		Approx. 30'E 2'-
GP-8	8/27/2010 7:43	0	3'standing water
			Approx. 30'E 2'-
GP-8	8/27/2010 7:54	0	3'standing water
			Approx. 30'E 2'-
GP-9	8/27/2010 7:58	0	3'standing water
			Approx. 30'E 2'-
GP-9	8/27/2010 8:09	1.3	3'standing water
			Approx. 20'E 1'-2'
GP-10	8/27/2010 8:14	19.1	standing water
			Approx. 20'E 1'-2'
GP-10	8/27/2010 8:24	39.4	standing water
			Approx. 25'E 1'-2'
GP-11	8/27/2010 8:29	50.8	standing water
			Approx. 25'E 1'-2'
GP-11	8/27/2010 8:40	57	standing water
			Approx. 25'E 1'-2'
GP-12	8/27/2010 8:45	0.7	standing water
			Approx. 25'E 1'-2'
GP-12	8/27/2010 8:56	1.8	standing water
			Approx. 25'E 2'-2.5'
GP-13	8/27/2010 9:00	1.3	standing water
			Approx. 25'E 2'-2.5'
GP-13	8/27/2010 9:10	4.7	standing water

Gas Probe	Date & Time	%CH4	Comment
11000	Date & Time	/0C114	Approx. 30'S 2'-3' standing
			water; approx. 60'N 1'-2'
GP-14	8/27/2010 9:14	0.3	standing water
			Approx. 30'S 2'-3' standing
			water; approx. 60'N 1'-2'
GP-14	8/27/2010 9:25	13.5	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'-3'
GP-15	8/27/2010 9:32	10.4	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'-3'
GP-15	8/27/2010 9:43	8.3	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'
GP-16	8/27/2010 11:29	0	standing water
			Approx. 25'S 2'-3' standing
			water; approx. 50'N 2'
GP-16	8/27/2010 11:40	0	standing water
			Approx. 20'W 1'-2'
			standing water; approx.
GP-17	8/27/2010 11:43	0	50'E 1'-2' standing water
			Approx. 20'W 1'-2'
CD 15	0/05/0010 11 54		standing water; approx.
GP-17	8/27/2010 11:54	0	50'E 1'-2' standing water
GD 10	0/07/0010 11 50		Approx. 20'W 2'-3'
GP-18	8/27/2010 11:58	6.6	standing water
CD 10	0/27/2010 12 00	25.6	Approx. 20'W 2'-3'
GP-18	8/27/2010 12:09	25.6	standing water
GP-19	8/27/2010 12:13	12.1	Approx. 20'NW 2'-3'
GF-19	0/2//2010 12.13	12.1	standing water Approx. 20'NW 2'-3'
GP-19	8/27/2010 12:24	22.7	
G1-19	0/2//2010 12.24	22.1	standing water Approx. 25'S 2'-3' standing
GP-20	8/27/2010 12:27	0	water
G1 -20	0/2//2010 12.2/	1 0	Approx. 25'S 2'-3' standing
GP-20	8/27/2010 12:38	0	water
G1 20	0/2//2010 12.50		Approx. 20'S 4' standing
			water; approx. 60'N 2'
GP-21	8/27/2010 12:42	11.3	standing water
			Approx. 20'S 4' standing
			water; approx. 60'N 2'
GP-21	8/27/2010 12:53	19.3	standing water

Gas Probe	Date & Time	%СН4	Comment
			Approx. 20'S 4' standing
			water; approx. 60'N 1'-2'
GP-22	8/27/2010 12:55	0	standing water
			Approx. 20'S 4' standing water; approx. 60'N 1'-2'
GP-22	8/27/2010 13:06	0	standing water
			Approx. 20'W 2'-3' standing
TGP-1	8/27/2010 15:37	55.2	water
TCD 1	9/27/2010 15.49	47.2	Approx. 20'W 2'-3' standing
TGP-1	8/27/2010 15:48	47.3	water Approx. 20'N 2'-3' standing
TGP-2	8/27/2010 14:38	1.2	water
			Approx. 20'N 2'-3' standing
TGP-2	8/27/2010 14:49	0.6	water
TGP-3	8/27/2010 13:42	18.1	Approx. 20'E 3'-4' standing
101-3	6/2//2010 15:42	10.1	water Approx. 20'E 3'-4' standing
TGP-3	8/27/2010 13:52	6.8	water
TGP-4	8/27/2010 16:09	0	Adjacent to GP-8.
TGP-4	8/27/2010 16:20	0	Adjacent to GP-8.
TGP-5	8/27/2010 15:53	1.6	Adjacent to GP-9.
TGP-5	8/27/2010 16:03	0.7	Adjacent to GP-9.
TGP-6	8/27/2010 15:23	0.6	Adjacent to GP-11.
TGP-6	8/27/2010 15:33	0.7	Adjacent to GP-11.
TGP-7	8/27/2010 15:09	48.9	Adjacent to GP-12.
TGP-7	8/27/2010 15:20	49.4	Adjacent to GP-12.
TGP-8	8/27/2010 14:55	44.1	Adjacent to GP-13.
TGP-8	8/27/2010 15:05	44.5	Adjacent to GP-13.
TGP-9	8/27/2010 14:23	0.2	Adjacent to GP-15.
TGP-9	8/27/2010 14:34	0.2	Adjacent to GP-15.
TGP-10	8/27/2010 14:09	0	Adjacent to GP-16.
TGP-10	8/27/2010 14:20	0	Adjacent to GP-16.
TGP-10	8/27/2010 13:56	0.9	Adjacent to GP-16.
TGP-11	8/27/2010 14:06	0.8	Adjacent to GP-17.
TGP-11	8/27/2010 12:55	0	Adjacent to GP-17.

Gas Probe	Date & Time	%СН4	Comment
TGP-12	8/27/2010 13:26	42.7	Adjacent to GP-19. Approx. 20'E 3'-4' standing water
TGP-12	8/27/2010 13:37	43.1	Adjacent to GP-19. Approx. 20'E 3'-4' standing water
TGP-13	8/27/2010 13:11	0.1	Adjacent to GP-20. Approx. 20'E 3'-4' standing water
TGP-13	8/27/2010 13:22	0	Adjacent to GP-20. Approx. 20'E 3'-4' standing water

Notes: Initial reading taken after 2 minutes based on typical monitoring procedures. Additional reading taken at the time shown (approximately 10 minutes) in attempt to purge the probe.

## ATTACHMENT C



Environmental Planning Specialists, Inc. 1936 Bruce B. Downs Blvd. No. 328 Wesley Chapel, Florida 33543 Telephone: (813) 388-1026

www.envplanning.com

August 2, 2010

Mr. Mike Kaiser Vice President, Environmental Management and Engineering, U.S. Waste Services, Inc. 1501 Omni Way St. Cloud, Florida 34773

Subject: Landfill Gas Migration Investigation - Closure Cap Integrity Evaluation and Repair

Omni Waste of Osceola County, LLC J.E.D. Solid Waste Management Facility St. Cloud, Osceola County, Florida

Dear Mr. Kaiser:

Environmental Planning Specialists, Inc (EPS) is pleased to present this letter report to Omni Waste of Osceola County, LLC (Omni) documenting the findings of the investigation of potential gas migration within the Phase 1 partial closure system performed at the J.E.D. Solid Waste Management facility.

The remainder of this letter report presents: (i) project background; (ii) results of investigation; and (iii) recommendations.

### PROJECT BACKGROUND

In August 2008, construction of the Phase 1, Sequence 1 and 2 of the Gas Collection and Control System (GCCS) commenced. This construction included the installation of 45 gas wells, the corresponding lateral and header pipes, and a candlestick flare unit in the northwest corner of the Phase 1 area (adjacent to Cell 1 sump area). Phase 1, Sequence 1 (which included the flare) was operational by the end of December 2008 and the construction of Sequence 2 was completed and operational by March 2009. In February 2009, the construction of the Phase 1 partial closure system commenced and included the installation of the final cover system over approximately 25 side slope acres of the Phase 1 area (Cells 1-4). Construction of the Phase 1 partial closure system was completed in October 2009.

In 2007, perimeter gas monitoring probes (gas probes) were installed on the outer slope of the storm water berm around the Phase 1-3 property boundary to monitor for off-site migration of landfill gas. Readings exceeding 100% of the Lower Explosive Limit (LEL) threshold for



methane were recorded in several of the gas probes during the initial quarterly monitoring event and subsequent quarterly events, triggering additional investigation of potential landfill gas migration from the landfill to the property boundary. Initial investigation work was completed by Brown and Caldwell Consultants, followed by the most recent investigation work by Golder Associates, Inc. (Golder). Additional investigation work completed by Golder included installation of temporary gas probes at the landfill perimeter berm, continued gas probe monitoring, and evaluation and collection of air samples for further fingerprinting analysis. A Methane Gas Migration Investigation Report was completed by Golder on June 17, 2010, which included findings and additional proposed action measures. The Florida Department of Environmental Protection (FDEP), Central District, provided comments to Golder's report in a letter dated July 6, 2010, and also recommended additional proposed action measures. Item No. 3 of the FDEP proposed actions included investigation of the closure cap integrity at the Cell 4 sump area and other closure cap tie-in locations.

During the 2<sup>nd</sup> quarter 2010 surface emissions monitoring with a flame ionization detector (FID), elevated readings were encountered by Golder at seven (7) locations within the limits of the Phase 1 partial closure area (see 2<sup>nd</sup> Quarter Surface emissions Monitoring Record performed by Golder on June 15, 2010). Two (2) of the areas were adjacent to gas extraction wells, three (3) of the areas were located on the side slopes of Cell 2, one (1) was located on the south side of the Cell 1 sump area, and the final area was located on the south side of the Cell 4 sump area. Additional locations of possible gas migration through the closure cap were documented by site personnel during a routine inspection of the closure cap. Stressed vegetation was the primary indicator of possible gas migration. Figure 1 shows the locations of the elevated surface emissions identified and additional locations noted during inspection of the closure cap.

Based on the information provided above, Omni requested the services of EPS to investigate and document repair of any integrity issues discovered with the closure cap and or base liner tie-in locations. The investigation and repair efforts as described in this report focuses on the findings of the exploration near the Cell 1, 2, and 4 sump areas and gas well rebooting/repairs.

### RESULTS OF INVESTIGATION

The gas migration investigation was performed between June 23 and 28, 2010. Initially, the two areas near the Cell 1 and Cell 4 sump areas where elevated readings were recorded with the FID were investigated. Earthwork activities were performed by ERC General Contracting Services, Inc. (ERC), Winter Garden, Florida. Repairs to the geosynthetics were performed by Comanco Environmental Corporation (Comanco), Plant City, Florida. EPS monitored all activities associated with the earthwork and repairs to the geosynthetics.



### Cell 1 Sump Area

Excavation on the south side of the Cell 1 sump area commenced on Wednesday, June 23, 2010. ERC utilized a Komatsu PC 78 MR mini excavator to carefully remove the closure vegetation and protective cover soils to expose the closure geosynthetics (see Attachments - Photo No. 1). Laborers utilized flat head shovels to remove the protective cover soils directly overlying the geosynthetics. The excavated soil was temporarily stockpiled adjacent to the excavation area. The extrusion weld - seaming the closure geomembrane liner to the Cell 1 base liner was exposed near the Cell 1 southern leachate collection system 6-inch diameter HDPE clean-out pipe. No apparent leaks were initially found, but the presence of landfill gas was evident based on odors detected. Excavation continued towards the Cell 1 sump area until a hissing noise was observed and bubbles were seen emanating form the storm water collected in the excavation near the geosynthetics. At the intersection of the Cell 1 sump area closure flap and the Cell 1 base liner was an approximate 2 foot long section where the sump cover flap and the base liner were not welded (Photo No.3). The Cell 1 primary geocomposite was not cut in this location to weld these two geomembrane liners together. Landfill gas was flowing through this un-welded area. This un-welded section was located in what was the anchor trench for the base liner. Note that the water seen in these pictures is from the closure drainage geocomposite and surface water drainage from a recent rain event. Excavation continued in the anchor trench to follow the unwelded section to where the two liners were found to be properly extrusion welded.

To cut off the landfill gas flowing through this opening, the Cell 1 primary geocomposite (gray colored material in Photo No. 3) was cut using a hook blade and pulled back. The approximate 2-ft long section was extrusion welded. The landfill gas pressure beneath the liner made it possible to check the seam by applying a soapy water solution to the weld. Bubbles identified leaks in the repair. Repairs to the extrusion weld were made until no bubbles were observed (Photo No.6). A visual examination of the exposed geomembrane liners and application of soapy water to exposed extrusions welds showed no other leaks (Photo No. 7). While exposed, the boots on the adjacent clean-out pipes were also checked with the soapy water solution. No leaks were found. Prior to backfilling a four gas meter (LEL, oxygen, hydrogen sulfide, and carbon monoxide) was used to screen the area. No readings, with the exception of oxygen, were recorded. The area was promptly backfilled after completion of the repairs (Photo No. 8). The backfilled area was regraded and sodded.

Based on what was encountered on the south side the Cell 1sump area, the area on the north side of the Cell 1 sump area where the sump area closure flap intersects the base liner was also exposed (Photo's 4 and 5). A similar scenario was encountered; an approximate 4-ft un-welded section was discovered. The un-welded section included the 2-ft vertical face of the anchor trench and the 2-ft horizontal run-out. The liners were exposed to where they were originally



extrusion welded together. The repairs were made and the area backfilled as described previously.

### Cell 4 Sump Area

On June 23, 2010 ERC laborers also exposed the geosynthetics approximately 50-ft south of the Cell 4 sump area where a high FID reading was recorded during the quarterly surface emissions monitoring. Prior to exposing the area, distressed vegetation was visually evident similar to what is shown in Photo No. 11, which was taken approximately 20-ft south of the Cell 4 sump area. No leaks in the geosynthetics were located and the landfill gas built up beneath the closure geomembrane "ballooning" the closure geomembrane (Photo No.'s 9 and 10). This area was left open while the investigation proceeded closer to the Cell 4 sump area to the location shown in Photo No.11.

As with the excavation at Cell 1; ERC utilized a Komatsu PC 78 MR mini excavator to carefully remove the closure vegetation and protective cover soils to expose the closure geosynthetics. The excavation revealed the same situation encountered at Cell 1. The Cell 4 base liner and the sump cover flap were not welded (Photo No.'s 12 and 16). As shown in these photos, the primary geocomposite (white colored geocomposite) was not cut in these two locations in order to weld these two geomembrane liners together. Landfill gas was flowing through this unwelded area. Both of these two un-welded sections were located in what was the anchor trench for the base liner. In addition, the closure drainage geocomposite (black colored geocomposite shown in Photo No.'s 12 and 16) overlaps the un-welded area. This overlap of the closure drainage geocomposite over the opening allowed for the lateral migration of landfill gas into the closure drainage geocomposite. This can explain why high FID readings were recorded further south to the area shown in Photo No. 9. Landfill gas could move laterally in the closure drainage geocomposite layer following the path of least resistance to where the protective cover soils were the thinnest (i.e., at the location of an erosion rill).

The repair procedure for the two areas near the Cell 4 sump was the same as that for described previously for the Cell 1 sump area (Photo No.'s 13, 14, and 17). As part of the investigation work at Cell 4, the geosynthetics were exposed along the entire length of the Cell 4 control panel pad (Landfill side) to check for any other potential leaks. No additional leaks were found. Prior to backfilling the open excavation areas at the Cell 4 sump area, a four gas meter (LEL, oxygen, hydrogen sulfide, and carbon monoxide) was used to screen the area. No readings, with the exception of oxygen, were recorded. These open excavation areas were promptly backfilled after completion of the repairs (Photo No. 18). The backfilled area was regraded and sodded.

### Cell 2 Sump Area



At the Cell 2 sump area, distressed vegetation was visually observed around the 6-in diameter HDPE leachate collection clean-out pipe located on the south side of the Cell 2 sump area. The closure pipe boot was exposed and a soapy water solution was used to check for leaks. A leak was found on the pipe boot weld where the neoprene gasket and stainless steel band secured the boot to the pipe. The band and gasket were removed and the boot was extended above the level of the protective cover (Photo No. 19). A new neoprene gasket and stainless steel band were used to secure the boot at the top of the boot extension. At the completion of the work, the boot was again checked with a soapy water solution and no leaks were found.

While working at the Cell 2 sump area, a piece of geomembrane liner was visually observed on the surface of the closure vegetation (Photo No. 21). ERC laborers utilized flat headed shovels to carefully dig around the geomembrane until the entire area was exposed (Photo No. 22). The damaged closure liner was repaired using an approximate 5ft by 6 ft extrusion welded patch (Photo No. 23). The extrusion welds were non-destructively tested using the vacuum box as shown in Photo No. 24. No additional leaks were found and the area was backfilled, regraded and sodded.

### Gas Well Rebooting/Repairs

During the quarterly surface emissions monitoring, high FID readings were recorded at Gas Well Nos. 47 and 57. The grass around each of these two wells was visibly distressed. The area around each gas well was excavated to expose the closure cap boot and skirt to check for leaks. Leaks were found in the boots for both of these two gas wells. These boots were removed and new boots were extrusion welded to the skirt. The new gas well boots were extended above the height of the surrounding protective cover soils. A soapy water solution was used to check for leaks in the new boots. No leaks were found.

### RECOMMENDATIONS

Based on the work performed to investigate the potential landfill gas leaks within the Phase I partial closure area, Omni will consider the following recommendations by EPS: (i) Cells 1 through 5 were all constructed using the vertical leachate sump risers located within the limits of the Cell liner system and have the closure flaps covering the sump areas. Two Cells were investigated and the same situation was encountered at both. If high FID readings are detected in the vicinity of Cells 2 and 3 during quarterly surface emissions monitoring, or distressed vegetation is observed near the sump areas, Omni will investigate these areas. The area around Cell 5 sump can be addressed when the final closure system is constructed for Cell 5; (ii) Omni will consider specifying adjustable stainless steel bands for pipe boots. Based on expansion and



contracting of the HDPE geomembrane pipes and boots, the stainless steel bands loosen over time. Adjustable bands would allow Omni to tighten existing bands without having to remove and replace the bands.

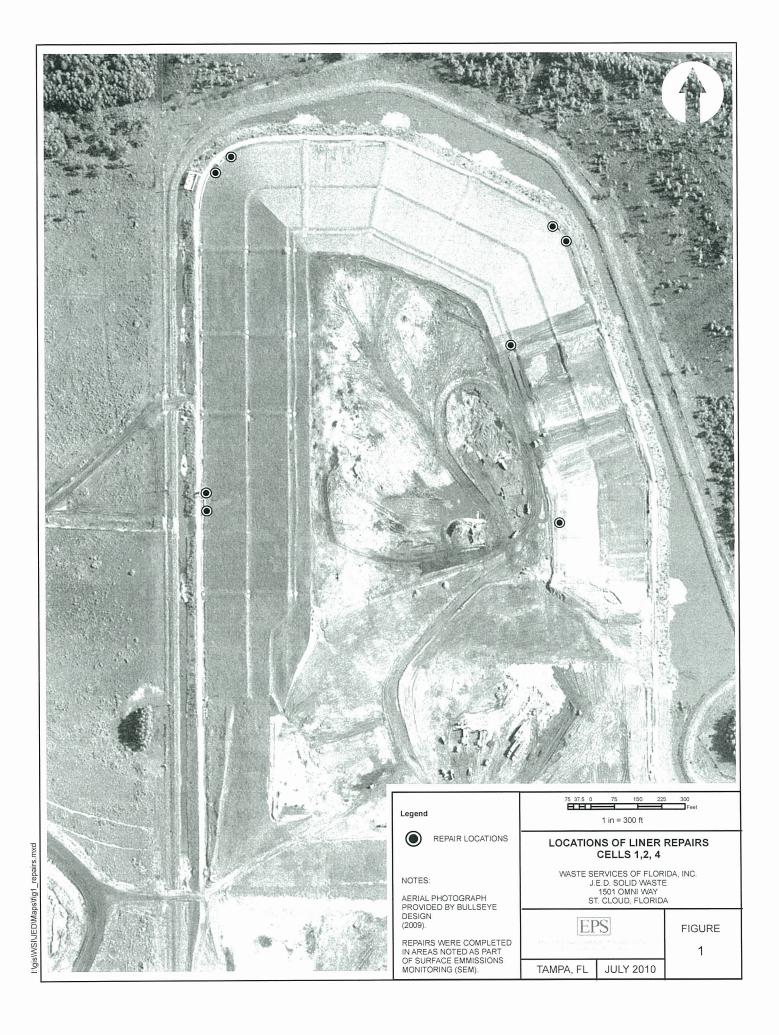
Sincerely,

Kirk E. Wills Senior Engineer

Attachments



## **ATTACHMENTS**



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 1

Date: June 23, 2010

Direction: Northeast

Comments: Excavation on south side of Cell 1 Sump area at location where a high surface emission reading was recorded with FID.



Photograph No. 2

Date: June 23, 2010

Direction: North

Comments: Excavation to investigate cause of high surface emission reading on south side of Cell1 sump area.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 3

Date: June 23, 2010

Direction: South

Comments: South side of Cell 1 Sump area. Closure Cap over vertical sump area not welded to base liner system in anchor trench.



Photograph No. 4

Date: June 23, 2010

Direction: Southeast

Comments: North side of Cell 1 Sump area. Closure Cap over vertical sump area not welded to base liner system in anchor trench.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 5

Date: June 25, 2010

Direction: South

Comments: Preparations for extrusion welding the sump closure cap with the base liner.



Photograph No. 6

Date: June 25, 2010

Direction: South

Comments: Extrusion welded patch to close up the approximate 2-ft long un-welded section of the sump area closure cap and the Cell 1 base liner.





Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 7

Date: June 25, 2010

Direction: Northeast

Comments: Soapy water is used to test extrusions

welds for leaks.



Photograph No. 8

Date: June 25, 2010

Direction: Northeast

Comments: Area on south side of Cell1 sump area is backfilled after completion of liner repairs.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 9

Date: June 23, 2010

Direction: South

Comments: Area located to the south side of the Cell 4 sump area where a high surface emission reading was recorded

with FID.

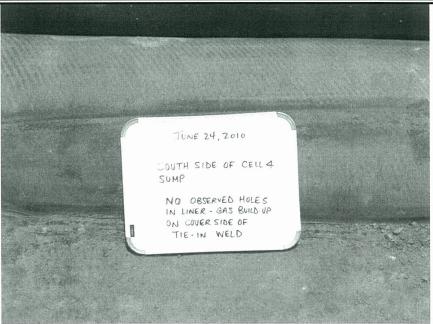


Photograph No. 10

Date: June 24, 2010

Direction: East

Comments: Same area as shown in Picture No. 9. No hole in liner found.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 11

Date: June 24, 2010

Direction: North

Comments: Distressed vegetation on south side of Cell 4 sump area.



Photograph No. 12

Date: June 24, 2010

Direction: East

Comments:

Geosynthetics exposed beneath distressed vegetation shown in previous photo. Sump area closure flap not welded to base liner in anchor trench.





Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 13

Date: June 28, 2010

Direction: East

Comments: Liner crew tack welds the seam to be extrusion welded with Lyster heat gun.



Photograph No. 14

Date: June 28, 2010

Direction: East

Comments: Cell 4 sump area closure cap extrusion welded to the Cell 4 base liner on south side of Cell 4 sump area.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 15

Date: June 24, 2010

Direction: Northeast

Comments: Cell 4 base and closure geomembrane liners exposed adjacent to the Cell 4 control panel.



Photograph No. 16

Date: June 24, 2010

Direction: East

Comments: Cell 4 closure cap over the vertical sump area not welded to the Cell 4 base liner in the anchor trench on north side of sump area.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

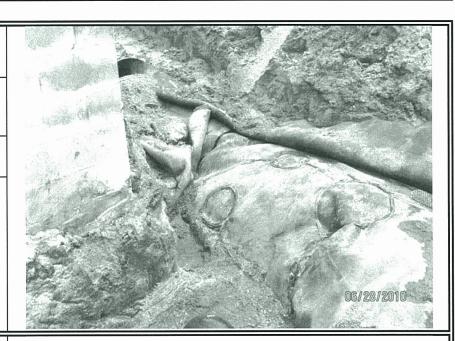
Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 17

Date: June 28, 2010

Direction: Northeast

Comments: Repairs made on north side of the Cell 4 sump area adjacent to the control panel pad.



Photograph No. 18

Date: June 28, 2010

Direction: North

Comments: Backfilling of area behind Cell 4 control panel after completion of repairs.





Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 19

Date: June 25, 2010

Direction: South

Comments: Repair of boot around leachate clean-out pipe located on the south side of the Cell

2 sump area.



Photograph No. 20

Date: June 24, 2010

Direction: N/A

Comments: Pipe boots checked for gas leaks using soapy water.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 21

Date: June 24, 2010

Direction: Southeast

Comments: Piece of liner is observed on ground surface behind Cell 2 sump. Hand shovels used to dig out around the liner.



Photograph No. 22

Date: June 24, 2010

Direction: North

Comments: Damage to the closure geomembrane liner behind Cell 2 sump area.



**EPS** 

Client: Omni Waste of Osceola County, LLC

Project Name: Landfill Gas Migration Investigation

Project Location: J.E.D. Solid Waste Management Facility, Osceola County, Florida

Photograph No. 23

Date: June 25, 2010

Direction: South

Comments: Extrusion welding patch on closure liner behind Cell 2 sump

area.



Photograph No. 24

Date: June 25, 2010

Direction: South

Comments: Vacuum box testing of extrusion welded patch on closure liner behind Cell 2 sump

area.



# ATTACHMENT D

### JED Solid Waste Management Facility

Monitored By: Joe Terry, EPS

Date: August 25, 2010

Temporary Piezometer / Gas Probe ID	Top PVC Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Measured Depth to Groundwater from TOC (feet)	Groundwater Elevation (feet msl)
P-1A	83.70	78.70	4.74	78.96
P-1B	83.53	78.70	4.75	78.78
GP-22	87.26	83.87	 	
P-2A	83.38	78.50	4.62	78.76
P-2B	83.41	78.50	4.83	78.58
GP-21	87.30	84.28		
P-3A	84.76	79.80	6.31	78.45
P-3B	84.71	79.80	4.77	79.94
GP-18	87.85	84.47		
P-4A	84.71	79.80	5.97	78.74
P-4B	84.76	79.80	5.94	78.82
GP-14	87.58	83.52	! !	×
P-5A	84.63	80.00	7.43	77.20
P-5B	84.96	80.00	4.26	80.70
GP-10	88.16	84.72		

Notes:

PA - Piezometers screened approximately 3-5 feet BGS.

PB - Piezometers screened approximately 1-3 feet BGS.

## **JED Solid Waste Management Facility**

Monitored By: Keith Lunsford Date: November 5, 2010

Temporary Piezometer / Gas Probe ID	Top PVC Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Measured Depth to Groundwater from TOC (feet)	Groundwater Elevation (feet msl)
P-1A	83.70	78.70	5.90	77.80
P-1B	83.53	78.70	5.85	77.68
GP-22	87.26	83.87		
P-2A	83.38	78.50	6.00	77.38
P-2B	83.41	78.50	5.25	78.16
GP-21	87.30	84.28		
P-3A	84.76	79.80	7.75	77.01
P-3B	84.71	79.80	7.25	77.46
GP-18	87.85	84.47	i i	
P-4A	84.71	79.80	7.60	77.11
P-4B	84.76	79.80	7.65	77.11
GP-14	87.58	83.52	! !	
P-5A	84.63	80.00	8.45	76.18
P-5B	84.96	80.00	7.50	77.46
GP-10	88.16	84.72		

Notes: PA - Piezometers screened approximately 3-5 feet BGS.

PB - Piezometers screened approximately 1-3 feet BGS.

# **JED Solid Waste Management Facility**

Monitored By: Keith Lunsford

Date: October 29, 2010

Temporary	Top PVC Casing	Ground Surface	Measured Depth	Groundwater
Piezometer /	Elevation (feet	Elevation (feet	to Groundwater	Elevation (feet
Gas Probe ID	msl)	msl)	from TOC (feet)	msl)
P-1A	83.70	78.70	6.71	76.99
P-1B	83.53	78.70	6.65	76.88
GP-22	87.26	83.87	10.40	76.86
P-2A	83.38	78.50	6.70	76.68
P-2B	83.41	78.50	6.80	76.61
GP-21	87.30	84.28	10.70	76.60
P-3A	84.76	79.80	9.45	75.31
P-3B	84.71	79.80	Dry	#VALUE!
GP-18	87.85	84.47	11.40	76.45
P-4A	84.71	79.80	8.10	76.61
P-4B	84.76	79.80	7.90	76.86
GP-14	87.58	83.52	10.60	76.98
P-5A	84.63	80.00	8.40	76.23
P-5B	84.96	80.00	8.80	76.16
GP-10	88.16	84.72	11.90	76.26
	T			

Notes: PA - Piezometers screened approximately 3-5 feet BGS.

PB - Piezometers screened approximately 1-3 feet BGS.

### JED Solid Waste Management Facility

Monitored By: Keith Lunsford

Date: September 9, 2010

Temporary Piezometer / Gas Probe ID	Top PVC Casing Elevation (feet msl)	Ground Surface Elevation (feet msl)	Measured Depth to Groundwater from TOC (feet)	Groundwater Elevation (feet msl)
P-1A	83.70	78.70	4.85	78.85
P-1B	83.53	78.70	4.10	79.43
GP-22	87.26	83.87	 	
P-2A	83.38	78.50	4.85	78.53
P-2B	83.41	78.50	5.00	78.41
GP-21	87.30	84.28	 	
P-3A	84.76	79.80	NM	#VALUE!
P-3B	84.71	79.80	NM	#VALUE!
GP-18	87.85	84.47		
P-4A	84.71	79.80	6.00	78.71
P-4B	84.76	79.80	7.60	77.16
GP-14	87.58	83.52		
P-5A	84.63	80.00	7.20	77.43
P-5B	84.96	80.00	4.10	80.86
GP-10	88.16	84.72		

Notes:

PA - Piezometers screened approximately 3-5 feet BGS.

PB - Piezometers screened approximately 1-3 feet BGS.

NM - Not monitored due to presence of gator near piezometers.





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-1A	DATE: <u>08</u> mo <u>17</u> day <u>2010</u> year
LOCATION AND ELEVATION:       X SURVEYED         NORTHING       Not Surveyed       EASTING:       1	ESTIMATED  Not Surveyed GROUND ELEVATION: 78.70
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 5.00 ft  ELEVATION*: 83.70 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         78.70         ft           DEPTH:         2.10         ft         TOP OF SAND/BOTTOM OF BENTONITE PLUG:	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  North side of storm water berm at toe down from GP-22	TOP OF SCREEN:   DEPTH:   2.60   ft     ELEVATION*:   76.10   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   4.60   ft     ELEVATION*:   74.10   ft
DEPTH:         4.60         ft         BOTTOM OF BOREHOLE:           ELEVATION*:         74.10         ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET1 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-1B	
	ESTIMATED  Not Surveyed GROUND ELEVATION: 78.70
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4.83 ft  ELEVATION*: 83.53 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         78.70         ft           DEPTH:         0.50         ft         TOP OF SAND/BOTTOM OF BENTONITE PLUG:           ELEVATION*:         78.20         ft	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  North side of storm water berm at toe down from GP-22	TOP OF SCREEN:   DEPTH:   1.00   ft
DEPTH:         3.00         ft         BOTTOM OF BOREHOLE:           ELEVATION*:         75.70         ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 2 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-2A	
	ESTIMATED  Not Surveyed GROUND ELEVATION: 78.50
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4.88 ft  ELEVATION*: 83.38 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         78.50         ft           DEPTH:         2.27         ft         TOP OF SAND/BOTTOM OF BENTONITE PLUG:           ELEVATION*:         76.23         ft	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  North side of storm water berm at toe down from GP-21	TOP OF SCREEN:   DEPTH:   2.77   ft     ELEVATION*:   75.73   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   4.77   ft     ELEVATION*:   73.73   ft
DEPTH: 4.77 ft BOTTOM OF BOREHOLE:  ELEVATION*: 73.73 ft ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 3 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-2B	
LOCATION AND ELEVATION:       X SURVEYED         NORTHING       Not Surveyed       EASTING:       Not Surveyed	ESTIMATED  Not Surveyed GROUND ELEVATION: 78.50
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4,91 ft  ELEVATION*: 83.41 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         78.50         ft	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  North side of storm water berm at toe down from GP-21	TOP OF SCREEN:   DEPTH:   0.90   ft     ELEVATION*:   77.61   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   2.90   ft     ELEVATION*:   75.60   ft
DEPTH:         2.90         ft         BOTTOM OF BOREHOLE:           ELEVATION*:         75.60         ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 4 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-3A	
, <u></u>	ESTIMATED  Not Surveyed GROUND ELEVATION: 79.80
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4,96 ft  ELEVATION*: 84.76 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         79.80         ft           DEPTH:         2.34         ft         TOP OF SAND/BOTTOM OF BENTONITE PLUG:           ELEVATION*:         77.46         ft	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES) Inside retention pond ~4 feet off toe down from GP-18  DEPTH: 4.84 ft BOTTOM OF BOREHOLE:	TOP OF SCREEN:   DEPTH:   2.84   ft     ELEVATION*:   76.96   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   4.84   ft     ELEVATION*:   74.96   ft

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 5 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-3B	DATE: <u>08</u> mo <u>17</u> day <u>2010</u> year
LOCATION AND ELEVATION:       X SURVEYED         NORTHING       Not Surveyed       EASTING:       Not Surveyed	ESTIMATED  Not Surveyed GROUND ELEVATION: 79.80
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4,91 ft  ELEVATION*: 84,71 ft
ELEVATION*: 79.80 ft GROUND SURFACE  DEPTH: 0.00 ft TOP OF BENTONITE PLUG/BOTTOM OF GROUT:	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
ELEVATION*: 79.80 ft  DEPTH: 0.50 ft TOP OF SAND/BOTTOM OF BENTONITE PLUG:  ELEVATION*: 79.30 ft	
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  Inside retention pond ~4 feet off toe down from GP-18	TOP OF SCREEN: DEPTH: 1.00 ft  ELEVATION*: 78.80 ft
DEPTH: 3.00 ft BOTTOM OF BOREHOLE: ELEVATION*: 76.80 ft	BOTTOM OF SCREEN/WELL: DEPTH: 3.00 ft  ELEVATION*: 76.80 ft

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 6 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-4A	DATE: <u>08</u> mo <u>17</u> day <u>2010</u> year
LOCATION AND ELEVATION:       X SURVEYED         NORTHING       Not Surveyed       EASTING:       1	ESTIMATED  Not Surveyed GROUND ELEVATION: 79.80
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4.91 ft  ELEVATION*: 84.71 ft
DEPTH:     0.00     ft     TOP OF BENTONITE PLUG/BOTTOM OF GROUT:       ELEVATION*:     79.80     ft	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
DEPTH: 2.24 ft TOP OF SAND/BOTTOM OF BENTONITE PLUG:  ELEVATION*: 77.56 ft  MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  Inside retention pond ~4 feet off toe down from GP-14	TOP OF SCREEN:   DEPTH:   2.74   ft     ELEVATION*:   77.06   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   4.74   ft     ELEVATION*:   75.06   ft
DEPTH:         4.74         ft         BOTTOM OF BOREHOLE:           ELEVATION*:         75.06         ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 7 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-4B	
LOCATION AND ELEVATION: X SURVEYED NORTHING Not Surveyed EASTING:	ESTIMATED  Not Surveyed GROUND ELEVATION: 79.80
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4.96 ft  ELEVATION*: 84.76 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         79.80         ft           DEPTH:         0.50         ft         TOP OF SAND/BOTTOM OF BENTONITE PLUG:           ELEVATION*:         79.30         ft	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES) Inside retention pond ~4 feet off toe down from GP-14	
DEPTH:         3.00         ft         BOTTOM OF BOREHOLE:           ELEVATION*:         76.80         ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 8 OF 10





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-5A	DATE: <u>08</u> mo <u>17</u> day <u>2010</u> year
	Not Surveyed GROUND ELEVATION: 80.00
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4.63 ft  ELEVATION*: 84.63 ft
DEPTH:   0.00   ft   TOP OF BENTONITE PLUG/BOTTOM OF GROUT:	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES) Inside retention pond ~1.5 feet off toe down from GP-10	TOP OF SCREEN:   DEPTH:   3.20   ft     ELEVATION*:   76.80   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   5.20   ft     ELEVATION*:   74.80   ft
DEPTH: 5.20 ft BOTTOM OF BOREHOLE:  ELEVATION*: 74.80 ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).





SITE: J.E.D. Solid Waste Management Facility  LOCATION: 1501 Omni Way, St. Cloud, FL 34773  DRILLING COMPANY: NA  PIEZOMETER NO.: P-5B	DATE: <u>08</u> mo <u>17</u> day <u>2010</u> year
LOCATION AND ELEVATION:       X SURVEYED         NORTHING       Not Surveyed       EASTING:       N	ESTIMATED  Not Surveyed GROUND ELEVATION: 80.00
DRILLING METHOD: Hand Auger	TOP OF CASING: HEIGHT: 4.96 ft  ELEVATION*: 84.96 ft
DEPTH:         0.00         ft         TOP OF BENTONITE PLUG/BOTTOM OF GROUT:           ELEVATION*:         80.00         ft           DEPTH:         0.30         ft           TOP OF SAND/BOTTOM OF BENTONITE PLUG:           ELEVATION*:         79.70	DIAMETER OF BOREHOLE: 3.25 in.  DIAMETER OF CASING: 1.00 in.  CASING MATERIAL: Sch 40 PVC  WIDTH OF SCREEN SLOT: 0.01 in.
MONITORING WELL LOCATION (INDICATE DISTANCES TO PERMANENT FEATURES)  Inside retention pond ~1.5 feet off toe down from GP-10	TOP OF SCREEN:   DEPTH:   0,80   ft     ELEVATION*:   79.20   ft     BOTTOM OF SCREEN/WELL:   DEPTH:   2.80   ft     ELEVATION*:   77.20   ft
DEPTH:         2.80         ft         BOTTOM OF BOREHOLE:           ELEVATION*:         77.20         ft	

NOTES: (1) \* indicates vertically surveyed elevation; (2) drawing has no scale; (3) depths and heights are relative to above or below ground surface (AGS/BGS).

TP Constr Diagram SHEET 10 OF 10

# ATTACHMENT E

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date:11-5-10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: K. Lunsford Company: Omni Waste of Osceola County LLC

Weather Conditions: Temperature: 63 °F M. Cloudy/P. Cloudy/Clear/Overcast

Barometric Pressure: inch Hg 29.8 Wind: 20 mph Humidity: 75%\_\_

Landfill Gas Meter: Envision Serial No 1007003.

Gas Probe No.	Time	%CH4	Comments	
GP-7	9:04am	25.4	Dry in storm water retention area	
GP-8	9:12am	0.0	1' standing water 50' E	
GP-9	9:18am	0.0	Dry in storm water retention area	
GP-10	9:24am	41.7	Saturated in storm water retention area	
GP-11	9:31am	40.1	Saturated in storm water retention area	
GP-12	9:37am	0.0	Saturated in storm water retention area	
GP-13	9:45am	0.0	Saturated in storm water retention area	
GP-14	9:52am	32.1	Saturated in storm water retention area	
GP-15	10:07am	18.4	Saturated in storm water retention area	
GP-16	10:15am	17.9	Saturated in storm water retention area	
GP-17	10:25am	12.0	Saturated in storm water retention area	
GP-18	10:35am	33.4	Saturated in storm water retention area	
GP-19	10:48am	40.1	Saturated in storm water retention area	
GP-20	10:56am	22.3	Saturated in storm water retention area	
GP-21	11:05am	24.3	0.5 'standing water 50' W in storm water retention area	
		24.5	0.5 ' standing water 50' W in storm water	
GP-22	11:19am	11:19am 8.0	8.0	retention area
TGP-1	12:00pm	53	Saturated in storm water retention area	
TGP-2	12:13pm	12.1	Saturated in storm water retention area	
TGP-3	12:25pm	32.4	Saturated in storm water retention area	
TGP-4	11:53am	0	1' standing water 50' W in storm water retention area	
TGP-5	11:57am	0	Dry in storm water retention area	

Notes: Gas meter run time set at two minutes. Monitoring performed until reading stabilizes at reported value within the two minute period.

Gas Probe No.	Time	%CH4	Comments
			Saturated in storm water retention
TGP-6	12:03pm		area/Approx. 14% CH4 at start - falls
		0	to 0% within 2-3 minutes
TGP-7	12:07pm	0	Saturated in storm water retention area
TGP-8	12:10pm	0	Saturated in storm water retention area
			Saturated in storm water retention
TGP-9	12:16pm		area/Approx. 14% CH4 at start - falls
	8	0	to 0% within 2-3 minutes
			Saturated in storm water retention
TGP-10	12:19pm		area/Approx. 14% CH4 at start - falls
		0	to 0% within 2-3 minutes
			Saturated in storm water retention
TGP-11	12:21pm	0	area/Approx. 14% CH4 at start - falls
			to 0% within 2-3 minutes
TGP-12	12:29pm	0	Saturated in storm water retention area
TGP-13	12:37pm	0	Saturated in storm water retention area

Notes: Gas meter run time set at two minutes. Monitoring performed until reading stabilizes at reported value within the two minute period.

### Water Level in Temporary Piezometers Located in Dry Retention Area

Depth to water from TOC/Depth to Bottom from TOC

P1A=5.9/9.6 P1B=5.85/7.85

P2A=6.0/9.65 P2B=5.25/7.8 P3A=7.75/9.8 P3B=7.25/7.9

P4A=7.6/9.65 P4B=7.65/7.9 P5A=8.45/9.85 P5B=7.5/7.8

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date:10-29-10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: Klunsford Company: Omni Waste of Osceola County LLC

Weather Conditions: Temperature: 80 °F M. Cloudy/P. Cloudy/Clear/Overcast

Barometric Pressure: 29.75 inch Hg Wind: 20 mph Humidity: 75%

Landfill Gas Meter: Envision Serial No 1007003.

Gas Probe No.	Time	%СН4	Comments
GP-7	9:00 AM	16	DRY
GP-8	9:07 AM	0	SATURATED
GP-9	9:13 AM	0	DRY
GP-10	9:18 AM	10.3	DRY
GP-11	9:30 AM	8.1	DRY
GP-12	9:26 AM	0	DRY
GP-13	9:42 AM	0	DRY
GP-14	9:51 AM	10.0	DRY
GP-15	10:01 AM	0.0	DRY
GP-16	10:51 AM	0.0	DRY
GP-17	10:57 AM	0.0	DRY
GP-18	11:04 AM	15.1	DRY
GP-19	11:15 AM	3.6	DRY
GP-20	11:23 AM	0.8	DRY
GP-21	11:30 AM	22.1	3" STANDING WATER 50' NW
GP-22	11:40 AM	0.5	3" STANDING WATER 50' NW
TGP4	12:02 PM	0	DRY
TGP5	12:04 PM	0	DRY
TGP1	12:07 PM	42.3	DRY
TGP6	12:11 PM	0	DRY
TGP7	12:16 PM	15	DRY
TGP8	12:20 PM	0	DRY
TGP2	12:23 PM	6.4	DRY

Notes: Percent of lower explosive limit (LEL) was calibrated to Methane ( $CH_4$ ) Continuous gas monitors that sound alarms at 0.95% by volume of methane in air have been installed at the admin office and scale house. SWB=Storm water berm>>> = Above the detection limit of the gas meter used

Gas Probe No.	Time	%CH4	Comments
TGP9	12:26 PM	0	DRY
TGP10	12:31 PM	0	DRY
TGP11	12:36 PM	0	DRY
TGP3	12:43 PM	26.8	DRY
TGP12	12:48 PM	0	DRY
TGP13	12:53PM	0	DRY

Notes: Percent of lower explosive limit (LEL) was calibrated to Methane (CH<sub>4</sub>) Continuous gas monitors that sound alarms at 0.95% by volume of methane in air have been installed at the admin office and scale house. SWB=Storm water berm>>> = Above the detection limit of the gas meter used

P1A=6.71/9.6 P1B=6.65/7.85 P2A=6.7/9.65 P2B=6.8/7.75 P3A=9.45/10.8 P3B=DRY/7.9 P4A=8.1/8.65 P4B=7.9/7.9 P5A=8.4/10.85 P5B=8.8/8.8

### PERIMETER GAS PROBE MONITORING LOG

Facility Name: J.E.D. Solid Waste Management Facility Date:9-9-10

Facility Address: 1501 Omni Way, St Cloud, Florida 34773

Technician: Klunsford Company: Omni Waste of Osceola County LLC

Weather Conditions: Temperature: 90 °F M. Cloudy/P. Cloudy/Clear/Overcast

Barometric Pressure: 29.82 inch Hg Wind: <u>0 mph</u> Humidity: 100\_\_

Landfill Gas Meter: LandTec Gem.2000 Serial No.GM11327/08

Gas Probe No.	Time	%CH4	Comments
GP-7	8:54am	1.4	Saturated
GP-8	9:01am	0.0	1.5'Water 50 E
GP-9	9:08am	0.0	1.5'Water 50 East
GP-10	9:14am	13.3	1.5'Water 50 East
GP-11	9:25am	40.7	1.5'Water 50 East /Sulfur Smell
GP-12	9:31am	0.7	1.5'Water 50 East
GP-13	9:38am	0.0	1.5'Water 50 East
GP-14	9:45am	2.3	1.5'Water 50 South
GP-15	10:07am	0.2	1.5'Water 50 South
GP-16	10:14am	0.0	1.5'Water 50 South
GP-17	10:24am	0.0	1.5'Water 50 West
GP-18	10:31am	7.8	1.5'Water 50 West
GP-19	10:39am	9.0	1.5'Water 50 North
GP-20	10:46am	0.0	1.5'Water 50 South
GP-21	10:54am	10.3	1.5'Water 50 West
GP-22	11:04am	0.0	1.5'Water 50 West
TGP4	12:46pm	0.0	1.5'Water 50 West
TGP5	1:03pm	31.0	1.5'Water 50 West/ 2'Washout area
TGP1	1:08pm	52.3	1.5'Water 50 West
TGP6	1:11pm	0.3	1.5'Water 50 West
TGP7	1:15pm	48.4	1.5'Water 50 West
TGP8	1:19pm	43.6	1.5'Water 50 North
TGP2	1:24pm	3.7	1.5'Water 50 North

Notes: Percent of lower explosive limit (LEL) was calibrated to Methane ( $CH_4$ ) Continuous gas monitors that sound alarms at 0.95% by volume of methane in air have been installed at the admin office and scale house. SWB=Storm water berm>>> = Above the detection limit of the gas meter used

Gas Probe No.	Time	%CH4	Comments
TGP9	1:27pm	0.6	1.5'Water 50 North
TGP10	1:31pm	0.0	1.5'Water 50 North
TGP11	1:34pm	0.7	1.5'Water 50 East
TGP3	1:37pm	26.3	1.5'Water 50 East
TGP12	1:40pm	39.0	1.5'Water 50 East
TGP13	1:44pm	0.1	1.5'Water 50 East

Notes: Percent of lower explosive limit (LEL) was calibrated to Methane (CH<sub>4</sub>) Continuous gas monitors that sound alarms at 0.95% by volume of methane in air have been installed at the admin office and scale house. SWB=Storm water berm>>> = Above the detection limit of the gas meter used