



# Florida Department of Environmental Protection

Bob Martinez Center  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Mimi A. Drew  
Interim Secretary

September 15, 2010

*Electronic Mail – Received Receipt Requested*

Tim Hawkins, South Florida Market Area Vice President  
Waste Management, Inc. of Florida  
2700 Northwest 48<sup>th</sup> Street  
Pompano Beach, FL 33073

Re: **Request for Additional Information**  
Project No. 0250615-012-AC (PSD-FL-414)  
Waste Management, Inc. of Florida, Medley Landfill  
Landfill Gas-to-Energy Project

Dear Mr. Hawkins:

On August 16, 2010, we received your application and sufficient fee for an air construction permit to construct and operate a landfill gas-to-energy facility at Medley Landfill, which will use landfill gas as fuel for six Caterpillar (CAT 3520) engines. The facility is located in Miami-Dade County at 9350 Northwest 89<sup>th</sup> Avenue in Medley, Florida. The application indicates that the project is subject to preconstruction review for the Prevention of Significant Deterioration (PSD) of Air Quality pursuant to Rule 62-212.400, of the Florida Administrative Code (F.A.C.). The application is incomplete. In order to continue processing your application, please provide the additional information requested below. Should your response to any of the requested items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

## **Application Information**

1. Based on information provided in the application, the Department understands the project proposes to install six CAT 3520 lean-burn internal combustion engines and generator sets, which will use landfill gas. The six engines will be capable of generating a total of 9.6 megawatts (MW) of power (1.6 MW per CAT 3520). The landfill currently generates 4,000 standard cubic feet per minute (scfm) of landfill gas. The future landfill gas production rate is estimated to be 7,317 scfm by 2013. The maximum hydrogen sulfide (H<sub>2</sub>S) content of the landfill gas is estimated to be 830 parts per million by volume (ppmv). The two existing flares will be retained and relocated adjacent to the engines as additional combustion devices for the landfill gas. The landfill gas will be routed through a landfill gas treatment system and then to the CAT 3520 engines and the remaining landfill gas will be routed to the flares. The gas treatment system includes initial gas dewatering, utilizing a moisture knock-out vessel, gas compressor and blowers, air-to-gas coolers and removal of particulate matter larger than 10 microns from the gas stream. Is this an accurate characterization? Please provide a detailed description and process flow diagram of the landfill gas treatment system.

## **H<sub>2</sub>S Information**

2. The H<sub>2</sub>S content, 830 ppmv, was based on "OLI" according to Table 2-1 of the application. What does OLI represent? What is the basis for assuming 830 ppmv of H<sub>2</sub>S? Does the Medley Landfill currently measure the H<sub>2</sub>S content of the landfill gas? If so, how and where is it measured and at what frequency? Please

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provide all H<sub>2</sub>S data available for Medley. If there is no available data, please take representative samples of the landfill gas at the Medley Landfill and test for H<sub>2</sub>S content to verify the estimated H<sub>2</sub>S content.

### PSD Applicability

3. For the initial facility construction, please identify the original landfill design capacity in million megagrams by mass or million cubic meters by volume, the maximum landfill gas generation rate and the potential emissions. Identify each subsequent year in which the landfill design capacity was expanded. For each expansion and using the same units, identify the new landfill design capacity, the maximum landfill gas generation rate and potential emissions. In addition, identify: the year that the original landfill gas collection system was installed; the year each landfill gas control device was installed (flares, engines, etc.); each year the landfill gas collection system was modified; each year a landfill gas control device was installed or modified; and the potential emissions after each change.
4. Please provide the following information in a table: year; annual waste received (tons); cumulative waste stored (tons); landfill gas generation potential (scfm); landfill covered by landfill gas collection and control system (%); and landfill gas recovered (scfm). Attached is an example (Table 6) from Project No. 0930104-014-AC for the Okeechobee Landfill expansion.
5. Table C-3 in Appendix C gives a summary of test data for the enclosed flare. Please address the landfill gas flow rate variability to the enclosed flare during the tests conducted between the years 2006 – 2010.
6. Please provide the emission factors that were the basis for estimating the two-year average baseline emissions in Table C-2.
7. Please describe the emission calculation methods used to estimate the baseline emissions reported in Table C-2 from the activity data identified in Table C-1.
8. Please estimate the baseline actual emissions as defined in Rule 62-210.370, F.A.C. This rule established a hierarchy for emissions calculations (e.g., continuous emission monitoring system (CEMS), mass balance, stack test data and emission factors).
9. In 2009, you estimated fugitive emissions of volatile organic compound (VOC)/non-methane organic compounds (NMOC). Please provide similar estimates for previous years in the baseline period.
10. Explain and identify the basis of the VOC and sulfur dioxide (SO<sub>2</sub>) emission factors. Why are the baseline emission rates of these pollutants so different?
11. Provide the supporting information for assuming the carbon monoxide (CO) and nitrogen oxides (NO<sub>x</sub>) emission rates from the flares are similar to units at other facilities.
12. In 2003, what was the landfill gas flow rate to each flare?
13. Please identify the year and project that this landfill became a PSD landfill source.
14. What is the projected date to close the landfill?
15. Based on the additional information provided in response to this request for additional information, the project may be subject to PSD preconstruction review for additional pollutants. Please identify any revised emissions increases and provide the required information related to the Best Available Control Technology (BACT) determination and the ambient air quality analyses. In particular, the application identifies an increase in SO<sub>2</sub> emissions of 39 tons/year, which is just below the PSD significant emission rate of 40 tons/year. Based on the information available at this time, the Department is concerned that an expansion of the landfill resulted in a significant SO<sub>2</sub> emissions increase. Please be prepared to provide vendor information and a specific cost quote on removing sulfur from the landfill gas with a Gas Desulfurization Plant (e.g., LO-CAT<sup>®</sup> or Paques/THIOPAQ<sup>®</sup> Process) as required for the expansion of the Okeechobee

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Landfill owned by Waste Management Inc. In addition, air quality modeling may be necessary to demonstrate compliance with the new federal SO<sub>2</sub> standard.

### **New Source Performance Standards (NSPS)**

16. The application states that “commence construction” begins with the placement of an order for the engines. This may be a trigger for notifications, etc; however, the engines are subject to the applicable requirements of NSPS Subpart JJJJ based on the date the engine was manufactured. Please comment.
17. Under Section 3.6.3 Emissions standards - NSPS Subpart JJJJ you have stated that “Caterpillar has indicated to Waste Management that they cannot certify the CAT 3520 engines when burning landfill gas as fuel”; however, under Section 5.0 Best Available Control Technology Analysis (BACT) - Selection of BACT and Rationale states that the proposed engines will be manufacturer-certified to comply with NSPS Subpart JJJJ emissions standards. Please clarify.
18. Please provide supporting information that the CAT 3520 engines will destroy 98% of NMOC.

### **Control Equipment**

19. The application states that the following controls are not technically feasible.
  - Oxidation catalyst for the control of CO and VOC emissions; and
  - Selective catalytic reduction (SCR) and regenerative SCR for the control of NO<sub>x</sub>.

However, these control systems are proven, effective control technologies. The application states that the landfill gas contains siloxanes, which will poison the catalysts. Please identify the siloxane levels in the landfill gas at the existing Medley Landfill. How does this compare with other landfills? Provide supporting information that siloxanes at this level will severely affect or prematurely deactivate the catalysts for the above referenced control systems. Provide a cost estimate for a siloxane removal system, an oxidation catalyst and an SCR system.

### **Proposed BACT Standards**

20. The Department previously issued three PSD permits for CAT 3520 engines firing landfill gas (Trail Ridge Energy, Brevard Energy and Seminole Energy). The Department’s CO BACT determination for all of these engines was 2.75 grams/brake horsepower-hour (g/bhp-hour). These facilities have been constructed and the engines have demonstrated compliance with the CO BACT standard. Please explain why the CAT 3520 engines proposed for the Medley project cannot achieve the same level of performance. Also note that the previous BACT determination for particulate matter with a mean particle diameter of 10 microns or less (PM<sub>10</sub>) for these existing projects was 0.24 g/bhp-hour. Stack tests have demonstrated compliance just below this level. The application for the Medley Landfill proposes a PM<sub>10</sub> BACT standard of 0.173 g/bhp-hour based on the AP-42 emission factors. Please comment.

### **Air Quality Modeling**

21. On August 23, 2010, Golder Associates Inc. attempted to e-mail the link to air quality modeling files related to the project. However, technical issues prevented the Department from receiving this information until September 1, 2010. Therefore, the Department will request any additional information related to the air quality analysis by the end of September.

The above information is requested pursuant to the following F.A.C. regulations: Rule 62-4.050 (Procedures to Obtain Permits and Other Authorizations; Applications); 62-4.055 (Permit Processing); 62-4.070 (Standards for Issuing or Denying Permits; Issuance; Denial); 62-4.120 (Construction Permits); 62-204.800 (Federal Regulations Adopted by Reference); 62-212.300 (Permits Required); 62-210.370 (Emissions Computations and Reporting); 62-210.900 (Forms and Instructions); 62-212.300 (General Preconstruction Review); and 62-212.400 (Prevention of Significant Deterioration). All applications for a Department permit must be certified by a

## REQUEST FOR ADDITIONAL INFORMATION

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professional engineer registered in the State of Florida pursuant to Rule 62-4.050(3), F.A.C. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official.

We will resume processing your application after receipt of the requested information. You are reminded that Rule 62-4.055(1), F.A.C. requires applicants to respond to requests for information within 90 days or to provide a written request for an additional period of time to submit the information. If you have any questions regarding this matter, please contact the project engineer, Tammy McWade, at 850/488-1906 or me at 850/921-9536.

Sincerely,



Jeffery F. Koerner, Administrator  
New Source Review Section

This letter was sent to the following persons by electronic mail with received receipt requested.

Mr. Tim Hawkins, Waste Management, Inc. (thawkins@wm.com)  
Mr. James Kisiel, P.E., Waste Management Inc. (jkisiel@wm.com)  
Mr. David A. Buff, P.E., Golder Associates Inc. (dbuff@golder.com)  
Mr. Lennon Anderson, SED Office (lennon.anderson@dep.state.fl.us)  
Ms. Mallika Muthias, Miami-Dade DERM (muthim@miamidade.gov)  
Ms. Kathleen Forney, EPA Region 4 (forney.kathleen@epa.gov)  
Ms. Heather Abrams, EPA Region 4 (abrams.heather@epa.gov)  
Ms. Vickie Gibson, DEP BAR Reading File (victoria.gibson@dep.state.fl.us)

JFK/ttm

**REQUEST FOR ADDITIONAL INFORMATION**

**Table 6 – Past Annual Waste, LFG Generation and Recovery Estimates and Future Projections**

<b>Year</b>	<b>Annual Waste (IPY)</b>	<b>Cumulative Waste (Tons)</b>	<b>LFG Generation Potential (scfm)</b>	<b>Landfill Covered by LFGCCS (%)</b>	<b>LFG Recovered (scfm)</b>
1991	28,637	315,007	194	0	0
1992	42,008	357,015	206	0	0
1993	186,295	543,310	230	0	0
1994	392,671	935,981	388	0	0
1995	452,973	1,388,954	729	0	0
1996	457,020	1,845,974	1,100	0	0
1997	655,581	2,501,555	1,447	70	1,013
1998	701,917	3,203,472	1,995	65	1,271
1999	758,554	3,962,026	2,468	60	1,481
2000	934,901	4,916,927	2,994	55	1,647
2001	757,288	5,674,215	3,665	50	1,833
2002	664,891	6,339,106	4,099	50	2,049
2003	693,349	7,032,455	4,411	60	2,647
2004	2,231,950	9,264,405	4,727	70	3,309
2005	2,246,790	11,511,195	6,471	80	4,530
2006	2,007,500	13,518,695	8,095	80	6,476
2007	2,007,500	15,526,195	9,368	80	7,494
2008	2,007,500	17,533,695	10,543	80	8,434
2009	2,007,500	19,541,195	11,628	80	9,302
2018	2,555,500	41,441,195	20,877	90	18,789
2028	2,555,500	66,991,195	26,659	90	23,993
2038	2,555,500	92,541,195	29,257	90	26,332
2048	2,555,500	118,091,195	30,425	90	27,382
2058	1,669,245	142,755,440	30,949	90	27,854
2068	0	142,755,440	14,674	100	14,674

## Livingston, Sylvia

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**From:** Livingston, Sylvia  
**Sent:** Wednesday, September 15, 2010 10:57 AM  
**To:** thawkins@wm.com  
**Cc:** jkisiel@wm.com; dbuff@golder.com; lennon.anderson@dep.state.fl.us; forney.kathleen@epa.gov; abrams.heather@epa.gov; victoria.gibson@dep.state.fl.us; jeff.koerner@dep.state.fl.us; elizabeth.walker@dep.state.fl.us  
**Subject:** RAI: Waste Management, Inc. of Florida - Medley Landfill (0250615-012-AC/ PSD-FL-414)  
**Attachments:** RAI 0250615-012-AC.pdf

Dear Sir/Madam:

Please send a "reply" message verifying receipt of the attached document(s); this may be done by selecting "Reply" on the menu bar of your e-mail software, *noting that you can view the documents*, and then selecting "Send". We must receive verification of receipt and your reply will preclude subsequent e-mail transmissions to verify receipt of the document(s).

The document(s) may require immediate action within a specified time frame. Please open and review the document(s) as soon as possible.

The document is in Adobe Portable Document Format (pdf). Adobe Acrobat Reader can be downloaded for free at the following internet site: <http://www.adobe.com/products/acrobat/readstep.html> .

The Bureau of Air Regulation is issuing electronic documents for permits, notices and other correspondence in lieu of hard copies through the United States Postal System, to provide greater service to the applicant and the engineering community. Please advise this office of any changes to your e-mail address or that of the Engineer-of-Record.

Thank you,

Sylvia Livingston  
Department of Environmental Protection  
Division of Air Resource Management (DARM)  
850/921-9561  
[sylvia.livingston@dep.state.fl.us](mailto:sylvia.livingston@dep.state.fl.us)

Tracking:

## Livingston, Sylvania

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**From:** Kisiel, James [JKisiel@wm.com]  
**Sent:** Wednesday, September 15, 2010 12:08 PM  
**To:** Livingston, Sylvania  
**Subject:** RE: Waste Management, Inc. of Florida - Medley Landfill (0250615-012-AC/ PSD-FL-414)

Syliva,

The scan is difficult to read, but readable. Please send a higher quality image.

Respectfully Yours,

James Kisiel, P.E.  
Project Manager  
1001 Fannin Street, Suite 4000  
Houston, Texas 77002

713 823 7068

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**From:** Livingston, Sylvania [mailto:Sylvia.Livingston@dep.state.fl.us]  
**Sent:** Wednesday, September 15, 2010 9:57 AM  
**To:** Hawkins, Tim  
**Cc:** Kisiel, James; dbuff@golder.com; Anderson, Lennon; forney.kathleen@epa.gov; abrams.heather@epa.gov; Gibson, Victoria; Koerner, Jeff; Walker, Elizabeth (AIR)  
**Subject:** RAI: Waste Management, Inc. of Florida - Medley Landfill (0250615-012-AC/ PSD-FL-414)

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Thank you,

Sylvia Livingston  
Department of Environmental Protection  
Division of Air Resource Management (DARM)  
850/921-9561

## Livingston, Sylvia

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**From:** Livingston, Sylvia  
**Sent:** Wednesday, September 15, 2010 3:04 PM  
**To:** Kisiel, James  
**Subject:** RE: Waste Management, Inc. of Florida - Medley Landfill (0250615-012-AC/ PSD-FL-414)  
**Attachments:** RAI 0250615-012-AC\_b.pdf

James,

Here is a higher quality scan of your RAI. It's a much bigger document so hopefully you're able to view it.

Sylvia

**From:** Kisiel, James [mailto:JKisiel@wm.com]  
**Sent:** Wednesday, September 15, 2010 12:08 PM  
**To:** Livingston, Sylvia  
**Subject:** RE: Waste Management, Inc. of Florida - Medley Landfill (0250615-012-AC/ PSD-FL-414)

Sylvia,

The scan is difficult to read, but readable. Please send a higher quality image.

Respectfully Yours,

James Kisiel, P.E.  
Project Manager  
1001 Fannin Street, Suite 4000  
Houston, Texas 77002

713 823 7068

**From:** Livingston, Sylvia [mailto:Sylvia.Livingston@dep.state.fl.us]  
**Sent:** Wednesday, September 15, 2010 9:57 AM  
**To:** Hawkins, Tim  
**Cc:** Kisiel, James; dbuff@golder.com; Anderson, Lennon; forney.kathleen@epa.gov; abrams.heather@epa.gov; Gibson, Victoria; Koerner, Jeff; Walker, Elizabeth (AIR)  
**Subject:** RAI: Waste Management, Inc. of Florida - Medley Landfill (0250615-012-AC/ PSD-FL-414)

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