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AIR REGULATION



1501 Omni Way, St. Cloud, FL 34773

March 21, 2011

Ms. Caroline Shine
Program Administrator
Air Resource Management
Florida Department of Environmental Protection, Central District
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803-3767

Subject: Visible Emissions and Sulfur Content Testing
Landfill Gas Flare Station No. 1
JED Solid Waste Management Facility
Title V Permit 0970079-009-AV & Air Const. Permit 0970079-001-AC
JED Solid Waste Management Facility
Osceola County, Florida

Dear Ms. Shine:

Please find attached reporting of Visible Emissions and Sulfur Content Testing for the JED Solid Waste Management Facility's Landfill Gas Flare Station No. 1. Testing and reporting was completed by Golder Associates, Inc. in compliance with the above listed facility permits. No noncompliance conditions were noted in the visible emissions test report and the sulfur content test results were reported at 14 ppm (converted factor of 6.24 lbs SO₂/MMscf of landfill gas).

If you have any questions, please contact me at (904) 673-0446, mkaiser@wsii.us, at your earliest convenience.

Sincerely,

A handwritten signature in cursive script that reads "Mike Kaiser".

Mike Kaiser
Waste Services, Inc.

Cc: Bureau of Air Regulations, FDEP, Tallahassee, Florida



March 15, 2011

083-82734.11

Mr. Mike Kaiser
Waste Services, Inc.
1501 Omni Way
St. Cloud, FL 34773

**RE: VISIBLE EMISSIONS AND SULFUR CONTENT TESTING
LANDFILL GAS COLLECTION AND CONTROL SYSTEM FLARE
J.E.D. SOLID WASTE MANAGEMENT FACILITY
ST. CLOUD, OSCEOLA COUNTY, FLORIDA**

Dear Mr. Kaiser:

Golder Associates Inc. (Golder) is pleased to present to you the results from the visible emissions and sulfur testing performed on February 16, 2011 at the J.E.D. Solid Waste Management Facility (facility) located in St. Cloud, Osceola County, Florida.

VISIBLE EMISSIONS TESTING

The visible emissions testing (USEPA Method 22) was performed and no visible emissions were observed during the two hour monitoring period, thus the flare was operating in compliance with the facility's Title V Permit. The visible emissions testing is required to be performed annually on the flare.

SULFUR CONTENT ANALYSIS

Golder contracted with Test America, who in turn sub-contracted with Core Laboratories (located in Houston, Texas) (Core) to perform the ASTM D-3246 laboratory analysis for total sulfur content in the landfill gas at the facility. A sample of the landfill gas was collected from the positive pressure side of the facility's blower prior to the flare stack and sent to Core for laboratory analysis. The results indicate a 14 ppm (by weight) content of sulfur in the landfill gas. Please refer to the attached analysis which converts the resultant into the format required by FDEP (lbs SO₂ / MMscf LFG). This result is 2.2 lbs SO₂ / MMscf of landfill gas.

SUMMARY

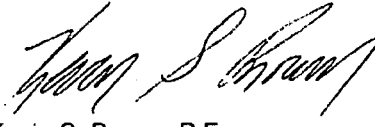
Both the visible emissions and sulfur content testing was completed on February 16, 2011. The accompanying documents support the results indicated above. These results are due to the FDEP by April 2, 2011.

Golder appreciates the opportunity to provide these services to WSI. Please contact us should you have any questions or require additional information.

Sincerely,

GOLDER ASSOCIATES INC.


Don E. Grigg
Senior Project Engineer


Kevin S. Brown, P.E.
Senior Consultant and Associate

Attachments: Visible Emissions Test Form
Test America Laboratory Report
Emission Factor Calculation

FN: G:\Projects\083\083-82\083-82734\083-82734.11\250_Final_Reports\Title V Annual Reporting\VE and Sulfur Test Report\2011\R-083-82734_11 Sulfur.docx

Golder Associates Inc.
9428 Baymeadows Road, Suite 400
Jacksonville, FL 32256 USA
Tel: (904) 363-3430 Fax: (904) 363-3445 www.golder.com



Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

VISIBLE EMISSIONS TEST FORM


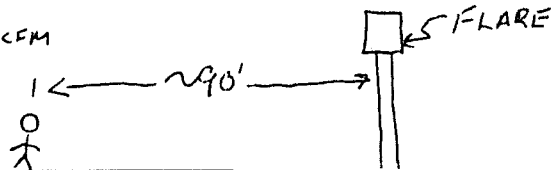
FUGITIVE OR SMOKE EMISSION INSPECTION OUTDOOR LOCATION			
Company Location <u>J.E.D. SOLID WASTE MANAGEMENT FACILITY</u> Company Rep. <u>D. GRIGG / V. FIGUEROA</u>	Observer <u>VKF/DEB</u> Affiliation <u>GAI</u> Date <u>2/16/11</u>		
Sky Conditions <u>MOSTLY CLEAR</u> Precipitation <u>NONE</u>	Wind Direction <u>E</u> Wind Speed <u>0-5</u>		
Industry <u>MSW LANDFILL</u>	Process Unit <u>FLARE</u>		
Sketch process unit: indicate observer position relative to source; indicate potential emission points and/or actual emission points.			
<div style="border: 1px solid black; padding: 10px; display: flex; align-items: center; justify-content: space-between;"> <div style="text-align: left;">  <p>FUEL: <u>LFG</u> HEAT INPUT: <u>567 Btu/cf*</u> GAS TEMP: <u>122.1</u> FLOW RATE: <u>2,013 SCFM</u> STACK TEMP: <u>1,397°F</u></p> </div> <div style="text-align: right;"> <p>N →</p>  </div> </div>			
OBSERVATIONS	Clock Time	Observation period duration, min:sec	Accumulated emission time, min:sec
Begin Observation	<u>0815</u>	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
End Observation	<u>1015</u>	<u>(2 hrs)</u> <u>120:00</u>	<u>0:00</u>
<u>DGA, VKF</u>			

Figure 22-1

* Heat input data taken from initial performance test of the flare, dated March 25, 2009.

TEST AMERICA LABORATORY REPORT

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

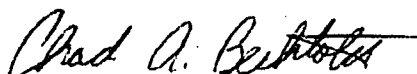
Job Number: 640-32536-1

Job Description: JED Solid Waste Mgmt. Facility

For:

Golder Associates Inc.
9428 Baymeadows Road
Suite 400
Jacksonville, FL 32256

Attention: Mr. Don E Grigg



Approved for release.
Chad Bechtold
Project Manager II
3/9/2011 4:44 PM

Chad Bechtold
Project Manager II
chad.bechtold@testamericainc.com
03/09/2011

These test results meet all the requirements of NELAC unless specified in the case narrative. All questions regarding this test report should be directed to the TestAmerica Project Manager who signed this test report. The estimated uncertainty associated with these reported results is available upon request. The results contained in this test report relate only to the samples included herein.

TestAmerica Tallahassee Florida Department of Health Certification No. E81005

ASTM D3246 analysis performed by Core Laboratories. Core does not have NELAC certification for this analysis.

TestAmerica Laboratories, Inc.
TestAmerica Tallahassee 2846 Industrial Plaza Drive, Tallahassee, FL 32301
Tel (850) 878-3994 Fax (850) 878-9504 www.testamericainc.com



SAMPLE SUMMARY

Client: Golder Associates Inc.

Job Number: 640-32536-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
640-32536-1	2011 JED Sulfur	Air	02/16/2011 0805	02/25/2011 1642



CORE LABORATORIES

201 Deerwood Glen Dr
Deer Park, TX 77536
281-478-1300

TESTAMERICA
Chad Bechtold
2846 INDUSTRIAL PLAZA DR
TALLAHASSEE, FL 32301

Report Number : 57801 110605
Date Reported 3/1/11
Date Received 2/25/11

Analytical Report

Sample No. 110605-001 Sample I 2011 JED Sulfur Date Sampled 2/16/11 8:05:00

Test	Result	Units	Method	Date	Analyst
Sulfur, Total in Gas by Micro.	14	ppm wt	ASTM D-3246	2/28/11	CB

Approved By: _____

Pat Gideons

The analytical results, opinions or interpretations contained in this report are based upon information and material supplied by the client for whose exclusive and confidential use this report has been made. The analytical results, opinions or interpretations expressed represent the best judgement of Core Laboratories. Core Laboratories, however, makes no warrant or representation, express or implied, of any type, and expressly disclaims same as to the productivity, proper operation or profitability of any oil, gas, or other mineral property, well or sand in conjunction with which such report is used or relied upon for any reason whatsoever. This report shall not be reproduced, in whole or in part, without the approval of Core Laboratories.

Chain of Custody Record

Client Information Client Contact: Chad Bechtold Company: TestAmerica Tallahassee Address: 2846 Industrial Plaza Drive City: Tallahassee State, Zip: FL 32301 Phone: 850-878-3994 Email: chad.bechtold@testamericainc.com Project Name: JED Sulfur Test Site: J.E.D. Solid Waste Management Facility			Sampler: <u>D. Grigg</u>		Lab PM:		Carrier Tracking No(s):			COC No:																																																																																																																															
			Phone: <u>904-363-3430</u>		E-Mail:		Page: 1 of 1																																																																																																																																		
Due Date Requested:					Analysis Requested					TAL Job #: _____ Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2SO3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify) Other: _____																																																																																																																															
TAT Requested (days): <u>Standard</u>					Field Filtered Sample (Yes or No) <input type="checkbox"/> ASTM D3248 (Subcontract to Core Labs) <input type="checkbox"/> Total Number of Containers: _____																																																																																																																																				
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Possible Hazard Identification: <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																																																																																																																																				
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Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.: _____			Cooler Temperature(s) °C and Other Remarks: _____																																																																																																																																				

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EMISSION FACTOR CALCULATION

Golder Associates	SUBJECT J.E.D. Solid Waste Management Facility Sulfur Emission Factor			
	JOB NO 083-82734.11	MADE BY DEG	DATE 3/10/2011	
	REF	CHECKED VKF	SHEET 1	OF 1
		REVIEWED KSB		

OBJECTIVE

Determine sulfur dioxide (SO₂) emission factor from facility testing of total sulfur (ppm by weight).

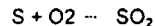
ASSUMPTIONS / GIVEN INFORMATION

1. All available sulfur converts to SO₂ (conservative)
2. One cubic foot of landfill gas weighs ~0.08 lbs (taken from LandGEM Model)
3. Ideal conditions have been assumed.
4. 14 ppm (by weight) - sulfur sampling on 2/16/11 (see attached results)

PROCEDURES

$$\frac{0.000014 \text{ lbs S}}{1 \text{ lb LFG}} \times \frac{0.08 \text{ lbs LFG}}{1 \text{ ft}^3 \text{ LFG}} = 1.1\text{E-}06 \text{ lb SO}_2/\text{ft}^3 \text{ LFG}$$

thus, there are 1.1 x 10⁻⁶ lb / ft³ LFG available to form SO₂



where: S = 32.065 g/mol
O = 15.9994 g/mol

therefore:
SO₂ = 64.06 g/mol

Estimate the ratio of S (by weight) to SO₂

$$\frac{S}{\text{SO}_2} = \frac{32.065}{64.06} = 0.5$$

therefore, double S to get SO₂ weight.

$$1.1 \times 10^{-6} \times 2 = 2.2\text{E-}06 \text{ lbs SO}_2/\text{ft}^3 \text{ LFG}$$

Create emission factor based on one million cubic feet of LFG

$$\frac{2.2 \times 10^{-6} \text{ lbs SO}_2}{\text{ft}^3 \text{ LFG}} \times \frac{1,000,000 \text{ ft}^3 \text{ LFG}}{\text{MMscf LFG}} = 2.2 \text{ lbs SO}_2/\text{MMscf LFG}$$

EMISSION ESTIMATE EXAMPLE

Assume 2,500 scfm LFG flow at the flare

$$\frac{2,500 \text{ scf}}{\text{min}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{24 \text{ hours}}{\text{day}} \times \frac{30 \text{ days}}{\text{month}} \times \frac{\text{MMscf}}{1,000,000 \text{ scf}} =$$

108 MMscf/month therefore,

$$2.2 \text{ lbs SO}_2/\text{MMscf LFG} \times 108 \text{ MMscf LFG/month} = 241.9 \text{ lbs SO}_2/\text{month}$$