2005 ANNUAL SOURCE TEST REPORT

Redwood Landfill
Landfill Gas Control - Flare - Source A-50
Facility Number A1179

Test Date: June 29, 2005

Submittal Date: August 10, 2005

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Prepared for:

Waste Management, Inc.
8950 Redwood Highway
Novato, CA 94948

For submittal to:

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Prepared by:

Shaw™ EMCON/OWT, Inc.
2360 Bering Drive
San Jose, California 95131-1121

Project 116753.01000000

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Landfill Gas Control - Flare - Source A-50
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The material and data in this report were reviewed by the undersigned.

Shaw™ Shaw Environmental, Inc.

William Johnston
Manager, Source Testing

Shaw™ EMCON/OWT, Inc.

Richard Merrill
Senior Air Quality Engineer

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1.0 Summary and Overview

1.1 Summary

Shaw Environmental, Inc. (Shaw) performed the source testing of the landfill gas flare at the Redwood Landfill located in Novato, California. This report presents the results of the test program. Table 1 summarizes the source test information. Table 2 summarizes the test results compared to the permit limits. The flare met all compliance criteria.

Table 1. Redwood Landfill
Source Test Information

Test Location:	Redwood Landfill 8950 Redwood Highway Novato, CA 94948	Contact: Whitney King 415-892-2851
Source Tested:	Enclosed Gas Flare (A-50)	
Test Objective:	Determine compliance with Major Facility Review Permit , Facility Number A1179 and Regulation 8, Rule 34 Flare, Source A-50: Permit Condition Number 19867	Emission Limits: NO_x: 15 ppmv@ 15% O_2 CO: 123 ppmv@ 15% O_2 NMOC: Destructive Efficiency greater than 98 percent or 30 ppmv @ 3% O_2, as methane
Test Performed By:	Shaw Environmental, Inc. 2360 Bering Drive San Jose, CA 95131	Contact: William R. Johnston Tel: (408) 382-5822 Fax: (408) 433-1912
Test Parameters:	Inlet—Landfill Gas O_2, N_2, CO_2, Btu, HHV, F-Factor THC, CH_4, NMOC, Sulfur Species, Organic Compounds Landfill gas volumetric flow rate	Outlet—Flare NMOC, NO_x, CO Volumetric flow rate

Notes:
NO_x = oxides of nitrogen
ppmv = parts per million by volume
CO = carbon monoxide
O_2 = oxygen
NMOC = non-methane organic compounds
N_2 = nitrogen
CO_2 = carbon dioxide
Btu = British thermal units
HHV = higher heating value
F-Factor = fuel factor
THC = total hydrocarbons
CH_4 = methane

Table 2. Compliance Summary
Test date: June 29, 2005

Condition	Average Result	Permit Limit	Compliance Status
NO_x (ppmv @ 15% O_2)	10	15	In Compliance
CO (ppmv @ 15% O_2)	30	123	In Compliance
NMOC (ppmv @ 3% O_2, dry as methane)	7	30	In Compliance

1.2 Overview

Shaw, an approved California Air Resources Board (ARB) source test contractor, performed the source test program. EMCON/OWT, Inc. (EMCON/OWT), the Solid Waste Management Division of Shaw, reviewed the source test data and report. The test program was designed to demonstrate compliance with the Bay Area Air Quality Management District (BAAQMD) Major Facility Review (MFR) Title V Permit, Facility Number A1179, Condition Number 19867 (See Appendix A) and Regulation 8, Rule 34. The source test was performed on the flare exhaust to assess the emissions of NMOC, NO_x, and CO. Additionally, a landfill gas (LFG) sample was collected for gas characterization.

The source test was conducted on June 29, 2005. Sampling was performed by Mr. Bill Johnston of Shaw. The BAAQMD was notified of the test via a letter dated June 15, 2005 that included the Source Test Protocol. The BAAQMD did not have a representative present. A copy of the Source Test Protocol is presented in Appendix B. Source test data are located in Appendix C. A copy of Shaw's ARB Independent Contractor Program certification is included in Appendix D.

The source test program for collecting the required performance data is discussed in Section 2; the source testing results are presented in Section 3; the source test procedures are presented in Section 4; and data review is discussed in Section 5. Supporting documentation is presented in the appendices.

1.3 Source Operating Conditions

The flare is a Power Strategies EV 4000 enclosed ground flare assembly with a total capacity of 4000 standard cubic feet per minute (scfm). With the addition of a new enclosed LFG (A-51), flare (A-50) is operated as a back-up flare. The LFG volumetric flow rate is measured with a LFG mass flow meter and continuously recorded on a chart recorder. Three thermocouples are installed at the top, middle, and bottom of the flare exhaust stack to provide temperature indication for control of the combustion temperature. The flare was operating at an average temperature of 1,679 degrees Fahrenheit (°F) for the source test. The temperature was measured

from the top thermocouple. A circular paper chart recorder documents the flare temperatures and gas flow rate.

The flare was fired continuously with LFG. Process data documenting the operation of the flare are contained in Appendix E. A picture of the flare is presented in Appendix F.

2.0 Source Test Program

The objective of the flare source test was to demonstrate compliance with requirements of MFR Condition Number 19867 for LFG parameters NO_x, CO, NMOC, and other gaseous constituents.

Measurements of the flare's emissions were conducted at the flare exhaust. LFG was sampled at the inlet to the flare. Table 3 provides a test matrix of the parameters tested at each sample location. U.S. Environmental Protection Agency (EPA) and BAAQMD source test methods were used. The source test program consisted of three 30-minute runs to measure gaseous emissions in the flare exhaust and one 30-minute run for the inlet header to the flare. The continuous emission monitoring system (CEMS) equipment was leak-checked before sampling began. Each instrument was calibrated before and after each sampling run with EPA protocol calibrated gas standards and a gas dilution system. The CEMS data are presented in Appendix G.

Concurrent with the exhaust sampling, Shaw collected one integrated 5-liter Tedlar® bag sample of the inlet LFG for analysis of organic compounds, sulfur compounds, HHV, F-Factor, and additional fixed gases. The organic and sulfur compounds are identified in the Condition Number 19867, Parts 18 and 31. The analytical laboratory results are contained in Appendix H.

The flare operating temperature and landfill gas rate were recorded on a field data sheet at the beginning and end of each run. The outlet volumetric flow rate was calculated using the fuel flow rate, HHV, exhaust gas O_2 content, and the F-Factor according to EPA Method 19. The flare temperature was measured from the top thermocouple.

Results of the emission tests for the LFG and flare exhaust are summarized in Tables 4 and 5, respectively, located in Section 3. Compliance for NMOC was demonstrated by verifying that the concentrations of NMOC were less than 30 ppmv at 3 percent O_2 as methane. The source test demonstrated that the flare operates with criteria pollutant emissions below the BAAQMD permit limits.

Table 3. Source Test Methods and Instrumentation

Method	Inlet (fuel) Analyte	Exhaust Analyte	Instrumentation/ Laboratory	Principle
ASTM D-1945/D-3588EPA Method 25 C	Fixed Gases, HHV and F-Factor NMOC	—	Atmospheric Analysis & Consulting, Inc.	Chromatographic Analysis GC/FID/TCA Analysis
BAAQMD Method ST-6	—	CO	Horiba VIA 510	IR
BAAQMD Method ST-7		$THC/CH_4/NMOC$	TECO Model 51	FID
BAAQMD Method ST-13A		NO_x	Ecophysics Model 70E	Chemiluminescence
BAAQMD Method ST-14		O_2	Teledyne	Fuel Cell
EPA Method 19		Flow rate, dscfm	—	Algorithm

Notes:
ASTM = American Society for Testing and Materials
dscfm = dry standard cubic feet per minute
FID = flame ionization detection
GC = gas chromatography
TCA = thermal conductivity analyzer
IR = infrared

3.0 Source Test Results

The source test was performed on the LFG fuel and flare exhaust. Table 4 presents the results of the LFG analysis. The LFG sample was drawn from the inlet header to the flare and was analyzed for organic compounds, sulfur compounds, HHV, F-Factor, and additional fixed gases. Table 5 presents the results of the source test. Triplicate 30-minute runs were performed on the flare exhaust to assess the NMOC, NO_x, and CO emissions. Concurrent with each run, the O_2 content of the exhaust gas was also measured. Concentrations of CO and NO_x are reported in units of ppmv corrected to 15 percent O_2. Concentrations of NMOC are reported in units of ppmv corrected to 3 percent O_2. Because THC concentrations measured were below the NMOC permit limits, the methane concentration was not measured.

To comply with Condition Number 19867, Parts 18 and 31, an LFG gas characterization was performed concurrently with the annual source test. Table 6 presents the results of the landfill gas characterization. The Run 2 Tedlar® bag sample was analyzed for the list of compounds. All compounds listed in Part 18 of the permit condition Number 19867 were reported below the specified limits.

Table 4. Redwood Landfill
Flare Operating Conditions and LFG Analysis
Test date: June 29, 2005

	Run 1	Run 2	Run 3	Average
Time	1030-1100	1108-1138	1146-1216	—
Flare Temperature (°F)	1,686	1,674	1,676	1,679
Recorded Fuel Flow Rate (scfm)	939	936	939	938
Heat Input MMBtu/day	710.9	709.0	711.2	710.4
O_2 (%)[1]	—	1.2	—	—
CO_2 (%)[1]	—	37	—	—
N_2 (%)[1]	—	10	—	—
Methane (%)[1]	—	52	—	—
NMOC (ppmv)[1]	—	927	—	—

[1] Only one sample of landfill gas was collected and analyzed for this value.

Table 5. Redwood Landfill
Source Test Results — Landfill Flare Exhaust A-50
Test date: June 29, 2005

	Run 1	Run 2	Run 3	Average	Permit
Time	1030-1100	1108-1138	1146-1216	—	—
Fuel Factor	9,239	9,239	9,239	9,239	—
Flare Temperature, Set Point (°F)	1,686	1,674	1,676	1,679	—
Landfill Gas Fuel Flow Rate (scfm)	939	936	939	938	—
Exhaust Flow Rate (dscfm)	11,625	11,054	11,922	11,534	—
O_2 (%)	12.7	12.3	12.9	12.6	—
NO_x					—
NO_x (ppmv)	14.7	15.2	13.9	14.6	—
NO_x (ppmv @ 15% O_2)	10.6	10.4	10.3	10.4	15
NO_x (lb/MMBtu)	0.041	0.041	0.040	0.041	0.06
CO					—
CO (ppmv)	44.8	34.0	47.1	42.0	—
CO (ppmv @ 15% O_2)	32.2	23.3	34.7	30.1	123
CO (lb/MMBtu)	0.076	0.055	0.082	0.071	0.30
Hydrocarbons as Methane					—
NMOC (ppmv)[1]	3.1	2.4	4.1	3.2	—
NMOC (ppmv corrected to 3% O_2)	6.8	5.0	9.2	7.0	30
NMOC Removal Efficiency (%)[2]	—	96.9	—	—	—

[1]These numbers are derived from THC values.

[2] Only one sample of landfill gas was analyzed for this value.

Table 6. Summary of Results, Redwood Landfill
Landfill Gas Analysis for Run 2
Test date: June 29, 2005

Compound	Measured Concentration (ppbv)	Permit Concentration Limit (ppbv)
Organic Compounds[1]		
Acrylonitrile	< 10	280
Benzene	256	340
Carbon Tetrachloride	< 10	70
Chlorobenzene	156	—
Chlorodifluoromethane	1181	—
Chloroethane	76	—
Chloroform	< 10	70
1,1-Dichloroethane	51	150
1,1-Dichloroethene	< 10	—
1,2-Dichloroethane (Ethylene dichloride)	< 20	70
1,4,Dichlorobenzene	23	400
Dichlorodifluoromethane	756	—
Dichlorofluoromethane	101	—
Ethylbenzene	3661	—
1,2-Dibromethane (Ethylene Dibromide)	< 10	70
Fluorotrichloromethane	23	—
Hexane	373	—
Isopropanol	3431	—
Methyl Ethyl Ketone	5515	—
Methylene Chloride	< 20	320
Perchloroethylene (Tetrachloroethylene)	85	450
Toluene	6515	—
1,1,1-Trichloroethane	< 10	—
1,1,2,2-Tetrachloroethane	< 10	70
Trichloroethylene	62	250
Vinyl Chloride	556	880
Xylenes	6685	—
Compound	**Measured Concentration (ppmv)**	**Permit Concentration Limit (ppmv)**
Sulfur Compounds[2]		
Carbon Disulfide	< 0.05	—
Carbonyl Sulfide	< 0.05	—
Dimethyl Sulfide	< 0.05	—
Ethyl Mercaptan	< 0.05	—
Hydrogen Sulfide	502	—
Methyl Mercaptan	< 0.05	—
NMOC		
NMOC (as Hexane)	154.5	750

Notes:

ppbv = parts per billion by volume

ppmv = parts per million by volume

[1] For compounds reported as non-detected, a less than (<) sign is used and the practical quantitation limit value is reported.

[2] For compounds reported as non-detected, a less than (<) sign is used and the method detection limit value is reported.

4.0 Test Procedures

Shaw conducted the source test according to BAAQMD and EPA test methods as described below.

4.1 Continuous Emissions Monitoring

Shaw measured stack gas constituent concentrations, using its CEMS sampling van, according to EPA methods for NMOC, NO_x, CO, and O_2. Figure 1 is a schematic diagram of the Shaw CEMS.

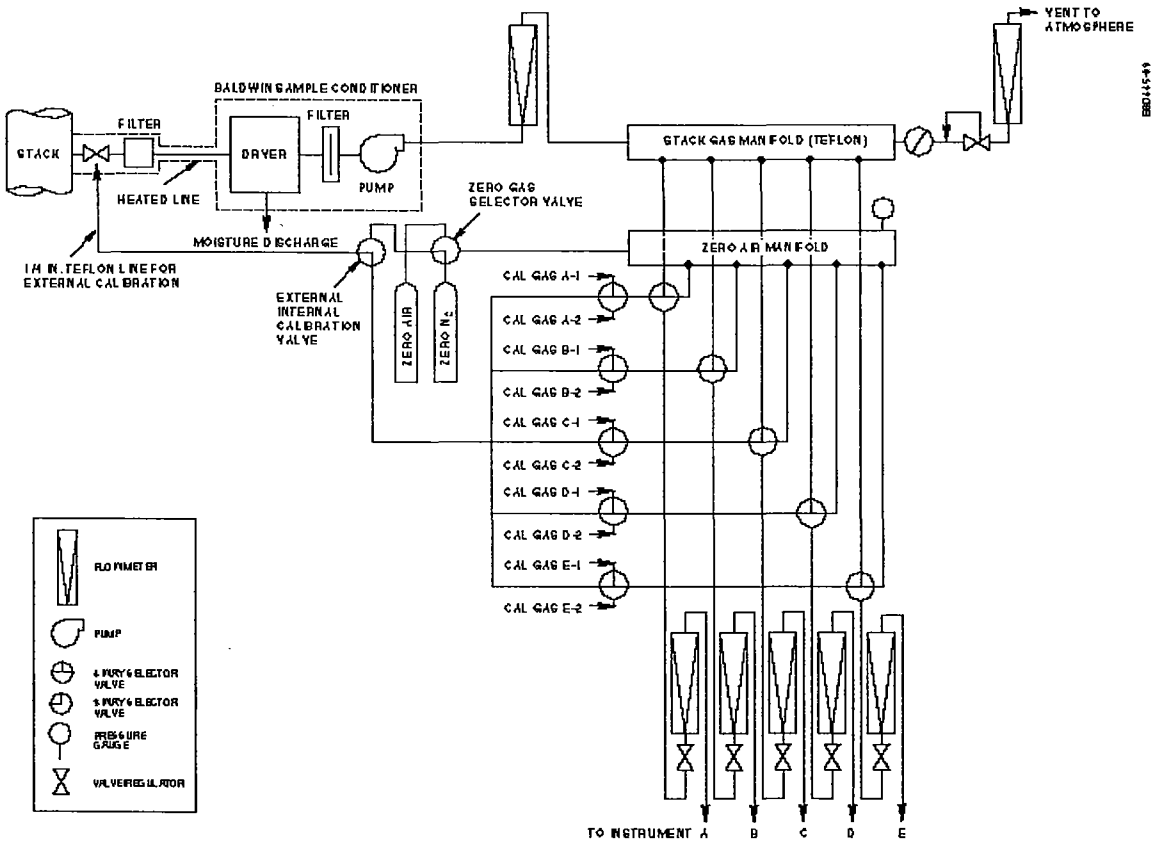

Figure 1. Schematic Diagram of the Shaw CEMS

In this source test, a sample pump was used to extract the sample gas continuously from each source through a stainless-steel sampling probe equipped with an in-stack filter, followed by a heated Teflon™ sample line and a Baldwin sample conditioner. The sample line between the sample point and the sample conditioner was heated to 250°F to maintain the gas stream temperatures above the water dew point. Gas flow was controlled with a back-pressure regulator. The sample flow rate to each instrument was controlled with individual rotameters. Instrument output was recorded with a strip chart recorder and a digital data logger, the STRATA data acquisition system. Table 7 lists the specifications of the instruments used in the source test.

Table 7. CEMS Instrument Specifications

Gas	Analyzer/Manufacturer	Principle of Operation	Operating Range
O_2	Teledyne 326A	Fuel Cell	0-25%
THC	TECO Model 51	Flame Ionization	0-50 ppmv as CH_4
NO_x	Ecophysics 70E	Chemiluminescence	0-50 ppmv
CO	Horiba VIA 510	NDIR	0-250 ppmv

Note:
NDIR = nondispersive infrared

Before the start of testing, the sampling system was assembled at the site and leak-checked. Calibrations were performed on each of the instruments using certified calibration gases and a gas dilution system.

A span drift check was performed at the end of each run to measure analyzer drift. The drift check measurement uses a zero gas (N_2) and a high calibration gas. All of the instrument checks conducted for this source test were within the drift limit criterion of 3 percent, as specified in the test methods. Reported values include a correction for the recorded instrument drift, as specified in EPA Method 6C. Copies of data logger printouts, calibration data sheets, strip charts, and gas certificates of analysis, are presented in Appendix G.

4.2 Landfill Gas

Shaw measured LFG constituent concentrations according to ASTM test methods. The sample was collected from a sample port located at the flare inlet header. The sample was collected in a 5-liter Tedlar® bag under positive pressure through Teflon™ tubing. The sample line was purged with sample gas prior to sampling. The sample flow rate was controlled with rotameters to collect a 30-minute integrated sample. The sample was kept out of sunlight and analyzed within the method holding times. Analytical results are presented in Appendix H.

5.0 Data Review

EMCON/OWT performed a quality assurance review of the source test data and report. The review included the following activities:

- Review of the general text
- Check of calculation algorithms for correctness
- Review of CEMS data extraction
- Determination that all supporting documentation is present

A detailed manual review of the data was completed. Based on our data review, EMCON/OWT concludes the following:

- The source test procedures were followed, and all data were reduced and entered into the reporting spreadsheets properly.
- The instrument drift and other measures of instrument performance were deemed acceptable.

As a result, the data are considered to be acceptable.

Limitations

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

Appendix A
Major Facility Review Permit

Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

~~Final~~Proposed

MAJOR FACILITY REVIEW PERMIT

Issued To:
Redwood Landfill, Inc.
Facility #A1179

Facility Address:
8950 Redwood Highway
Novato, CA 94948

Mailing Address:
P. O. Box 793
Novato, CA 94948

Responsible Official	**Facility Contact**
James Devlin, Vice President	Whitney King, Environmental Programs
415-892-2851	415-892-2851

Type of Facility:	Landfill for Solid Waste Disposal	BAAQMD Engineering Division Contact:
Primary SIC:	4953	Carol S. Allen
Product:	Refuse and Sludge Disposal	

ISSUED BY THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT

~~Signed by Peter F. Hess for Jack P. Broadbent~~ ~~November 10, 2004~~

Jack P. Broadbent, Executive Officer/Air Pollution Control Officer — Date

VI. Permit Conditions

Condition # 19867

FOR: S-5, REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18, WATER SPRAYS; AND A-50, LANDFILL GAS FLARE

	Minimum	Maximum
Install New Vertical Wells:	0	58
Install New Horizontal Collectors	0 feet	4000 feet
Decommission Horizontal Collectors	0 feet	11

Wells installed or shutdown pursuant to subpart b shall be added to or removed from subpart a in accordance with the procedures identified in Regulations 2-6-414 or 2-6-415. The Permit Holder shall maintain records of the initial operation date for each new well.

(Basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305, and 2-6-413)

18. If a gas characterization test indicates that this site's landfill gas contains compounds in excess of any of the concentrations listed below, then the Permit Holder shall submit an application for a Change of Permit Conditions, within no later than 30 days from receipt of the test results.

a. Total Non-Methane Organic Compounds: 750 ppmv (calculated as hexane equivalent)
Total Reduced Sulfur (TRS) Content: ~~231 ppmv~~ (calculated as hydrogen sulfide equivalent)
Peak TRS Limit (any single test): 1300 ppmv
Annual Average TRS Limit: 425 ppmv

(Basis: Cumulative Increase and RACT)

*b. For toxic air contaminants (TACs):

Compound	Concentration
Acrylonitrile	280 ppbv
Benzene	340 ppbv
Carbon Tetrachloride	70 ppbv
Chloroform	70 ppbv
1,4 Dichlorobenzene	400 ppbv
1,1 Dichloroethane	150 ppbv
Ethylene Dibromide	70 ppbv
Ethylene Dichloride	70 ppbv
Methylene Chloride	320 ppbv
Perchloroethylene	450 ppbv
1,1,2,2 Tetrachloroethane	70 ppbv
Trichloroethylene	250 ppbv
Vinyl Chloride	880 ppbv

(Basis: Toxic Risk Management Policy)

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Condition # 19867
FOR: S-5, REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18, WATER SPRAYS; AND A-50, LANDFILL GAS FLARE

19. The A-50 Landfill Gas Flare shall be fired on landfill gas and may also be used to abate leachate vapors from the S-50 Leachate Vaporator.
(Basis: RACT and Regulation 2-2-112)

20. The total throughput of landfill gas (with an HHV of 500 BTU/scf) to the A-50 Landfill Gas Flare shall not exceed 1,490,000,000 scf during any consecutive 12-month period and shall not exceed 5,760,000 scf during any one day. In order to demonstrate compliance with this condition, the A-50 Flare shall be equipped with a properly operating continuous gas flow meter.
(Basis: Cumulative Increase, 40 CFR 60.756(b)(2)(i))

21. The A-50 Landfill Gas Flare shall be operated continuously unless:
    a. The owner/operator of A-50 is performing inspection and maintenance activities meeting the requirements of 8-34-113.

    In order to assure compliance with this condition, the A-50 Landfill Gas Flare shall be equipped with local and remote alarms and auto restart capability. The A-50 Flare and associated systems shall be properly maintained.
    (Basis: 8-34-301.1)

22. The temperature in the combustion zone of A-50 shall be maintained at a minimum of 1475 degrees F, averaged over any 3-hour period. In order to demonstrate compliance with this condition, A-50 shall be equipped with a continuous temperature monitor and recorder. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise this temperature limit, in accordance with the procedures identified in Regulation 2-6-414 or 2-6-415, based on the following criteria. The minimum combustion zone temperature for A-2 shall be equal to the average combustion zone temperature determined during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature is not less than 1400 degrees F.
    (Basis: Toxic Risk Management Policy, Regulations 8-34-301.3 and 8-34-501.3, and 40 CFR 60.756(b)(1))

23. The A-50 Landfill Gas Flare shall comply with the NMOC emission limit in Regulation 8-34-301.3.
    (Basis: Cumulative Increase, 8-34-301.3, and 40 CFR 60.752(b)(2)(iii)(B))

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*24. The A-50 Landfill Gas Flare shall achieve a minimum destruction efficiency of 83% by weight for any EPA Hazardous Air Pollutants or any District toxic compounds that are determined to be present in the landfill gas or leachate vapors. (Basis: Toxic Risk Management Policy)

25. Nitrogen oxides (NO_x) emissions from the A-50 Landfill Gas Flare shall not exceed 0.06 pounds of NO_x, calculated as NO_2, per million BTU. Compliance with this emission limit may be demonstrated by meeting the following concentration limit. The concentration of NO_x in the flue gas from A-50 shall not exceed 15 ppmv of NO_x, corrected to 15% oxygen, dry basis.
(Basis: RACT and Offsets)

26. Carbon monoxide (CO) emissions from the A-50 Landfill Gas Flare shall not exceed 0.30 pounds of CO per million BTU. Compliance with this emission limit may be demonstrated by meeting the following concentration limit. The concentration of CO in the flue gas from A-50 shall not exceed 123 ppmv of CO, corrected to 15% oxygen, dry basis. (Basis: RACT and Cumulative Increase)

27. [deleted]

28. [deleted]

29. The Permit Holder shall maintain records of all planned and unanticipated shut downs of the A-50 Flare and of any temperature excursions. The records shall include the date, time, duration, and reason for any shut down or excursion. Any unanticipated shut downs or temperature excursions shall be reported to the Enforcement Division immediately. All inspection and maintenance records, records of shut downs and excursions, gas flow records, temperature records, analytical results, source test results, and any other records required to demonstrate compliance with the above permit conditions, Regulation 8 Rule 34, or 40 CFR Part 60 Subpart WWW shall be retained on site for a minimum of five years and shall be made available to District staff upon request.
(Basis: 2-6-501, 8-34-501, 40 CFR 60.758)

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FOR: S-5, REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18, WATER SPRAYS; AND A-50, LANDFILL GAS FLARE

30. In order to demonstrate compliance with Parts 23, 25, and 26 above, Regulation 8, Rule 34, Sections 301.3 and 412, and 40 CFR 60.8 and 60.752(b)(2)(iii)(B), the Permit Holder shall ensure that a District approved source test is conducted annually on the A-50 Landfill Gas Flare. Each annual source test shall determine the following:
    a. landfill gas flow rate to the flare (dry basis);
    b. concentrations (dry basis) of carbon dioxide (CO_2), nitrogen (N_2), oxygen (O_2), total hydrocarbons (THC), methane (CH_4), and total non-methane organic compounds (NMOC) in the landfill gas;
    c. stack gas flow rate from the flare (dry basis);
    d. concentrations (dry basis) of NO_x, CO, NMOC, and O_2 in the flare stack gas;
    e. NMOC destruction efficiency achieved by the flare;
    f. NO_x and CO emission rates from the flare in units of pounds per MM BTU,
    g. average combustion zone temperature in the flare during the test period.

    Each annual source test shall be conducted no earlier than 9 months and no later than 12 months after the previous annual source test. The Source Test Section of the District shall be contacted to obtain approval of the source test procedures at least 14 days in advance of each source test. The Source Test Section shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 45 days of the test date. (Basis: Cumulative Increase, Toxic Risk Management Policy, RACT, Offsets, Regulations 8-34-301.3, 8-34-412, 40 CFR 60.8 and 40 CFR 60.752(b)(2)(iii)(B))

31. a. The Permit Holder shall conduct a characterization of the landfill gas on a quarterly basis with one test concurrent with the annual source test required by Part 30 above. The landfill gas sample shall be drawn from the main landfill gas header. Each quarterly landfill gas sample shall be analyzed for the sulfur compounds listed below. Once per year (concurrent with the Part 30 annual source test) the landfill gas shall be analyzed for all the organic and sulfur compounds listed below. All concentrations shall be reported on a dry basis. The test report shall be submitted to the Compliance and Enforcement Division and the Source Test Section within 45 days of the test date. (Basis: Toxic Risk Management Policy and Regulations 8-34-412 and 9-1-302)

VI. Permit Conditions

Condition # 19867

FOR: S-5, REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18, WATER SPRAYS; AND A-50, LANDFILL GAS FLARE

Organic Compounds	Organic Compounds	Sulfur Compounds
acrylonitrile	ethylene dibromide	carbon disulfide
benzene	fluorotrichloromethane	carbonyl sulfide
carbon tetrachloride	hexane	dimethyl sulfide
chlorobenzene	isopropyl alcohol	ethyl mercaptan
chlorodifluoromethane	methyl ethyl ketone	hydrogen sulfide
chloroethane	methylene chloride	methyl mercaptan
chloroform	perchloroethylene	
1,1 dichloroethane	toluene	
1,1 dichlorethene	1,1,1 trichloroethane	
1,2 dichlorethane	1,1,2,2 tetrachloroethane	
1,4 dichlorbenzene	trichloroethylene	
dichlorodifluoromethane	vinyl chloride	
dichlorofluoromethane	xylenes	
ethylbenzene		

b. Once per week, beginning no later than March 31, 2005, the Permit Holder shall analyze the landfill gas for hydrogen sulfide (H2S) concentration using a Draeger tube to further demonstrate compliance with Part 18 and Regulation 9-1-302. The landfill gas sample shall be drawn from the main landfill gas header. The Permit Holder shall follow the manufacturer's procedures for using the Draeger tube and interpreting the results. The total reduced sulfur (TRS) content of the landfill gas shall be calculated using the average ratio of TRS/H2S for this site according to the following equation: TRS = 1.015* H2S measured by Draeger tube. The Permit Holder shall maintain records of all Draeger tube test dates and test results and shall summarize the average H2S concentrations and the calculated TRS content of the landfill gas on a quarterly basis. Each Draeger tube test result (after conversion to TRS content) and the quarterly laboratory analysis in Part 31a shall be compared to the Peak TRS Limit in Part 18. On a rolling quarterly basis, the Permit Holder shall determine the annual average TRS content for comparison to the Annual Average TRS Limit in Part 18. (Basis: RACT and Regulation 9-1-302).

VI. Permit Conditions

Condition # 19867
FOR: S-5, REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM; A-18, WATER SPRAYS; AND A-50, LANDFILL GAS FLARE

32. The annual report required by BAAQMD Regulation 8-34-411 shall be submitted in two semi-annual increments. The reporting period for the first increment of the Regulation 8-34-411 annual report that is submitted subsequent to the issuance of the MFR Permit for this site shall be from December 1, 2003 through April 30, 2004. This first increment report shall be submitted by May 31, 2004. The reporting periods and report submittal due dates for all subsequent increments of the Regulation 8-34-411 report shall be synchronized with the reporting periods and report submittal due dates for the semi-annual MFR Permit monitoring reports that are required by Section I.F of the MFR Permit for this site. A single report may be submitted to satisfy the requirements of Section I.F, Regulation 8-34-411, and 40 CFR Part 63.1980(a), provided that all items required by each applicable reporting requirement are included in the single report.
(Basis: Regulation 8-34-411 and 40 CFR Part 63.1980(a))

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Collection System Installation Dates	BAAQMD 8-34-304.1	Y		For Inactive/Closed Areas: collection system components must be installed and operating by 2 years + 60 days after initial waste placement	BAAQMD 8-34-501.7 and 501.8 and BAAQMD Condition # 19867, Parts 5 and 17b	P/E	Records
Collection System Installation Dates	BAAQMD 8-34-304.2	Y		For Active Areas: Collection system components must be installed and operating by 5 years + 60 days after initial waste placement	BAAQMD 8-34-501.7 and 501.8 and BAAQMD Condition # 19867, Parts 5 and 17b	P/E	Records
Collection System Installation Dates	BAAQMD 8-34-304.3	Y		For Any Uncontrolled Areas or Cells: collection system components must be installed and operating within 60 days after the uncontrolled area or cell accumulates 1,000,000 tons of decomposable waste	BAAQMD 8-34-501.7 and 501.8 and BAAQMD Condition # 19867, Parts 5 and 17b	P/E	Records
Collection System Installation Dates	40 CFR 60.753 (a)(2) and 60.755 (b)(2)	Y		For Inactive/Closed Areas: collection system components must be installed and operating by 2 years + 60 days after initial waste placement	40 CFR 60.758(a), (d)(1) and (d)(2), and 60.759(a)(3)	P/E	Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Collection System Installa-tion Dates	40 CFR 60.753 (a)(1) and 60.755 (b)(1)	Y		For Active Areas: Collection system components must be installed and operating by 5 years + 60 days after initial waste placement	40 CFR 60.758(a), (d)(1) and (d)(2)	P/E	Records
Gas Flow	BAAQMD 8-34-301 and 301.1 and BAAQMD Condition # 19867, Parts 16 and 17	Y		Landfill gas collection system shall operate continuously and all collected gases shall be vented to a properly operating control system	BAAQMD 8-34-501.1, 8-34-501.2, 8-34-501.10, 8-34-508, and BAAQMD Condition # 19867, Parts 20 and 29	C P/D	Gas Flow Meter and Recorder (every 15 minutes), and Records of Landfill Gas Flow Rates, Collection and Control Systems Downtime, and Collection System Components
Gas Flow	40 CFR 60.753(a) and (e)	Y		Operate a Collection System in each area or cell and vent all collected gases to a properly operating control system	40 CFR 60.756(b)(2) (i or ii) and 60.758(c)(2)	C or P/M	Gas Flow Meter and Recorder (every 15 minutes) or Monthly Inspection of Bypass Valve and Lock and Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Gas Flow	BAAQMD 8-34-301, 301.1, 301.3, and 301.4, and BAAQMD Condition # 19867, Parts 16 and 21	Y		Vent all collected gases to a properly operating control system and operate control system continuously.	BAAQMD 8-34-501.10 and 508 and BAAQMD Condition # 19867, Parts 21 and 29	C P/E	Gas Flow Meter and Recorder (every 15 minutes); Alarms; and Records
Gas Flow	40 CFR 60.752 (b)(2)(iii) and 60.753(e) and (f)	Y		Vent all collected gases to a properly operating control system and operate control system at all times when gas is vented to it	40 CFR 60.756(b)(2) (i or ii) and 60.758(c)(2)	C or P/M	Gas Flow Meter and Recorder (every 15 minutes) or Monthly Inspection of Bypass Valve and Lock and Records
Landfill Gas Through-put	BAAQMD Condition # 19867, Part 20	Y		≤ 5,760,000 scf per day and ≤ 1,490,000,000 scf per 12-month period (applies to A-50 Flare only)	BAAQMD Condition # 19867, Parts 20 and 29	C	Gas Flow Meter and Recorder
Collection and Control Systems Shutdown Time	BAAQMD 8-34-113.2	Y		240 hours per year and 5 consecutive days	BAAQMD 8-34-501.1	P/D	Operating Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Collection System Startup Shutdown or Malfunc-tion	40 CFR 60.755(e)	Y		5 days per event	40 CFR 60.7(b), 60.757(f)(2) and (f)(4)	P/D	Operating Records (all occurrences and duration of each)
Control System Startup Shutdown or Mal-function	40 CFR 60.755(e)	Y		1 hour per event	40 CFR 60.7(b), 60.757(f)(2) and (f)(3)	P/D	Operating Records (all occurrences and duration of each)
Startup Shutdown or Mal-function Pro-cedures	40 CFR 63.6(e)	Y		Minimize Emissions by Implementing SSM Plan	40 CFR 63.1980(a-b)	P/E	Records (all occurrences, duration of each, corrective actions)
Periods of Inopera-tion for Para-metric Monitors	BAAQMD 1-523.2	Y		15 consecutive days per incident and 30 calendar days per 12-month period	BAAQMD 1-523.4	P/D	Operating Records for All Parametric Monitors (for gas flow and temperature monitors)

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Continuous Monitors	40 CFR 60.13(e)	Y		Requires Continuous Operation except for breakdowns, repairs, calibration, and required span adjustments	40 CFR 60.7(b)	P/D	Operating Records for All Continuous Monitors (for gas flow and temperature monitors)
Wellhead Pressure	BAAQMD 8-34-305.1	Y		< 0 psig	BAAQMD 8-34-414, 501.9 and 505.1	P/M	Monthly Inspection and Records
Wellhead Pressure	40 CFR 60.753(b)	Y		< 0 psig	40 CFR 60.755(a)(3), 60.756(a)(1), and 60.758(c) and (e)	P/M	Monthly Inspection and Records
Temperature of Gas at Wellhead	BAAQMD 8-34-305.2	Y		< 55 °C	BAAQMD 8-34-414, 501.9 and 505.2	P/M	Monthly Inspection and Records
Temperature of Gas at Wellhead	40 CFR 60.753(c)	Y		< 55 °C	40 CFR 60.755(a)(5), 60.756(a)(3), and 60.758(c) and (e)	P/M	Monthly Inspection and Records
Gas Concentrations at Wellhead	BAAQMD 8-34-305.3 or 305.4	Y		N_2 < 20% **OR** O_2 < 5%	BAAQMD 8-34-414, 501.9 and 505.3 or 505.4	P/M	Monthly Inspection and Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Gas Concentrations at Wellhead	40 CFR 60.753(c)	Y		$N_2 < 20\%$ **OR** $O_2 < 5\%$	40 CFR 60.755(a)(5), 60.756(a)(2), and 60.758(c) and (e)	P/M	Monthly Inspection and Records
Well Shutdown Limits	BAAQMD 8-34-116.2	Y		No more than 5 wells at a time or 10% of total collection system, whichever is less	BAAQMD 8-34-116.5 and 501.1	P/D	Records
Well Shutdown Limits	BAAQMD 8-34-116.3	Y		24 hours per well	BAAQMD 8-34-116.5 and 501.1	P/D	Records
Well Shutdown Limits	BAAQMD 8-34-117.4	Y		No more than 5 wells at a time or 10% of total collection system, whichever is less	BAAQMD 8-34-117.6 and 501.1	P/D	Records
Well Shutdown Limits	BAAQMD 8-34-117.5	Y		24 hours per well	BAAQMD 8-34-117.6 and 501.1	P/D	Records
Total Carbon Emissions	BAAQMD 8-2-301	Y		15 pounds/day or 300 ppm, dry basis (applies to soil containing $\leq$ 50 ppmw of VOC during aeration or use as cover)	BAAQMD Condition # 19867, Part 14	P/E	Soil or Surface VOC Analysis and Records
Volatile Organic Compound (VOC) Emissions	BAAQMD Condition # 19867, Part 14	Y		10,530 pounds per calendar year (applies to soil containing $\leq$ 50 ppmw of VOC during aeration or use as cover)	BAAQMD Condition # 19867, Part 14	P/E, M	Soil or Surface VOC Analysis and Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
TOC (Total Organic Com-pounds Plus Methane)	BAAQMD 8-34-301.2	Y		1000 ppmv as methane (component leak limit)	BAAQMD 8-34-501.6 and 503	P/Q	Quarterly Inspection of collection and control system components with portable analyzer and Records
TOC	BAAQMD 8-34-303	Y		500 ppmv as methane at 2 inches above surface	BAAQMD 8-34-415, 416, 501.6, 506 and 510	P/M, Q, and E	Monthly Visual Inspection of Cover, Quarterly Inspection with Portable Analyzer of Surface, Various Reinspec-tion Times for Leaking Areas, and Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
TOC	40 CFR 60.753(d)	Y		<500 ppmv as methane at 5-10 cm from surface	40 CFR 60.755(c)(1), (4) and (5), 60.756(f), and 60.758(c) and (e)	P/M, Q and E	Monthly Visual Inspection of Cover, Quarterly Inspection with Portable Analyzer of Surface, Various Reinspec-tion Times for Leaking Areas, and Records
Non-Methane Organic Com-pounds (NMOC)	BAAQMD Condition # 19867, Part 18a	Y		750 ppmv (calculated as hexane equivalent) in landfill gas	BAAQMD Condition # 19867, Part 31	P/A	Annual Landfill Gas Characteri-zation Analysis
NMOC	BAAQMD 8-34-301.3 and BAAQMD Condition # 19867, Part 23	Y		98% removal by weight OR < 30 ppmv, dry basis @ 3% O_2, expressed as methane (applies to A-50 Flare only)	BAAQMD 8-34-412 and 8-34-501.4 and BAAQMD Condition # 19867, Part 30	P/A	Annual Source Tests and Records
NMOC	40 CFR 60.752(b) (2)(iii)(B)	Y		98% removal by weight OR < 20 ppmv dry @ 3% O_2, expressed as hexane (applies to A-50 Flare only)	40 CFR 60.8 and 60.752(b) (2)(iii)(B) and 60.758 (b)(2)(ii)	P/E	Initial Source Test and Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Temperature of Combustion Zone (CT)	BAAQMD Condition # 19867, Part 22	Y		CT ≥ 1475 °F, averaged over any 3-hour period (applies to A-50 Flare only)	BAAQMD 8-34-501.3, 8-34-507, and BAAQMD Condition # 19867, Part 22	C	Temperature Sensor and Recorder (continuous)
CT	40 CFR 60.758 (c)(1)(i)	Y		CT ≥ 1475 °F (3-hour average) from (CT ≥ CT_{PF} – 28 °C), where CT_{PF} is the average combustion temperature during the most recent complying performance test (applies to A-50 Flare only)	40 CFR 60.756(b)(1) and 60.758 (b)(2)(i)	C	Temperature Sensor and Recorder (measured every 15 minutes and averaged over 3 hours)
Opacity	BAAQMD 6-301 and BAAQMD Condition # 19867, Part 11	Y		Ringelmann No. 1 for < 3 minutes/hr (applies to S-5)	BAAQMD Condition # 19867 Part 11	P/E, D	Records of all site watering and road cleaning events
Opacity	BAAQMD 6-301	Y		Ringelmann No. 1 for < 3 minutes/hr (applies to A-50 Flare)	None	N	NA
FP	BAAQMD 6-310	Y		≤ 0.15 grains/dscf (applies to A-50 Flare only)	None	N	NA
NOx	BAAQMD Condition # 19867, Part 25	Y		≤ 0.06 pounds per MM BTU, calculated as NO_2, or ≤ 15 ppmv @ 15% O_2, dry (applies to A-50 Flare only)	BAAQMD Condition # 19867, Part 30	P/A	Annual Source Test
CO	BAAQMD Condition # 19867, Part 26	Y		≤ 0.30 pounds per MM BTU, or ≤ 123 ppmv @ 15% O_2, dry (applies to A-50 Flare only)	BAAQMD Condition # 19867, Part 30	P/A	Annual Source Test

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
SO_2	BAAQMD 9-1-301	Y		Property Line Ground Level Limits: ≤ 0.5 ppm for 3 minutes and ≤ 0.25 ppm for 60 min. and ≤0.05 ppm for 24 hours (applies to A-50 Flare only)	None	N	NA
SO_2	BAAQMD 9-1-302	Y		≤ 300 ppm, dry basis (applies to A-50 Flare only)	BAAQMD Condition # 19867, Parts 18a and 31	P/W, Q	Weekly Draeger Tube Analysis and Quarterly ~~Landfill Gas~~ Laboratory Analysis of Landfill Gas
H_2S	BAAQMD 9-2-301	N		Property Line Ground Level Limits: ≤ 0.06 ppm, averaged over 3 minutes and ≤ 0.03 ppm, averaged over 60 minutes	None	N	NA
Total Reduced Sulfur (TRS)	BAAQMD Condition # 19867, Part 18a	Y		~~≤ 231 ppmv of TRS in landfill gas, expressed as H_2S, dry basis~~ Peak TRS Limit (any single test): 1300 ppmv of TRS (expressed as H_2S) in landfill gas and Annual Average TRS Limit: 425 ppmv of TRS (expressed as H_2S) in landfill gas	BAAQMD Condition # 19867, Part 31	P/W, Q	Weekly Draeger Tube Analysis and Quarterly ~~Landfill Gas~~ Laboratory Analysis of Landfill Gas and Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Cumulative Waste Disposal	BAAQMD Condition # 19867, Part 1	Y		19.1 million cubic yards of all wastes and cover materials (excluding final cover)	BAAQMD Condition # 19867, Part 5	P/D	Records
Cumulative Waste Disposal	BAAQMD Condition # 19867, Part 2	Y		17.1 million tons of decomposable wastes and decomposable cover materials, unless POC $\leq$ 20.424 tons/year	BAAQMD Condition # 19867, Part 5	P/D	Records
Amount of Waste Accepted	BAAQMD Condition # 19867, Part 3	Y		all wastes (including sewage sludge): 2300 tons per day (except during emergencies) and 450,000 tons per calendar year sewage sludge only: 1000 wet tons per day (except during emergencies) and 200,750 wet tons per calendar year	BAAQMD Condition # 19867, Part 5	P/D	Records
Cover Material Usage Rate	BAAQMD Condition # 19867, Part 4	Y		1160 tons per day and 105,500 tons per calendar year	BAAQMD Condition # 19867, Part 5	P/D	Records
Contaminated Soil Disposal Rate	BAAQMD Condition # 19867, Part 15f	Y		6240 tons per calendar year	BAAQMD Condition # 19867, Part 15m	P/E	Records
Contaminated Soil VOC Content	BAAQMD Condition # 19867, Part 15f	Y		$\leq$ 100 ppmw of VOC in soil	BAAQMD Condition # 19867, Part 15m	P/E	Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Amount of Contaminated Soil Aerated or Used as Cover	BAAQMD 8-40-116.1	Y		1 cubic yard per project	BAAQMD Condition # 19867, Part 15m	P/E	Records
Amount of Contaminated Soil Aerated or Used as Cover	BAAQMD 8-40-116.2	Y		8 cubic yards per project, provided organic content ≤ 500 ppmw and limited to 1 exempt project per 3 month period	BAAQMD 8-40-116.2 and BAAQMD Condition # 19867, Part 15m	P/E	Records
Amount of Accidental Spillage	BAAQMD 8-40-117	Y		Soil Contaminated by Accidental Spillage of ≤ 5 gallons of Liquid Organic Compounds	BAAQMD Condition # 19867, Part 15m	P/E	Records
Total Aeration Project Emissions	BAAQMD 8-40-118	Y		150 pounds per project and toxic air contaminant emissions per year <BAAQMD Table 2-1-316 limits	BAAQMD Condition # 19867, Part 15m	P/E	Records
Amount of Contaminated Soil Aerated or Used as Cover	BAAQMD 8-40-301 and BAAQMD Condition # 19867, Part 15k	Y		Prohibited for Soil with Organic Content >50 ppmw unless exempt per BAAQMD 8-40-116, 117, or 118	BAAQMD Condition # 19867, Part 15m	P/E	Records
Contaminated Soil Handling	BAAQMD Condition # 19867, Part 15e	Y		Limited to 2 on-site transfers per lot of contaminated soil	BAAQMD Condition # 19867, Part 15m	P/E	Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Contaminated Soil On-Site Storage Time	BAAQMD Condition # 19867, Part 15f	Y		Storage Time ≤ 90 days from receipt	BAAQMD Condition # 19867, Part 15m	P/E	Records
Vehicle Fleet Weight	BAAQMD Condition # 19867, Part 6	Y		15.4 tons for off-site vehicle fleet	BAAQMD Condition # 19867, Part 10	P/E	Records
Vehicle Fleet Weight	BAAQMD Condition # 19867, Part 7	Y		28.4 tons for on-site vehicle fleet	BAAQMD Condition # 19867, Part 10	P/E	Records
Vehicle Miles Traveled (VMT)	BAAQMD Condition # 19867, Part 8	Y		VMT Limit / Road Type 875 per day gravel 438 per day dirt 50 per day paved 273,000 per year gravel 136,500 per year dirt 15,600 per year paved	BAAQMD Condition # 19867, Part 10	P/D	Records
Vehicle Miles Traveled (VMT)	BAAQMD Condition # 19867, Part 9	Y		VMT Limit / Road Type 62 per day dirt 19,145 per year dirt	BAAQMD Condition # 19867, Part 10	P/D	Records
Water Application Rates	BAAQMD Condition # 19867, Part 11a	Y		0.5 gallons per square yard on unpaved roads and parking areas	BAAQMD Condition # 19867, Part 11f-g	P/D	Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – B
Applicable Limits and Compliance Monitoring Requirements
S-5 REDWOOD LANDFILL WITH GAS COLLECTION SYSTEM
AND A-50 LANDFILL GAS FLARE

Type of Limit	Citation of Limit	FE Y/N	Future Effective Date	Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Water Application Frequency	BAAQMD Condition # 19867, Part 11b-d	Y		unpaved roads: once every 3 hours; unpaved parking areas and infrequently traveled unpaved roads: twice per day or once every 150 vehicle trips; active face, stockpiles, composting, etc.: twice per day	BAAQMD Condition # 19867, Part 11f-g	P/D	Records
Toxic Air Contaminants (TACs)	BAAQMD Condition # 19867, Part 18b	N		Concentration Limits for TACs in Landfill Gas: Compound — PPBV acrylonitrile 280 benzene 340 carbon tetrachloride 70 chloroform 70 1,4 dichlorobenzene 400 1,1 dichloroethane 150 ethylene dibromide 70 ethylene dichloride 70 methylene chloride 320 perchloroethylene 450 1,1,2,2 tetrachloroethane 70 trichloroethylene 250 vinyl chloride 880	BAAQMD Condition # 19867, Part 31	P/A	Annual Landfill Gas Analysis
TAC / HAP	BAAQMD Condition # 19867, Part 24	N		Destruction Efficiency ≥ 83% by weight for any TAC or HAP	None	N	NA

Appendix B
Source Test Protocol

Shaw Environmental, Inc.
2360 Bering Drive
San Jose, California 95131
408-382-5800
FAX: 408-433-1912

Shaw™ Shaw Environmental, Inc.

VIA FAX 415-749-4922

To: Ken Kunaniec, BAAQMD Date: June 15, 2005
Subject: Source Test Protocol & Test Notification

SOURCE TEST PROTOCOL
FOR
REDWOOD LANDFILL
FLARE, A-50

Shaw Environmental, Inc. (Shaw) will perform compliance testing on one landfill gas flare (A-50) at the Redwood Landfill in Novato, California. The purpose of the test is to demonstrate the performance of the landfill gas flare as specified by the Bay Area Air Quality Management District (BAAQMD) Major Facility Review (MFR) Title V permits and Regulation 8, Rule 34. This protocol is to inform the BAAQMD of the planned test date and testing procedures. Shaw is approved by the California Air Resources Board (ARB) as an independent contractor to conduct compliance emission testing.

Source Test Information

Test Location:	Redwood Landfill, Inc. 8950 Redwood Highway Novato, CA 94948 BAAQMD MFR Number A1179	Contact: Mr. Whitney King 415-892-2851
Source to be Tested:	Flare A-50	
Test Objective:	Determine compliance with Title V Permit and Regulation 8, Rule 34 Flare: Permit Condition Number 19867	Emission Limits: NO_x: 15 ppm @3% O_2 CO: 123 ppmv @3% O_2 NMOC: > 98% destruction efficiency or < 30 ppm as methane at 3% O_2
Test to be Performed By:	Shaw Environmental, Inc. 2360 Bering Drive San Jose, CA 95131	Contact: Bill Johnston Tel: (408) 382-5822
Test date	June 22, 2005	
Test Parameters:	Inlet O_2, CO_2, N_2, BTU, HHV THC, CH_4, NMOC, Sulfur Species,	Outlet THC, NMOC, NO_x, CO, Volumetric flow rate

SCOPE OF WORK

A source test will be performed on one flare (A-502) located at the Redwood Landfill. The flare source test shall determine the following parameters as specified in the facility's Title V permit condition number 19867 and BAAQMD Regulation 8, Rule 34. The following items in the condition, will be met.

- Determine landfill gas flow rate (dry basis);
- The landfill gas shall be analyzed for Higher Heating Value (HHV), Carbon Dioxide (CO_2), Nitrogen (N_2), Oxygen (O_2), total hydrocarbons (THC), Methane (CH_4), NMOC, speciated organic and sulfur compounds. All concentrations shall be reported on a dry basis;
- Stack gas flow rate from the flare using EPA Method 19 or equivalent (dry basis);
- Concentrations (dry basis) of NMOC, CO, NO_x, and O_2 in the flare stack gas;
- NMOC destruction efficiency achieved by the flare, if the outlet NMOC is greater than30 parts per million by volume (ppmv), expressed as methane at 3 percent oxygen on a dry basis.;
- The average combustion temperature in the flare during the test period.
- A characterization of the landfill gas for all the compounds listed below, as identified in Part 31-a of the condition.

Organic Compounds	Organic Compounds	Sulfur Compounds
acrylonitrile	ethylene dibromide	carbon disulfide
benzene	fluorotrichoromethane	carbonyl sulfide
carbon tetrachloride	hexane	dimethyl sulfide
chlorobenzene	isopropyl alcohol	ethyl mercaptan
chlorodifluoromethane	methyl ethyl ketone	hydrogen sulfide
chloroethane	methylene chloride	methyl mercapton
chloroform	perchloroethylene	
1,1 dichloroethane	toluene	
1,1 dichloroethene	1,1,1 trichloroethane	
1,2 dichloroethane	1,1,2,2 tetrachloroethane	
1,4 dichloroethane	trichloroethylene	
dichlorodifluoromethane	vinyl chloride	
dichlorofluoromethane	xylenes	
ethylbenzene		

The source test will demonstrate the following limits.

- Emissions of NOx shall not exceed 0.06 pounds per million BTU (lb/MMBtu) or exceed 15 ppmv corrected to 15 percent O_2.
- Emissions of CO shall not exceed 0.30 lb/MMBtu or exceed 123 ppmv corrected to 15 percent O_2.
- The flare destruction efficiency of NMOC shall not be less than 98 percent by weight, unless the outlet NMOC concentration is less than 30 ppmv, expressed as methane at 3 percent oxygen on a dry basis.

- Concentration of selected organic and sulfur compounds listed below, as identified in Part 18, a and b of the condition.

Compound	Concentration
NMOC	750 ppmv
TRS, peak limit	1300 ppmv
Acrylonitrile	280 ppbv
Benzene	340 ppbv
Carbon Tetrachloride	70 ppbv
Chloroform	70 ppbv
1,4 Dichlorobenzene	400 ppbv
1,1 Dichloroethane	150 ppbv
Ethylene Dibromide	70 ppbv
Ethylene Dichloride	70 ppbv
Methylene Chloride	320 ppbv
Perchloroethylene	450 ppbv
1,1,2,2 Tetrachloroethane	70 ppbv
Trichloroethylene	250 ppbv
Vinyl Chloride	880 ppbv

TEST PROCEDURES

The following source test methods (each compliant with the requirements of the BAAQMD) will be utilized to determine the emissions from the flare. The vapors from the Leachate Evaporator (S-50) shall also be abated during the test if sufficient condensate is available.

- Three (3) thirty-minute test runs for NO_x (BAAQMD Method ST-13A), CO (BAAQMD Method ST-6), NMOC (BAAQMD Method ST-7), and O_2 (BAAQMD Method ST-14) at the flare exhaust;
- Environmental Protection Agency (EPA) Method 19: volumetric flow rate at the flare exhaust;
- One sample will be collected of the landfill gas for analysis of higher heating value (HHV), C_1 through C_6 hydrocarbons, O_2, CO_2, and N_2 by ASTM D-1945, organic compounds by EPA TO 15, sulfur compounds by ASTM D-5504, and NMOC by EPA Method 25C.

Landfill Gas Fuel Analysis

Integrated Tedlar bag samples will be collected at the inlet to the flare. Samples will be collected concurrently with the outlet sampling. Samples will be analyzed within 72 hours (48 hrs for sulfur). One of the samples will be analyzed for speciated organics and sulfur compounds.

Continuous Emission Monitoring

Single point sampling will be performed at the center of the stack. All analyzers will be checked for calibration before and after each run. Emission monitoring data will be recorded on strip charts and a data logger. Methane concentrations will be determined by passing sample gas through an

activated carbon scrubber prior to the hydrocarbon analyzer. Hydrocarbon emissions will be measured and reported as methane.

Process Parameters

Flare process parameters including the fuel gas flow rate and the flare operating temperature will be measured and recorded during each run using the flare gas measurement system.

REPORT

The final report is due to the BAAQMD 45 days after testing has occurred. The report will describe the tests that were conducted, the operating conditions of the source during the test, and the emission results reported in units of the appropriate standard. All raw data and sample calculations used to obtain the reported results will be included so that the accuracy of the reported results can be verified from the report. The flare process information will be submitted in the report.

TEST SCHEDULE

The source test is scheduled for June 22, 2005.

Appendix C
Source Test Data

Emission Rate Calculations
Stack Gas Flow Rate and Fuel Usage, EPA Method 19

EMISSION RATE CALCULATION

Facility: Redwood Landfill
Source : Flare A-50
Test date: 6/29/2005

Temperature Std: 70
Pressure Std: 29.92
O2% correction: 15 NOx & CO
O2% correction: 3 NMOC

Time	1030-1100 Run 1		1108-1138 Run 2		1146-1216 Run 3		Avg		Permit Limits
	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	
Flare Temp (F)	1,686		1,674		1,676		1,679		
Fuel factor	9,239		9,239		9,239		9,239		
Oxygen (%)		12.7		12.3		12.9		12.6	
Flowrate (dscfm)	939	11,625	936	11,054	939	11,922	938	11,534	
Oxides of Nitrogen									
MW = 46									
NOx, ppm		14.7		15.2		13.9		14.6	
NOx, ppm corrected to 15% O2		10.6		10.4		10.3		10.4	15
NOx, lb/hr		1.2		1.2		1.2		1.2	
NOx, lb/MMBtu		0.041		0.041		0.040		0.041	
Carbon Monoxide									
MW = 28									
CO, ppm		44.8		34.0		47.1		42.0	
CO, ppm corrected to 15% O2		32.2		23.3		34.7		30.1	123
CO, lb/hr		2.3		1.6		2.4		2.1	
CO, lb/MMBtu		0.076		0.055		0.082		0.071	
Hydrocarbons as methane									
MW = 16									
THC, ppm	NM	3.1	927	2.4	NM	4.1	927	3.2	
THC, lb/hr	NM	0.09	2	0.07	NM	0.12	2	0.09	
Methane, ppm		NM		NM		NM	--	--	
NMOC, ppm	NM	3.1	927	2.4	NM	4.1	927	3.2	
NMOC, ppm corrected to 3% O2		6.8		5.0		9.2		7.0	30
NMOC, lb/hr	NM	0.09	2.2	0.07	NM	0.121	2.2	0.09	
Efficiency %									
NMOC	NM		96.9%		NM			96.9%	98

Calculations

lb/hr = ppm x MW x Qs x 8.223x10-5 / (Tstd + 460)
ppm corrected @ O2 = ppm measured x [(20.9 - O2% correction) / (20.9% O2 - O2 measured)]
lb/MMBtu = F-factor x MW x [1.3711x10-6 / (Tstd + 460)] x [(20.9 /20.9 -O2%)] x ppm
Efficiency (%) = in (lb/hr)-out (lb/hr)/in (lb/hr) x 100
NM = not measured

Stack Gas Flow Rate ---- Fuel Usage

EPA Method 19

Facility Redwood Landfill
Source Flare A-50
Date 6/29/2005

		Run 1	Run 2	Run 3	Average
Gross Caloric Value (Btu/ft3)	Btu/ft3	526	526.0	526	526.0
Stack Oxygen	%	12.7	12.3	12.9	12.6
Fuel factor @ 68 F	DSCF/MMBtu	9,239	9,239	9,239	9,239
Corrected Fuel Rate (SCFM) @ Tstd	SCFM	939	936	939	938
Fuel Flowrate (SCFH) @ Tstd	SCFH	56,310	56,160	56,340	56,270
Million Btu per minute	MMBtu/min	0.494	0.492	0.494	0.493
Heat Input (MMBtu/hr)	MMBtu/hr	29.6	29.5	29.6	29.6
Heat Input (MMBtu/day)	MMBtu/day	710.9	709.0	711.2	710.4
Stack Gas Flow Rate (dscfm)	dscfm	11,625	11,054	11,922	11,534

Calculations

SCFM = CFM * (Tstd + 460) * gas PSIA) / 14.7 / (gas F + 460)
SCFH = SCFM * 60
MMBtu/min = SCFM * Btu/ft3 / 1,000,000
MMBtu/hr = MMBtu/min * 60
DSCFM = Fuel factor * MMBtu/min * (20.9 / (20.9-O2%)) * (Tstd + 460) / 528

Notes
Corrected Fuel Rate (SCFM) @ Tstd data is from the system data aquistion

Appendix D
ARB Independent Contractor Program Certification

State of California

Air Resources Board

Approved Independent Contractor

Shaw Environmental, Inc.

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to section 91207, Title 17, California Code of Regulations, until June 30, 2005 for those test methods listed below:

ARB Source Test Methods:
1, 2, 3, 4, 5, 8, 100 (CO, CO_2, NO_x, O_2, SO_2, THC)
Visible Emissions Evaluation

William V. Loscutoff, Chief
Monitoring and Laboratory Division

90 56165

Appendix E
Process Data

Field Data Sheet

Landfill Process Data Sheet

Landfill: Redwood Landfill

Test date: 6-29-05

Source: (Flare,) IC Engine, Turbine
circle one

Landfill Gas Data	Run 1		Run 2		Run 3	
Time	1030	1100	1108	1138	1146	1216
~~Methane (%)~~						
HHV based on methane						
F-factor based on methane						
O2 (%)						
Landfill Gas Rate (scfm)	943	934	939	933	935	943
~~Engine (KW)~~						
~~Condensate Rate (gpm)~~						
Flare Temp (F)	1684	~~1676~~ 1688	1673	1675	1682	1669

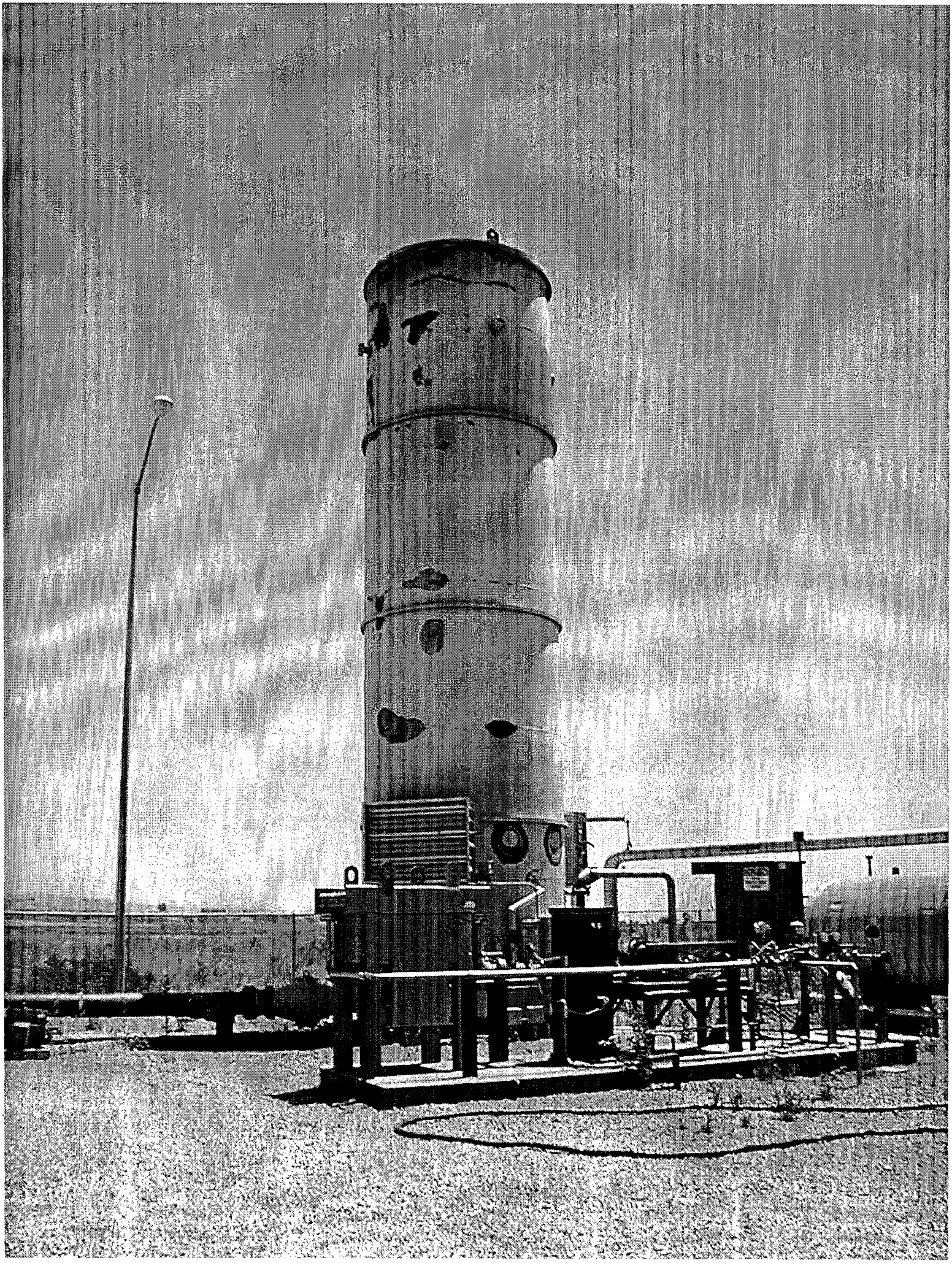
Thermocouple Measurement Location (Top) Middle Bottom
circle one

HHV = methane (%) x ~~1018~~ 1013

From monthly report
53.2% - methane

O_2 - 0.9%

Appendix F
Site Picture



Appendix G
Continuous Emission Monitoring Data

Data Acquisition
Strip Chart Records
Calibration Gas Certificates of Analysis
NO_x Converter Check

Run averages corrected for bias
Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50

Run	O2 %	CO ppm	NOx ppm	THC ppm
1	12.7	44.8	14.7	3.1
2	12.3	34.0	15.3	2.4
3	12.9	47.1	13.9	4.1

w

STRATA Configuration Page 1
06-29-2005 10:19:51
File Name: C:\STRATA\REDWOOD.STR

Operator:	B Johnston
Plant Name:	Redwood Landfill
Location:	Flare A-50
Run Length:	30 minutes
Sample Rate:	40 per minute
Average Calibration Results:	1 minutes
Automatic Sequence, Calibration Error:	No
Automatic Sequence, System Bias:	No
Max Response Time:	Manual
Max Response Time:	1 minutes
Traverse During Run:	No

Active	Chan.	Analyte Name	Units	Span Units	Span Volts	Offset Volts
Yes	1	O2	%	25	1	0
Yes	3	CO	ppm	250	.5	0
Yes	4	NOx	ppm	50	10	0
Yes	5	THC	ppm	50	5	0

Measurement System Preparation Table

Gas Name	Reference Cylinder Numbers 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
O2	Z	H														
CO	Z		H													
NOx	Z			H												
THC	Z				H											

CEM leak check 0.1" for 1 min @ 19" Hg

R1 1030 - 1100

R2 1108 - 1138

R3 1146 - 1216

Gas Name	Zero Reference Cylinder No.	Conc	ID Number	Low Reference Cylinder No.	Conc	ID Number
O2	1	0		99	999	
CO	1	0		99	999	
NOx	1	0		99	999	
THC	1	0		99	999	

Gas Name	Mid Reference Cylinder No.	Conc	ID Number	High Reference Cylinder No.	Conc	ID Number
O2	99	999		2	18.96	CC140645
CO	99	999		3	81.9	CC163817
NOx	99	999		4	40.3	SA15339
THC	99	999		5	45	AAL4576

Seq Num	Calibration Error Test Sequence O2	CO	NOx	THC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Seq Num	Calibration Error Valve Sequence 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

Seq Num	System Bias Check Sequence O2	CO	NOx	THC
1	Zero	Zero	Zero	Zero
2	High	High	High	High
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Seq Num	System Bias Valve Sequence 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	X															
2		X	X	X	X											
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																

STRATA Configuration End

Initial System Bias Check, Run 1 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 10:22:40	-0.107	-0.64	-0.011	0.260
06-29-2005 10:23:41	-0.121	-1.07	-0.012	0.261
06-29-2005 10:24:40	0.514	7.94	7.546	8.924
06-29-2005 10:25:41	16.345	81.80	39.940	44.030
06-29-2005 10:26:40	18.548	81.37	39.971	45.116
06-29-2005 10:27:40	18.892	81.21	40.011	45.127

Initial System Bias Check for Run 1
Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50

	Reference Cylinder Numbers Zero	Span
O2		CC140645
CO		CC163817
NOx		SA15339
THC		AAL4576

Date/Time 06-29-2005 10:28:27 PASSED

Analyte	O2	CO	NOx	THC
Units	%	ppm	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000	0.000
Zero Cal	0.000	0.00	0.000	0.000
Zero Avg	-0.129	-0.81	-0.012	0.264
Zero Bias%	0.5%	0.3%	0.0%	0.5%
Zero Drift%				
Span Ref Cyl	18.960	81.90	40.300	45.000
Span Cal	18.960	81.90	40.300	45.000
Span Avg	18.938	81.10	40.039	45.129
Span Bias%	0.1%	0.3%	0.5%	0.3%
Span Drift%				

System Bias Check End

Test Run 1 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 10:29:28	14.978	52.52	17.573	6.520
Begin calculating run averages				
06-29-2005 10:30:28	12.881	55.21	13.990	4.180
06-29-2005 10:31:27	12.588	54.64	14.809	3.725
06-29-2005 10:32:28	12.694	53.86	14.195	3.022
06-29-2005 10:33:27	12.558	21.03	15.335	1.394
06-29-2005 10:34:28	12.146	15.33	15.513	1.316
06-29-2005 10:35:28	12.621	44.15	14.288	3.679
06-29-2005 10:36:27	12.630	73.37	14.147	6.075
06-29-2005 10:37:28	12.688	46.25	14.530	2.995
06-29-2005 10:38:27	12.447	11.38	15.460	1.096
06-29-2005 10:39:28	11.919	10.94	15.988	0.954
06-29-2005 10:40:28	12.488	27.62	14.834	1.798
06-29-2005 10:41:27	12.575	48.25	14.536	5.127
06-29-2005 10:42:28	12.737	67.22	14.300	3.558
06-29-2005 10:43:28	12.206	14.74	15.985	1.051
06-29-2005 10:44:27	12.256	17.80	15.407	1.782
06-29-2005 10:45:28	12.722	58.75	14.131	4.813
06-29-2005 10:46:27	12.495	24.93	14.804	1.370
06-29-2005 10:47:28	12.554	28.64	14.846	2.031
06-29-2005 10:48:28	12.671	52.84	14.476	3.804
06-29-2005 10:49:27	12.977	86.17	13.457	9.671
06-29-2005 10:50:28	13.171	142.06	13.032	13.282
06-29-2005 10:51:27	13.106	82.40	13.646	6.343
06-29-2005 10:52:28	12.468	28.52	15.105	1.495
06-29-2005 10:53:28	12.240	14.67	15.897	0.975
06-29-2005 10:54:27	12.630	45.80	14.062	5.083
06-29-2005 10:55:28	12.880	91.35	13.993	7.349
06-29-2005 10:56:27	12.184	21.03	15.566	1.228
06-29-2005 10:57:28	12.678	19.09	14.462	1.516
06-29-2005 10:58:28	12.663	39.02	14.307	3.402
06-29-2005 10:59:27	12.717	52.96	14.435	3.775
Run Averages	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 11:00:10	12.570	44.09	14.691	3.520

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50
Test Run 1 End

Final System Bias Check, Run 1 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 11:01:14	4.432	8.43	1.153	0.600
06-29-2005 11:02:15	-0.022	0.91	-0.016	0.495
06-29-2005 11:03:16	-0.127	0.26	-0.016	0.516
06-29-2005 11:04:15	6.688	41.68	23.550	28.070
06-29-2005 11:05:15	18.602	81.17	40.210	45.628
06-29-2005 11:06:14	18.944	80.82	40.302	45.697

Final System Bias Check for Run 1
Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50

	Reference Cylinder Numbers	
	Zero	Span
O2		CC140645
CO		CC163817
NOx		SA15339
THC		AAL4576

Date/Time 06-29-2005 11:06:56 PASSED

Analyte	O2	CO	NOx	THC
Units	%	ppm	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000	0.000
Zero Cal	0.000	0.00	0.000	0.000
Zero Avg	-0.130	0.20	-0.016	0.517
Zero Bias%	0.5%	0.1%	0.0%	1.0%
Zero Drift%	0.0%	0.4%	0.0%	0.5%
Span Ref Cyl	18.960	81.90	40.300	45.000
Span Cal	18.960	81.90	40.300	45.000
Span Avg	18.850	80.71	40.306	45.720
Span Bias%	0.4%	0.5%	0.0%	1.4%
Span Drift%	-0.4%	-0.2%	0.5%	1.2%
Ini Zero Avg	-0.129	-0.81	-0.012	0.264
Ini Span Avg	18.938	81.10	40.039	45.129
Run Avg	12.570	44.09	14.691	3.520
Co	-0.129	-0.30	-0.014	0.391
Cm	18.894	80.90	40.172	45.425
Correct Avg	12.657	44.77	14.747	3.127

System Bias Check End

Test Run 2 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 11:07:57	15.055	74.48	17.140	9.566
Begin calculating run averages				
06-29-2005 11:08:58	12.495	21.41	15.109	1.833
06-29-2005 11:09:57	12.703	33.75	14.701	2.000
06-29-2005 11:10:58	12.929	62.37	13.745	5.684
06-29-2005 11:11:57	12.824	27.50	14.597	1.779
06-29-2005 11:12:57	12.335	14.46	15.272	1.466
06-29-2005 11:13:58	12.477	26.19	14.984	1.827
06-29-2005 11:14:57	11.632	8.66	17.292	1.015
06-29-2005 11:15:58	11.616	10.29	16.363	1.165
06-29-2005 11:16:58	12.241	23.00	15.499	1.664
06-29-2005 11:17:57	11.321	10.01	17.918	1.055
06-29-2005 11:18:58	10.875	12.34	18.251	1.055
06-29-2005 11:19:57	11.501	15.09	16.727	1.095
06-29-2005 11:20:57	11.880	19.23	16.419	1.114
06-29-2005 11:21:58	11.463	16.64	16.863	1.181
06-29-2005 11:22:57	11.869	17.67	15.778	1.170
06-29-2005 11:23:58	12.001	17.85	15.716	1.311
06-29-2005 11:24:58	12.264	22.75	14.871	1.882
06-29-2005 11:25:57	12.267	21.42	15.443	1.520
06-29-2005 11:26:58	11.992	12.16	15.794	1.242
06-29-2005 11:27:57	12.752	52.13	13.666	4.764
06-29-2005 11:28:58	13.336	128.08*	12.347	14.395
06-29-2005 11:29:57	13.224	117.43	13.122	11.154
06-29-2005 11:30:58	13.297	80.83	12.576	7.799
06-29-2005 11:31:57	13.567	89.97	12.538	7.776
06-29-2005 11:32:57	12.672	21.71	15.392	3.002
06-29-2005 11:33:58	11.586	7.83	16.824	1.412
06-29-2005 11:34:57	11.621	6.84	16.653	1.240
06-29-2005 11:35:58	12.236	17.63	14.808	2.348
06-29-2005 11:36:57	13.010	84.23	13.404	5.663
06-29-2005 11:37:57	12.327	14.19	15.201	1.449

Run Averages	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 11:38:12	12.277	33.63*	15.254	3.062

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50
Test Run 2 End

Final System Bias Check, Run 2 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 11:39:14	4.427	8.78	1.387	1.059
06-29-2005 11:40:13	-0.073	0.78	-0.021	0.924
06-29-2005 11:41:14	3.695	26.19	16.148	18.889
06-29-2005 11:42:14	18.388	80.94	40.081	44.549
06-29-2005 11:43:13	18.983	80.57	40.319	44.616
06-29-2005 11:44:14	19.049	80.28	40.354	44.617

Final System Bias Check for Run 2
Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50

	Reference Cylinder Numbers	
	Zero	Span
O2		CC140645
CO		CC163817
NOx		SA15339
THC		AAL4576

Date/Time 06-29-2005 11:44:24 PASSED

Analyte	O2	CO	NOx	THC
Units	%	ppm	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000	0.000
Zero Cal	0.000	0.00	0.000	0.000
Zero Avg	-0.133	0.47	-0.021	0.927
Zero Bias%	0.5%	0.2%	0.0%	1.9%
Zero Drift%	0.0%	0.1%	0.0%	0.8%
Span Ref Cyl	18.960	81.90	40.300	45.000
Span Cal	18.960	81.90	40.300	45.000
Span Avg	19.042	80.27	40.357	44.621
Span Bias%	0.3%	0.7%	0.1%	0.8%
Span Drift%	0.8%	-0.2%	0.1%	-2.2%
Ini Zero Avg	-0.130	0.20	-0.016	0.517
Ini Span Avg	18.850	80.71	40.306	45.720
Run Avg	12.277	33.63	15.254	3.062
Co	-0.132	0.34	-0.019	0.722
Cm	18.946	80.49	40.332	45.171
Correct Avg	12.332	34.02	15.254	2.368

System Bias Check End

Test Run 3 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 11:45:25	14.841	59.10	17.127	8.897
Begin calculating run averages				
06-29-2005 11:46:25	13.087	89.98	13.437	11.084
06-29-2005 11:47:24	13.088	54.38	13.729	3.152
06-29-2005 11:48:25	12.695	14.43	14.181	1.866
06-29-2005 11:49:24	13.157	70.22	12.812	9.077
06-29-2005 11:50:25	13.203	44.02	13.785	2.995
06-29-2005 11:51:24	13.224	95.78	12.765	17.138*
06-29-2005 11:52:25	13.480	111.03	12.422	12.654
06-29-2005 11:53:25	13.133	29.03	14.140	2.379
06-29-2005 11:54:24	13.074	34.47	13.372	3.097
06-29-2005 11:55:25	13.279	91.58	12.868	10.870
06-29-2005 11:56:25	12.922	95.32	13.796	5.915
06-29-2005 11:57:24	12.754	20.63	14.184	2.099
06-29-2005 11:58:25	13.304	89.19	12.705	10.642
06-29-2005 11:59:24	12.638	20.62	14.580	1.499
06-29-2005 12:00:25	12.817	16.07	13.740	2.666
06-29-2005 12:01:25	12.673	21.83	15.113	1.477
06-29-2005 12:02:24	12.712	39.05	13.700	8.113
06-29-2005 12:03:25	13.262	116.68	13.226	9.698
06-29-2005 12:04:25	12.663	19.57	14.753	2.537
06-29-2005 12:05:24	12.788	46.91	13.918	5.488
06-29-2005 12:06:25	13.108	58.11	13.466	5.066
06-29-2005 12:07:24	12.386	20.40	15.544	1.826
06-29-2005 12:08:25	12.740	36.79	13.894	4.408
06-29-2005 12:09:25	13.032	71.29	13.654	5.384
06-29-2005 12:10:24	12.513	17.10	14.883	1.897
06-29-2005 12:11:25	13.018	47.06	13.749	4.250
06-29-2005 12:12:25	12.661	12.35	14.385	1.244
06-29-2005 12:13:25	12.627	9.18	14.449	1.420
06-29-2005 12:14:25	13.220	13.02	13.572	1.708
06-29-2005 12:15:24	13.224	15.58	13.606	1.892

Run Averages	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 12:16:06	12.956	45.94	13.814	4.912*

Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50
Test Run 3 End

Final System Bias Check, Run 3 STRATA Version 1.1

	O2	CO	NOx	THC
	%	ppm	ppm	ppm
06-29-2005 12:17:08	4.154	7.43	1.557	0.897
06-29-2005 12:18:07	-0.106	0.47	-0.025	0.806
06-29-2005 12:19:08	-0.175	-0.17	-0.026	0.813
06-29-2005 12:20:08	7.870	43.05	24.903	28.220
06-29-2005 12:21:07	18.992	80.19	39.874	44.843
06-29-2005 12:22:08	19.214	79.91	39.805	44.883
06-29-2005 12:23:07	19.237	79.54	40.022	44.883

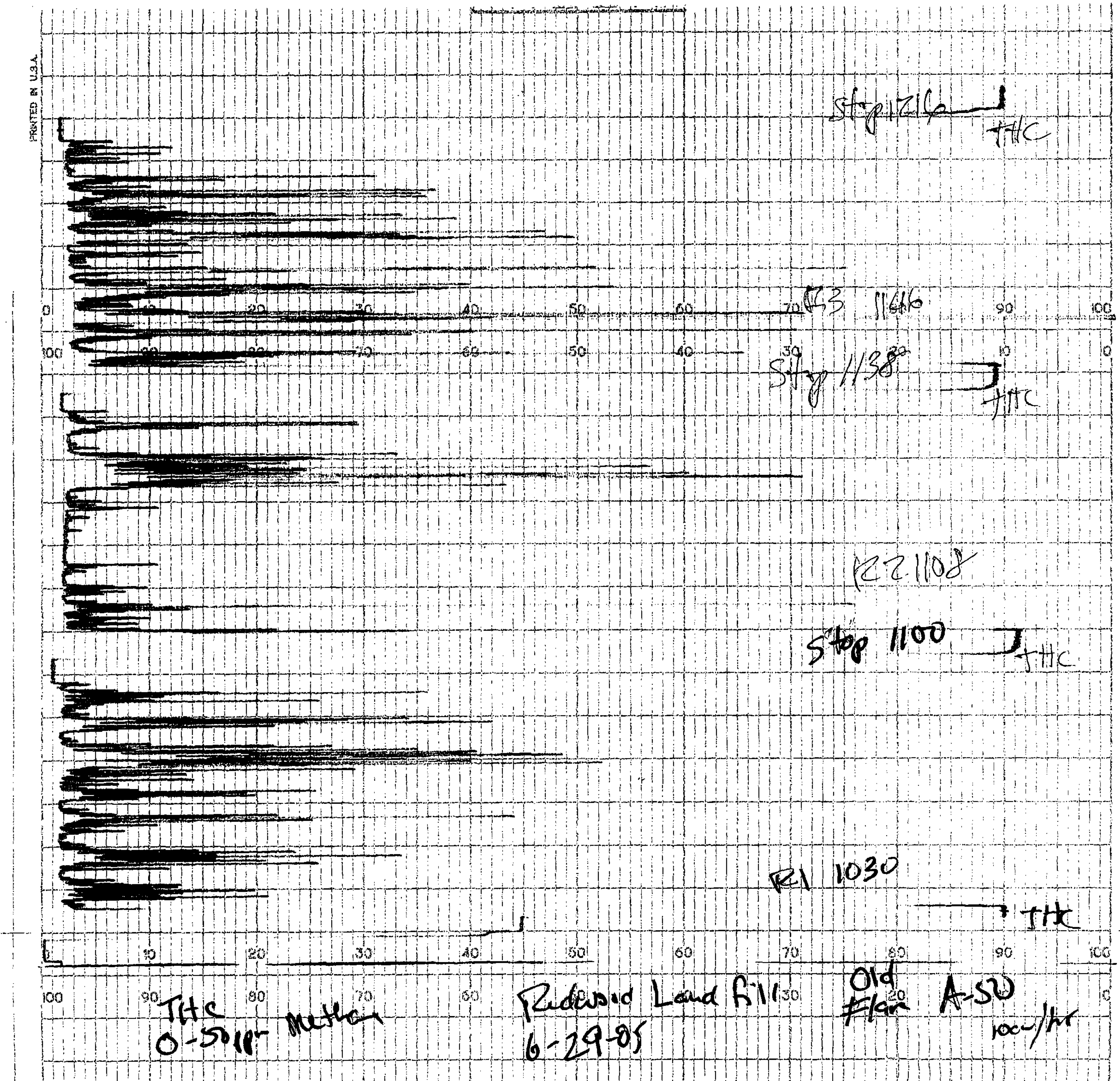
Final System Bias Check for Run 3
Operator: B Johnston
Plant Name: Redwood Landfill
Location: Flare A-50

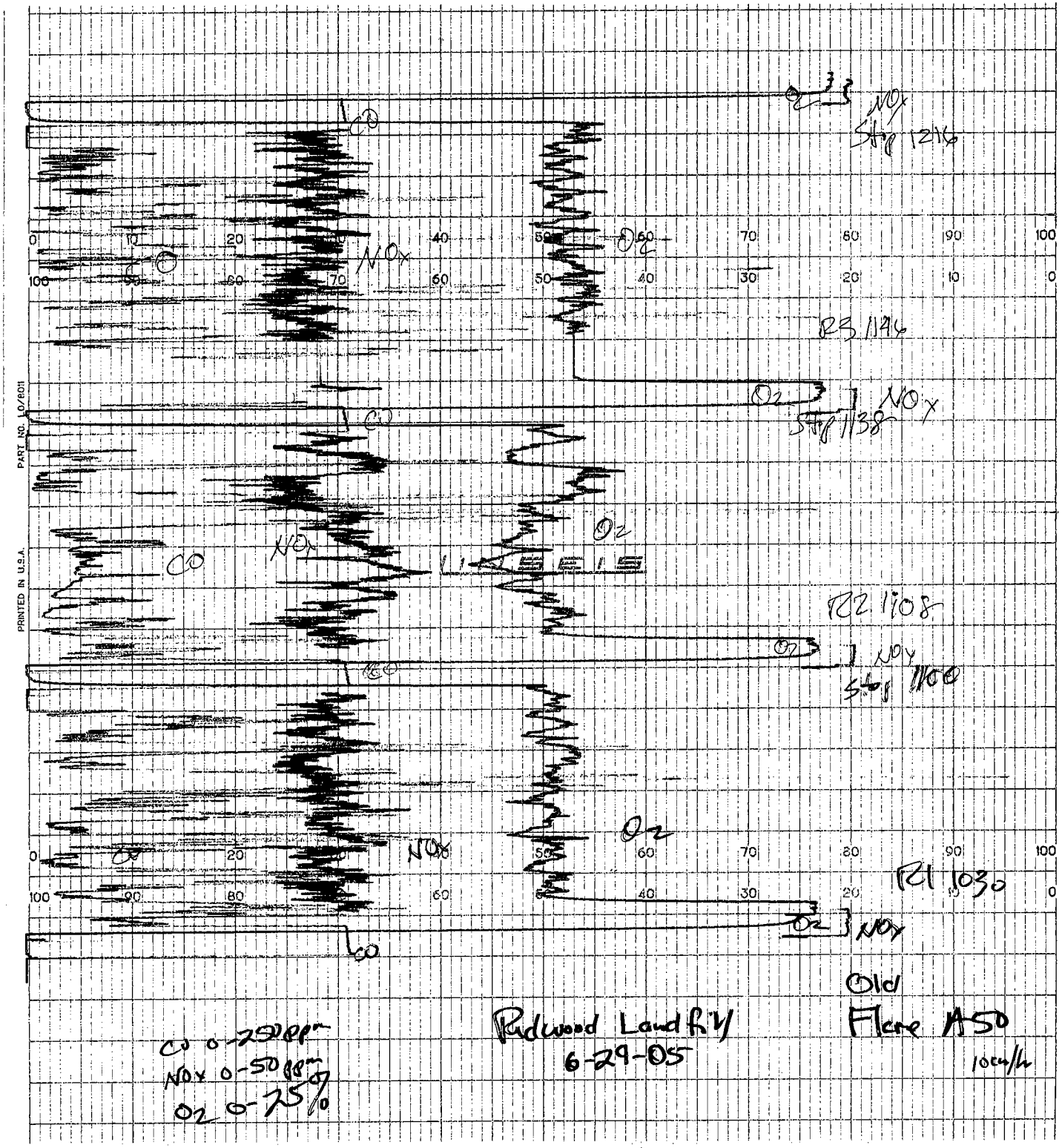
	Reference Cylinder Numbers	
	Zero	Span
O2		CC140645
CO		CC163817
NOx		SA15339
THC		AAL4576

Date/Time 06-29-2005 12:23:12 PASSED

Analyte	O2	CO	NOx	THC
Units	%	ppm	ppm	ppm
Zero Ref Cyl	0.000	0.00	0.000	0.000
Zero Cal	0.000	0.00	0.000	0.000
Zero Avg	-0.180	-0.26	-0.026	0.812
Zero Bias%	0.7%	0.1%	0.1%	1.6%
Zero Drift%	-0.2%	-0.3%	0.0%	-0.2%
Span Ref Cyl	18.960	81.90	40.300	45.000
Span Cal	18.960	81.90	40.300	45.000
Span Avg	19.236	79.55	40.003	44.883
Span Bias%	1.1%	0.9%	0.6%	0.2%
Span Drift%	0.8%	-0.3%	-0.7%	0.5%
Ini Zero Avg	-0.133	0.47	-0.021	0.927
Ini Span Avg	19.042	80.27	40.357	44.621
Run Avg	12.956	45.94	13.814	4.912
Co	-0.157	0.10	-0.023	0.870
Cm	19.139	79.91	40.180	44.752
Correct Avg	12.885	47.05	13.871	4.145

System Bias Check End


PRINTED IN U.S.A.
Stop 1216 THC
R3 1146
Stop 1138 THC
R2 1108
Stop 1100 THC
R1 1030
THC
THC
0-50 ppm Methane
Riverside Land fill
6-29-85
Old Flare
A-50
100cc/hr


CO
NOx
O2
Start 1216
RS 1196
Start 1138
RS 1108
Start 1100
RS 1030
PART NO. LO/8011
PRINTED IN U.S.A.
CO 0-250 ppm
NOx 0-50 ppm
O2 0-25%
Redwood Landfill
6-29-05
Old Flare A50
10cm/h

CERTIFIED MASTER CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
500 WEAVER PARK RD,LONGMONT,CO 80501 Phone: 888-253-1635 Fax: 303-772-7673

CERTIFICATE OF ACCURACY: Certified Master Class Calibration Standard

Product Information
Project No.: 08-24834-001
Item No.: 08022711 PAL
P.O. No.: SUSAN M. POWERS

Cylinder Number: AAL4576
Cylinder Size: AL
Certification Date: 25May2005
Expiration Date: 25May2008

Customer

SHAW ENVIRONMENTAL & INFRASTRUCTURE
2360 BERING DRIVE
SAN JOSE, CA 95131

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
METHANE	45.0	PPM	2
AIR		BALANCE	

TRACEABILITY

Traceable To

NIST

APPROVED BY: _____ DATE: 5-25-05
JON WITZAK

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER TIAX LLC **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	vsSRM#1683b	CC 137757	48.4 ppm

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** NITRIC OXIDE GMIS **ANALYZER MAKE-MODEL-S/N** BECKMAN 951A S/N#0101354

ANALYTICAL PRINCIPLE CHEMILUMINESCENCE **LAST CALIBRATION DATE** 11/03/03

FIRST ANALYSIS DATE 11/26/03 **SECOND ANALYSIS DATE** 12/03/03

Z	0.0	R	448.2	C	368.8	CONC.	39.8	Z	0.0	R	448.3	C	368.7	CONC.	39.8
R	448.3	Z	0.0	C	368.4	CONC.	39.8	R	448.2	Z	0.0	C	369.2	CONC.	39.9
Z	0.0	C	367.7	R	448.2	CONC.	39.7	Z	0.0	C	369.5	R	448.8	CONC.	39.8
U/M	mV			MEAN TEST ASSAY		39.8 ppm		U/M	mV			MEAN TEST ASSAY		39.8 ppm	

VALUES NOT VALID BELOW 150 psig. NOx VALUE FOR REFERENCE ONLY.

THIS CYLINDER NO. SA 15339
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. REV. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 12/03/03
EXPIRATION DATE 12/03/05 **TERM** 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	39.8 ppm
NITROGEN	BALANCE
NOx	40 ppm

ANALYZED BY CHRIS VU **CERTIFIED BY** HELENA TRAN

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER TIAX **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON DIOXIDE GMIS	vs.SRM#2745	8747556	17.99 %
OXYGEN GMIS	vs.SRM#2659	CC 92411	20.75 %

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** CARBON DIOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-730

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 06/05/03

FIRST ANALYSIS DATE 07-01-03 **SECOND ANALYSIS DATE**

Z 0	R 18.00	C 17.92	CONC. 17.91	Z	R	C	CONC.		
R 18.00	Z 0	C 17.92	CONC. 17.91	R	Z	C	CONC.		
Z 0	C 17.92	R 18.00	CONC. 17.91	Z	C	R	CONC.		
U/M %		MEAN TEST ASSAY 17.91		U/M %			MEAN TEST ASSAY		

2. **COMPONENT** OXYGEN GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Oxymat 5E S/N A12-839

ANALYTICAL PRINCIPLE Paramagnetic **LAST CALIBRATION DATE** 06/05/03

FIRST ANALYSIS DATE 07-01-03 **SECOND ANALYSIS DATE**

Z 0	R 20.75	C 18.96	CONC. 18.96	Z	R	C	CONC.		
R 20.75	Z 0	C 18.96	CONC. 18.96	R	Z	C	CONC.		
Z 0	C 18.96	R 20.75	CONC. 18.96	Z	C	R	CONC.		
U/M %		MEAN TEST ASSAY 18.96		U/M %			MEAN TEST ASSAY		

Values not valid below 150 psig

THIS CYLINDER NO. CC 140645
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 07/01/03
EXPIRATION DATE 07/01/06 **TERM** 36 MONTHS

CERTIFIED CONCENTRATION

CARBON DIOXIDE	17.91 %
OXYGEN	18.96 %
NITROGEN	BALANCE

ANALYZED BY PHU TIEN NGUYEN ***CERTIFIED BY*** VICTOR DOTAN

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (714) 542-6689

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER BEST ENV. **P.O NUMBER**

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
CARBON MONOXIDE GMIS	vs.SRM#1679	CC 43032	99.1 ppm
OXYGEN GMIS	vs.SRM#2658	CC 72756	10.01 %
CARBON DIOXIDE GMIS	vs.SRM82745	SA 18781	14.12 %

ANALYZER READINGS

R=REFERENCE STANDARD *Z=ZERO GAS* *C=GAS CANDIDATE*

1. **COMPONENT** CARBON MONOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-729

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 04/03/03

FIRST ANALYSIS DATE 04/07/03 **SECOND ANALYSIS DATE** 04/14/03

Z 0	R 99.1	C 81.8	CONC. 81.8	Z 0	R 99.1	C 82.0	CONC. 82.0		
R 99.1	Z 0	C 81.8	CONC. 81.8	R 99.1	Z 0	C 82.0	CONC. 82.0		
Z 0	C 81.7	R 99.1	CONC. 81.7	Z 0	C 82.0	R 99.1	CONC. 82.0		
U/M ppm	MEAN TEST ASSAY 81.8			U/M ppm	MEAN TEST ASSAY 82.0				

2. **COMPONENT** OXYGEN GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Oxymat 5E S/N A12-839

ANALYTICAL PRINCIPLE Paramagnetic **LAST CALIBRATION DATE** 04/03/03

FIRST ANALYSIS DATE 04/07/03 **SECOND ANALYSIS DATE**

Z 0	R 10.00	C 8.57	CONC. 8.58	Z	R	C	CONC.
R 10.00	Z 0	C 8.57	CONC. 8.58	R	Z	C	CONC.
Z 0	C 8.57	R 10.00	CONC. 8.58	Z	C	R	CONC.
U/M %	MEAN TEST ASSAY 8.58			U/M %	MEAN TEST ASSAY		

3. **COMPONENT** CARBON DIOXIDE GMIS **ANALYZER MAKE-MODEL-S/N** Siemens Ultramat 5E S/N A12-730

ANALYTICAL PRINCIPLE NDIR **LAST CALIBRATION DATE** 04/03/03

FIRST ANALYSIS DATE 04/07/03 **SECOND ANALYSIS DATE**

Z 0	R 14.12	C 12.68	CONC. 12.68	Z	R	C	CONC.
R 14.12	Z 0	C 12.68	CONC. 12.68	R	Z	C	CONC.
Z 0	C 12.68	R 14.12	CONC. 12.68	Z	C	R	CONC.
U/M %	MEAN TEST ASSAY 12.68			U/M %	MEAN TEST ASSAY		

THIS CYLINDER NO. CC 163817
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121
OF TRACEABILITY PROTOCOL NO. Rev. 9/97
PROCEDURE G1
CERTIFIED ACCURACY ± 1 **% NIST TRACEABLE**
CYLINDER PRESSURE 2000 **PSIG**
CERTIFICATION DATE 04/14/03
EXPIRATION DATE 04/14/06 **TERM** 36 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	81.9 ppm
OXYGEN	8.58 %
CARBON DIOXIDE	12.68 %
NITROGEN	BALANCE

Values not valid below 150 psig. CO & 02
CONCS. WERE CORRECTED FOR CO2 INTERFERENCE.

ANALYZED BY THANHTRUC NGOC NGUYEN

CERTIFIED BY PHU TIEN NGUYEN

Appendix H
Analytical Results

Atmospheric Analysis & Consulting, Inc.

Atmospheric Analysis & Consulting, Inc.

CLIENT : Shaw Environmental
PROJECT NAME : Redwood Landfill
AAC PROJECT NO. : 050226
REPORT DATE : 07/13/05

On June 30, 2005, Atmospheric Analysis & Consulting, Inc. received one (1) tedlar bag for VOC analysis by EPA method TO-15 of AP-42 List compounds (see enclosed list). Upon receipt the sample was assigned a unique Laboratory ID numbers as follows:

Client ID	Lab No.
Landfill Gas	050226-10397

TO-14/15 Analysis - Up to a 500ml aliquot of the sample is concentrated, put through a water and CO2 management system, cryofocused, and injected in the GC/MS (full scan mode) for analysis following EPA Method TO-14/15 as specified in the SOW. Holding times for analysis were complied with. Sample received without a sampling date.

No other problems were encountered during receiving, preparation and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI-TO-15. Estimated uncertainty of the test results will be provided upon request.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized release of the data contained in this hardcopy data package.

If you have any questions or require further explanation of data results, please contact the undersigned.

Sucha S. Parmar, PhD
Technical Director

This report consists of 9 pages.

ACCREDITED IN ACCORDANCE WITH nelac Certificate#E87837

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : **Shaw Environmental** **DATE RECEIVED** : **06/30/05**
PROJECT NO : **050226** **DATE REPORTED** : **07/13/05**
MATRIX : **AIR**
UNITS : **PPB (v/v)**

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Landfill Gas			
AAC ID	050226-10397			
Date Sampled	N/A		PQL	MDL
Date Analyzed	6/30/2005			
Can Dilution Factor	1.0			
Chlorodifluoromethane	1181		20	1.0
Dichlorodifluoromethane	756		10	0.5
Vinyl Chloride	556		10	0.5
Chloroethane	76		10	0.5
Dichlorofluoromethane	101		10	0.5
Trichlorofluoromethane	23		10	0.5
Isopropanol	3431		110	1.0
Acrylonitrile	ND	U	10	0.5
1,1-Dichloroethylene	ND	U	10	0.5
Methylene Chloride	ND	U	20	1.0
1,1-Dichloroethane	51		10	0.5
2-Butanone (MEK)	5515		110	1.0
Hexane	373		10	0.5
Chloroform	ND	U	10	0.5
1,2-Dichloroethane	ND	U	20	1.0
1,1,1-Trichloroethane	ND	U	10	0.5
BENZENE	256		10	0.5
Carbon Tetrachloride	ND	U	10	0.5
Trichloroethene	62		20	1.0
TOLUENE	6515		110	1.0
Tetrachloroethylene	85		10	0.5
Chlorobenzene	156		10	0.5
Ethylbenzene	3661		55	0.5
m- & p-Xylenes	5114		55	0.5
1,1,2,2-Tetrachloroethane	ND	U	10	0.5
o-Xylene	1571		55	0.5
1,2-Dibromoethane	ND	U	10	0.5
1,4-Dichlorobenzene	23		10	0.5
BFB-Surrogate Std. % Recovery	114%			48-151

J- Analyte was detected. However the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Pratical Quantitation Limit (PQL).
E - Estimated value, result outside linear range of instrument.
U - Compound was analyzed for, but was not detected.

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Method Blank Analysis Report

MATRIX	**: AIR**	**ANALYSIS DATE**	**: 06/30/05**
UNITS	**: ppbv**	**REPORT DATE**	**: 07/08/05**

VOLATILE ORGANIC COMPOUNDS BY EPA TO-14/TO-15

Client ID / *AAC ID*	Method Blank MB063005#1	MDL
Chlorodifluoromethane*	<PQL	1.0
Propylene*	<PQL	0.5
DiClDIFMethane*	<PQL	0.5
CHLOROMETHANE*	<PQL	0.5
1,2 DiCl-1,1,2,2-TetraFEthane*	<PQL	0.5
VINYL CHLORIDE*	<PQL	0.5
Methanol*	<PQL	20
1,3-Butadiene*	<PQL	0.5
BROMOMETHANE*	<PQL	0.5
Dichlorofluoromethane	<PQL	0.5
CHLOROETHANE*	<PQL	0.5
Vinyl Bromide*	<PQL	0.5
Acetone*	<PQL	1.0
TRICHLOROFLUOROMETHANE*	<PQL	0.5
Acrylonitrile*	<PQL	0.5
1,1 DICHLOROETHENE*	<PQL	0.5
METHYLENE CHLORIDE*	<PQL	1.0
Allyl CHLORIDE*	<PQL	0.5
Carbon disulfide*	<PQL	0.5
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE*	<PQL	0.5
trans-1,2- DICHLOROETHYLENE*	<PQL	0.5
1,1- DICHLOROETHANE*	<PQL	0.5
MTBE*	<PQL	0.5
Vinyl Acetate*	<PQL	0.5
MEK*	<PQL	1.0
cis-1,2- DICHLOROETHYLENE*	<PQL	0.5
Hexane*	<PQL	0.5
CHLOROFORM*	<PQL	0.5
Ethyl Acetate*	<PQL	0.5
Tetrahydrofuran*	<PQL	0.5
1,2-DICHLOROETHANE*	<PQL	1.0
1,1,1-TRICHLOROETHANE*	<PQL	0.5
BENZENE**	<PQL	0.5
CARBON TETRACHLORIDE**	<PQL	0.5
Cyclohexane**	<PQL	0.5
1,2-DICHLOROPROPANE**	<PQL	0.5
Bromodichloromethane**	<PQL	0.5

Atmospheric Analysis & Consulting, Inc.

Method Blank Analysis Report

MATRIX	**: AIR**	**ANALYSIS DATE**	**: 06/30/05**
UNITS	**: ppbv**	**REPORT DATE**	**: 07/08/05**

VOLATILE ORGANIC COMPOUNDS BY EPA TO-14/TO-15

Client ID / *AAC ID*	Method Blank MB063005#1	MDL
1,4-Dioxane**	<PQL	1.0
TRICHLOROETHENE**	<PQL	1.0
2,2,4-Trimethylpentane**	<PQL	0.5
Heptane**	<PQL	0.5
cis- 1,3 DICHLOROPROPENE**	<PQL	0.5
trans 1,3 DICHLOROPROPENE**	<PQL	0.5
MiBK**	<PQL	0.5
1,1,2-TRICHLOROETHANE**	<PQL	0.5
TOLUENE**	<PQL	0.5
2-Hexanone**	<PQL	1.0
Dibromochloromethane**	<PQL	0.5
1,2 DIBROMOETHANE**	<PQL	0.5
TETRACHLOROETHYLENE**	<PQL	0.5
CHLOROBENZENE***	<PQL	0.5
ETHYLBENZENE***	<PQL	0.5
m-, & p- XYLENES***	<PQL	0.5
Bromoform***	<PQL	0.5
STYRENE***	<PQL	0.5
1,1, 2,2- TETRACHLORETHANE***	<PQL	0.5
o- XYLENE***	<PQL	0.5
Ethyltoluene***	<PQL	0.5
1,3,5- TRIMETHYLBENZENE***	<PQL	0.5
1,2,4- TRIMETHYLBENZENE***	<PQL	0.5
Benzyl Chloride***	<PQL	1.0
1,3- DICHLOROBENZENE***	<PQL	0.5
1,4- DICHLOROBENZENE***	<PQL	0.5
1,2-DICHLOROBENZENE***	<PQL	0.5
1,2,4 TRICHLOROBENZENE***	<PQL	1.0
HEXACHLOROBUTADIENE***	<PQL	1.0
System Monitoring Compounds		
BFB-Surrogate Std. % Recovery	90%	48-151

PQL - Practical Quantitation Limit

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

AAC ID	: 050225-10394	DATE ANALYZED	: 06/30/05
MATRIX	: Air	DATE REPORTED	: 07/08/05
		UNITS	: ppbv

TO-14/TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Chlorodifluoromethane*	<PQL	<PQL	0.0
Propylene*	6.9	5.8	18
DiClDIFMethane*	<PQL	<PQL	0.0
CHLOROMETHANE*	<PQL	<PQL	0.0
1,2 DiCl-1,1,2,2-TetraFEthane*	<PQL	<PQL	0.0
VINYL CHLORIDE*	<PQL	<PQL	0.0
Methanol*	<PQL	<PQL	0.0
1,3-Butadiene*	<PQL	<PQL	0.0
BROMOMETHANE*	<PQL	<PQL	0.0
CHLOROETHANE*	<PQL	<PQL	0.0
Dichlorofluoromethane	<PQL	<PQL	0.0
Ethanol*	<PQL	<PQL	0.0
Vinyl Bromide*	<PQL	<PQL	0.0
Acetone*	70	78	11
TRICHLOROFLUOROMETHANE*	3.9	4.0	4.1
Isopropyl Alcohol*	3181	3029	4.9
Acrylonitrile*	<PQL	<PQL	0.0
1,1 DICHLOROETHENE*	<PQL	<PQL	0.0
METHYLENE CHLORIDE*	12.8	12.8	0.3
Allyl CHLORIDE*	<PQL	<PQL	0.0
Carbon disulfide*	<PQL	<PQL	0.0
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE*	<PQL	<PQL	0.0
trans-1,2- DICHLOROETHYLENE*	<PQL	<PQL	0.0
1,1- DICHLOROETHANE*	<PQL	<PQL	0.0
MTBE*	<PQL	<PQL	0.0
Vinyl Acetate*	<PQL	<PQL	0.0
MEK*	<PQL	<PQL	0.0
cis-1,2- DICHLOROETHYLENE*	<PQL	<PQL	0.0
Hexane*	7.1	6.7	4.7
CHLOROFORM*	<PQL	<PQL	0.0
Ethyl Acetate*	<PQL	<PQL	0.0
Tetrahydrofuran*	<PQL	<PQL	0.0
1,2-DICHLOROETHANE*	<PQL	<PQL	0.0
1,1,1-TRICHLOROETHANE*	<PQL	<PQL	0.0
BENZENE**	<PQL	<PQL	0.0
CARBON TETRACHLORIDE**	<PQL	<PQL	0.0

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

AAC ID	: 050225-10394	DATE ANALYZED	: 06/30/05
MATRIX	: Air	DATE REPORTED	: 07/08/05
		UNITS	: ppbv

TO-14/TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Cyclohexane**	<PQL	<PQL	0.0
1,2-DICHLOROPROPANE**	<PQL	<PQL	0.0
Bromodichloromethane**	<PQL	<PQL	0.0
1,4-Dioxane**	<PQL	<PQL	0.0
TRICHLOROETHENE**	<PQL	<PQL	0.0
2,2,4-Trimethylpentane**	<PQL	<PQL	0.0
Heptane**	1.6	1.6	0.9
cis- 1,3 DICHLOROPROPENE**	<PQL	<PQL	0.0
MiBK**	<PQL	<PQL	0.0
trans 1,3 DICHLOROPROPENE**	<PQL	<PQL	0.0
1,1,2-TRICHLOROETHANE**	<PQL	<PQL	0.0
TOLUENE**	4.0	3.8	3.8
2-Hexanone**	<PQL	<PQL	0.0
Dibromochloromethane**	<PQL	<PQL	0.0
1,2 DIBROMOETHANE**	<PQL	<PQL	0.0
TETRACHLOROETHYLENE**	<PQL	<PQL	0.0
CHLOROBENZENE***	<PQL	<PQL	0.0
ETHYLBENZENE***	<PQL	<PQL	0.0
m-, & p- XYLENES***	<PQL	<PQL	0.0
Bromoform***	<PQL	<PQL	0.0
STYRENE***	<PQL	<PQL	0.0
1,1, 2,2- TETRACHLORETHANE***	<PQL	<PQL	0.0
o- XYLENE***	<PQL	<PQL	0.0
Ethyltoluene***	<PQL	<PQL	0.0
1,3,5- TRIMETHYLBENZENE***	<PQL	<PQL	0.0
1,2,4- TRIMETHYLBENZENE***	<PQL	<PQL	0.0
Benzyl Chloride***	<PQL	<PQL	0.0
1,3- DICHLOROBENZENE***	<PQL	<PQL	0.0
1,4- DICHLOROBENZENE***	<PQL	<PQL	0.0
1,2-DICHLOROBENZENE***	<PQL	<PQL	0.0
1,2,4 TRICHLOROBENZENE***	<PQL	<PQL	0.0
Hexachlorobutadiene	<PQL	<PQL	0.0
System Monitoring Compounds			
BFB-Surrogate Std. % Recovery	90	90	0.8

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

CLIENT ID	**: Laboratory Control Spike**	**DATE ANALYZED**	**: 6/30/05**
AAC ID	**: LCS**	**DATE REPORTED**	**: 7/8/05**
MEDIA	**: Air**	**UNITS**	**: ppbv**

TO-14/15 Laboratory Control Spike Recovery

Compound	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
1,1-DICHLOROETHYLENE	0.0	50	60	50	119	100	18
Methylene Chloride	0.0	50	48	42	96	85	12
BENZENE	0.0	50	40	46	81	91	12
TRICHLOROETHENE	0.0	50	42	48	84	97	13
TOLUENE	0.0	50	45	54	91	107	17
TETRACHLOROETHYLENE	0.0	50	44	51	88	103	15
CHLOROBENZENE	0.0	50	38	41	77	82	6.2
ETHYLBENZENE	0.0	50	41	44	83	89	7.1
m-, & p- XYLENES	0.0	100	86	92	86	92	7.4
o- XYLENE	0.0	50	44	47	88	94	7.0

* Must be 70-130%

** Must be $\leq$ 25%

Dr. Sucha Parmar
President

1534 Eastman Avenue • Suite A • Ventura, California 93003 (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

AAC ID	**: 050225-10396**	**DATE ANALYZED**	**: 6/30/05**
MEDIA	**: Air**	**DATE REPORTED**	**: 7/8/05**
		UNITS	**: ppbv**

TO-14 Matrix Spike Recovery

Compound	Sample Conc.	Spike Added	Spike Res	Spike % Rec *
1,1-DICHLOROETHYLENE	0.0	50	51	103
Methylene Chloride	1.4	50	47	91
Carbon Tetrachloride	0.0	50	44	87
TRICHLOROETHENE	0.0	50	39	79
TOLUENE	0.0	50	48	97
TETRACHLOROETHYLENE	0.0	50	47	94
CHLOROBENZENE	0.0	50	40	80
ETHYLBENZENE	0.0	50	45	89
m & p XYLENE	0.0	100	92	92
o- XYLENE	0.0	50	47	95

* Must be 70-130%

** Must be $\leq$ 25%

Dr. Sucha Parmar
Technical Director

Laboratory

050226

Shaw Environmental Chain Of Custody Record

CLIENT: Redwood Landfill

DATE: 6-29-05

PAGE: 1 of 1

SAMPLING COMPANY: Shaw Environmental, Inc.	LOG CODE:	SITE ADDRESS (Street and City):	
ADDRESS: 2360 Bering San Jose, CA 95131		EDF DELIVERABLE TO (Responsible Party or Designee):	PHONE NO.: / E-MAIL: / CONSULTANT PROJECT NO.:
PROJECT CONTACT (Hardcopy or PDF Report to): Bill Johnston		SAMPLER NAME(S) (Print):	
TELEPHONE: 408.382.5800 / FAX: 408.433.1912 / E-MAIL:			

TURNAROUND TIME (BUSINESS DAYS):
☐ 10 DAYS ☐ 5 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

AP 42 list for VOCs and sulfur compounds

Report NMOC concentrations as methane

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Compliance Landfill Gas	D1945-81, 3588-89, GPA 2145-94		AP 42 List for	TO 15	Sulfur species, TRS D-5504		EPA M25-C, NMOC as methane		AP 42	AP 42 Analysis see list			FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
3391	Landfill Gas			air	1											X			NMOC TO-15 Sulfur Species Landfill Gas C1-C6, F-factor
																			see list of compounds to report for TO15

Relinquished by: (Signature)	Received by: (Signature)	Date: 6/30/05	Time: 1000
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Atmospheric Analysis & Consulting, Inc.

CLIENT : Shaw Environmental, Inc.
PROJECT NAME : Redwood Landfill
AAC PROJECT NO. : 050226
REPORT DATE : 07/12/2005

On June 30, 2005, Atmospheric Analysis & Consulting, Inc. received one (1) Tedlar bag for AP42 analysis & BTU analysis, Sulfur Analysis by ASTM D-5504, Hydrocarbons analysis by EPA method 18 and fixed gas analysis by EPA 3C Volatile Organic Compounds analysis by SCAQMD 25C. Upon receipt the samples were assigned unique Laboratory ID numbers as follows:

Client ID	Lab No.
Landfill Gas	050226-10397

EPA 25C Analysis - Up to a 1 ml aliquot of gaseous sample is injected into the GC/FID for analysis following EPA25C as specified in the SOW.

ASTM D-5504 – Up to a 1ml aliquot of sample is injected into the GC/SCD for analysis following ASTM D-5504 as specified in the SOW.

EPA 18 Analysis - Up to a 1 ml aliquot of samples is injected into the GC/FID for analysis following EPA 18 as specified in the SOW.

EPA 3C Analysis - Up to a 1 ml aliquot of samples is injected into the GC/TCD for analysis following EPA 3C as specified in the SOW.

Sample received without a sampling date.

No other problems were encountered during receiving, preparation and/ or analysis of these samples. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI- SCAQMD 25C,D-5504, EPA 18 & EPA 3C.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized release of the data contained in this hardcopy data package.

If you have any question or require further explanation of data results, please contact the undersigned.

Sucha S. Parmar, PhD
Technical Director

This report consists of 11 pages.

ACCREDITED IN ACCORDANCE WITH nelac Certificate #E87637

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Shaw Environmental, Inc.
PROJECT NO. : 050226
MATRIX : GAS

RECEIVING DATE : 06/30/2005
ANALYSIS DATE : 06/30/2005
REPORT DATE : 07/12/2005

Client ID:	Landfill Gas	Detection Limits
AAC ID:	050226-10397	
Compounds, Units		
H_2S, ppmv	502	0.05ppmv
Carbonyl Sulfide, ppmv	ND	0.05ppmv
Methyl Mercaptan, ppmv	ND	0.05ppmv
Ethyl Mercaptan, ppmv	ND	0.05ppmv
Propyl Mercaptan, ppmv	ND	0.05ppmv
Carbon Disulfide, ppmv	ND	0.05ppmv
Dimethyl sulfide, ppmv	ND	0.05ppmv
Allyl Sulfide, ppmv	ND	0.05ppmv
Propyl Sulfide, ppmv	ND	0.05ppmv
Allyl Disulfide, ppmv	ND	0.05ppmv
Butyl Sulfide, ppmv	ND	0.05ppmv
Ethyl Methyl Sulfide, ppmv	ND	0.05ppmv
Thiophene, ppmv	ND	0.05ppmv
Dimethyl Disulfide, ppmv	ND	0.05ppmv
Butyl Mercaptan, ppmv	ND	0.05ppmv
Allyl mercaptan, ppmv	ND	0.05ppmv
C1 hydrocarbons, ppmv	518648	0.3 ppmv
C2 hydrocarbons, ppmv	ND	0.3 ppmv
C3 hydrocarbons, ppmv	19	0.3 ppmv
C4 hydrocarbons, ppmv	8.1	0.3 ppmv
C5 hydrocarbons, ppmv	5.1	0.3 ppmv
C6 hydrocarbons, ppmv	7.2	0.3 ppmv
C6 + hydrocarbons, ppmv	64	0.3 ppmv
CO_2, %	37	0.1 %
CO, %	ND	0.1 %
O_2, %	1.2	0.1 %
N_2, %	10	0.1 %
H_2, %	ND	0.1 %
F Factor(dscf Exhaust/MM Btu)	**9239**	
Total Wt.% Adjusted Sp. Gravity	**1.0**	
FUEL GAS BTU per LBM	**12390**	
FUEL GAS BTU per CU. FT	**526**	

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

Client: : Shaw Environmental, Inc.
Project No. : 050226
Matrix : air
Units : %

Receiving Date : 06/30/2005
Analysis Date : 06/30/2005
Report Date : 07/12/2005

EPA Method 3C

Detection Limit: 0.1 %		Analyte					
Client ID	AAC ID	Hydrogen	Oxygen	Nitrogen	CO	Methane	CO2
Landfill Gas	050226-10397	ND	1.2	10	ND	52	37

Dr. Sucha Parmar
Technical Director

1534 Eastman Avenue • Suite A • Ventura, California 93003 (805) 650-1642 • FAX (805) 650-1644

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT	**: Shaw Environmental, Inc.**	**Receiving Date**	**: 06/30/2005**
PROJECT NO.	**: 050226**	**Analysis Date**	**: 06/30/2005**
UNITS	**: PPMV**	**Report Date**	**: 07/12/2005**

Total Reduced Sulfur Compounds Analysis by ASTM D-5504

Compounds	Client ID. / AAC ID	Landfill Gas 050226-10397	MDL
Analysis Dilution Factor		**100**	
Can Dilution Factor		**1.0**	
H_2S		503	0.05
Carbonyl Sulfide & SO2		<PQL	0.05
Methyl Mercaptan		<PQL	0.05
Ethyl Mercaptan		<PQL	0.05
Dimethyl Sulfide		<PQL	0.05
n-Butyl mercaptan		<PQL	0.05
Carbon Disulfide		<PQL	0.05
Allyl Sulfide		<PQL	0.05
Propyl Sulfide		<PQL	0.05
Allyl disulfide		<PQL	0.05
Isopropyl Mercaptan		<PQL	0.05
t-Butyl mercaptan		<PQL	0.05
Propyl Mercaptan		<PQL	0.05
Butyl Sulfide		<PQL	0.05
Ethyl methyl sulfide		<PQL	0.05
Thiophene		<PQL	0.05
Isobutyl mercaptan		<PQL	0.05
Dimethyl disulfide		<PQL	0.05
Allyl mercaptan		<PQL	0.05
3-Methylthiophene		<PQL	0.05
Tetrahydrothiophene		<PQL	0.05
Diethyl sulfide		<PQL	0.05
2-Ethylthiophene		<PQL	0.05
2,5-Dimethylthiophene		<PQL	0.05
Diethyl disulfide		<PQL	0.05
Total Unidentified Sulfurs as H_2S		<PQL	0.05
Total Reduced Sulfurs		503	0.05

PQL = Practical Quantitation Limit (MDL x Analysis Dilution factor)
All compounds concentrations expressed in terms of H_2S.

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT: : Shaw Environmental, Inc.
PROJECT NO. : 050226
MATRIX : AIR
UNITS : PPMV

RECEIVING DATE : 06/30/2005
ANALYSIS DATE : 06/30/2005
REPORT DATE : 07/12/2005

Client ID	AAC ID	*ANALYSIS METHOD*		*EPA Method 18*				
		Detection Limit		*0.3 ppmv*				
		C1*	C2	C3	C4	C5	C6	C6+
Landfill Gas	050226-10397	*	ND	19	8.1	5.1	7.2	64

*** C1 values form EPA 3C**

Dr. Sucha Parmar
Technical Director

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

Client	**: Shaw Environmental, Inc.**	**Receiving Date**	**: 06/30/2005**
Project No.	**: 050226**	**Analysis Date**	**: 06/30/2005**
Matrix	**: air**	**Report Date**	**: 07/12/2005**
Units	**: ppmv**		

EPA Method 25

Detection Limit:		**0.3 ppmv**
Client Sample ID	**AAC ID**	**NMHC****
Landfill Gas	**050226-10397**	**927**

****Non-Methane Hydrocarbons as methane**

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 06/30/2005

I-Method Blank - EPA 3C

	Analyte	Units	Sample Analysis
Method Blank	Hydrogen	%	ND
	Oxygen	%	ND
	Nitrogen	%	ND
	CO	%	ND
	Methane	%	ND
	CO2	%	ND

II-LCS - EPA 3C

	Analyte	Spike Conc.	LCS Conc.	LCS Dup Conc.	% Rec	% RPD
LCS	Hydrogen	20	24	24	121	1.4
	Nitrogen	20	25	22	119	10.6
	CO	20	21	21	106	0.4
	Methane	20	21	22	107	1.0
	CO2	20	21	21	107	0.6

III-Duplicate Analysis -EPA 3C

AAC ID	Analyte	Sample Analysis	Duplicate Analysis	Mean	% RPD
050226-10397	Hydrogen	0.0	0.0	0.0	0.0
	Oxygen	1.3	1.3	1.3	0.0
	Nitrogen	10	10	10	0.3
	CO	0.0	0.0	0.0	0.0
	Methane	53	53	53	0.0
	CO2	38	38	38	0.1

IV-Matrix Spike Analysis -EPA 3C

AAC ID	Analyte	Sample Conc.	Spike Added	Sample Spike Conc.	Sample Spike Dupl. Conc.	Spike % Rec. *	Spike Dupl % Rec. *	% RPD **
050226-10397	Hydrogen	0.0	10	10	10	105	101	3.4
	Nitrogen	4.9	10	16	16	110	115	4.9
	CO	0.0	10	10	10	101	100	0.5
	Methane	27	10	38	37	110	107	2.4
	CO2	19	10	29	29	103	102	0.8

* Must be 70-130%

** Must be $\leq$ 25%

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

DATE ANALYZED : 06/30/2005 **UNITS : ppmv**

I - Method Blank

AAC ID	Analyte	Units	MB Conc.
Method Blank	H2S	ppmv	ND

II-LCS - ASTM D-5504

Analyte	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
H2S	20	20	17	102	86	**16**

III-Matrix Spike - ASTM D-5504 - 050226-10397

Analyte	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
H2S	252	1000	1286	1324	103	107	**3.6**

* Must be 70-130%

** Must be $\leq$ 25%

Dr. Sucha Parmar
Technical Director

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 06/30/2005

I-Method Blank EPA Method 25C

Analyte	Units	Sample Analysis
NMHC	ppm	ND

II-LCS

Analyte	True Conc.	LCS Conc.	LCS Conc. Dup	% Rec. *	% RPD **
NMHC	100	120	123	122	2.1

III-Duplicate Analysis

AAC ID	Analyte	Units	Sample Analysis	Duplicate Analysis	Mean	% RPD **
050226-10397	NMHC	ppm	334	340	337	1.9

IV-Matrix Spikes

AAC ID	Analyte	Units	Sample Conc.	Spike Added	Sample Spike Conc.	Sample Spike Dupl. Conc.	Spike % Rec.*	Spike Dupl % Rec.*	% RPD **
050226-10397	NMHC	ppm	169	50	213	202	89	67	28

* Must be 70-130%

** Must be $\leq$ 25%

Dr. Sucha Parmar,
Technical Director

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report

Date Analyzed : 06/30/2005

I - Method Blank

AAC ID	Analyte	Units	MB Conc.
Method Blank	C1	ppmv	ND
	C2	ppmv	ND
	C3	ppmv	ND
	C4	ppmv	ND
	C5	ppmv	ND
	C6	ppmv	ND

II - LCS

AAC ID	Analyte	Theoretical Conc.	LCS Conc.	LCS Conc. Dup	% Rec	% RPD
Lab Control Standard	Methane	100	103	104	103	1.4
	Ethane	101	105	106	105	1.0
	Propane	100	104	106	105	1.3
	Butane	100	102	105	104	2.3
	Pentane	100	97	101	99	4.0
	Hexane	98	83	94	91	12

III - Duplicate Analysis

AAC ID	Analyte	Units	Sample Conc.	Duplicate Conc.	Mean	%RPD
050226-10397	Ethane	ppmv	0.0	0.0	0.0	0.0
	Propane	ppmv	15	15	0.0	0.0
	Butane	ppmv	2.6	2.6	0.0	0.0
	Pentane	ppmv	1.9	1.7	1.8	11
	Hexane	ppmv	1.2	1.7	1.5	30

IV-Spiked Sample

AAC ID	Analyte	Units	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
050227-10398	Methane	ppmv	0.3	50	55	53	110	106	3.8
	Ethane	ppmv	0.0	50	56	53	111	107	4.2
	Propane	ppmv	0.0	50	55	53	110	105	4.4
	Butane	ppmv	0.0	50	55	52	110	104	5.0
	Pentane	ppmv	0.0	50	53	52	107	104	2.7
	Hexane	ppmv	0.0	50	52	52	104	103	0.3

* Must be 70-130%

** Must be $\leq$ 25%

Dr. Sucha Parmar
Technical Director

Laboratory

050226

Shaw Environmental Chain Of Custody Record

CLIENT: Redwood Landfill

DATE: 6-27-01

PAGE: 1 of 1

Page 11

SAMPLING COMPANY: Shaw Environmental, Inc.	LOG CODE:	SITE ADDRESS (Street and City):	
ADDRESS: 2360 Bering San Jose, CA 95131		EDF DELIVERABLE TO (Responsible Party or Designee):	PHONE NO.: / E-MAIL: / CONSULTANT PROJECT NO.:
PROJECT CONTACT (Hardcopy or PDF Report to): Bill Johnston		SAMPLER NAME(S) (Print):	
TELEPHONE: 408.382.5800	FAX: 408.433.1912	E-MAIL:	

TURNAROUND TIME (BUSINESS DAYS):
☐ 10 DAYS ☐ 5 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

SPECIAL INSTRUCTIONS OR NOTES:

AP 42 list for VOCs and sulfur compounds

Report NMOC concentrations as methane

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Compliance Landfill Gas	D1945-81, 3588-89, GPA 2145-94		AP 42 List for	TO 15	Sulfur species, TRS D-5504		EPA M25-C, NMOC as methane		AP 42 list	AP 42 Analysis	see list			FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes
597	Landfill Gas			air	1											X				NMOC TO-15 Sulfur Species Landfill Gas C1-C6, F-factor
																				see list of compounds to report for TO15

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

03/06/03 Revision