AP-42 Test Data - Submission Checklist

FACILITY INFORMATION

Landfill Name:
City of Palo Alto Landfill

Location:
3201 East Bayshore Rd., East Palo Alto, CA 94303

Owner: City of Palo Alto	**LFG Operator:** City of Palo Alto	
Contact Person: Michael O'Connor	**Address:** 3843 Brickway Blvd, Ste, 208, Santa Rosa, CA	
Email: moconnor@scsengineers.com	**Phone:** 707-546-9461	**Fax:**
Year Opened:	**Year Gas Collection Started:**	

Gas Collection Control Device Description:
LFG flare

Co disposal: ☐ Yes ☐ No ☒ Unknown

ADMINISTRATIVE INFORMATION
Complete test reports must be submitted (see footnote[1]))

Sampling Date: 9/22/08	**Analysis Date:** 9/23, 24, 25/08

Description of sampling site:
Enclosed LFG Flare

Description of sampling method:
Continuous emissions monitoring

QA/QC data included: ☒ Yes ☐ No

Chain of Custody included: ☒ Yes ☐ No

DATA SUMMARY

Type of Data: ☐ Header Draw
☐ Punch Probe (this data does not presently meet EPA requirements)
☒ Stack Test
☐ Other:

Header Draw data:

NMOC data:
☐ Yes
☐ No

NMOC (ppm as hexane):

Raw LFG Constituent data:
☐ Yes
☐ No

Sulfur Compound data:
☐ Yes
☐ No

NMOC Test Method:	**LFG Test Methods:**

Stack Testing data:
Device Tested (Flare, IC Engine, Turbine, Boiler):
Concentration (ppm)

NOx: 3.47 @ 15% O2	**SOx: 3.29**
CO: 0.51 @ 15% O2	**Dioxin/furans: NS**
PM: NS	**Aldehydes/metals: NS**

Was sampling conducted after the control device? (Y/N): Y

Test Methods: BAAQMD ST-6, 7, 13A, 14, EPA Method 6, Modified EPA Method TO-15 and D-5504

[1] According to USEPA, complete test reports should contain, at a minimum: Landfill name; physical description of the landfill, gas collection system and control device; description of sampling site and methods used to take samples; a sample matrix showing date of test and methods used for analysis; data results tables and discussion of results, identifying any data qualifiers or unusual circumstances affecting results; and QA/QC items such as field notes, laboratory notes, and a test QAPP or documentation of field and laboratory QA/QC procedures, including equipment calibrations and blank or spiked sample results.

CITY OF PALO ALTO LANDFILL
PALO ALTO, CA

Compliance Emissions Test Report
One Landfill Gas Fired Flare (A-3)
NOx, CO, SO_2 & NMOC Emission Results &
Complete Landfill Gas Characterization
[Facility # A2721, Condition # 1028]

Test Date(s): September 22, 2008
Report Date: October 23, 2008

Performed and Reported by:

BEST ENVIRONMENTAL (BE)
6261 Southfront Road
Livermore, CA 94551
Phone: (925) 455-9474
Fax: (925) 455-9479

Prepared For:

SCS Field Services
4707 Greenleaf Circle, Suite F
Modesto, CA 95956
Attn: Art Jones

For Submittal To:

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Attn: Tim Underwood

REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program. If this report is submitted for compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please call the Team Leader or Reviewer at (925) 455-9474.

Bobby Asfour
Project Manager

Reviewer:

I have reviewed this report for presentation and accuracy of content, and hereby certify that to the best of my knowledge the information is complete and correct.

Regan Best
Source Test Manager

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SECTION 1. INTRODUCTION

1.1. Test Purpose

Best Environmental was contracted by SCS Field Services to perform emissions testing on one landfill gas flare (A-3) to comply with Bay Area Air Quality Management District (BAAQMD) Regulation 8 Rule 34 Sections 301.3 & 412 as well as condition # 1028 of the permit. A copy of the Permit is included in the appendices.

1.2. Test Location

The testing was conducted on the flare located at the City of Palo Alto, Byxbee Park, 3201 East Bayshore Road, Palo Alto, CA 94303. (Facility #A2721)

The flare is used to incinerate landfill gas that is created from the decomposition of waste.

1.3. Test Date(s)

Testing was conducted on September 22, 2008.

1.4. Pollutants Tested

The following emission parameters were measured:

Parameter	Monitoring & Analytical Protocols
TNMHC, CH_4, THC, NOx, CO & O_2	BAAQMD Methods ST-7, 13A, 14 & 6
SO_2	EPA Method 6
DSCFM	EPA Method 19 (exhaust)
Inlet TNMHC	EPA Method 25C
Fixed Gases, Btu/CF & F Factor	ASTM D-1945 & 3588
LFG organics & TRS compounds	Modified EPA TO-15 & D-5504

1.5. Sampling and Observing Personnel

Sampling was performed by Bobby Asfour and Ross Hipple of BEST ENVIRONMENTAL (BE).

The BAAQMD was notified of the test date, however, there was no representative present to witness the test program.

1.6. Other Important Background Information

Testing was last performed at the flare on September 28, 2007.

SECTION 2. SUMMARY OF RESULTS

2.1. Emission Results

Table 2.1:

Parameter	Average Results	Limits
NOx, ppm @ 15% O_2	3.47	**32**
CO, ppm @ 15% O_2	0.51	**208**
SO_2, lbs/hr	0.070	**N/A**
*TNMHC, ppm @ 3% O_2 as Methane	9.81 (*see note)	**30**
*TNMHC Destruction Efficiency	42.022% (*see note)	**98%**
THC Destruction Efficiency	99.989	**N/A**
CH_4 Destruction Efficiency	99.998	**N/A**

*The PTO cites compliance to be determined by either of these two standards.

A more extensive summary of the emissions is presented in Table 1 on page 6. The Landfill Gas Characterization lab results can be found below and in Appendix B of the report.

Parameter	Results	Limits
AP-42 List of Compounds (inlet)		
Hydrogen Sulfide, ppb	34,000	
Carbonyl Sulfide, ppb	<1000	
Methyl Mercaptan, ppb	<1000	
Ethyl Mercaptan, ppb	<1000	
Dimethyl Sulfide, ppb	<1000	
Total Reduced Sulfur as H_2S, ppm	36	**1300**
Freon 12 (Dichlorodifluoromethane), ppb	250	
Chloromethane, ppb	<100	
Vinyl Chloride, ppb	<25	
Chloroethane, ppb	<25	
Freon 11, ppb(Flourotrichloromethane)	58	
Ethanol, ppb	2400	
1,1-Dichloroethene, ppb	<25	
Acetone, ppb	1200	
2-propanol ppb	840	
Carbon Disulfide ppb	<25	
Methylene Chloride, ppb	42	
Methyl tert-butyl ether ppb	<25	
trans-1,2-Dichloroethane, ppb	<25	
Hexane, ppb	470	
1,1-Dichloroethane, ppb	<25	
2-Butanone (Methyl Ethyl Ketone), ppb	940	
Chloroform, ppb	<25	
1,1,1-Trichloroethane, ppb	<25	
Carbon Tetrachloride, ppb	<25	
Benzene, ppb	220	
1,2-Dichloroethane, ppb	<25	

Trichloroethene, ppb	34	
1,2-Dichloropropane, ppb	<25	
Bromodichloromethane, ppb	<25	
4-Methyl-2-pentanone, ppb	<25	
Toluene, ppb	1400	
1,1,2-Trichloroethane	<25	
Tetrachloroethene, ppb	57	
1,2-Dibromoethane, ppb (EDB)	<25	
Chlorobenzene, ppb	97	
Ethyl Benzene, ppb	1300	
m, p-Xylene, ppb	1500	
o-xylene, ppb	530	
1,1,2,2-Tetrachloroethane, ppb	<25	
1,3-Dichlorobenzene, ppb	<25	
1, 4-Dichlorobenzene, ppb	120	
1, 2 Dichlorobenzene, ppb	<25	
Chlorodifluoromethane, ppb	660	
Acrylonitrile, ppb	<100	
Dichlorofluoromethane, ppb	<100	
Total Chlorinated Compounds, ppm as chloride (detected compounds only)	2.04	**104**
Total Chlorinated Compounds, ppm as chloride (includes non-detect compounds)	3.19	**104**
Oxygen, %	5.26	
Nitrogen, %	33.36	
Carbon Dioxide, %	29.75	
Carbon Monoxide, %	<0.01	
NMOC, ppm	63	
Methane, %	34.77	
Butane, ppm	<100	
Ethane, ppm	<100	
Propane, ppm	<100	
Pentane, ppm	<100	
Hexanes +, ppm	400	

2.2. Process Data

The flare temperature and fuel flow rate on the flare control panel was recorded during every run.

Table 2.2:

Parameter	Fuel Flow Meter, SCFM	Flare Temp., °F
Run # 1	263	1571
Run # 2	274	1565
Run # 3	267	1561

2.3. Allowable Emissions

See Table 2.1 above. The Non Methane Organic Compound (NMOC) Removal efficiency standard could not be demonstrated, as the inlet VOC concentrations were very low. However, the test results show that the flare is operating within the PTO NMOC gaseous emission limit and is therefore in compliance.

2.4. Comments: Discussion of Quality Assurance and Errors

Quality assurance procedures listed in the above referenced test methods and referenced in the Source Test Plan were performed and documented. The QA/QC procedures are described in Section 4.3 of the report. Documentation of the QA/QC is provided in Appendix A, B, E & F.

Although the sulfur compound (inorganic compounds) analysis was performed outside the analytical hold time, the overall results were consistent with previous years concentrations.

SECTION 3. SOURCE OPERATION

3.1. Process Description

The landfill gas fired flare is a control device for the treatment of landfill gas (mainly methane, carbon dioxide and nitrogen) that is generated from the decomposition of waste. The gas is collected in a network of interconnected pipes from several landfill gas extraction wells that draw a vacuum on the vapors in the landfill. The vapors are treated to remove condensate and particulate material, and then they are incinerated in the flare.

3.2. Flow Diagram

A digital image of the flare stack is contained in Appendix G.

3.3. Process and control operating parameters during testing

The flare was operated at ~1560 °F at a fuel rate of ~268 SCFM according to the flare's monitoring devices,

3.4. Normal Operating Parameters

The flare was operating normally during the test periods.

3.5. Testing or Process interruptions and changes

There were no testing or process interruptions during the test series.

SECTION 4. SAMPLING AND ANALYSIS PROCEDURES

4.1. Port location

Emissions from the flare were sampled via a square stack with four ports located approximately 5 stack diameters downstream of the burners and 1 stack diameter upstream from the exit. Access to the sampling ports was provided by a 40-foot boom-lift.

The dimensional cross-sections of the square stack is 78 X 78 inches (Area SQFT = 42.25)

The fuel line to the flare is a 10-inch stainless steel pipe. A single port/tap was located approximately 2-feet downstream from the flame arrestor and 2-feet upstream form the flare wall.

4.2. Point description/Labeling – ports/stack

The stack ports were not labeled, but were designated as facing East. 16-traverse points were selected by CARB Method 1 and were used to determine the stack gas profile during the first run. The remaining test runs were sampled from a representative location in the stack.

4.3. Method description, equipment, sampling, analysis and QA/QC

Sampling and analytical procedures of the EPA Methods are followed as published in the "Quality Assurance Handbook for Air Pollution Measurement Systems" Volume III, US EPA 600/4-77-027b.

The following is an overview of the Testing Performed

Parameter	Location	Method(s)	Duration	# of Runs
THC, CH_4, NMOC, NO_x, CO & O_2	Exhaust	BAAQMD ST-7, 13A, 14, 6	30 mins	3
SO_2	Exhaust	EPA Method 6	30 mins	3
Flow Rate	Exhaust	EPA 19	~10 mins	3
LFG organics & TRS compounds	Inlet	Modified EPA TO-15 & D-5504	30 mins	1
C1-C6, O_2, N_2, BTU-Fixed Gasses	Inlet	ASTM D-1945/3588	~15 mins	1
Flow Rate & Flare Temp.	Inlet	Flare Gas Metering System	~10 mins	3
NMOC	Inlet	EPA Method 25C	~15 mins	3

CARB Method 1. This method is used to determine the duct of stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements. The point selection is made based on the type of test (particulate, velocity or CEM), the stack diameter and port location distance from flow disturbance.

O_2, NOx, CO & THC by BAAQMD ST-13A, 14, 6 &7. These methods are all continuous emissions monitoring (CEM) techniques using instrumental analyzers to determine stack emissions. A leak check of the CEM system was performed prior to the start of testing. A linearity check was performed by first calibrating all analyzers with a zero gas and a high level gas. All calibrations were performed internally (direct calibration mode). NMHC testing was performed using a heated FID THC analyzer with methane cutter calibrated with propane in air EPA Protocol 1 calibration gases. Sample gas is pulled through a methane cutter, during each run, and tested for CH_4. NMHC is assumed equal to THC minus CH_4. In this case, NMHC is less than 1 as the methane concentrations were within 1ppm of the THC concentrations throughout the test program.

The following continuous monitoring analyzers were used:

Parameter	Make	Model	Principle
NO_x	CAI	600CLD	Chemiluminescence
CO	TECO	48i	GFC IR analyzer
O_2	CAI	100P	Paramagnetic
THC	CAI	300M	FID/Methane Cutter

EPA Method 6 is used to determine the moisture and SO_2 content in the gas stream by extracting a sample and condensing the stack gas in the impingers and the silica gel trap of the Method 6 sample trains. The first impinger is filled with IPA for interference filtration, and the second and third impingers are filled with 100mL of H_2O_2. The fourth impinger is filled with 200mg of silica gel. The moisture gained is determined volumetrically and gravimetrically. The SO_2 is determined using the Barium-thorin Titration method. Results are recorded on the field data sheet. A sample is pulled using a leak tight pump. Volume is measured with a calibrated dry gas meter. Pre- and post-test leak checks are performed for each run.

EPA Method 25C, TO-15 & D-5504 analysis is used to determine emissions of NMOC (equivalent to TNMHC) referenced to methane. Organic and inorganic compounds including sulfurs are determined from one of the runs. Inlet gases are filled into tedlar bags in triplicate corresponding to the test program. The bags are labeled respectively then sent to a laboratory and analyzed for NMOC and speciated compounds using GC/FID (gas chromatography/flame ionization detector) within 72 hours (48 hours for sulfur). For more information on the lab analysis, refer to Appendix C for method description and QA/QC.

EPA Method 19 is used to determine stack gas volumetric flow rates using oxygen based F-factors. F-factors are ratios of combustion gas volumes generated from heat input. The heating value of the fuel in Btu per cubic foot is determined from the analysis of fuel gas samples using gas chromatography (GC). Dedicated fuel meters monitor total fuel consumption for the source. The total cubic feet per hour of fuel multiplied times the Btu/CF provides million Btu per hour (MMBTU) heat input. The heat input in MMBTU/hr is multiplied by the F-factor (DSCF/MMBTU) and adjusted for the measured oxygen content of the source to determine volumetric flow rate. This procedure is proposed for pollutants whose compliance standards are based on emission rates (lb/day) or emission factors (lb/MMBtu).

EPA Method ASTM D-1945 & D-3588 analysis is used to determine the composition of fuel gas (e.g. Methane, fixed gases & BTU Content). Inlet gases are filled into a tedlar bag, the bag is labeled respectively then sent to a Laboratory and analyzed for fixed gases, methane and C_1-C_6 using GC/FID (gas chromatography/flame ionization detector). Each compound has calorific values that are used to calculate the combustion factors.

4.4. Analytical Laboratories

Three Inlet bag samples were sent to Columbia Analytical Services, Inc. for NMOC analysis. One Inlet bag samples was sent to Zalco Laboratories for heat input analysis. One inlet bag sample was sent to Air Toxics Laboratories Ltd. for organic and inorganic compound analyses.

Three wet test samples were brought back to the BE laboratory and analyzed for SO_2.

For more information on the analysis procedure and QA/QC refer to Appendix B.

TABLE 1
City of Palo Alto Landfill
NOx, CO, THC & SO_2 Emissions
Flare Outlet (A-3)

RUN #	1		2		3		AVG	
TEST LOCATION	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet	Inlet	Outlet
TEST DATE	9/22/2008		9/22/2008		9/22/2008			
TEST TIME	1037-1108		1120-1150		1200-1230			
STANDARD TEMP., °F	70		70		70			
FLARE TEMP., °F	1571		1565		1561		1566	
FLOW RATE, DSCFM	263.0	2,142	274.0	2,165	267.0	2,179	268.0	2,162
O_2, %	5.26	12.80	N.M.	12.56	N.M.	12.82	5.3	12.73
CO_2, (%)	29.750	7.20	N.M.	7.50	N.M.	7.26	29.750	N.M.
N_2, %	33.360	N.M.	N.M.	N.M.	N.M.	N.M.	33.360	N.M.
CO, ppm	N.A.	1.19	N.A.	0.58	N.A.	0.34	N.A.	0.70
CO, ppm @ 15% O_2	N.A.	0.87	N.A.	0.41	N.A.	0.25	N.A.	0.51
CO, lbs/hr	N.A.	0.011	N.A.	0.005	N.A.	0.003	N.A.	0.007
NOx, ppm	N.M.	4.14	N.M.	4.78	N.M.	5.50	N.M.	4.81
NOx, ppm @ 15% O_2	N.A.	3.02	N.A.	3.38	N.A.	4.02	N.A.	3.47
NOx, lbs/hr as NO_2	N.M.	0.063	N.M.	0.074	N.M.	0.086	N.M.	0.074
CH_4, ppm	337000.0	1.01	341000.0	<1.00	365000.0	<1.00	347666.7	1.00
CH_4, lbs/hr	220.019	0.005	231.942	<0.005	241.924	<0.005	231.295	0.005
THC, ppm	337055.0	5.88	341071.0	4.65	365064.0	3.93	347730.0	4.82
THC, lbs/hr	220.055	0.031	231.990	0.025	241.966	0.021	231.337	0.026
TNMHC, ppm	55	4.87	71	4.65	64	3.93	63	4.48
TNMHC, ppm @ 3% O_2 as CH_4	N.A.	10.76	N.A.	9.97	N.A.	8.71	N.A.	9.81
TNMHC, lbs/hr as CH_4	0.036	0.026	0.048	0.025	0.042	0.021	0.042	0.024
SO_2, ppm	N.M.	6.22	N.M.	1.70	N.M.	1.96	N.M.	3.29
SO_2, lbs/hr	N.M.	0.132	N.M.	0.037	N.M.	0.042	N.M.	0.070
H_2S, ppm	34.00	N.M.	N.M.	N.M.	N.M.	N.M.	34.00	N.M.
H_2S, lbs/hr	0.047	N.M.	N.M.	N.M.	N.M.	N.M.	0.047	N.M.
TNMHC D.E., %	**27.941**		**48.240**		**49.885**		**42.022**	
THC D.E., %	**99.986**		**99.989**		**99.991**		**99.989**	
CH_4 D.E., %	**99.998**		**99.998**		**99.998**		**99.998**	
CO, lbs/MMBtu (O_2 based)	**0.0022**		**0.0011**		**0.0006**		**0.0013**	
NOx, lbs/MMBtu (O_2 based)	**0.0127**		**0.0143**		**0.0169**		**0.0146**	
SO_2, lbs/MMBtu (O_2 based)	**0.0266**		**0.0071**		**0.0084**		**0.0140**	

* The < (less than) value is used in calculations when concentrations are below the analyzer detection limit.

WHERE:

CO = Carbon Monoxide (M.W. = 28)
NO_x = Nitrogen Dioxide (M.W. = 46)
CO_2 = Carbon Dioxide
O_2 = Oxygen
CH_4 = Methane (M.W. = 16)
THC = Total Hydrocarbon as CH_4
TNMHC = Total Non-Methane Hydrocarbon as CH_4
TNMHC = THC - CH_4
SO_2 = Sulfur Dioxide (M.W. = 64.1)
H_2S = Hydrogen Sulfide (M.W. = 34)
lbs/hr = Pounds Per Hour Emission Rate
lbs/MMBtu = Pounds per Million Btu
DSCFM = Dry Standard Cubic Feet Per Minute
D.E. = Destruction Efficiency
N.M. = Not Measured
N.A. = Not Applicable
ppm = Parts per Million

CALCULATIONS:

D.E. = 100 * (Inlet TNMHC lbs/hr - Outlet TNMHC lbs/hr) / Inlet TNMHC lbs/hr
lbs/hr = ppm * DSCFM * M.W. * 8.223E-5 / (Tstd + 460)
lbs/MMBtu (CO_2 based) = ppm * M.W. * Fc * 2.60E-9 * 100 / %CO_2
tons/month = lbs/hr * 24 hr/day * 22 days/month / 2000 lbs/ton
ppm @ 15% O_2 = ppm * (5.9/(20.9-O_2))

APPENDICES

APPENDIX A
CALCULATIONS & NOMENCLATURE

Standard Abbreviations for Reports

Unit	Abbreviation	Unit	Abbreviation
billion	G	microgram	µg
Brake horsepower	bhp	milligram	mg
Brake horsepower hour	bhp-hr	milliliter	ml
British Thermal Unit	Btu	million	MM
capture efficiency	CE	minute	min
destruction efficiency	DE	Molecular Weight	M
Dry Standard Cubic Feet	DSCF	nanogram	ng
Dry Standard Cubic Feet per Minute	DSCFM	Parts per Billion	ppb
Dry Standard Cubic Meter	DSCM	Parts per Million	ppm
Dry Standard Cubic Meter per Minute	DSCMM	pennyweight per firkin	pw/fkn
grains per dry standard cubic foot	gr/DSCF	pound	lb
gram	g	pounds per hour	lbs/hr
grams per Brake horsepower hour	g/bhp-hr	pounds per million Btu	lbs/MMBtu
kilowatt	kW	second	sec
liter	l	Specific Volume, ft^3/lb-mole	SV
Megawatts	MW	Thousand	k
meter	m	watt	W

Common Conversions / Calculations / Constants

1 gram = 15.432 grains

1 pound = 7000 grains

grams per pound = 453.6

bhp = 1.344 * Engine kW, (where Engine kW = Generator kW output / 0.95) @ 95% efficiency

g/bhp-hr = lbs/hr * 453.6 / bhp

2.59E-9 = Conversion factor for ppm to lbs/scf; **EPA 40CFR60.45**

dscf / MMBTU = 8710 for Natural gas; **EPA Method 19**

Btu/ft^3 = 1040 for Natural Gas; **EPA Method 19**

lb/hr Part. Emission Rate = 0.00857 * gr/dscf * dscfm; **EPA Method 5**

lbs/hr = ppm / SV x dscfm x M * 60; **CARB Method 100; where SV ≈ $385E^6$ @ 68°F or ≈ $379E^6$ @ 60°F.**

Correction to 12% CO_2 = gr/dscf * 12% / stack CO_2%; **EPA Method 5**

Correction to 3% O_2 = ppm * 17.9 / (20.9 - stack O_2 %); **CARB Method 100**

Correction to 15% O_2 = ppm * 5.9 / (20.9 - stack O_2 %); **CARB Method 100**

dscfm = Gas Fd * MMBtu/min * 20.9 / (20.9 - stack O_2 %); **EPA Method 19**

lb/MMBtu = Fd * M * ppm * 2.59E-9 * 20.9 / (20.9 - stack O_2 %); **EPA Method 19**

Standard Temperatures by District

EPA	68 °F	NSAPCD - Northern Sonoma	68 °F
CARB	68 °F	PCAPCD - Placer	68 °F
BAAQMD - Bay Area	70 °F	SLOCAPCD - San Luis Obispo	60 °F
SJVUAPCD - San Joaquin	60 °F	SMAQMD - Sacramento	68°F de facto
SCAQMD - South Coast	60 °F	SCAQMD - Shasta County	68 °F
MBUAPCD - Monterey Bay	68 °F	YSAPCD - Yolo-Solano	60 °F
FRAQMD – Feather River	68 °F		

CEM CORRECTION SUMMARY

Facility:	City of Palo Alto Landfill	Barometric:	29.90
Unit:	Flare Outlet (A-3)	Leak Check:	OK
Condition:	1560 F	Strat. Check:	OK
Date:	9/22/08	Personnel:	BA/RH

	Inlet					Outlet						
	TOC	CO_2	O_2	CO	CH_4	O_2	CO_2	NOx	CO	THC	CH_4	Comments
Analyzer						100P	100.0	600CLD	48i	300M	300M	
Range						25	15	25	20	100	100	
Units, ppm or %						%	%	ppm	ppm	ppm	ppm	
Span Gas Value						20.94	4.0	21.6	16.5	88.8	88.8	
Run 1						0.00	0.00	0.0	0.0	0.4	0.4	zero (initial), Zi
						20.92	4.21	21.5	16.4	90.3	90.3	upscale cal (initial), Si
1037-1108						12.8	7.5	4.1	1.1	5.1	0.3	TEST AVG
						0.00	0.00	0.0	0.0	-1.9	-1.9	zero (final), Zf
						20.91	4.20	21.6	16.4	85.2	85.2	upscale cal (final), Sf
						0.0%	0.0%	0.0%	-0.1%	-2.3%	-2.3%	zero drift
						-0.1%	-0.1%	0.2%	-0.2%	-5.1%	-5.1%	cal drift
						12.8	**7.2**	**4.1**	**1.2**	**5.9**	**1.0**	**CORRECTED AVG**
Run 2						0.00	0.00	0.0	0.0	0.6	0.6	zero (initial), Zi
						20.91	4.20	21.6	16.4	88.3	88.3	upscale cal (initial), Si
1120-1150						12.5	7.8	4.8	0.5	4.9	1.0	TEST AVG
						0.00	0.00	0.0	-0.1	-0.1	-0.1	zero (final), Zf
						20.91	4.20	21.5	16.4	87.8	87.8	upscale cal (final), Sf
						0.0%	0.0%	0.0%	-0.1%	-0.6%	-0.6%	zero drift
						0.0%	0.0%	0.0%	-0.1%	-0.5%	-0.5%	cal drift
						12.6	**7.5**	**4.8**	**0.6**	**4.7**	**0.7**	**CORRECTED AVG**
Run 3						0.00	0.0	0.0	-0.1	-0.1	-0.1	zero (initial), Zi
						20.91	4.2	21.5	16.4	87.8	87.8	upscale cal (initial), Si
1200-1230						12.8	7.5	5.5	0.2	2.8	-0.6	TEST AVG
						0.00	0.0	0.0	-0.1	-2.1	-2.1	zero (final), Zf
						20.90	4.20	21.6	16.3	86.0	86.0	upscale cal (final), Sf
						0.0%	0.0%	0.0%	-0.2%	-2.1%	-2.1%	zero drift
						-0.1%	0.0%	0.1%	-0.3%	-1.8%	-1.8%	cal drift
						12.8	**7.3**	**5.5**	**0.3**	**3.9**	**0.5**	**CORRECTED AVG**
AVERAGES						**12.7**	**7.3**	**4.8**	**0.7**	**4.8**	**0.7**	**TEST AVG**

CORRECTED VALUE = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+Sf) / 2)-((Zi+Zf) / 2)]
ZERO DRIFT % = 100 * (Zf-Zi) / Instrument Range
SPAN DRIFT % = 100 * (Sf-Si) / Instrument Range

A-3

STACK GAS FLOW RATE DETERMINATION -- FUEL USAGE
EPA Method 19

Facility: City of Palo Alto Landfill
Unit: Flare Outlet (A-3)
Condition: 1560F
Date: 9/22/08

	Run 1 1037-1108	Run 2 1120-1150	Run 3 1200-1230	
Time:				
Gross Calorific Value @ 68°F	317	317	317	Btu / ft³
Stack Oxygen	12.80	12.56	12.82	%
Gas Fd-Factor @ 68°F	9952.4	9952.4	9952.4	DSCF/MMBtu
Standard Temperature (°F)	70	70	70	°F
Corrected Fuel Rate (SCFM) @ 68°F	263.0	274.0	267.0	SCFM
Fuel Flow Rate (SCFH) @68°F	15,780	16,440	16,020	SCFH
Fuel Flow Rate (SCFH) @60°F	15,541	16,191	15,777	SCFH
Million Btu per minute	0.083	0.087	0.085	MMBtu/min
Heat Input (MMBtu/hour)	5.0	5.2	5.1	MMBtu/Hr
Stack Gas Flow Rate	**2,142**	**2,165**	**2,179**	**DSCFM**

WHERE:

Gas Fd-Factor = Fuel conversion factor (ratio of combustion gas volumes to heat inputs)
MMBtu = Million Btu

CALCULATIONS:

SCFM = CFM * 528 * (gas line PSIA) / 14.7 / (gas °F + 460)
MMBtu/min = (SCFM * Btu/ft³) / 1,000,000
DSCFM = Gas Fd-Factor * MMBtu/min * 20.95 / (20.95 - stack oxygen%)
SCFH = SCFM * 60
Heat Input = MMBtu/min * 60

City of Palo Alto Landfill
BAAQMD ST-19B - SO_2 Determination

Location: **Flare Outlet (A-3)**

Test:	1	2	3	
Date:	9/22/08	9/22/08	9/22/08	
Time:	1039-1109	1123-1153	1202-1232	
1. Uncorrected Meter Volume (Vm)	15.124	18.674	17.534	
2. Meter Factor (Yd)	0.9976	0.9976	0.9976	
3. Barometric Pressure (Pb)	29.90	29.90	29.90	" Hg
4. Meter Pressure (ΔH)	0.0	0.0	0.0	" H_2O
5. Meter Temperature (Tm)	89.7	88.9	86.1	°F
6. Std. Temperature (Tstd)	70.0	70.0	70.0	°F
7. Impinger H_20 Gain (Vw imp)	24.0	10.0	22.0	ml
8. Silica Gel Wt. Gain (Vw sg)	7.5	15.3	7.9	g
9. Total H_2O Gain (Vw)	31.5	25.3	29.9	g
10. Moisture Vapor (Vw std)	1.490	1.197	1.414	ft^3
11. SO_2 (mg)	6.8	2.3	2.5	mg
Std. Meter Volume (Vm std)	14.537	17.976	16.965	ft^3
Percent of H_2O in Stack (% H_2O)	9.30	6.24	7.69	%
SO_2 (ppm)	**6.22**	**1.70**	**1.96**	

WHERE

ft^3 = Cubic Feet
Hg = Mercury
°F = Fahrenheit
ml = milliliters
mg = milligrams
g = grams
% = Percent

CALCULATIONS

SO_2 ppm = 1.6085 * mg SO_2 * T_{std} / (Vm std * 64.1)
SO_3 & SO_4 ppm = 1.6085 * mg H_2SO_4 * Tstd / (Vm std * 98.1)
Vw std = 0.00267 * Vw * (Tstd + 460) / 29.92
Vm std = Vm * Yd * (Tstd + 460) * (Pb +(ΔH/13.6)) / (Tm + 460) / 29.92
Stack Moisture H_2O % = 100 * Vw std / (Vw std + Vm std)

APPENDIX B
LAB REPORTS

LAB METHOD 6 SO_2 DETERMINATION

Job Name: City of Palo Alto
Sample date: 9/22/08
Request By: B. Asfour
Date of Analysis: 9/23/08
Source: Stack outlet

Analysts: R. Mariano
Signature: Mariano

Barium Perchlorate Standardization:

H_2SO_4 Normality = **0.00983** eq./liter

RUN#	H_2SO_4,ml	$Ba(ClO_4)_2$, ml
1	20.00	21.20
2	20.00	21.20
3	20.00	21.20
Avg.	**20.00**	**21.20**

Ba $(ClO_4)_2$ Normality = **0.00927** eq./liter

Sample Analysis:

Sample I.D.	Tot. Vol. (ml)	Aliq. (ml)	Titrant #1(ml)	Titrant #2(ml)	Avg.	Dilution	SO_2Con. (mg)
R1	224	20.0	2.10	2.10	**2.10**	1.0	**6.8**
R2	226	20.0	0.70	0.75	**0.73**	1.0	**2.3**
R3	226	20.0	0.80	0.80	**0.80**	1.0	**2.5**
Blank	100	20.0	0.05	0.05	**0.05**		

CALCULATION:

SO_2 mg = 32.03*$Ba(ClO_4)_2$Normality*(Titrant Avg.-Blank Avg.)*(Tot.Vol./Aliquot)*Dilution

Best Environmental Ph (925) 455-9474; Fx (925) 455-9479

Project ID: **SAMPLE CHAIN OF CUSTODY** **BE PROJECT MANAGER:** BA

Analyical Lab: Best Environmental

#	DATE	TIME	SAMPLE ID Run#/Method/Fraction/Source	CONTAINER size / type	Volume	Storage Temp °F	SAMPLE DESCRIPTION	ANALYSIS	TAT
1	9-22-08	11:09	Run 1	500mL/HDPE	224	<68	3% H_2O_2 + Catch	SO_2	Norm.
2									
3		11:53	Run 2	500mL/HDPE	226	<68	3% H_2O_2 + Catch	SO_2	Norm.
4									
5		12:32	Run 3	500mL/HDPE	226	<68	3% H_2O_2 + Catch	SO_2	Norm.
6									
7		12:40	Blank	500mL/HDPE		<68	3% H_2O_2	SO_2	Norm.
8									
9									
10		11:09	Run 1	500mL/HDPE	100	<68	IPA + Catch	N/A	N/A
11		11:53	Run 2	500mL/HDPE	84	<68	IPA + Catch	N/A	N/A
12		12:32	Run 3	500mL/HDPE	96	<68	IPA + Catch	N/A	N/A
13		12:40	Blank	500mL/HDPE	~~100~~	<68	IPA	N/A	N/A
14									
15									
16									
17									
18									
19									
20									
21									

SPECIAL INSTRUCTIONS: Record & Report all liquid sample volumes.

Submit Results to: Attn: Bobby Asfour BEST ENVIRONMENTAL 6261 SOUTHFRONT RD. LIVERMORE CA. 94551

Relinquished by: Ross Hipple 9-22-08 15:00 Received by: Mariano Date: 9-23-08 Time: 10 AM

Relinquished by: _____ Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Received by: _____ Date: _____ Time: _____

SAMPLE CONDITION AS RECEIVED: OK or not OK

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC.
An Employee - Owned Company

LABORATORY REPORT

October 7, 2008

Bobby Asfour
Best Environmental
6261 Southfront Road
Livermore, CA 94551

RE: City of Palo Alto

Dear Bobby:

Enclosed are the results of the samples submitted to our laboratory on September 23, 2008. For your reference, these analyses have been assigned our service request number P0803092.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 7 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

2655 Park Center Drive, Suite A Simi Valley, California 93065 (805) 526-7161 (805) 526-7270 fax

Columbia Analytical Services INC.
An Employee - Owned Company

Client: Best Environmental CAS Project No: P0803092
Project: City of Palo Alto

CASE NARRATIVE

The samples were received intact under chain of custody on September 23, 2008 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Methane Analysis

The samples were analyzed for methane according to modified EPA Method 3C (single injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD).

Total Gaseous Non-Methane Organics as Methane Analysis

The samples were also analyzed for total gaseous non-methane organics as methane according to modified EPA Method 25C. The analyses included a single sample injection (method modification) analyzed by gas chromatography using flame ionization detection/total combustion analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: Best Environmental
Project: City of Palo Alto

Service Request: P0803092

SAMPLE CROSS-REFERENCE

SAMPLE #	CLIENT SAMPLE ID	DATE	TIME
P0803092-001	R1/Inlet	09/22/08	10:37
P0803092-002	R2/Inlet	09/22/08	11:20
P0803092-003	R3/Inlet	09/22/08	12:00

BEST ENVIRONMENTAL — Livermore, CA 925-455-9474

Project ID: City of Palo Alto

Analytical Lab: Columbia Analytical

SAMPLE CHAIN OF CUSTODY

PO803092

#	DATE	TIME	SAMPLE ID Run#/Method/Fraction/Source	CONTAINER size / type	Volume	Storage Temp °F	SAMPLE DESCRIPTION	ANALYSIS	TAT
1	9-22-08	1037	R1/ inlet	1Lt/Tedlr		Amb	Landfill Gas	NMOC	Norm
2	↓	1120	R2/ inlet	↓		↓	↓	↓	↓
3		1200	R3/ inlet						
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									

SPECIAL INSTRUCTIONS:

Submit Results to: Attn: Bobby Ashoo — Best Environmental, 6261 Southfront Rd., Livermore, CA 94551

Relinquished by: [signature] 9-22-08 — Received by: ON TRAC — Date: ____ Time: ____

Relinquished by: ON TRAC — Received by: [signature] — Date: 9/23/08 Time: 0935

Relinquished by: ____ — Received by: ____ — Date: ____ Time: ____

SAMPLE CONDITION AS RECEIVED: OK or not OK — SHIP DATE. — CARRIER.

B-7

4 t:\forms\fieldcoc.xls - 8/4/99

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: Best Environmental Work order: P0803092

Project: City of Palo Alto

Sample(s) received on: 9/23/08 Date opened: 9/23/08 by: LKUKITA

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Container(s) **supplied by CAS?**	☐	☒	☐
3	Did **sample containers** arrive in good condition?	☒	☐	☐
4	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
5	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
6	Was **sample volume** received adequate for analysis?	☒	☐	☐
7	Are samples within specified holding times?	☒	☐	☐
8	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
	Cooler Temperature _____ °C Blank Temperature _____ °C			
9	Was a **trip blank** received?	☐	☒	☐
	Trip blank supplied by CAS: Serial # _____ -TB _____			
10	Were **custody seals** on outside of cooler/Box?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
	Were custody seals on outside of sample container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
11	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
12	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
	Do they contain moisture?	☐	☐	☒
13	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P0803092-001.01	10 L Tedlar Bag					
P0803092-002.01	10 L Tedlar Bag					
P0803092-003.01	10 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12) RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Best Environmental**
Client Project ID: **City of Palo Alto** CAS Project ID: P0803092

Methane

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD Date(s) Collected: 9/22/08
Analyst: Zheng Wang/Wade Henton Date Received: 9/23/08
Sampling Media: 10 L Tedlar Bag(s) Date Analyzed: 9/23/08
Test Notes:

Client Sample ID	CAS Sample ID	Injection Volume ml(s)	Result %, v/v	MRL %, v/v	Data Qualifier
R1/Inlet	P0803092-001	0.10	**33.7**	0.10	
R2/Inlet	P0803092-002	0.10	**34.1**	0.10	
R3/Inlet	P0803092-003	0.10	**36.5**	0.10	
Method Blank	P080923-MB	0.10	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: _____ Date: 10/7/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Client: **Best Environmental**
Client Project ID: **City of Palo Alto** CAS Project ID: P0803092

Total Gaseous Nonmethane Organics (TGNMO) as Methane

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA Date(s) Collected: 9/22/08
Analyst: Zheng Wang/Wade Henton Date Received: 9/23/08
Sampling Media: 10 L Tedlar Bag(s) Date Analyzed: 9/23/08
Test Notes:

Client Sample ID	CAS Sample ID	Injection Volume ml(s)	Result ppmV	MRL ppmV	Data Qualifier
R1/Inlet	P0803092-001	0.50	**55**	1.0	
R2/Inlet	P0803092-002	0.50	**71**	1.0	
R3/Inlet	P0803092-003	0.50	**64**	1.0	
Method Blank	P080923-MB	0.50	ND	1.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: WH Date: 10/7/08

ZALCO LABORATORIES, INC.
Analytical & Consulting Services

4309 Armour Avenue
Bakersfield, California 93308

(661) 395-0539
FAX (661) 395-3069

Monday, September 29, 2008

Bobby Asfour
Best Environmental Services
6261 Southfront Rd.
Livermore, CA 94551

TEL: (925) 455-9474
FAX (925) 455-9479

RE: City of Palo Alto

Order No.: 0809311

Dear Bobby Asfour:

Zalco Laboratories, Inc. received 1 sample(s) on 9/23/2008 for the analyses presented in the following report.

We appreciate your business and look forward to serving you in the future. Please feel free to call our office if you have any questions regarding these test results.

Sincerely,

Authorized Signature
Zalco Laboratories, Inc.
(661) 395-0539

ZALCO LABORATORIES, INC.
Analytical & Consulting Services

4309 Armour Avenue
Bakersfield, California 93308

(661) 395-0539
FAX (661) 395-3069

Best Environmental Services
6261 Southfront Road
Livermore CA 94551

Attention: Bobby Asfour

Sample Description: **R1 / Inlet**
Sampled: 09/22/2008 @ 10:37 AM by Client

Laboratory No: 0809311-001
Date Received: 09/23/08
Date Analyzed: 09/23/08
Purchase Order:

Test Code: 1635

Chromatographic Analysis, ASTM D-1945-81, ASTM D-3588-89, GPA 2145-94

Constituent:	Mole %	Weight %	Gas Liquids, Gallons per 1000 cubic feet	CHONS%
				Carbon, C
Oxygen	5.26	5.76		25.31
Nitrogen	33.36	31.97		
				Hydrogen, H
Carbon Dioxide	29.75	44.80		4.38
Carbon Monoxide	0.00	0.00		
Hydrogen Sulfide	0.00	0.00		Oxygen, O
Methane	31.59	17.34		38.34
Ethane	0.00	0.00		
Propane	0.00	0.00	0.00	Nitrogen, N
IsoButane	0.00	0.00	0.00	31.97
n-Butane	0.00	0.00	0.00	
IsoPentane	0.00	0.00	0.00	Sulfur, S
n-Pentane	0.00	0.00	0.00	0.00
Hexanes+	0.04	0.13	0.02	
Totals:	100.00	100.00	0.02	100.00

Gas Properties calculated at STP: degrees F.	60.00	H/C Ratio:
Measurement Base Pressure at STP: psia	14.696	0.17

~~316~~ 317.0 @ 60°

Gross Btu/Cu.Ft.,	Dry Gas HHV	321.8	Relative Gas Density; Ideal gas:	1.0091
Ideal Gross Btu/Lb.	Dry Gas HHV	4170.1	Specific Gravity, (Air = 1) Real gas:	1.0104
Net Btu/Cu.Ft.	Dry Gas LHV	289.8	Real Gas Density, Lb/Cu.Ft.	0.07716
Ideal Net Btu/Lb	Dry Gas LHV	3755.3	Specific Volume, Cu.Ft./Lb	12.9596
Gross Btu/Cu.Ft.,	water saturated	315.6	Compressibility, 'z'	0.9981

		Gross or HHV:	Net or LHV:
"F" Factor,	DSCF/MMBtu at 60F.	9803.1	10885.7
"F" Factor,	DSCF/MMBtu at 68F.	9952.4	11051.5
"F" Factor,	DSCF/MMBtu at 70F.	9990.2	11093.5
"FC" Factor,	DSCF CO2/MMBtu60F.	1919.0	2130.9
"FC" Factor,	DSCF CO2/MMBtu68F.	1948.2	2163.3

Juan Manuel Magana for
Robert Cortez, Laboratory Manager

TCDH Pet 080923A LTS

BEST ENVIRONMENTAL — Livermore, CA 925-455-9474

Project ID: City of Palo Alto

Analytical Lab: Zalco

SAMPLE CHAIN OF CUSTODY

0809211

B-13

#	DATE	TIME	SAMPLE ID Run#/Method/Fraction/Source	CONTAINER size / type	Volume	Storage Temp °F	SAMPLE DESCRIPTION	ANALYSIS	TAT
1	9-22-08	1037	RI Inlet	1L/Tedlar		Amb	Landfill Gas	Comp. Fuel	Norm
2									
3	9-22-08	1120	RI Inlet - Backup	"		"	"	"	"
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									

SPECIAL INSTRUCTIONS:

only need 1 sample

Submit Results to: Attn: Bobby Astor — Best Environmental, 6261 Southfront Rd., Livermore, CA 94551

Relinquished by: [signature] 9-22-08 Received by: Patricia Johnson Date: 9/23/08 Time: 10:00

Relinquished by: _____ Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Received by: _____ Date: _____ Time: _____

SAMPLE CONDITION AS RECEIVED: OK or not OK SHIP DATE. CARRIER.

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Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0809491B

Work Order Summary

CLIENT:	Mr. Bobby Asfour Best Environmental 6261 Southfront Road Livermore, CA 94551	**BILL TO:**	Mr. Bobby Asfour Best Environmental 6261 Southfront Road Livermore, CA 94551
PHONE:	925-455-9474 x104	**P.O. #**	
FAX:	925-455-9479	**PROJECT #**	City of Palo Alto
DATE RECEIVED:	09/23/2008	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	09/26/2008		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	R1/inlet	ASTM D-5504	Tedlar Bag	Tedlar Bag
02A(on hold)	R1/inlet-Back-up	ASTM D-5504	Tedlar Bag	Tedlar Bag
03A	Lab Blank	ASTM D-5504	NA	NA
04A	LCS	ASTM D-5504	NA	NA

CERTIFIED BY: Linda A. Freeman DATE: 09/26/08

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/08, Expiration date: 06/30/09
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
ASTM D-5504
Best Environmental
Workorder# 0809491B

Two 10 Liter Tedlar Bag samples were received on September 23, 2008. The laboratory performed the analysis of sulfur compounds via ASTM D-5504 using GC/SCD. The method involves direct injection of the air sample into the GC via a fixed 1.0 mL sampling loop. See the data sheets for the reporting limits for each compound.

Receiving Notes

Sample R1/inlet-Back-up was placed on hold per the client's request.

Analytical Notes

Ethyl Methyl Sulfide and n-Butyl Mercaptan coelute with 3-Methyl Thiophene.

The Reporting Limit was raised to 10 ppbv for all compounds except 3-Methyl Thiophene/n-Butyl Mercaptan/Ethyl Methyl Sulfide which was raised to 30 ppbv.

Sample R1/inlet was analyzed past the method specified 24 hour hold time due to production capacity..

The Total Reduced Sulfur (TRS) concentration is calculated by summing all peaks and quantitating the area based on the response of Hydrogen Sulfide.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Summary of Detected Compounds
SULFUR GASES BY ASTM D-5504 GC/SCD

Client Sample ID: R1/inlet

Lab ID#: 0809491B-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	1000	34000
Total Reduced Sulfur ref. to H2S (MW=34)	1000	36000

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: R1/inlet

Lab ID#: 0809491B-01A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**l092409**	**Date of Collection: 9/22/08**	
Dil. Factor:	**100**	**Date of Analysis: 9/24/08 02:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	1000	34000
Carbonyl Sulfide	1000	Not Detected
Methyl Mercaptan	1000	Not Detected
Ethyl Mercaptan	1000	Not Detected
Dimethyl Sulfide	1000	Not Detected
Carbon Disulfide	1000	Not Detected
Isopropyl Mercaptan	1000	Not Detected
tert-Butyl Mercaptan	1000	Not Detected
n-Propyl Mercaptan	1000	Not Detected
Thiophene	1000	Not Detected
Isobutyl Mercaptan	1000	Not Detected
3-Methyl Thiophene/n-Butyl Mercaptan/Ethyl Methyl Sulfide	3000	Not Detected
Diethyl Sulfide	1000	Not Detected
Dimethyl Disulfide	1000	Not Detected
Tetrahydrothiophene	1000	Not Detected
2-Ethylthiophene	1000	Not Detected
2,5-Dimethylthiophene	1000	Not Detected
Diethyl Disulfide	1000	Not Detected
Total Reduced Sulfur ref. to H2S (MW=34)	1000	36000

The result of Total Reduced Sulfur is reported from file L092409a.d.

Container Type: 10 Liter Tedlar Bag

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0809491B-03A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**I092408**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/24/08 02:31 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	10	Not Detected
Carbonyl Sulfide	10	Not Detected
Methyl Mercaptan	10	Not Detected
Ethyl Mercaptan	10	Not Detected
Dimethyl Sulfide	10	Not Detected
Carbon Disulfide	10	Not Detected
Isopropyl Mercaptan	10	Not Detected
tert-Butyl Mercaptan	10	Not Detected
n-Propyl Mercaptan	10	Not Detected
Thiophene	10	Not Detected
Isobutyl Mercaptan	10	Not Detected
3-Methyl Thiophene/n-Butyl Mercaptan/Ethyl Methyl Sulfide	30	Not Detected
Diethyl Sulfide	10	Not Detected
Dimethyl Disulfide	10	Not Detected
Tetrahydrothiophene	10	Not Detected
2-Ethylthiophene	10	Not Detected
2,5-Dimethylthiophene	10	Not Detected
Diethyl Disulfide	10	Not Detected
Total Reduced Sulfur ref. to H2S (MW=34)	10	Not Detected

The result of Total Reduced Sulfur is reported from file L092408a.d.

Container Type: NA - Not Applicable

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0809491B-04A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	**I092407**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/24/08 02:08 PM**	

Compound	%Recovery
Hydrogen Sulfide	105
Carbonyl Sulfide	81
Methyl Mercaptan	93
Ethyl Mercaptan	90
Dimethyl Sulfide	89
Carbon Disulfide	104
Isopropyl Mercaptan	91
tert-Butyl Mercaptan	77
n-Propyl Mercaptan	93
Thiophene	87
Isobutyl Mercaptan	82
3-Methyl Thiophene/n-Butyl Mercaptan/Ethyl Methyl Sulfide	87
Diethyl Sulfide	86
Dimethyl Disulfide	94
Tetrahydrothiophene	94
2-Ethylthiophene	85
2,5-Dimethylthiophene	85
Diethyl Disulfide	82

Container Type: NA - Not Applicable

Air Toxics Ltd. Introduces the Electronic Report

Thank you for choosing Air Toxics Ltd. To better serve our customers, we are providing your report by e-mail. This document is provided in Portable Document Format which can be viewed with Acrobat Reader by Adobe.

This electronic report includes the following:

- Work order Summary;
- Laboratory Narrative;
- Results; and
- Chain of Custody (copy).

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630

(916) 985-1000 .FAX (916) 985-1020
Hours 8:00 A.M to 6:00 P.M. Pacific

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0809491A

Work Order Summary

CLIENT:	Mr. Bobby Asfour Best Environmental 6261 Southfront Road Livermore, CA 94551	**BILL TO:**	Mr. Bobby Asfour Best Environmental 6261 Southfront Road Livermore, CA 94551
PHONE:	925-455-9474 x104	**P.O. #**	
FAX:	925-455-9479	**PROJECT #**	City of Palo Alto
DATE RECEIVED:	09/23/2008	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	10/06/2008		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	R1/inlet	Modified TO-15 (5&20 ppbv)	Tedlar Bag	Tedlar Bag
01AA	R1/inlet Lab Duplicate	Modified TO-15 (5&20 ppbv)	Tedlar Bag	Tedlar Bag
02A(on hold)	R1/inlet-Back-up	Modified TO-15 (5&20 ppbv)	Tedlar Bag	Tedlar Bag
03A	Lab Blank	Modified TO-15 (5&20 ppbv)	NA	NA
04A	CCV	Modified TO-15 (5&20 ppbv)	NA	NA
05A	LCS	Modified TO-15 (5&20 ppbv)	NA	NA

CERTIFIED BY: Linda J. Truman DATE: 10/06/08

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/08, Expiration date: 06/30/09
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
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LABORATORY NARRATIVE
Modified TO-15 Soil Gas
Best Environmental
Workorder# 0809491A

Two 10 Liter Tedlar Bag samples were received on September 23, 2008. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 50 mLs of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
Daily CCV	+- 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

Sample R1/inlet-Back-up was placed on hold per the client's request.

Analytical Notes

The reported CCV for each daily batch may be derived from more than one analytical file due to the client's request for non-standard compounds.

Non-standard compounds may have different acceptance criteria than the standard TO-14A/TO-15 compound list as per contract or verbal agreement.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS

Client Sample ID: R1/inlet

Lab ID#: 0809491A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	25	250	120	1200
Freon 11	25	58	140	330
Ethanol	100	2400	190	4600
Acetone	100	1200	240	2800
2-Propanol	100	840	240	2100
Methylene Chloride	25	42	87	150
Hexane	25	470	88	1700
2-Butanone (Methyl Ethyl Ketone)	25	940	74	2800
Benzene	25	220	80	720
Trichloroethene	25	34	130	180
Toluene	25	1400	94	5100
Tetrachloroethene	25	57	170	390
Chlorobenzene	25	97	120	440
Ethyl Benzene	25	1300	110	5800
m,p-Xylene	25	1500	110	6700
o-Xylene	25	530	110	2300
1,4-Dichlorobenzene	25	120	150	760
Chlorodifluoromethane	100	660	350	2300

Client Sample ID: R1/inlet Lab Duplicate

Lab ID#: 0809491A-01AA

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	25	240	120	1200
Freon 11	25	60	140	340
Ethanol	100	2300	190	4300
Acetone	100	1100	240	2500
2-Propanol	100	810	240	2000
Methylene Chloride	25	33	87	110
Hexane	25	460	88	1600
2-Butanone (Methyl Ethyl Ketone)	25	910	74	2700
Benzene	25	210	80	680
Trichloroethene	25	34	130	180
Toluene	25	1300	94	5000
Tetrachloroethene	25	58	170	390
Chlorobenzene	25	94	120	430
Ethyl Benzene	25	1300	110	5600

Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS

Client Sample ID: R1/inlet Lab Duplicate

Lab ID#: 0809491A-01AA

m,p-Xylene	25	1500	110	6500
o-Xylene	25	520	110	2300
1,4-Dichlorobenzene	25	130	150	770
Chlorodifluoromethane	100	660	350	2300

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: R1/inlet

Lab ID#: 0809491A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092517**	**Date of Collection:**	**9/22/08**
Dil. Factor:	**5.00**	**Date of Analysis:**	**9/25/08 05:48 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	25	250	120	1200
Chloromethane	100	Not Detected	210	Not Detected
Vinyl Chloride	25	Not Detected	64	Not Detected
Chloroethane	25	Not Detected	66	Not Detected
Freon 11	25	58	140	330
Ethanol	100	2400	190	4600
1,1-Dichloroethene	25	Not Detected	99	Not Detected
Acetone	100	1200	240	2800
2-Propanol	100	840	240	2100
Carbon Disulfide	25	Not Detected	78	Not Detected
Methylene Chloride	25	42	87	150
Methyl tert-butyl ether	25	Not Detected	90	Not Detected
trans-1,2-Dichloroethene	25	Not Detected	99	Not Detected
Hexane	25	470	88	1700
1,1-Dichloroethane	25	Not Detected	100	Not Detected
2-Butanone (Methyl Ethyl Ketone)	25	940	74	2800
Chloroform	25	Not Detected	120	Not Detected
1,1,1-Trichloroethane	25	Not Detected	140	Not Detected
Carbon Tetrachloride	25	Not Detected	160	Not Detected
Benzene	25	220	80	720
1,2-Dichloroethane	25	Not Detected	100	Not Detected
Trichloroethene	25	34	130	180
1,2-Dichloropropane	25	Not Detected	120	Not Detected
Bromodichloromethane	25	Not Detected	170	Not Detected
4-Methyl-2-pentanone	25	Not Detected	100	Not Detected
Toluene	25	1400	94	5100
1,1,2-Trichloroethane	25	Not Detected	140	Not Detected
Tetrachloroethene	25	57	170	390
1,2-Dibromoethane (EDB)	25	Not Detected	190	Not Detected
Chlorobenzene	25	97	120	440
Ethyl Benzene	25	1300	110	5800
m,p-Xylene	25	1500	110	6700
o-Xylene	25	530	110	2300
1,1,2,2-Tetrachloroethane	25	Not Detected	170	Not Detected
1,3-Dichlorobenzene	25	Not Detected	150	Not Detected
1,4-Dichlorobenzene	25	120	150	760
1,2-Dichlorobenzene	25	Not Detected	150	Not Detected
Chlorodifluoromethane	100	660	350	2300
Acrylonitrile	100	Not Detected	220	Not Detected

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: R1/inlet

Lab ID#: 0809491A-01A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092517**	**Date of Collection: 9/22/08**	
Dil. Factor:	**5.00**	**Date of Analysis: 9/25/08 05:48 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dichlorofluoromethane	100	Not Detected	420	Not Detected

Container Type: 10 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	90	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	95	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: R1/inlet Lab Duplicate

Lab ID#: 0809491A-01AA

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092518**	**Date of Collection:**	**9/22/08**
Dil. Factor:	**5.00**	**Date of Analysis:**	**9/25/08 06:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	25	240	120	1200
Chloromethane	100	Not Detected	210	Not Detected
Vinyl Chloride	25	Not Detected	64	Not Detected
Chloroethane	25	Not Detected	66	Not Detected
Freon 11	25	60	140	340
Ethanol	100	2300	190	4300
1,1-Dichloroethene	25	Not Detected	99	Not Detected
Acetone	100	1100	240	2500
2-Propanol	100	810	240	2000
Carbon Disulfide	25	Not Detected	78	Not Detected
Methylene Chloride	25	33	87	110
Methyl tert-butyl ether	25	Not Detected	90	Not Detected
trans-1,2-Dichloroethene	25	Not Detected	99	Not Detected
Hexane	25	460	88	1600
1,1-Dichloroethane	25	Not Detected	100	Not Detected
2-Butanone (Methyl Ethyl Ketone)	25	910	74	2700
Chloroform	25	Not Detected	120	Not Detected
1,1,1-Trichloroethane	25	Not Detected	140	Not Detected
Carbon Tetrachloride	25	Not Detected	160	Not Detected
Benzene	25	210	80	680
1,2-Dichloroethane	25	Not Detected	100	Not Detected
Trichloroethene	25	34	130	180
1,2-Dichloropropane	25	Not Detected	120	Not Detected
Bromodichloromethane	25	Not Detected	170	Not Detected
4-Methyl-2-pentanone	25	Not Detected	100	Not Detected
Toluene	25	1300	94	5000
1,1,2-Trichloroethane	25	Not Detected	140	Not Detected
Tetrachloroethene	25	58	170	390
1,2-Dibromoethane (EDB)	25	Not Detected	190	Not Detected
Chlorobenzene	25	94	120	430
Ethyl Benzene	25	1300	110	5600
m,p-Xylene	25	1500	110	6500
o-Xylene	25	520	110	2300
1,1,2,2-Tetrachloroethane	25	Not Detected	170	Not Detected
1,3-Dichlorobenzene	25	Not Detected	150	Not Detected
1,4-Dichlorobenzene	25	130	150	770
1,2-Dichlorobenzene	25	Not Detected	150	Not Detected
Chlorodifluoromethane	100	660	350	2300
Acrylonitrile	100	Not Detected	220	Not Detected

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: R1/inlet Lab Duplicate

Lab ID#: 0809491A-01AA

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092518**	**Date of Collection:**	**9/22/08**
Dil. Factor:	**5.00**	**Date of Analysis:**	**9/25/08 06:39 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dichlorofluoromethane	100	Not Detected	420	Not Detected

Container Type: 10 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	88	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	96	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0809491A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092509d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/08 12:08 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	5.0	Not Detected	25	Not Detected
Chloromethane	20	Not Detected	41	Not Detected
Vinyl Chloride	5.0	Not Detected	13	Not Detected
Chloroethane	5.0	Not Detected	13	Not Detected
Freon 11	5.0	Not Detected	28	Not Detected
Ethanol	20	Not Detected	38	Not Detected
1,1-Dichloroethene	5.0	Not Detected	20	Not Detected
Acetone	20	Not Detected	48	Not Detected
2-Propanol	20	Not Detected	49	Not Detected
Carbon Disulfide	5.0	Not Detected	16	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	5.0	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	Not Detected	18	Not Detected
1,1-Dichloroethane	5.0	Not Detected	20	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.0	Not Detected	15	Not Detected
Chloroform	5.0	Not Detected	24	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	27	Not Detected
Carbon Tetrachloride	5.0	Not Detected	31	Not Detected
Benzene	5.0	Not Detected	16	Not Detected
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Trichloroethene	5.0	Not Detected	27	Not Detected
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	20	Not Detected
Toluene	5.0	Not Detected	19	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	27	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	38	Not Detected
Chlorobenzene	5.0	Not Detected	23	Not Detected
Ethyl Benzene	5.0	Not Detected	22	Not Detected
m,p-Xylene	5.0	Not Detected	22	Not Detected
o-Xylene	5.0	Not Detected	22	Not Detected
1,1,2,2-Tetrachloroethane	5.0	Not Detected	34	Not Detected
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
Chlorodifluoromethane	20	Not Detected	71	Not Detected
Acrylonitrile	20	Not Detected	43	Not Detected

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: Lab Blank

Lab ID#: 0809491A-03A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092509d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/08 12:08 PM**	

Compound	**Rpt. Limit (ppbv)**	**Amount (ppbv)**	**Rpt. Limit (uG/m3)**	**Amount (uG/m3)**
Dichlorofluoromethane	20	Not Detected	84	Not Detected

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130

Client Sample ID: CCV

Lab ID#: 0809491A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	w092503	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 9/25/08 08:21 AM	

Compound	%Recovery
Freon 12	99
Chloromethane	92
Vinyl Chloride	106
Chloroethane	110
Freon 11	97
Ethanol	109
1,1-Dichloroethene	103
Acetone	105
2-Propanol	110
Carbon Disulfide	108
Methylene Chloride	99
Methyl tert-butyl ether	98
trans-1,2-Dichloroethene	106
Hexane	109
1,1-Dichloroethane	106
2-Butanone (Methyl Ethyl Ketone)	114
Chloroform	100
1,1,1-Trichloroethane	98
Carbon Tetrachloride	95
Benzene	99
1,2-Dichloroethane	90
Trichloroethene	97
1,2-Dichloropropane	102
Bromodichloromethane	94
4-Methyl-2-pentanone	106
Toluene	98
1,1,2-Trichloroethane	99
Tetrachloroethene	97
1,2-Dibromoethane (EDB)	102
Chlorobenzene	99
Ethyl Benzene	99
m,p-Xylene	101
o-Xylene	102
1,1,2,2-Tetrachloroethane	99
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	93
1,2-Dichlorobenzene	92
Chlorodifluoromethane	98
Acrylonitrile	116

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: CCV

Lab ID#: 0809491A-04A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/08 08:21 AM**	

Compound	**%Recovery**
Dichlorofluoromethane	100

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0809491A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092507**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/08 11:06 AM**	

Compound	%Recovery
Freon 12	96
Chloromethane	92
Vinyl Chloride	110
Chloroethane	107
Freon 11	95
Ethanol	107
1,1-Dichloroethene	100
Acetone	101
2-Propanol	113
Carbon Disulfide	101
Methylene Chloride	97
Methyl tert-butyl ether	88
trans-1,2-Dichloroethene	98
Hexane	100
1,1-Dichloroethane	103
2-Butanone (Methyl Ethyl Ketone)	105
Chloroform	97
1,1,1-Trichloroethane	98
Carbon Tetrachloride	95
Benzene	97
1,2-Dichloroethane	90
Trichloroethene	95
1,2-Dichloropropane	100
Bromodichloromethane	88
4-Methyl-2-pentanone	103
Toluene	98
1,1,2-Trichloroethane	99
Tetrachloroethene	95
1,2-Dibromoethane (EDB)	100
Chlorobenzene	99
Ethyl Benzene	101
m,p-Xylene	102
o-Xylene	104
1,1,2,2-Tetrachloroethane	104
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	109
1,2-Dichlorobenzene	108
Chlorodifluoromethane	Not Spiked
Acrylonitrile	Not Spiked

Air Toxics LTD.

AN ENVIRONMENTAL ANALYTICAL LABORATORY

Client Sample ID: LCS

Lab ID#: 0809491A-05A

MODIFIED EPA METHOD TO-15 GC/MS

File Name:	**w092507**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/25/08 11:06 AM**	

Compound	**%Recovery**
Dichlorofluoromethane	Not Spiked

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

BEST ENVIRONMENTAL — Livermore, CA 925-484-1919

Project ID: City of Palo Alto

SAMPLE CHAIN OF CUSTODY

0809491

Analytical Lab: AirToxics Ltd.

#	DATE	TIME	SAMPLE ID Rural/Method/Fraction/Source	CONTAINER size / type	Volume	Storage Temp °F	SAMPLE DESCRIPTION	ANALYSIS	TAT
1	9-22-08	1200	RI Inlet	1 L / Tedlar		Amb	Landfill Gas	organics & inorganics by D5504 & TO-15	Normal
2									
3									
4									
5									
6	9-22-08	1200	RI Inlet - Back-up	"		"	"	"	"
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									

SPECIAL INSTRUCTIONS:

Only need 1 Sample

Submit Results to: Attn: Robby Aston — Best Environmental, 6201 Southfront Rd, Livermore, CA 94551

Relinquished by: [signature] 9-22-08 — Received by: Monica Troglen — Date: ATL 9/23/08 — Time: 835

Relinquished by: _____ — Received by: _____ — Date: _____ — Time: _____

Relinquished by: _____ — Received by: _____ — Date: _____ — Time: _____

SAMPLE CONDITION AS RECEIVED: OK or not OK — SHIP DATE. — CARRIER.

B-37

APPENDIX C
FIELD DATA SHEETS

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility:	City of Palo Alto Landfill	Run #:	1	Date:	09/22/08
Location:	Flare Outlet (A-3)	Barometric:	29.90	Leak ✓:	OK
Observers:		Personnel:	BA/RH	Strat. ✓:	OK
Expected Run Time =	30 min	Std. Temp:	70		
Cylinder #s:	SA16267	SA4220	CC206688		

Analyte		O2	CO2	NOx	CO	THC	CH4			
Analyzer		100P	100	600CLD	48i	300M	300M			
Range		25	15	25	20	100	100			
Span Value		20.94	4.04	21.6	16.5	88.8	88.8			
	Time									Comments:
	10:37	10.88	9.06	5.2	4.7	5.8				
	10:38	11.76	8.31	5.0	4.9	6.4				Unit #
	10:39	11.79	8.26	4.9	3.3	6.5				
	10:40	11.64	8.50	4.9	3.0	6.6				
	10:41	12.14	8.11	4.6	3.0	6.8				Operating Conditions
	10:42	11.95	8.24	4.4	1.8	6.2				
	10:43	12.42	7.92	4.3	1.4	5.8				
	10:44	16.27	4.30	2.4	0.8	6.5				Fuel
	10:45	16.66	3.87	2.2	0.2	6.6				
	10:46	13.47	6.81	3.7	0.2	5.3				
	10:47	12.14	8.03	4.5	0.4	4.8				
	10:48	12.54	7.55	3.8	0.6	4.9				
	10:49	11.00	9.11	4.4	0.7	4.5				
	10:50	11.85	8.38	4.0	1.0	4.5				
	10:51	12.09	8.19	4.0	1.0		1.3			
	10:52	13.06	7.30	3.4	0.9		0.3			
	10:53	12.95	7.45	3.5	0.6		0.2			
	10:54	13.63	6.78	4.1	1.5		0.9			
	10:55	12.80	7.49	4.7	0.4	4.4				
	10:56	12.00	8.21	4.6	0.2	4.2				
	10:57	11.98	8.24	4.4	0.3	4.2				
	10:58	12.01	8.26	4.2	0.5	4.2				
	10:59	11.98	8.32	4.1	0.7	4.3				
	11:00	14.24	6.22	3.1	0.6	4.7				
	11:01	14.39	6.05	2.9	0.3	4.7				
	11:02	14.79	5.64	3.5	0.9	5.0				
	11:03	12.67	7.67	5.0	0.7	4.3				
	11:04	12.45	7.82	5.1	0.2	4.0				
	11:05	11.97	8.28	4.9	0.2	2.8				
	11:06	13.39	6.98	4.1	0.3		-0.6			
	11:07	13.48	6.90	3.9	0.3		-0.6			
ZERO I	10:32	0.00	0.00	0.0	0.0	0.4	0.4			
SPAN I	10:30	20.92	4.21	21.5	16.4	90.3	90.3			
Average		12.79	7.49	4.1	1.1	5.1	0.3			
ZERO f	11:09	0.00	0.00	0.0	0.0	-1.9	-1.9			
SPAN f	11:12	20.91	4.20	21.6	16.4	85.2	85.2			
Zero Drift %		0.0%	0.0%	0.0%	-0.1%	-2.3%	-2.3%			
Span Drift %		-0.1%	-0.1%	0.2%	-0.2%	-5.1%	-5.1%			
Corr. Avg.		12.80	7.20	4.1	1.2	5.9	1.0			

Corrected Average = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+Sf) / 2)-((Zi+Zf) / 2)]
Zero Drift % = 100 * (Zf - Zi)/Instrument Range
Span Drift % = 100 * (Sf - Si)/Instrument Range

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility:	City of Palo Alto Landfill	**Run #:**	2	**Date:**	09/22/08
Location:	Flare Outlet (A-3)	**Barometric:**	29.90	**Leak ✓:**	*OK*
Observers:		**Personnel:**	BA/RH	**Strat. ✓:**	*OK*
Expected Run Time =	30 min	**Std. Temp:**	70		
Cylinder #s:	SA16267	SA4220	CC206688		

Analyte		O2	CO2	NOx	CO	THC	CH4			
Analyzer		100P	100	600CLD	48i	300M	300M			
Range		25	15	25	20	100	100			
Span Value		20.94	4.04	21.6	16.5	88.8	88.8			
	Time									Comments:
	11:20	11.92	8.40	4.3	0.5	5.3				
	11:21	11.82	8.49	4.3	0.6	5.2				*Unit #*
	11:22	11.68	8.63	4.3	0.7	5.2				
	11:23	11.90	8.42	4.3	0.7	5.4				
	11:24	11.77	8.55	4.4	0.7	5.7				*Operating Conditions*
	11:25	12.05	8.25	4.1	0.7	5.8				
	11:26	12.24	8.11	3.9	0.7	5.6				
	11:27	12.71	7.63	3.8	0.6	5.3				*Fuel*
	11:28	12.81	7.54	3.7	0.4	5.0				
	11:29	12.53	7.84	3.8	0.3	4.7				
	11:30	13.08	7.31	3.6	0.3	4.7				
	11:31	12.57	7.75	3.7	0.2	3.7				
	11:32	12.70	7.68	3.7	0.2		0.8			
	11:33	12.99	7.36	3.6	0.2		0.8			
	11:34	11.98	8.34	4.8	0.1		0.6			
	11:35	12.39	7.96	6.0	0.3		2.0			
	11:36	12.86	7.51	5.1	3.0	4.7				
	11:37	13.22	7.13	4.7	1.3	4.2				
	11:38	12.68	7.64	5.6	0.2	4.5				
	11:39	12.78	7.58	5.7	0.3	4.7				
	11:40	13.21	7.15	5.3	0.3	4.8				
	11:41	12.67	7.64	5.8	0.2	4.8				
	11:42	12.58	7.75	5.8	0.3	3.8				
	11:43	13.02	7.33	5.5	0.4		1.0			
	11:44	12.58	7.72	5.7	0.4		1.0			
	11:45	12.62	7.72	5.7	0.4		0.8			
	11:46	12.83	7.49	5.5	0.4		0.8			
	11:47	12.71	7.61	5.4	0.4		0.8			
	11:48	12.58	7.74	5.5	0.4	4.2				
	11:49	12.61	7.70	5.4	0.4	4.4				
ZERO I	*11:15*	*0.00*	*0.00*	*0.0*	*0.0*	*0.6*	*0.6*			
SPAN I	*11:16*	*20.91*	*4.20*	*21.6*	*16.4*	*88.3*	*88.3*			
Average		*12.54*	*7.80*	*4.8*	*0.5*	*4.9*	*1.0*			
ZERO f	*11:52*	*0.00*	*0.00*	*0.0*	*-0.1*	*-0.1*	*-0.1*			
SPAN f	*11:55*	*20.91*	*4.20*	*21.5*	*16.4*	*87.8*	*87.8*			
Zero Drift %		*0.0%*	*0.0%*	*0.0%*	*-0.1%*	*-0.6%*	*-0.6%*			
Span Drift %		*0.0%*	*0.0%*	*0.0%*	*-0.1%*	*-0.5%*	*-0.5%*			
Corr. Avg.		*12.56*	*7.50*	*4.8*	*0.6*	*4.7*	*0.7*			

Corrected Average = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+Sf) / 2)-((Zi+Zf) / 2)]
Zero Drift % = 100 * (Zf - Zi)/Intrument Range
Span Drift % = 100 * (Sf - Si)/Instrument Range

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility:	City of Palo Alto Landfill	**Run #:**	3	**Date:**	09/22/08
Location:	Flare Outlet (A-3)	**Barometric:**	29.90	**Leak ✔:**	*OK*
Observers:		**Personnel:**	BA/RH	**Strat. ✔:**	*OK*
Expected Run Time =	30 min	**Std. Temp:**	70		
Cylinder #s:	SA16267	SA4220	CC206688		

Analyte		O2	CO2	NOx	CO	THC	CH4			
Analyzer		100P	100	600CLD	48i	300M	300M			
Range		25	15	25	20	100	100			
Span Value		20.94	4.04	21.6	16.5	88.8	88.8			
	Time									Comments:
	12:00	12.89	7.43	5.4	0.4	3.8				
	12:01	12.61	7.71	5.6	0.4	3.7				*Unit #*
	12:02	12.62	7.72	5.6	0.4	3.7				
	12:03	12.74	7.59	5.6	0.4	3.7				
	12:04	12.96	7.37	5.4	0.4	3.9				*Operating Conditions*
	12:05	12.80	7.54	5.4	0.3	3.9				
	12:06	12.69	7.63	5.5	0.3	3.8				
	12:07	12.50	7.83	5.7	0.3	3.9				*Fuel*
	12:08	13.13	7.25	5.3	0.3	4.0				
	12:09	12.69	7.63	5.6	0.2		0.9			
	12:10	12.66	7.68	5.6	0.2		0.2			
	12:11	12.69	7.65	5.5	0.3		-0.6			
	12:12	12.85	7.49	5.5	0.3		-0.9			
	12:13	12.80	7.54	5.5	0.2		-0.9			
	12:14	12.98	7.38	5.4	0.2	1.1				
	12:15	12.68	7.63	5.5	0.2	2.3				
	12:16	12.79	7.55	5.4	0.2	2.4				
	12:17	12.76	7.59	5.5	0.3	2.4				
	12:18	12.70	7.63	5.5	0.3	2.4				
	12:19	12.75	7.58	5.4	0.2	2.5				
	12:20	12.79	7.55	5.4	0.2	2.5				
	12:21	12.99	7.35	5.3	0.2	2.6				
	12:22	12.94	7.39	5.3	0.2	1.1				
	12:23	12.79	7.54	5.5	0.1		-1.3			
	12:24	12.91	7.44	5.3	0.2		-1.3			
	12:25	13.25	7.11	5.2	0.1		-1.1			
	12:26	12.86	7.47	5.6	0.0	1.9				
	12:27	12.68	7.64	5.7	0.0	1.9				
	12:28	12.59	7.73	5.6	0.0	1.9				
	12:29	12.81	7.52	5.7	0.1	2.1				
ZERO I	*11:52*	*0.00*	*0.00*	*0.0*	*-0.1*	*-0.1*	*-0.1*			
SPAN I	*11:55*	*20.91*	*4.20*	*21.5*	*16.4*	*87.8*	*87.8*			
Average		*12.80*	*7.54*	*5.5*	*0.2*	*2.8*	*-0.6*			
ZERO f	*12:31*	*0.00*	*0.01*	*0.0*	*-0.1*	*-2.1*	*-2.1*			
SPAN f	*12:34*	*20.90*	*4.20*	*21.6*	*16.3*	*86.0*	*86.0*			
Zero Drift %		*0.0%*	*0.0%*	*0.0%*	*-0.2%*	*-2.1%*	*-2.1%*			
Span Drift %		*-0.1%*	*0.0%*	*0.1%*	*-0.3%*	*-1.8%*	*-1.8%*			
Corr. Avg.		*12.82*	*7.26*	*5.5*	*0.3*	*3.9*	*0.5*			

Corrected Average = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+Sf) / 2)-((Zi+Zf) / 2)]
Zero Drift % = 100 * (Zf - Zi)/Intrument Range
Span Drift % = 100 * (Sf - Si)/Instrument Range

(CARB/EPA Method 4) Moisture Sampling Data Sheet

Facility: City of Palo Alto flare — Meter #: 5558 — Pbar: 29.9
Location: Outlet — Yd: 0.9975 — %O2:
Date: 9-22-08 — Pyrometer #: — %CO2:
Personnel: BA, RH — %H2O:

Point	Time	Meter Vol. Ft³	Temperature, °F: Meter In	Meter Out	Imp.	Vacuum, "Hg
1	1039	737.46	85	89	68	4
2	1044		86	90		
3	1049	742.6	87	91		
4	1054	744.6	88	92		
5	1059	747.3	91	93		
6	1104	750.2	91	93	↓	
Stop	1109	752.585				
TOTAL/AVG		15.124	89.7			

Initial Leak Check: 0 CFM 24 "Hg
Final Leak Check: 0 CFM 12 "Hg

	Initial	Final	Net
IPA Impinger #1:	100	100	0
H_2O_2 Impinger #2:	100	116	16
H_2O_2 Impinger #3:	100	108	8
Silica Gel:	198.6	206.1	7.5
Total Net:			31.5
% Moisture			

1	11:23	752.827	90	92	68	4
2	11:28	755.9	88	90		6
3	11:33	759.3	89	89		5
4	11:38	762.3	89	88		5
5	11:43	765.4	89	88		5
6	11:48	768.5	88	87	↓	5
Stop	11:53	771.501				
TOTAL/AVG		18.674	88.9			

Initial Leak Check: 0 CFM 12 "Hg
Final Leak Check: 0 CFM 17 "Hg

	Initial	Final	Net
IPA Impinger #1:	100	84	-16
H_2O_2 Impinger #2:	100	114	14
H_2O_2 Impinger #3:	100	112	12
Silica Gel:	200	215.3	15.3
Total Net:			25.3
% Moisture			

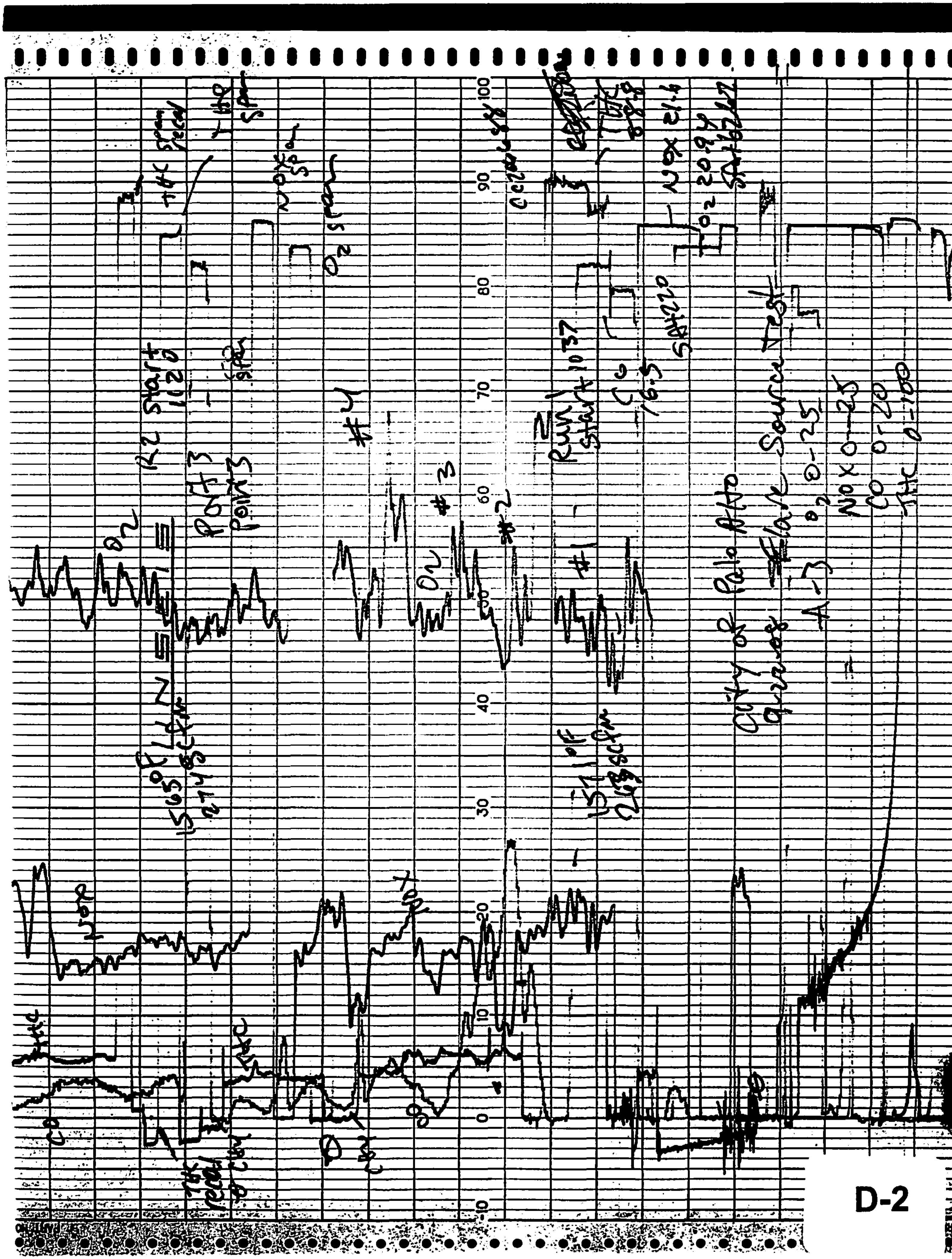
1	12:02	771.986	86	85	68	5
2	12:07	775.[illegible]	84	85		4.5
3	12:12	778.1	86	85		4.5
4	12:17	780.9	88	86		4.5
5	12:22	783.7	88	86		4.5
6	12:27	786.6	88	86	↓	4.5
Stop	12:32	789.520				
TOTAL/AVG		17.534	86.1			

Initial Leak Check: 0 CFM 17 "Hg
Final Leak Check: 0 CFM 15 "Hg

	Initial	Final	Net
IPA Impinger #1:	100	96	-4
H_2O_2 Impinger #2:	100	118	18
H_2O_2 Impinger #3:	100	108	8
Silica Gel:	208.1	214.0	7.9
Total Net:			29.9
% Moisture			

Comments:

APPENDIX D
STRIP CHART RECORDS



City of Palo Alto
A-3
O2 0-25
NOx 0-25
CO 0-20
THC 0-100
Run #1
0
10
20
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40
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D-2

Run 3
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APPENDIX E
CALIBRATION GAS CERTIFICATES

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#2613	SGAL 1090	24.4 ppm
CARBON DIOXIDE GMIS	vs.SRM#1674	CC 101954	5.04 %
OXYGEN GMIS	vsSRM#2659a	CC 76878	20.98 %

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 06/04/07
   FIRST ANALYSIS DATE 06/12/07 SECOND ANALYSIS DATE 06/20/07

Z	0.0	R	24.4	C	16.46	CONC. 16.5	Z	0.0	R	24.4	C 16.46 CONC. 16.5
R	24.4	Z	0.0	C	16.46	CONC. 16.5	R	24.4	Z	0.0	C 16.46 CONC. 16.5
Z	0.0	C	16.46	R	24.4	CONC. 16.5	Z	0.0	C	16.46	R 24.4 CONC. 16.5

   U/M ppm MEAN TEST ASSAY 16.5 U/M ppm MEAN TEST ASSAY 16.5

2. COMPONENT CARBON DIOXIDE GMIS ANALYZER MAKE-MODEL-S/N Siemens Ultramat 5E S/N A12-730
   ANALYTICAL PRINCIPLE NDIR LAST CALIBRATION DATE 06/04/07
   FIRST ANALYSIS DATE 06/12/07 SECOND ANALYSIS DATE

Z	0.000	R	5.040	C	4.040	CONC. 4.04	Z		R		C CONC.
R	5.040	Z	0.000	C	4.045	CONC. 4.04	R		Z		C CONC.
Z	0.000	C	4.050	R	5.040	CONC. 4.05	Z		C		R CONC.

   U/M % MEAN TEST ASSAY 4.04 U/M % MEAN TEST ASSAY

3. COMPONENT OXYGEN GMIS ANALYZER MAKE-MODEL-S/N Siemens Oxymat 5E S/N A12-839
   ANALYTICAL PRINCIPLE Paramagnetic LAST CALIBRATION DATE 06/04/07
   FIRST ANALYSIS DATE 06/12/07 SECOND ANALYSIS DATE

Z	0.00	R	20.98	C	20.94	CONC. 20.94	Z		R		C CONC.
R	20.98	Z	0.00	C	20.94	CONC. 20.94	R		Z		C CONC.
Z	0.00	C	20.94	R	20.98	CONC. 20.94	Z		C		R CONC.

   U/M % MEAN TEST ASSAY 20.94 U/M % MEAN TEST ASSAY

THIS CYLINDER NO. SA 16267
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 06/20/07
EXPIRATION DATE 06/20/10 TERM 36 MONTHS

CERTIFIED CONCENTRATION

CARBON MONOXIDE	16.5 ppm
CARBON DIOXIDE	4.04 %
OXYGEN	20.94 %
NITROGEN	BALANCE

Values not valid below 150 psig. CO & O2
CONCS. WERE CORRECTED FOR CO2 INTERFERENCE.

ANALYZED BY PABLO REYES CERTIFIED BY ERIC YOUNG

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Telephone: (323) 585-2154
Facsimile: (323) 585-0582

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER DEST P.O NUMBER

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
NITRIC OXIDE GMIS	vs.SRM2629a	CC 241424	24.1 ppm

ANALYZER READINGS

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

1. COMPONENT NITRIC OXIDE GMIS ANALYZER MAKE-MODEL-S/N Thermo Env. 42C S/N 0518113467

ANALYTICAL PRINCIPLE Chemiluminescence LAST CALIBRATION DATE 12/05/07

FIRST ANALYSIS DATE 12/18/07 SECOND ANALYSIS DATE 12/26/07

Z 0	R 24.1	C 21.7	CONC. 21.7		Z 0	R 24.1	C 21.5	CONC. 21.5	
R 24.1	Z 0	C 21.7	CONC. 21.7		R 24.1	Z 0	C 21.5	CONC. 21.5	
Z 0	C 21.7	R 24.1	CONC. 21.7		Z 0	C 21.6	R 24.1	CONC. 21.6	
U/M ppm		MEAN TEST ASSAY 21.7			U/M ppm		MEAN TEST ASSAY 21.5		

NOx value for reference only.
All values not valid below 150 psig.

THIS CYLINDER NO. SA 4220
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 12/26/07
EXPIRATION DATE 12/26/09 TERM 24 MONTHS

CERTIFIED CONCENTRATION

NITRIC OXIDE	21.6 ppm
NITROGEN	BALANCE
NOx	21.6 ppm

ANALYZED BY Komal Patel

CERTIFIED BY Eugene Cho

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

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

CUSTOMER AVOGADRO P.O NUMBER

REFERENCE STANDARD

COMPONENT	NIST SRM NO.	CYLINDER NO.	CONCENTRATION
PROPANE CMIS	vs.SRM#1667	SA 5161	49.0 ppm

ANALYZER READINGS

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

1. COMPONENT PROPANE CMIS ANALYZER MAKE-MODEL-S/N HORIBA, FID-510, 851135122
ANALYTICAL PRINCIPLE Flame Ionisation Detector LAST CALIBRATION DATE 11/22/06
FIRST ANALYSIS DATE 12/14/06 SECOND ANALYSIS DATE

Z 0.0	R 134.5	C 80.1	CONC. 29.6		Z	R	C	CONC.	
R 134.6	Z 0.0	C 80.2	CONC. 29.7		R	Z	C	CONC.	
Z 0.0	C 80.1	R 134.5	CONC. 29.6		Z	C	R	CONC.	
U/M ppm		MEAN TEST ASSAY 29.6			U/M ppm		MEAN TEST ASSAY		

Values not valid below 150 psig

THIS CYLINDER NO. CC 206680 CERTIFIED CONCENTRATION
HAS BEEN CERTIFIED ACCORDING TO SECTION EPA-600/R97/121 PROPANE 29.6 ppm
OF TRACEABILITY PROTOCOL NO. Rev. 9/97 AIR BALANCE
PROCEDURE G1
CERTIFIED ACCURACY ± 1 % NIST TRACEABLE
CYLINDER PRESSURE 2000 PSIG
CERTIFICATION DATE 12/14/06
EXPIRATION DATE 12/14/09 TERM 36 MONTHS

THC 88.3

ANALYZED BY KING CHEUNG CERTIFIED BY CHARLES BURDELL WILLIAMS

APPENDIX F
EQUIPMENT CALIBRATION RECORDS

Spring Type Thermometer Calibration

Calibrated By: BBG/Hgh Date Calibrated: 6-9-08

Calibration Due: 12-9-08

Thermometer ID	Test Thermometer Temp (°F)	Reference Thermocouple (°F)	Temp Difference	% Difference	Notes
8559					
Meter in					
36A	38	39.8	-1.8		Pass
	81	82.4	-1.4		
	128	129.1	-1.1		
Meter out					
8A	38	38.6	-.6		
	82	82.2	-.2		
	129	130.4	-1.4		

NIST Pyrometer: T223406 T/Couple: 970306

ASTM Thermometer: RM3310

Comments:

Reference Thermometer: ASTM mercury in glass.
Method Reference: EPA QA Handbook Vol. III: Stationary Source Specific Methods, sect. 3.5.2.2
Tolerance Limits: ± 5.4 °F at ambient temperature and in hot water bath.
Calibration Frequency – 6 months

BEST ENVIRONMENTAL

LIVERMORE CA 925 455 9474

METER BOX FULL TEST CALIBRATION

Meter #: 8559

Meter Orifice ID: #2 11/64

Date: 1 16 08

Standard Meter: Wet Gas Meter

Operator: BOB GALLAGHER

Test Vacuum "Hg: 2.0

Signature: BOB Gallagher

Bar. Pressure (Pb): 29.55

QAQC Officer: BOB GALLAGHER

Leak Checked: 19 7

	Yd	ΔH@
Current	0.9976	1.985
Previous	0.9896	1.963

ΔH	ΔP	Yds	Standard Meter Gas Volume (ft³)			Meter Box Gas Volume (ft³)			Std. Meter Temp.	Meter Box Temperature					Time (Min.)	Q	Yd	ΔH@
			Initial	Final	(Vds) Net	Initial	Final	(Vd) Net	(T_{ds}) Avg.	(T_i) Inlet Init.	Inlet End	(T_o) Outlet Init.	Outlet End	(T_d) Avg.	Ø			
0.50	-0.060	1.000	0.000	5.460	5.460	185.663	191.177	5.514	52.0	52	52	52	52	52.0	14.90	0.373	0.9888	2.045
0.50	-0.065	1.000	5.460	12.170	6.710	191.177	197.953	6.776	52.0	53	53	52	52	52.5	18.38	0.372	0.9898	2.059
0.50	-0.060	1.000	12.170	17.590	5.420	197.953	203.417	5.464	53.0	53	54	52	53	53.0	14.87	0.371	0.9906	2.071
1.50	-0.080	1.000	0.000	11.605	11.605	204.878	216.549	11.671	53.0	53	60	53	55	55.3	17.42	0.677	0.9948	1.852
1.50	-0.075	1.000	11.605	22.005	10.400	216.549	227.033	10.484	53.0	60	62	54	55	57.8	15.58	0.679	0.9973	1.836
1.50	-0.080	1.000	22.005	32.815	10.810	227.033	237.955	10.922	53.0	62	63	55	55	58.8	16.22	0.677	0.9969	1.838
3.00	-0.100	1.000	0.000	10.720	10.720	248.058	258.917	10.859	53.0	68	72	58	67	66.3	12.13	0.898	1.0049	2.061
3.00	-0.100	1.000	10.720	24.200	13.480	258.917	272.592	13.675	53.0	71	73	67	68	69.8	15.28	0.897	1.0101	2.054
3.00	-0.095	1.000	24.200	43.100	18.900	272.592	291.891	19.299	53.0	73	73	68	68	70.5	21.42	0.897	1.0050	2.051

Comments: this is the calib. Cert.

Variables:

Q = Flow rate (cfm)

ΔH = Orifice pressure differential (in. H_2O)

ΔP = Inlet pressure differential standard meter (in. H_2O)

Yds = Standard meter correction factor (Unitless)

Yd = Meter box correction factor (Unitless)

ΔH@ = Orifice pressure differential that gives 0.75 DSCFM of air at 68°F and 29.92 in. Hg (in. H_2O)

$$Yd = (Yds)\left(\frac{Vds}{Vd}\right)\left(\frac{Td+460}{Tds+460}\right)\left(\frac{Pb+\Delta P/13.6}{Pb+\Delta H/13.6}\right)$$

$$\Delta H@ = \frac{0.0317\times\Delta H}{Pb(T_o+460)}\left[\frac{(Tds+460)\theta}{Vds\times Yds}\right]^2$$

$$Q = \frac{17.64\times Vds\times Pb}{(Tds+460)\theta}$$

1 Yd Tolerance: $(Yd_{AVG}-Yd)\pm 0.02$ ref Fig 5 6 in EPA method 5

2 ΔH@ Tolerance: $(\Delta H@_{AVG}-\Delta H@)\pm 0.20$ ref fig 5.6 in EPA method 5.

g:\cals\metercal\master1

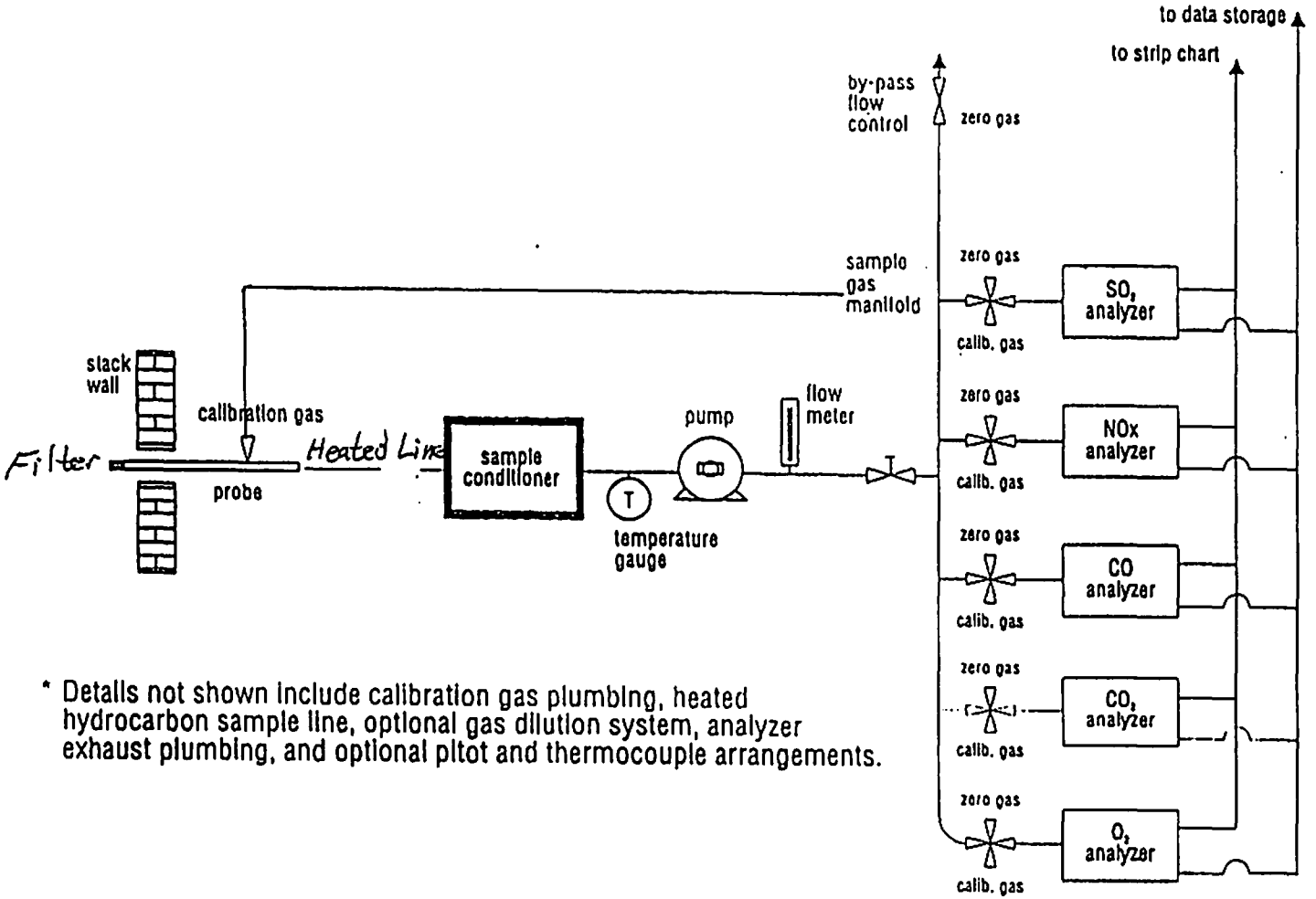
APPENDIX G
STACK DIAGRAMS

City of Palo Alto Landfill

Landfill Gas Flare (A-3)
[Facility # A2721, Condition # 1028]

APPENDIX H
SAMPLING SYSTEM DIAGRAMS

Method 100 Sample Train Assembly



* Details not shown include calibration gas plumbing, heated hydrocarbon sample line, optional gas dilution system, analyzer exhaust plumbing, and optional pitot and thermocouple arrangements.

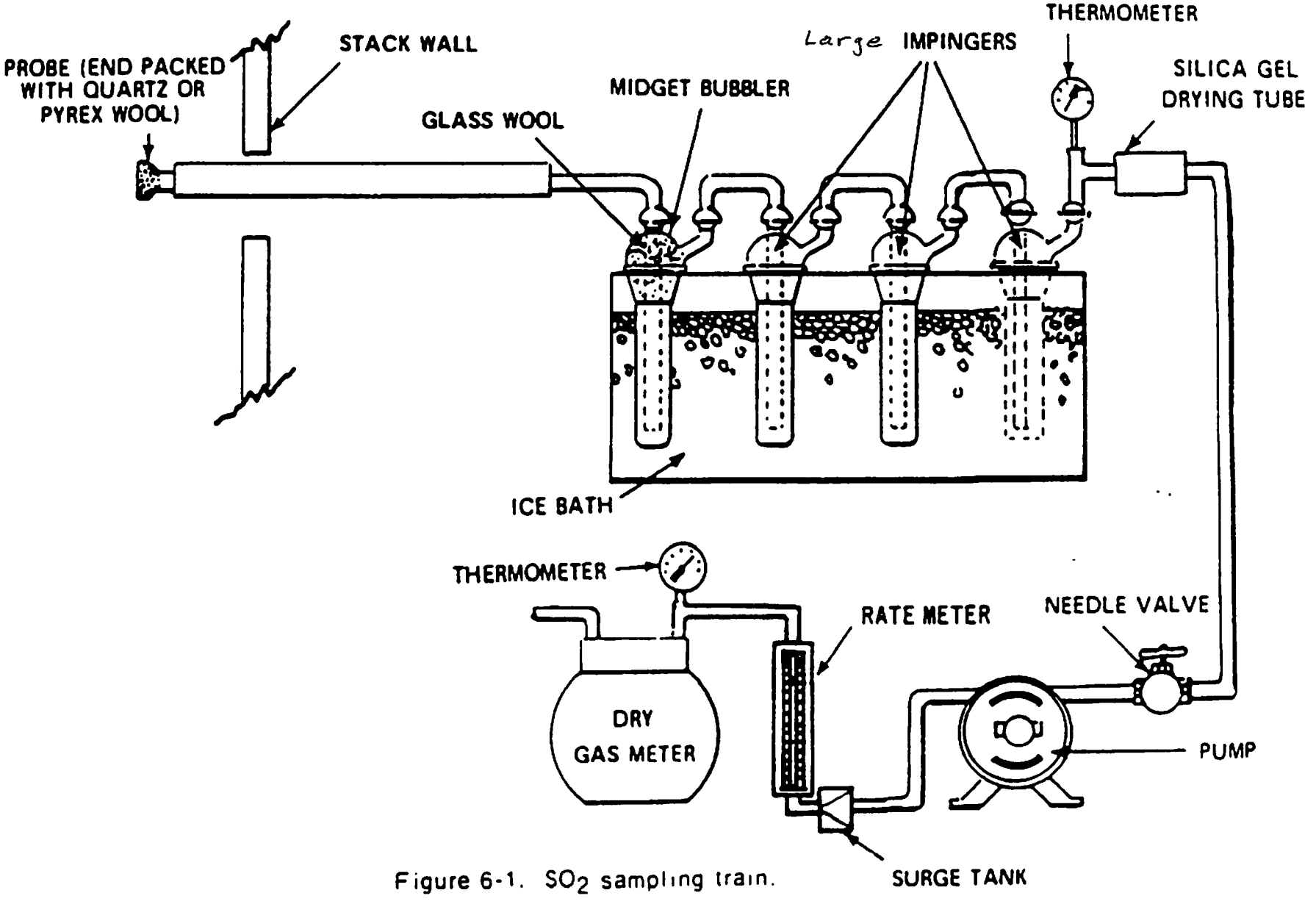


Figure 6-1. SO_2 sampling train.

EPA method 6

APPENDIX I
SOURCE TEST PLAN

BEST ENVIRONMENTAL
6261 SOUTHFRONT ROAD
LIVERMORE, CALIFORNIA 94551
(925) 455-9474 FAX (925) 455-9479
E-Mail bestair@sbcglobal.net

September 8, 2008

Attn: Ken Kunaniec
BAAQMD
939 Ellis Street
San Francisco, CA 94019

RE: Compliance emissions Monitoring of one flare located at the City of Palo Alto Landfill, Byxbee Park, Palo Alto, California. (Regulation #8-34-301.3 & 412 Plant A2721, Cond.#1028).

Dear Ken:

Best Environmental (BE) proposes the following methodology for compliance testing the above referenced source.

- Triplicate thirty-minute test runs will be performed at the flare exhaust using BAAQMD Methods ST-13A (NO_x), ST-6 (CO), ST-7 (THC's = CH_4 & NMOC), and ST-14 (O_2).
- A single integrated fuel sample will be collected at the inlet for the landfill gas organic and sulfur compounds (analyzed using a modified EPA Method TO-14 & D-5504), plus compliance fuel gas analysis (BTU/CF, hydrocarbons C1-C6, O_2, CO_2, N2 etc.) analyzed using ASTM Method D-1945 and D-3588
- Triplicate integrated bag samples will be collected at the flare inlet for TNMHC (NMOC) and analyzed using EPA Method 25C.
- Fuel flow rate will be recorded and the fuel analysis data will be used to calculate outlet volumetric flow rate using EPA Method 19. Flare temperature will also be recorded and included in the final report.

An overview of the sampling program is summarized in the table below

Parameter	Location	Method(s)	Duration	# of Runs
THC, CH_4, NMOC, NO_x, CO & O_2	Exhaust	BAAQMD ST-7, 13A, 14, 6	30 mins	3
SO_2	Exhaust	BAAQMD ST-19A	30 mins	3
Flow Rate & Fuel	Exhaust	EPA 19	30 mins	3
LFG organics	Inlet	EPA TO14/TO15 & D-5504	30 mins	1
C1-C6, O_2, N_2 & BTU	Inlet	ASTM D-1945/3588	30 mins	1
Flow Rate	Inlet	Flare Gas Metering System	30 mins	3
NMOC	Inlet	EPA 25C	30 mins	3

- Three copies of the technical compliance report will be submitted to SCS Field Services within approximately four weeks of testing. The report will present a test narrative; emission concentrations, emission rates, NMOC, CH_4 & THC destruction

efficiency and landfill gas organic & sulfur compound characterization. Analysis will be performed by Columbia Analytical and/or Air Toxics Ltd.. for Method 25C. All supporting documents (strip charts, field data sheets, laboratory reports, calibrations, calculations, process information, etc) will also be included.

The test program is scheduled for September 22, 2008 with BE's tentative site arrival time set for 8:00am. Mr. James Moore from SCS Field Services is coordinating the test program and he can be reached at (209) 545-8490.

If there are any questions, please contact me at (925) 455-9474 X 102.

Sincerely,

Regan Best

Regan Best
Source Test Manager

cc: Art Jones, SCS Field Services

APPENDIX J
PERMIT TO OPERATE

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Proposed

MAJOR FACILITY REVIEW PERMIT

Issued To:
City of Palo Alto Landfill
Facility #A2721

Facility Address:
Byxbee Park
Palo Alto, CA 94301

Mailing Address:
P. O. Box 10250
Palo Alto, CA 94303

Responsible Official	Facility Contact
Frank Benest, City Manager	Sean Kennedy, Manager, Environmental Programs
(650)-496-5937	(650)-496-5937

Type of Facility:	Landfill	BAAQMD Permit Division Contact:
Primary SIC:	4953	Hari S. Doss
Product:	Landfill Gas	

ISSUED BY THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT

William C. Norton, Executive Officer/Air Pollution Control Officer — Date

Draft
h:\pub_data\title\permit\f-draft\A2721.doc
Application # 3047
7/29/2003 12:19 PM

Facility Name: City of Palo Alto Landfill
Permit for Facility #: A2721

II. EQUIPMENT

Table II A - Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition IJ and Regulation 2-1-301.

S-#	Description	Make or Type	Model	Capacity
S-1	Palo Alto Landfill with Gas Collection System	Active solid waste disposal site that accepts municipal, commercial, industrial, and construction wastes. active		Max. Waste Acceptance Rate = 200 tons per day Max. Design Capacity = 7,759,000 yd^3 (5,932,000 m^3) Max. Cumulative Waste In Place = 5,830,000 tons (5,289,000 Mg) 92 vertical wells
S-5	Wood Grinder	Morbark	Model 5600 CPA #4304	50 tons per hour
S-6	Diesel Engine, Driver for S-5 Wood Grinder	Caterpiller, Model Year 2000	3412EC	860 bhp, 2100 rpm, 1649 in^3, 44.4 gallons/hour of diesel oil, 6.172 MM BTU/hour
S-7	Trommel Screen	Powerscreen	Model 620 CPA #4307	50 tons per hour
S-8	Diesel Engine, Driver for S-7 Trommel Screen	Deutz Model Year 2000	BF4M-1012C	96 bhp, 2200 rpm, 195 in^3, 4.7 gallons/hour of diesel oil, 0.653 MM BTU/hour

Table II B – Abatement Devices

A-#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
A-3	Landfill Gas Flare, Sur Lite, 30 MM BTU/hour, 1000 cfm of landfill gas	S-1	BAAQMD 8-34-301.3, see also Table IV-A	Minimum combustion zone temperature of 1470 °F, see also Table VII-A	98% by weight destruction of NMOC or < 30 ppmv of NMOC, as CH_4, at 3% O_2, dry
A-5	Water Sprays	S-5 and S-7	BAAQMD 6-301	Visible emission	Ringelmann 1

X

VI. PERMIT CONDITIONS

Any condition that is preceded by an asterisk is not federally enforceable.

Condition # 1028
For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

1. The Permit Holder shall comply with the following waste acceptance and disposal limits and shall obtain the appropriate New Source Review permit, if one of the following limits is exceeded:
   a. Total waste accepted and placed at the landfill shall not exceed 200 tons in any day. (basis: Regulation 2-1-301)
   b. The total cumulative amount of all waste placed in the landfill shall not exceed 5,830,000 tons. Exceedance of the cumulative tonnage limit is not a violation of the permit and does not trigger the requirement to obtain a New Source review permit, if the operator can, within 30 days of the date of discovery of the exceedance, provide documentation to the District demonstrating, in accordance with BAAQMD Regulation 2-1-234.3, that the limit should be higher. (basis: Regulation 2-1-234.3)
   c. The maximum design capacity of the landfill (total volume of all wastes and cover materials placed in the landfill, excluding final cover) shall not exceed 7,759,000 cubic yards. (basis: Regulation 2-1-301)

2. This facility is not subject to Regulation 8, Rule 40 because the landfill does not accept contaminated soil (soil containing more than 50 ppmw of volatile organic compounds, VOCs). The following types of materials may be accepted:
   a. Materials for which the Permit Holder has appropriate documentation demonstrating that either the organic content of the soil or the organic concentration above the soil is below the "contaminated" level (as defined in Regulation 8, Rule 40, Sections 205, 207, and 211).
   b. Materials for which the Permit Holder lacks documentation to prove that soil is not contaminated, but source of the soil is known and there is no reason to suspect that the soil might contain organic compounds.
   c. Materials which the Permit Holder plans to test in order to determine the VOC contamination level in the soil, provided that the material is sampled within 24 hours of receipt by this site and is handled as if the soil were contaminated until the Permit Holder receives the test results. The Permit Holder shall collect soil samples in accordance with Regulation 8-40-601. The organic content of the collected soil samples shall be determined in accordance with Regulation 8-40-602.

VI. Permit Conditions

Condition # 1028
For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

i. If the test results indicate that the soil is contaminated or if the soil was not sampled within 24 hours of receipt by the facility, the Permit Holder must continue to handle the soil in accordance with Regulation 8, Rule 40, until the soil has been removed from this site or has completed treatment. Storing soil in a temporary stockpile or pit is not considered treatment. Co-mingling, blending, or mixing of soil lots is not considered treatment.

ii. If the test results indicate that the soil, as received at this site, has an organic content of 50 ppmw or less, then the soil need not be handled in accordance with Regulation 8, Rule 40 any longer.

(basis: Regulation 8-40-301)

3. The Permit Holder shall limit the quantity of low VOC soil (soil that contains 50 ppmw or less of VOCs) disposed of per day so that no more than 15 pounds of total carbon could be emitted to the atmosphere per day. In order to demonstrate compliance with this condition, the Permit Holder shall maintain the following records in a District approved log.

a. Record on a daily basis the amount of low VOC soil disposed of in the landfill or used as cover material in the landfill. This total amount (in pounds per day) is Q in the equation in subpart c. below.

b. Record on a daily basis the VOC content of all low VOC soils disposed of or used as cover material. This VOC Content (C in the equation below) should be expressed as parts per million by weight as total carbon.

c. Calculate and record on a daily basis the VOC Emission Rate (E) using the following equation:

$E = Q * C / 10^6$

(basis: Regulation 8-2-301)

4. Water and/or dust suppressants shall be applied to all unpaved roadways and active soil removal and fill areas associated with this landfill as necessary to prevent visible particulate emissions. Paved roadways at the facility shall be kept sufficiently clear of dirt and debris as necessary to prevent visible particulate emissions from vehicle traffic or wind. (basis: Regulations 2-1-403, 6-301, and 6-305)

VI. Permit Conditions

Condition # 1028
For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

~~1. Under no circumstances shall raw landfill gas be vented to the atmosphere in excess of 1000 ppmv measured as methane, per Regulation 8-34-301.1 and 8-34-303.~~

5. All collected landfill gas shall be vented to the properly operating Landfill Gas Flare (A-3) or to the IC Engines (S-1 and S-2 at Site #A9794). If the IC engines at Site # A9794 are not operating, all collected landfill gas shall be vented to the A-3 Landfill Gas Flare. If one or both of the IC engines at Site #9794 are operating, any amount of collected landfill gas that exceeds the capacity of the operating engines shall be vented to the flare. Raw landfill shall not be vented to the atmosphere, except for unavoidable landfill gas emissions that occur during collection system installation, maintenance, or repair (which is performed in compliance with Regulation 8, Rule 34, Sections 113, 116, 117, or 118) and for inadvertent component or surface leaks that do not exceed the limits specified in 8-34-301.2 or 8-34-303. (basis: Regulation 8-34-301)

~~2. Wells shall not be disconnected or removed at any time except for repair or maintenance of brief duration, without written authorization from the District.~~

6. The landfill gas collection system described in Part 7a shall be operated continuously, as defined in Regulation 8-34-219. Wells and adjustment valves shall not be shut off, disconnected, or removed from operation without written authorization from the District, unless the Permit Holder complies with all applicable requirements of Regulation 8, Rule 34, Sections 113, 116, 117, and 118. (basis: Regulation 8-34-301.1)

~~3. The District shall be notified in writing of a change in permit conditions in the event of increasing the number of wells from 92.~~

VI. Permit Conditions

Condition # 1028

For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

7. The Permit Holder shall apply for and receive an Authority to Construct before modifying the landfill gas collection system described in Parts 7a below. Increasing or decreasing the number of wells or collectors, changing the length of collectors, or changing locations of wells or collectors are all considered to be modifications that are subject to the Authority to Construct requirement.

   a. The Permit Holder has been issued a Permit to Operate for the landfill gas collection system components listed below. Well and collector locations, depths, and lengths are as described in detail in Permit Application # 2230.

	Required Components
Total Number of Vertical Wells:	92

(basis: Regulations 2-1-301, 8-34-301.1, 8-34-304, 8-34-305)

~~4. A flow meter to measure gas flow into the flare shall be installed and maintained.~~

~~5. Written annual reports shall be submitted to the District within 30 days after the permit anniversary date of the amount (in tons) of garbage placed on the uncontrolled portion of the landfill during the 12 months prior to the anniversary date. The report shall be submitted to the Permit Services Division, referenced to the above permit number, and shall include the increase (in feet) in refuse depth, area (in yd2 and acreage) filled, and compacted in place density (lb/yd3) of the garbage filled in the previous 12 months. This information shall be used to re-evaluate the uncontrolled portion of the landfill for compliance with Regulation 8, Rule 34.~~

8. The Heat Input to the A-3 Landfill Gas Flare shall not exceed 720 million BTU per day and shall not exceed 262,800 million BTU per year. In order to demonstrate compliance with this part, the Permit Holder shall calculate and record, on a monthly basis, the maximum daily and total monthly heat input to the flare based on: (a) the landfill gas flow rate recorded pursuant to Regulation 8-34-508 and 8-34-501.10, (b) the average methane concentration in the landfill gas measured in most recent source test, and (c) a high heating value for methane of 1013 BTU per cubic foot at 60 degrees F. (basis: Regulation 2-1-301)

VI. Permit Conditions

Condition # 1028
For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

~~6. A temperature monitor with readout display and continuous recorder (recording thermocouple) shall be installed and maintained on the Sur-Lite flare. One or more thermocouples shall be placed in the primary combustion zone of the flare and shall accurately indicate flare combustion temperature at all times. Temperature charts shall be retained for at least one year and made available at all times for District inspection.~~

~~7. The combustion temperature of the Sur-Lite flare shall be maintained at a minimum of 1400 degrees F and a residence time of at least 0.3 seconds. These operating conditions are subject to adjustment if source test data demonstrates significant NOx or CO reduction at a different temperature and/or residence time.~~

9. The combustion zone temperature of the A-3 Landfill Gas Flare shall be maintained at a minimum of 1470 degrees Fahrenheit, averaged over any 3-hour period. If a source test demonstrates compliance with all applicable requirements at a different temperature, the APCO may revise the minimum combustion zone 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 the flare shall be equal to the average combustion zone temperature measured during the most recent complying source test minus 50 degrees F, provided that the minimum combustion zone temperature shall not be less than 1400 degrees F. (basis: Toxic Risk Management Policy and Regulation 8-34-301.3)

~~8. If inconsistent or erratic temperature control is exhibited by the Sur-Lite flare, automatic temperature controlled louvers or other equipment shall be installed as necessary to stabilize combustion temperature and residence time.~~

910. The ~~Sur-Lite flare~~ A-3 Landfill Gas Flare shall be equipped with both local and remote alarm systems. (basis: Regulation 8-34-301)

11. Nitrogen oxide (NO_x) emissions from the A-3 Landfill Gas Flare shall not exceed 32 ppmv of NO_x, corrected to 15% oxygen, dry basis. (basis: Cumulative Increase)

~~10. If source test data indicates that CO emissions from the Sur-Lite flare exceed 550 lb/day, the applicant shall provide modeling as required by Regulation 2-2-306.~~

VI. Permit Conditions

Condition # 1028
For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

12. Carbon monoxide (CO) emissions from the A-2 Landfill Gas Flare shall not exceed 208 ppmv of CO, corrected to 15% oxygen, dry basis. (basis: Cumulative Increase)

*~~11~~13. If the ~~T~~total chlorinated compound concentration ~~exceeding 104 ppm, detected~~ in the landfill gas ~~samples~~ is determined to exceed 104 ppmv (dry), ~~shall require~~ the ~~applicant to apply~~ Permit Holder shall submit a permit application to the District for a change in permit conditions within 30 days of receipt of the test results. (Basis: Toxic Risk Management Policy)

14. Total reduced sulfur compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in control system's exhaust. The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed 1300 ppmv (dry). In order to demonstrate compliance with this part, the Permit Holder shall measure the total sulfur content as hydrogen sulfide in collected landfill gas on a quarterly basis using a draeger tube. The landfill gas sample shall be taken from the main landfill gas header. The Permit Holder shall follow the manufacturer's recommended procedures for using the dreager tube and interpreting the results. The Permit Holder shall conduct the first draeger tube test no later than 3 months after the issue date of the MFR Permit and quarterly thereafter. (Basis: Regulation 9-1-302)

15. To demonstrate compliance with Parts 8-12 above and Regulation 8, Rule 34, Sections 301.3 and 412, the Permit Holder shall ensure that a District approved source test is conducted annually on the Landfill Gas Flare (A-3). As a minimum, the 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, THC, CH_4, NMOC, and O_2 in the flare stack gas;
    e. the NMOC destruction efficiency achieved by the flare; and
    f. the average combustion zone temperature in the flare during the test period.

VI. Permit Conditions

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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, and Regulations 8-34-301.3 and 8-34-412)

16. To demonstrate compliance with Part 13 above and Regulation 8-34-412, the Permit Holder shall conduct a characterization of the landfill gas concurrent with the annual source test required by Part 15 above. The landfill gas sample shall be drawn from the main landfill gas header. In addition to the compounds listed in part 15b, the landfill gas shall be analyzed for 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. After conducting three annual landfill gas characterization tests, the Permit Holder may request to remove specific compounds from the lists below if the compounds have not been detected and have no significant impacts on the cancer risk or hazard index determinations for the site.

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		

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(basis: Toxic Risk Management Policy and Regulations 8-34-412 and 9-1-302)

17. To demonstrate compliance with the above conditions, the Permit Holder shall maintain the following records in a District approved logbook.
    a. Record the total amount of municipal solid waste received at S-1 on a daily basis. Summarize the daily waste acceptance records for each calendar month.
    b. For each area or cell that is not controlled by a landfill gas collection system, maintain a record of the date that waste was initially placed in the area or cell. Record the cumulative amount of waste placed in each uncontrolled area or cell on a monthly basis.
    c. If the Permit Holder plans to exclude an uncontrolled area or cell from the collection system requirement, the Permit Holder shall also record the types and amounts of all non-decomposable waste placed in the area and the percentage (if any) of decomposable waste placed in the area.
    d. Record of the dates, locations, and frequency per day of all watering activities on unpaved roads or active soil or fill areas. Record the dates, locations, and type of any dust suppressant applications. Record the dates and description of all paved road-cleaning activities. All records shall be summarized on monthly basis.
    e. Record the initial operation date for each new landfill gas well and collector.
    f. Maintain an accurate map of the landfill that indicates the locations of all refuse boundaries and the locations of all wells and collectors (using unique identifiers) that are required to be operating continuously pursuant to part 7a. Any areas containing only non-decomposable waste shall be clearly identified. This map shall be updated at least once a year to indicate changes in refuse boundaries and to include any newly installed wells and collectors.
    g. Calculate and record the heat input to A-3, pursuant to Part 8.
    h. Maintain records of all test dates and test results performed to maintain compliance Parts 14-16 above or to maintain compliance with any applicable rule or regulation

VI. Permit Conditions

Condition # 1028

For: S-1 PALO ALTO LANDFILL WITH GAS COLLECTION SYSTEM AND A-3 LANDFILL GAS FLARE

All records shall be maintained on site or shall be made readily available to District staff upon request for a period of at least 5 years from the date of entry. These record keeping requirements do not replace the record keeping requirements contained in any applicable rules or regulations. (basis: Cumulative Increase, Toxic Risk Management Policy and Regulations 2-1-301, 2-6-501, 6-301, 6-305, 8-2-301, 8-34-301, 8-34-304, and 8-34-501)

18. 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, 2002 through [last day of the month that is 6 months after MFR Permit issuance date]. This first increment report shall be submitted by [last day of the month following the end of the reporting period]. 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. (basis: Regulation 8-34-411 and 40 CFR Part 63.1980(a))