METHANE AND NONMETHANE ORGANIC DESTRUCTION EFFICIENCY TESTS OF AN ENCLOSED LANDFILL GAS FLARE

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SCOTT ENVIRONMENTAL TECHNOLOGY
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TABLE OF CONTENTS

2.0 TEST LOCATION

The gas flare inlet, a 9.75 inch I.D. PVC pipe, was equipped with two 1.5 inch sampling ports located at a 90° arc. The test ports were installed on the straight run of pipe leading from the blower building to the burner heads. A twelve-point velocity traverse was conducted for determining gas velocity. A schematic of the source is shown in Figure 2-2.

The flare is contained within an 8 foot diameter refractory lined enclosure serving both as a primary combustion zone and discharge stack. The enclosed flare discharges to atmosphere approximately 40 feet above ground level. The ports are installed three feet below the stack exit. A basic schematic of the enclosed flare system is shown in Figure 2-1 of this report. The unit is equipped with flame-out sensors which shut down the gas delivery system when a lost flame is detected.

During the entire test program, motor BL-2 operated at 60 amps. The flare operated within a temperature range of 1900 to 2010°F. There were no flame out interruptions during the test program.

SET# 1498-0415-215-02

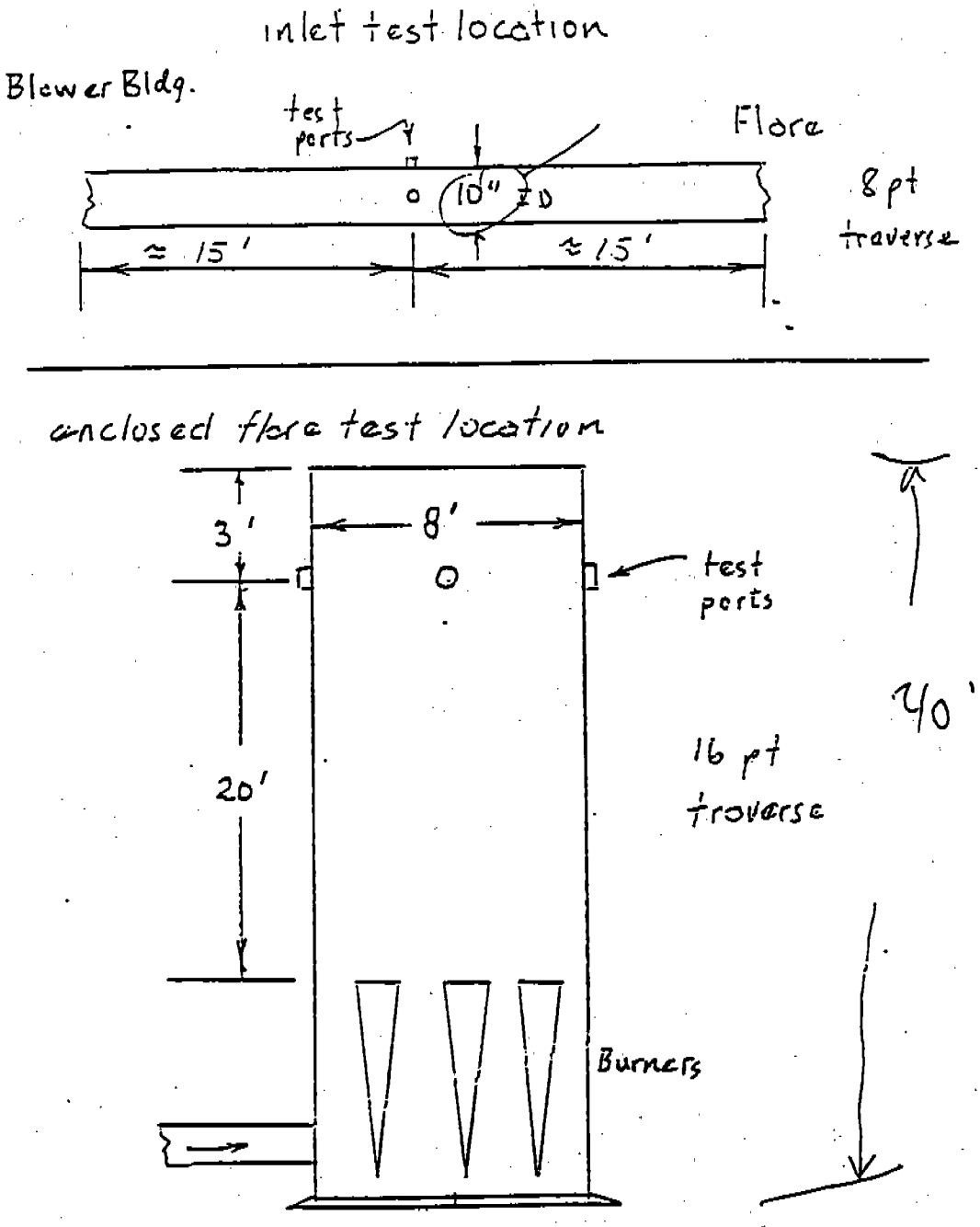

Figure 2-1 Enclosed Flare System

SET# 1498-0415-215-02

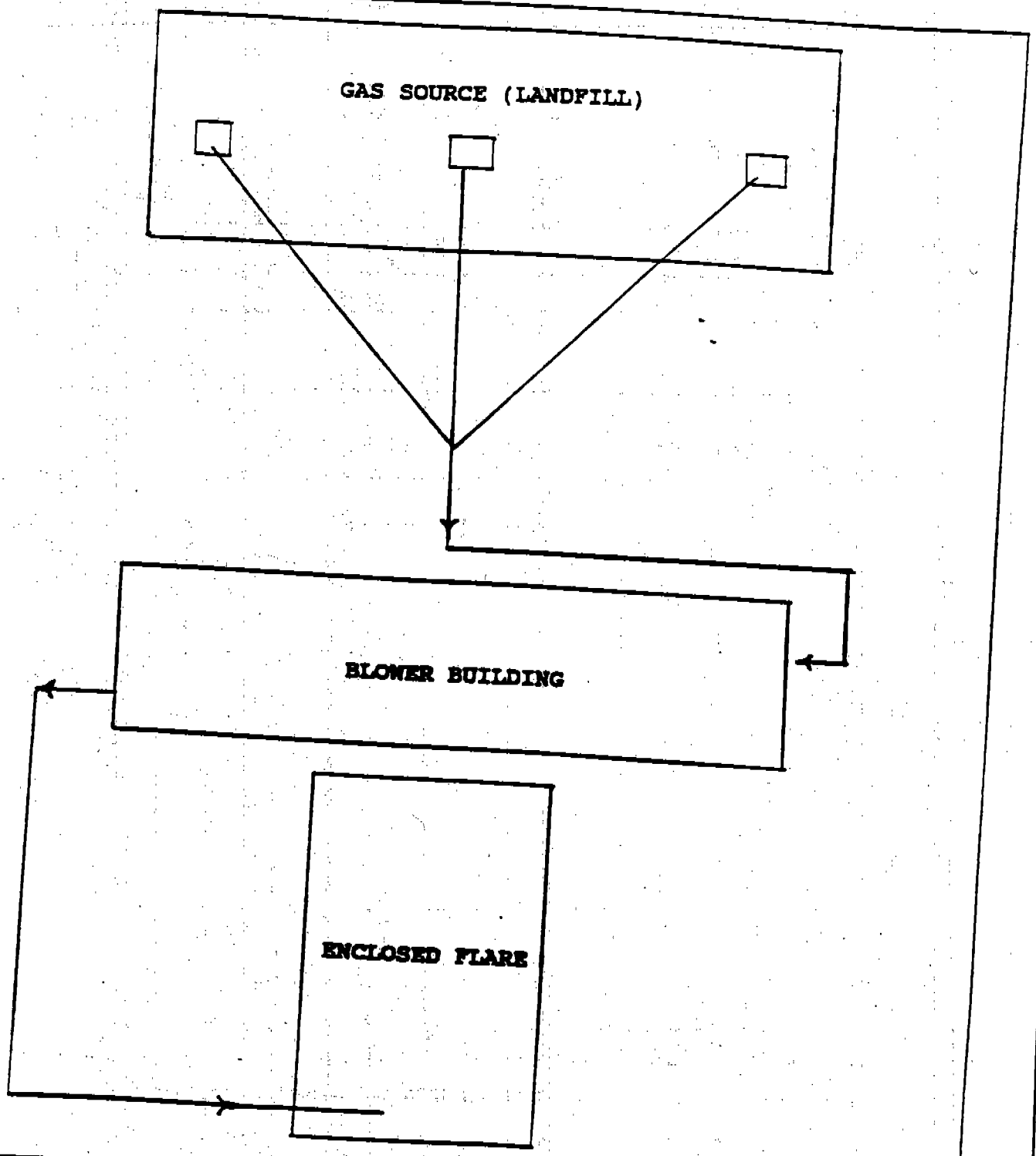

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Figure 2-2 Source Schematic

SET# 1498-0415-215-02

3.0 SAMPLING AND ANALYTICAL PROCEDURES

Gas characterization tests were performed to determine the quantity of methane (CH_4) and non-methane organic carbon (NMOC) at the flare inlet and exit. Sections 3.1 through 3.3 describe the sampling and analytical procedures employed.

3.1 METHANE AND NON-METHANE ORGANIC CARBON

Total hydrocarbon tests were conducted employing the NJDEP Air Test Method 3.9 with some modifications. At both locations a representative sample was extracted at approximately one liter per minute through two midget impinger condensers, immersed in an ice bath. The dry gas sample was collected in a Tedlar bag. The NJDEP Air Test Method 3.9 technique, with an evacuated rigid container, was utilized for sample collection for Test Run 1. The rigid container was evacuated with a VOST type meter box, equipped with a dry gas meter and rotameter for volume and flow rate monitoring. Sample gas for test runs 2 and 3 was obtained utilizing a direct fill technique. A teflon lined diaphragm pump equipped with a rotameter was used to extract the sample through the impinger condensers, and exhaust the gas directly into a Tedlar bag.

The condensate from the midget impingers was analyzed by Gas Chromatography (GC), employing the purge and trap

technique with Flame Ionization Detection. Five milliliters of condensate sample was purged for 11 minutes using nitrogen gas (N_2) @ 40 cc/minute. The purge is used to remove the hydrocarbons from the water and deposit them into an analytical trap. The analytical trap was then desorbed for three minutes at 180°C using N_2 backflush.

The outlet Tedlar bag samples were analyzed by GC-FID to determine the methane and non-methane organic carbon (NMOC) concentrations, while the inlet Tedlar bag samples were analyzed by GC-FID to determine the non-methane organic concentration only. A Model 3400 Varian GC, equipped with a Flame Ionization Detector (FID), was utilized for the analyses. The inlet methane analysis was performed using GC with a thermal conductivity detector (GC-TCD). A Model A 90-P3 Aerograph GC was used for the inlet methane analysis. Table 3-1 lists the chromatography conditions for each instrument.

Each GC was calibrated with a series of methane standards. The total area of each chromatograph was compared to the methane response factors to calculate concentrations.

Non-methane hydrocarbon was calculated by adding the resultant concentrations from the purge trap and Tedlar bag analyses.

SET# 1498-0415-215-02

TABLE 3-1

CHROMATOGRAPHIC CONDITIONS

Varian 3400 - Bag and Condensate Analysis

Column:	1% SP-1000
Carrier Gas:	N_2 @ 40 cc/minute
Start Temperature:	35°C for 5 minutes
Temperature Program:	250°C @ 40°C /minute
Detector:	FID

Aerograph A 90-P3

Column:	Carbosieve SII
Carrier Gas:	He @ 40 cc/minute
Start Temperature:	180°C
Temperature Program:	Isotemperature
Detector:	Thermal Conductivity

SET# 1498-0415-215-02

3.2 CARBON MONOXIDE

Carbon monoxide concentration on the flare outlet was determined using the Tedlar gas bag. Following the organic analysis, a sample of the gas was analyzed using a TECO gas filter correlation non-dispersive infrared (NDIR) analyzer, which was calibrated using zero gas and three standards of CO in nitrogen. The analysis was performed in accordance with EPA Method 10 (40 CFR 60, Appendix A). The monitor output is included in Appendix B (Laboratory Data).

3.3 DRY GAS MOLECULAR WEIGHT/VOLUMETRIC FLOW RATE

The procedures employed for the determination of the landfill gas volumetric flow rate are defined in detail within EPA Reference Methods 1-4; 40 CRF 60, Appendix A.

A twelve point velocity traverse was conducted before and after each test. A standard pitot tube (Cp = 0.99) and Type K thermocouple were used to determine stack gas velocity and temperature.

At the flare exit, a 16 point velocity traverse was performed using an S-type pitot tube (Cp = 0.84) and Type K thermocouple.

Gas sampling for the determination of dry gas molecular weight was performed by EPA Reference Method 3 procedure. An Orsat apparatus was used for the measurement of O_2 and CO_2 concentrations from the Tedlar bags collected.

SET# 1498-0415-215-02

Gas moisture content was determined by EPA Reference Method 4 procedures. Gas was extracted from the inlet and outlet through polypropylene tubing. An impinger train incorporating water and silica gel was utilized for the condensation of water vapor in the gas. The net increase in the volume of the impinger water and weight of silica gel were recorded as the volume of water collected (1 gram=1 ml). The water gain was compared to the gas volume sampled to calculate the moisture content of the gas stream.

SET# 1498-0415-215-02

4.0 RESULTS

Table 4-1 contains a complete tabulation of the outlet test results, including the flow measurements and gas characterizations and the inlet organic results and destruction efficiencies.

Following the Table 4-1 are the results of the individual velocity test runs. Table 4-2 is a detailed tabulation of the inlet test results.

The Appendices following contain copies of the field and laboratory data and results.

SET# 1498-0415-215-02

LFG flow rate = 1355 cfm
CH_4 = 52.24 %

Table 4-1

NEWCO -PINELANDS
TEST RESULTS SUMMARY
VELOCITY - OUTLET

Date	02/28/92	02/28/92	02/28/92	02/28/92	
Run ID	1	2	3	4	
Start Time	10:30	13:20	14:40	17:20	
Finish Time	10:35	13:30	14:50	17:30	
					Average
Velocity (ft/sec)	10.72	16.53	11.08	15.49	13.46
ACFM	32,324	49,859	33,416	46,719	40,580
DSCFM	6,902	9,990	6,500	9,462	8,213
Stack Temperature(°F)	1897	.1953	1942	1930	1,931
% O2	17.9	15.15	11.65	10.5	13.80
% CO2	2.3	5.2	8.45	9.4	6.34
% Moisture	5.70	9.40	12.45	9.30	9.21
ppm CO	2.4	5.9	4.7		4.3
ppm CO(7%O2)	11.1	14.3	7.1		10.8
ppm THC	11.82	8.66	1.29		7.25
ppm Methane	7.52	2.19	0.36		3.36
ppm NMOC	4.30	6.47	0.93		3.90
Lb/hour					
Methane	0.16	0.04	0.01		0.07
NMOC	0.09	0.13	0.02		0.08
INLET lb/hour					
Methane	1520.7	1577.2	1495.0		
NMOC	2.3	2.7	2.7		
Destruction Efficiency					
Methane	99.99	99.997	99.9995		99.995
NMOC	96.06	95.14	99.31		96.837
THC	99.98	99.99	99.998		99.990

SET# 1498-0415-215-02

Project#: 1498
PLANT : NEWCO -PINELANDS
DATE : 02/28/92
SAMP.LOCATION : OUTLET
RUN : 1
TEST ID :VELOCITY - OUTLET
START TIME : 10:30
FINISH TIME : 10:35

SAMPLE TIME (Mi)	=	32	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	30.13	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	-0.1	in. H2O	METER ORIFICE (dH)	=	ERR	in. H2O
STACK AREA (As)	=	50.27	sq.ft.	METER VOLUME (Vm)	=	0.00	cu. ft.
STACK TEMP. (Ts)	=	1897	°F	METER TEMP. (Tm)	=	ERR	°F
Pitot Factor (Cp)	=	0.84		SQRT. dP	=	0.090	in. H2O
GAS ANALYSIS	=	2.3	% CO2	COND. LIQ. (Vlc)	=	0.0	ml
		17.9	% O2	METER Y (Yd)	=	0.0000	
		79.8	% N2	STD. TEMP. (Tstd)	=	70	°F
		7.52	ppm CH4				
		3.47	ppm NMOC(as CH4)				
		2.4	ppm CO				

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)]
/ (Tm+460) x Yd x Vm = ERR dry std. cu.ft.

Vw(std) = 0.04707 x Vlc = 0.00 cu. ft.

Bws = Vw(std) / [Vm(std) + Vw(std)] = 0.057

Md =(.44 x %CO2)+(.32 x %O2)+[.28 x (%N2 + %CO)] = 29.08 lb./lb.-mole (dry basis)

Ms = [Md x (1-Bws)] + (18.0 x Bws) = 28.45 lb./lb.-mole (stack)

Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps)}] = 10.72 ft. per second

Qs = Vs x As x 60 = 32,324 cu.ft. per minute(actual)

Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92 = 6,902 cu.ft. per minute(dry,std.)

SET# 1498-0415-215-02

Project#: 1498
PLANT : NEWCO -PINELANDS
DATE : 02/28/92
SAMP.LOCATION : OUTLET
RUN : 2
TEST ID :VELOCITY - OUTLET
START TIME : 13:20
FINISH TIME : 13:30

SAMPLE TIME (Mi)	=	32	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	30.13	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	-0.1	in. H2O	METER ORIFICE (dH)	=	ERR	in. H2O
STACK AREA (As)	=	50.27	sq.ft.	METER VOLUME (Vm)	=	0.00	cu. ft.
STACK TEMP. (Ts)	=	1953	°F	METER TEMP. (Tm)	=	ERR	°F
Pitot Factor (Cp)	=	0.84		SQRT. dP	=	0.137	in. H2O
GAS ANALYSIS	=	5.2	% CO2	COND. LIQ. (Vlc)	=	0.0	ml
		15.2	% O2	METER Y (Yd)	=	0.0000	
		79.7	% N2	STD. TEMP. (Tstd)	=	70	°F
		2.19	ppm CH4				
		5.9	ppm NMOC(as CH4)				
		5.9	ppm CO				

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)]
/ (Tm+460) x Yd x Vm = ERR dry std. cu.ft.

Vw(std) = 0.04707 x Vlc = 0.00 cu. ft.

Bws = Vw(std) / [Vm(std) + Vw(std)] = 0.094

Md =(.44 x %CO2)+(.32 x %O2)+[.28 x (%N2 + %CO)] = 29.44 lb./lb.-mole (dry basis)

Ms = [Md x (1-Bws)] + (18.0 x Bws) = 28.37 lb./lb.-mole (stack)

Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps}] = 16.53 ft. per second

Qs = Vs x As x 60 = 49,859 cu.ft. per minute(actual)

Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92 = 9,990 cu.ft. per minute(dry,std.)

SET# 1498-0415-215-02

Project#: 1498
PLANT : NEWCO -PINELANDS
DATE : 02/28/92
SAMP.LOCATION : OUTLET
RUN : 3
TEST ID :VELOCITY - OUTLET
START TIME : 14:40
FINISH TIME : 14:50

SAMPLE TIME (Mi)	=	32	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	30.13	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	-0.1	in. H2O	METER ORIFICE (dH)	=	ERR	in. H2O
STACK AREA (As)	=	50.27	sq.ft.	METER VOLUME (Vm)	=	0.00	cu. ft.
STACK TEMP. (Ts)	=	1942	°F	METER TEMP. (Tm)	=	ERR	°F
Pitot Factor (Cp)	=	0.84		SQRT. dP	=	0.092	in. H2O
GAS ANALYSIS	=	8.5	% CO2	COND. LIQ. (Vlc)	=	0.0	ml
		11.7	% O2	METER Y (Yd)	=	0.0000	
		79.9	% N2	STD. TEMP. (Tstd)	=	70	°F
		0.36	ppm CH4				
		0.78	ppm NMOC(as CH4)				
		4.7	ppm CO				

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)]
/ (Tm+460) x Yd x Vm = ERR dry std. cu.ft.

Vw(std) = 0.04707 x Vlc = 0.00 cu. ft.

Bws = Vw(std) / [Vm(std) + Vw(std)] = 0.125

Md =(.44 x %CO2)+(.32 x %O2)+[.28 x (%N2 + %CO)] = 29.82 lb./lb.-mole (dry basis)

Ms = [Md x (1-Bws)] + (18.0 x Bws) = 28.35 lb./lb.-mole (stack)

Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps}] = 11.08 ft. per second

Qs = Vs x As x 60 = 33,416 cu.ft. per minute(actual)

Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92 = 6,500 cu.ft. per minute(dry,std.)

SET# 1498-0415-215-02

Project#: 1498
PLANT : NEWCO -PINELANDS
DATE : 02/28/92
SAMP.LOCATION : OUTLET
RUN : 4
TEST ID :VELOCITY - OUTLET
START TIME : 17:20
FINISH TIME : 17:30

SAMPLE TIME (Mi)	=	32	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	30.13	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	-0.1	in. H2O	METER ORIFICE (dH)	=	ERR	in. H2O
STACK AREA (As)	=	50.27	sq.ft.	METER VOLUME (Vm)	=	0.00	cu. ft.
STACK TEMP. (Ts)	=	1930	°F	METER TEMP. (Tm)	=	ERR	°F
Pitot Factor (Cp)	=	0.84		SQRT. dP	=	0.130	in. H2O
GAS ANALYSIS	=	9.4	% CO2	COND. LIQ. (Vlc)	=	0.0	ml
		10.5	% O2	METER Y (Yd)	=	0.0000	
		80.1	% N2	STD. TEMP. (Tstd)	=	70	°F
LAB ANALYSIS	=		grams				

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)] / (Tm+460) x Yd x Vm	=	ERR	dry std. cu.ft.
Vw(std) = 0.04707 x Vlc	=	0.00	cu. ft.
Bws = Vw(std) / [Vm(std) + Vw(std)]	=	0.093	
Md =(.44 x %CO2)+(.32 x %O2)+[.28 x (%N2 + %CO)]	=	29.92	lb./lb.-mole (dry basis)
Ms = [Md x (1-Bws)] + (18.0 x Bws)	=	28.81	lb./lb.-mole (stack)
Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps)}]	=	15.49	ft. per second
Qs = Vs x As x 60	=	46,719	cu.ft. per minute(actual)
Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92	=	9,462	cu.ft. per minute(dry,std.)

SET# 1498-0415-215-02

Table 4-2

NEWCO - PINELANDS
TEST RESULTS SUMMARY
VELOCITY INLET

Date	02/28/92	02/28/92	02/28/92	
Run ID	1	2	3	
Start Time	10:15	13:32	16:18	
Finish Time	11:15	14:32	17:18	
				Average
Velocity (ft/sec)	42.12	45.63	42.73	43.49
ACFM	1,309	1,424	1,333	1,355
DSCFM	1,140	1,245	1,161	1,182
Stack Temperature(°F)	136	135	134	135
% O2	1.9	3.2	3.2	2.77
% CO2	36.1	34.2	34.4	34.90
% Moisture	1.80	1.10	1.60	1.50
Lb/hour				
Methane	1520.7	1577.2	1495.0	1530.9
NMOC	2.3	2.7	2.7	2.6

SET# 1498-0415-215-02

Project#: 1497
PLANT : NEWCO - PINELANDS
DATE : 02/28/92
SAMP.LOCATION : INLET
RUN : 1
TEST ID :VELOCITY INLET
START TIME : 10:15
FINISH TIME : 11:15

CO2 avg = 36.1, 34.2, 34.4, 34.9

SAMPLE TIME (Mi)	=	60	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	29.74	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	1.5	in. H2O	METER ORIFICE (dH)	=	1.30	in. H2O
STACK AREA (As)	=	0.52	sq.ft.	METER VOLUME (Vm)	=	40.58	cu. ft.
STACK TEMP. (Ts)	=	136	°F	METER TEMP. (Tm)	=	75	°F
Pitot Factor (Cp)	=	0.99		SQRT. dP	=	0.581	in. H2O
GAS ANALYSIS	=	36.1	% CO2	COND. LIQ. (Vlc)	=	15.3	ml
		1.9	% O2	METER Y (Yd)	=	1.0000	
		8.2	% N2	STD. TEMP. (Tstd)	=	70	°F
		53.76	% CH4				
		0.0808	% NMOC(as CH4)				
		5.9	ppm CO				

CH4 = 52.24%

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)] / (Tm+460) x Yd x Vm	=	40.079	dry std. cu.ft.
Vw(std) = 0.04707 x Vlc	=	0.72	cu. ft.
Bws = Vw(std) / [Vm(std) + Vw(std)]	=	0.018	
Md =(.44 x %CO2)+(.32 x %O2)+.28 x (%N2)+.16*(%CH4+%THC)	=	27.39	lb./lb.-mole (dry basis)
Ms = [Md x (1-Bws)] + (18.0 x Bws)	=	27.22	lb./lb.-mole (stack)
Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps}]	=	42.12	ft. per second
Qs = Vs x As x 60	=	1,309	cu.ft. per minute(actual)
Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92	=	1,140	cu.ft. per minute(dry,std.)
%I = 0.0945 x (460+Ts) x Vmstd / (Ps x Vs x An x Mi x (1-Bws))	=	ERR	%

CH4 Lb/hr = %CH4 * Qs(std) * 960 / 387e2	=	1520.7	lb. per hour
NMOC Lb/hr = %NMOC * Qs(std) * 960 / 387e2	=	2.3	lb. per hour
THC Lb/hr = (%CH4+%NMOC)*960*Qs(std)/387e2	=	1522.9	lb. per hour

SET# 1498-0415-215-02

Project#: 1497
PLANT : NEWCO - PINELANDS
DATE : 02/28/92
SAMP.LOCATION : INLET
RUN : 2
TEST ID :VELOCITY INLET
START TIME : 13:32
FINISH TIME : 14:32

SAMPLE TIME (Mi)	=	60	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	29.59	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	1.5	in. H2O	METER ORIFICE (dH)	=	1.30	in. H2O
STACK AREA (As)	=	0.52	sq.ft.	METER VOLUME (Vm)	=	41.02	cu. ft.
STACK TEMP. (Ts)	=	135	°F	METER TEMP. (Tm)	=	74	°F
Pitot Factor (Cp)	=	0.99		SQRT. dP	=	0.630	in. H2O
GAS ANALYSIS	=	34.2	% CO2	COND. LIQ. (Vlc)	=	9.5	ml
		3.2	% O2	METER Y (Yd)	=	1.0000	
		11.4	% N2	STD. TEMP. (Tstd)	=	70	°F
		51.07	% CH4				
		0.0882	% NMOC(as CH4)				
		7.1	ppm CO				

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)] / (Tm+460) x Yd x Vm	=	40.390	dry std. cu.ft.
Vw(std) = 0.04707 x Vlc	=	0.45	cu. ft.
Bws = Vw(std) / [Vm(std) + Vw(std)]	=	0.011	
Md =(.44 x %CO2)+(.32 x %O2)+.28 x (%N2)+.16*(%CH4+%THC)	=	27.46	lb./lb.-mole (dry basis)
Ms = [Md x (1-Bws)] + (18.0 x Bws)	=	27.36	lb./lb.-mole (stack)
Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps}]	=	45.63	ft. per second
Qs = Vs x As x 60	=	1,424	cu.ft. per minute(actual)
Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92	=	1,245	cu.ft. per minute(dry,std.)
%I = 0.0945 x (460+Ts) x Vmstd / (Ps x Vs x An x Mi x (1-Bws))	=	ERR	%

CH4 Lb/hr = %CH4 * Qs(std) * 960 / 387e2	=	1577.2	lb. per hour
NMOC Lb/hr = %NMOC * Qs(std) * 960 / 387e2	=	2.7	lb. per hour
THC Lb/hr = (%CH4+%NMOC)*960*Qs(std)/387e2	=	1579.9	lb. per hour

SET# 1498-0415-215-02

Project#: 1497
PLANT : NEWCO - PINELANDS
DATE : 02/28/92
SAMP.LOCATION : INLET
RUN : 3
TEST ID :VELOCITY INLET
START TIME : 16:18
FINISH TIME : 17:18

SAMPLE TIME (Mi)	=	60	minutes	NOZZLE DIA. (Dn)	=	0.000	inches
BAR. PRESSURE (Pb)	=	29.59	in. Hg	NOZZLE AREA (An)	=	0.00E+00	sq.ft.
STK. PRESSURE (Ps)	=	1.3	in. H2O	METER ORIFICE (dH)	=	1.30	in. H2O
STACK AREA (As)	=	0.52	sq.ft.	METER VOLUME (Vm)	=	41.01	cu. ft.
STACK TEMP. (Ts)	=	134	°F	METER TEMP. (Tm)	=	64	°F
Pitot Factor (Cp)	=	0.99		SQRT. dP	=	0.589	in. H2O
GAS ANALYSIS	=	34.4	% CO2	COND. LIQ. (Vlc)	=	14.1	ml
		3.2	% O2	METER Y (Yd)	=	1.0000	
		10.4	% N2	STD. TEMP. (Tstd)	=	70	°F
		51.9	% CH4				
		0.0922	% NMOC(as CH4)				
		6.5	ppm CO				

Vm(std) = (Tstd+460)/ 29.92 x [Pb + (dH / 13.6)]
/ (Tm+460) x Yd x Vm = 41.156 dry std. cu.ft.

Vw(std) = 0.04707 x Vlc = 0.66 cu. ft.

Bws = Vw(std) / [Vm(std) + Vw(std)] = 0.016

Md =(.44 x %CO2)+(.32 x %O2)+.28 x (%N2)+.16*(%CH4+%THC) = 27.39 lb./lb.-mole (dry basis)

Ms = [Md x (1-Bws)] + (18.0 x Bws) = 27.24 lb./lb.-mole (stack)

Vs = 85.49 x Cp x (SQRT[dP]) x [SQRT{(Ts+460)/Ms/Ps}] = 42.73 ft. per second

Qs = Vs x As x 60 = 1,333 cu.ft. per minute(actual)

Qs(std)=Qs x (1-Bws)x(Tstd+460)/(Ts+460)x(Pb+Ps/13.6)/29.92 = 1,161 cu.ft. per minute(dry,std.)

%I = 0.0945 x (460+Ts) x Vmstd / (Ps x Vs x An x
Mi x (1-Bws)) = ERR %

CH4 Lb/hr = %CH4 * Qs(std) * 960 / 387e2 = 1495.0 lb. per hour

NMOC Lb/hr = %NMOC * Qs(std) * 960 / 387e2 = 2.7 lb. per hour

THC Lb/hr = (%CH4+%NMOC)*960*Qs(std)/387e2 = 1497.6 lb. per hour

APPENDIX A

EPA REFERENCE METHODS FIELD DATA

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

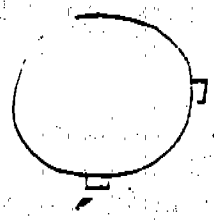
PLANT [illegible]
DATE [illegible]
SAMPLING LOCATION [illegible]
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A) [illegible]
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B) [illegible]
STACK I.D., (DISTANCE A - DISTANCE B) [illegible]
NEAREST UPSTREAM DISTURBANCE [illegible]
NEAREST DOWNSTREAM DISTURBANCE [illegible]
CALCULATOR [illegible]

SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)	DISTANCE B	TRAVERSE POINT I FROM OUTSIDE OF (SUM OF COLUMN
1	4.4	9 3/1	.5	1	1.5
2	14.6		1.7		2.47
3	29.6		2.9		3.9
4	70.4		2.9		7.9
5	85.4		3.5		9.3
6	95.6		9.[illegible]		10.3

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT [illegible]
DATE
SAMPLING LOCATION
INSIDE OF FAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE A)
INSIDE OF NEAR WALL TO
OUTSIDE OF NIPPLE, (DISTANCE B)
STACK I.D., (DISTANCE A - DISTANCE B) 3[illegible]
NEAREST UPSTREAM DISTURBANCE
NEAREST DOWNSTREAM DISTURBANCE
CALCULATOR



SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)	DISTANCE B	TRAVERSE POINT I FROM OUTSIDE OF (SUM OF COLUMN
1			2.1	3	11.1
2	[illegible]		10.1		18.1
3	19.4		18.6		26.6
4	[illegible]		21.0		39.0
5	67.7		65.0		73.0
6	80.6		77.4		95.4
7	[illegible]		35.9		93.9
2	[illegible]		92.9		100.9

(Dun) 222

DRY MOLECULAR WEIGHT DETERMINATION

Plant: PINELANDS FLARE Date: _____

Sampling Time (24-Hour Clock): _____

Concurrent with Run #: 1

Sampling Location: OUTLET

Sample Type (Bag, Integrated, Continuous): _____

Analytical Method: _____

Ambient Temperature: _____ Operator: _____

Comments: _____

Gas	Run 1		Run 2		Run 3		Avg. Net Volume	Multiplier	Molecular Weight of Stack Gas (dry basis) M_d, lb/lb-mole
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO_2	2.3		2.3					44/100	
O_2 (net is actual O_2 reading minus actual O_2 reading)	20.2		20.2					32/100	
CO (net is actual CO reading minus actual O_2 reading)								28/100	
N_2 (net is 100 minus actual CO reading)								28/100	

Plant LINELANDS

Date 2-28-92

Sample Location FLARE OUT

Run Number 1 M1-M4

Operators TB

Ambient Temperature

Barometer 1007mb X .2992 = 30.13

Static Pressure -0.05

Pitot Factor .84

Inches Hg

Leak Rate

Estimates for K-Factor Determination

P_s -

$\%O_2$ -

$\%CO_2$ -

T_s -

T_m -

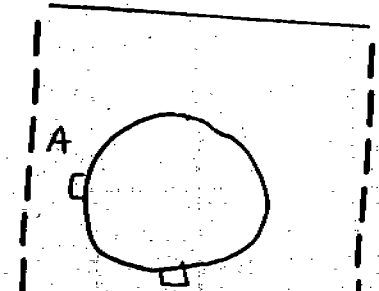
B_{WS} -

Y_d -

dH@ -

Stack ID 8'

K -



Test Number 1

Meter Box Number 4

Meter Box Number

Probe Heater Setting

Filter Heater Setting

Total ml H_2O

grams Silica Gel

$\%O_2$

$\%CO_2$

Nozzle ID

Start Time 10:28 - 10:33 * 10:43

Finish Time

Traverse Point	Sampling Time	Gas Meter Reading	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Impinger Temp.
		Init. 232.136	10:43 *							
		234.944								
1	0	236.430		1.5	1885	~~62~~	~~62~~	15		
2		238.110		.5	1813	60	58	5		
3			.005	.5	1853	62	58	5		
4			.005	.5	1859	66	60	5		
5		239.755	.005	.5	1919	68	61	5		
6		241.460	.01	.5	1931	69	62	5		
7		243.100	.02	.5	1926	70	63	5		
8		244.765	.015	.5	1996	71	64	5		
1		246.500		.5	1730	70	65	5		
2		248.175	.005	.5	1844	70	65	5		
3		249.940		.5	1910	68	65	5		
4		251.630	.005	.5	1890	66	64	5		
5		253.349	.005		1896	64	63			
6			.01		1932					
7			.01		1932					
8			.01		1932					
Average										

EM-39 5/89

SAMPLE RECOVERY DATA

Plant: PINELANDS

Date: 7-22-[illegible]

Sampling Location: [illegible]

Sample Type: M4

Run Number: 1

Sample Box Number: _____

Clean-up Man: _____

Job Number: _____

Comments: _____

_____

FRONT HALF

Filter Number: _____ _____ _____

Description of Filter: _____

MOISTURE

Impingers

Final Volume:	119 ml	100 ml	_____ ml
Initial Volume:	100 ml	100 ml	_____ ml
Net Volume:	_____ ml	_____ ml	_____ ml
Total H_2O:	_____	_____	_____

Silica Gel

Final Volume:	233.2 g	_____ g	_____ g
Initial Volume	224.1 g	_____ g	_____ g
Net Volume	_____ g	_____ g	_____ g
Total Moisture:	_____	_____	_____

Description of Impinger Catch: _____

_____

DRY MOLECULAR WEIGHT DETERMINATION

Plant: PINELANDS Date:

Sampling Time (24-Hour Clock):

Concurrent with Run #: 1

Sampling Location: OUTLET

Sample Type (Bag, Integrated, Continuous):

Analytical Method:

Ambient Temperature: Operator:

Comments:

Gas	Run 1		Run 2		Run 3		Avg. Net Volume	Multiplier	Molecular Weight of Stack Gas (dry basis) M_d, lb/lb-mole
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO_2	4.8		4.4		4.5			44/100	
O_2 (net is actual O_2 reading minus actual O_2 reading)	20.4	15.6	20.2	15.8	20.3	15.8		32/100	
CO (net is actual CO reading minus actual O_2 reading)								28/100	
N_2 (net is 100 minus actual CO reading)								28/100	

Plant PINELANDS

Date 2-28-92

Sample Location FLARE OUTLET

Run Number 2

Operators FL

Ambient Temperature

Barometer

Static Pressure

Pitot Factor

Inches Hg

Leak Rate

Estimates for K-Factor Determination

P_s -

$\%O_2$ -

$\%CO_2$ -

T_s -

T_m -

B_{WS} -

Y_d -

dH@ -

Stack ID

K -

Test Number

Meter Box Number

Meter Box Number

Probe Heater Setting

Filter Heater Setting

Total ml H_2O 260ML +60ML

grams Silica Gel

$\%O_2$

$\%CO_2$

Nozzle ID

Start Time 1:30

Finish Time 7:30

Traverse Point	Sampling Time	Gas Meter Reading Init. 253.419	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
		255.140		.5		60	60	5		
		256.850		.5		64	60	5		
		258.530		.5		70	62	5		
		260.220		.5		72	64	5		
		261.870		.5		74	65	5		
		263.680		.5		77	67	5		
		265.310		.5		80	69	5		
		267.070		.5		80	70	5		
		268.816		.5		75	70	5		
		270.500		.5		71	69	5		
		272.220		.5		68	68	5		
		273.944		.5		66	66	5		
Total										
Average										

RM-39 5/89

SAMPLE RECOVERY DATA

Plant: PINELANDS

Date: 2-28-92

Sampling Location: FLARE OUT

Sample Type: M4

Run Number: OUTLET-2

Sample Box Number:

Clean-up Man:

Job Number:

Comments:

FRONT HALF

Filter Number:

Description of Filter:

MOISTURE

Impingers

Final Volume:	760 ml	ml	ml
Initial Volume:	700 ml	ml	ml
Net Volume:	ml	ml	ml
Total H_2O:	60		

Silica Gel

Final Volume:	2403 g	g	g
Initial Volume	2352.6 g	g	g
Net Volume	g	g	g
Total Moisture:			

Description of Impinger Catch:

VELOCITY 2

PLANT RUGLAND 5 ENGINEER _____ TEST NO. _____

DATE 2-25-92 _____ BARO. PRESS. (P_{bar}) _____ "HG

TEST LOCATION STACK TECHNICIAN _____ WET BULB _____

SKETCH STACK/DUCT DIAMETER _____ IN. DRY BULB _____

PITOT TYPE _____ % H_2O _____

PITOT COEFFICIENT (C_p) = _____ REMARKS:

P_{std} = Standard absolute pressure (29.92 in.Hg)

T_{std} = Standard absolute temperature (528°R) or (460 + 68°F)

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1	.005		1856	.10
2	.006		1874	
3	.01		1894	
4	.015		1920	
5	.03		1995	
6	.03		1998	
7	.03		1994	
8	.03		2031	
9				
10				
11				
12				
	TOTAL			
	AVG.			

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1	.005	1845		
2	.01	1906		
3	.014	1945		
4	.02	1962		
5	.03	1968		
6	.03	2009		
7	.03	2019		
8	.03	2030		
9				
10				
11				
12				
	TOTAL			
	AVG.			

CALCULATED BY _____

DATE _____

FIELD CALCULATIONS

1. T_s (Avg.) = _____ + 460 = _____ °R

2. A_s (Stack/Duct Area) = _____ = _____ sq. ft.

3. P_s (Absolute stack gas pressure) = $P_{Bar} \pm Pg/13.6$ = _____ in. Hg

4. B_{ws} (Water vapor in the gas stream, proportion by volume) = $\frac{\%H_2O}{100}$ = _____ = _____

5. V_s (Avg. stack gas velocity) $= C_p \times K_p \times \left(\frac{T_s}{P_s} \times \frac{\text{Ave. } \Delta P}{M_s}\right)^{\frac{1}{2}}$ = FPM

V_s = ____ x 5129.4 x $\left(\frac{\quad}{\quad} \times \frac{\quad}{\quad}\right)^{\frac{1}{2}}$ = ____ FPM

6. Q_{sd} (Stack Gas Flow Rate) $= \frac{528}{T_s} \times \frac{P_s}{29.92} \times V_s \times A_s \times (1 - B_{ws})$ = DSCFM

$= \frac{528}{\quad} \times \frac{\quad}{29.92} \times \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_ \times (1 - \_\_\_\_)$ = _____ DSCFM

M_d (Molecular Weight of stack gas, dry basis) = 29.0 lb/lb-mole for air or _____ lb/lb-mole by orsat

M_s (Molecular Weight of stack gas, wet basis) = $Md\ (1-B_{ws}) + 18\ (B_{ws})$ = _____ lb/lb mole

K_p (Pitot tube constant) = 5129.4 $\frac{ft}{min} \left[\frac{(lb/lb\text{-}mole)(in.Hg)}{(°R)\ (in.\ H_2O)}\right]^{\frac{1}{2}}$

DRY MOLECULAR WEIGHT DETERMINATION

Plant: PINELANDS Date: 2/28/92

Sampling Time (24-Hour Clock):

Concurrent with Run #: 3

Sampling Location: OUTLET

Sample Type (Bag, Integrated, Continuous):

Analytical Method:

Ambient Temperature: Operator:

Comments:

Gas	Run 1		Run 2		Run 3		Avg. Net Volume	Multiplier	Molecular Weight of Stack Gas (dry basis) M_d, lb/lb-mole
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO_2	7.0	7.0	9.0					44/100	
O_2 (net is actual O_2 reading minus actual O_2 reading)	19.3	10.3	19.4					32/100	
CO (net is actual CO reading minus actual O_2 reading)								28/100	
N_2 (net is 100 minus actual CO reading)								28/100	

Estimates for K-Factor Determination

P_s - _____
$\%O_2$ - _____
$\%CO_2$ - _____
T_s - _____
T_m - _____
B_{WS} - _____
Y_d - _____
dH@ - _____
Stack ID _____
K - _____

Test Number _____
Meter Box Number _____
Meter Box Number _____
Probe Heater Setting _____
Filter Heater Setting _____
Total ml H_2O 253mL + 53mL
grams Silica Gel _____
$\%O_2$ _____
$\%CO_2$ _____
Nozzle ID _____
Start Time 4:16
Finish Time _____

4/28/92 OUTLET
Sample Location ~~INLET~~ M-4
Run Number 3
Operators _____
Ambient Temperature _____
Barometer _____
Static Pressure _____
Pitot Factor _____

Inches Hg .006
Leak Rate 11"

Traverse Point	Sampling Time	Gas Meter Reading Init. ~~430.795~~	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.	
		274.121									
		275.938	.5			50	50	5			
		277.550	.5			54	56	5			
		279.231	.5			56	51	5			101
		280.930	.5			60	52	5			97
		282.595	.5			60	54	5			55
		284.275	.5			62	54	5			253
		285.950	.5			62	56	5			
		287.630	.5			64	56	5			
		289.300	.5			65	57	5			
		290.980	.5			66	58	5			
		292.775	.5			68	58	5			
		294.476	.5			69	59	5			
Total											
Average											

ORM-39 5/89

VELOCITY 2

PLANT FINCLANDS ENGINEER _____ TEST NO. RUN 2

DATE 2-28-72 _____ BARO. PRESS. (P_{bar}) _____ "HG

FLARE TEST LOCATION OUTLET TECHNICIAN _____ WET BULB _____

SKETCH STACK/DUCT DIAMETER _____ IN. DRY BULB _____

PITOT TYPE _____ % H_2O _____

PITOT COEFFICIENT (C_p) = _____ REMARKS:

P_{std} = Standard absolute pressure (29.92 in.Hg)

T_{std} = Standard absolute temperature (528°R) or (460 + 68°F)

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1	.001		1820	
2	.001		1853	
3	.002		1875	
4	.01		1919	
5	.02		1930	
6	.025		1925	
7	.03		1949	
8	.001		1936	
9	.01		1950	
10	.01		2006	
11	.01		1973	
12	.01		2003	
	TOTAL			
	AVG.			

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1	.01		2017	
2	.015		2071	
3	.01		2041	
4				
5				
6				
7				
8				
9				
10				
11				
12				
	TOTAL			
	AVG.			

160 ZMB

CALCULATED BY _____

DATE _____

FIELD CALCULATIONS

1. T_s (Avg.) = _____ + 460 = _____ °R

2. A_s (Stack/Duct Area) = _____ = _____ sq. ft.

3. P_s (Absolute stack gas pressure) = $P_{Bar} \pm Pg/13.6$ = _____ in. Hg

4. B_{ws} (Water vapor in the gas stream, proportion by volume) = $\frac{\%H_2O}{100}$ = _____ = _____

5. V_s (Avg. stack gas velocity) = $C_p \times K_p \times \left(\frac{T_s}{P_s} \times \frac{\text{Avg. } \Delta P}{M_s}\right)^{1/2}$ = FPM

V_s = ____ x 5129.4 x (____ x ____)$^{1/2}$ = ____ FPM

6. Q_{sd} (Stack Gas Flow Rate) = $\frac{528}{T_s} \times \frac{P_s}{29.92} \times V_s \times A_s \times (1 - B_{ws})$ = DSCFM

= $\frac{528}{\quad} \times \frac{\quad}{29.92} \times \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_ \times (1 - \_\_\_\_)$ = _____ DSCFM

M_d (Molecular Weight of stack gas, dry basis) = 29.0 lb/lb-mole for air or _____ lb/lb-mole by orsat

M_s (Molecular Weight of stack gas, wet basis) = $M_d (1-B_{ws}) + 18 (B_{ws})$ = _____ lb/lb mole

K_p (Pitot tube constant) = 5129.4 $\frac{ft}{min} \left[\frac{(lb/lb\text{-}mole)(in.Hg)}{(°R)(in.\ H_2O)}\right]^{1/2}$

VELOCITY 4

PLANT Pinelands — ENGINEER _____ — TEST NO. _____

DATE 2-28-97 — _____ — BARO. PRESS. (P_{bar}) _____ "HG

TEST LOCATION STACK — TECHNICIAN _____ — WET BULB _____

SKETCH — STACK/DUCT DIAMETER _____ IN. — DRY BULB _____

Run 3 — PITOT TYPE _____ — % H_2O _____

PITOT COEFFICIENT (C_p) = _____ — REMARKS:

P_{std} = Standard absolute pressure (29.92 in.Hg)

T_{std} = Standard absolute temperature (528°R) or (460 + 68°F)

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	P_g Stack Static Pressure in. H_2O
1	.002		1856	
2	.01		1863	
3	.01		1883	
4	.02		1924	
5	.03		1977	
6	.03		1974	
7	.03		1987	
8	.03		2003	
9				
10				
11				
12				
	TOTAL			
	AVG.			

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	P_g Stack Static Pressure in. H_2O
1	.002		1762	
2	.005		1870	
3	.01		1919	
4	.02		1950	
5	.02		1952	
6	.025		1970	
7	.03		1992	
8	.03		2003	
9				
10				
11				
12				
	TOTAL			
	AVG.			

998MB

CALCULATED BY _____

DATE _____

FIELD CALCULATIONS

1. T_s (Avg.) = _____ + 460 = _____ °R

2. A_s (Stack/Duct Area) = _____ = _____ sq. ft.

3. P_s (Absolute stack gas pressure) = $P_{Bar} \pm P_g/13.6$ = _____ in. Hg

4. B_{ws} (Water vapor in the gas stream, proportion by volume) = $\frac{\%H_2O}{100}$ = _____ = _____

5. V_s (Avg. stack gas velocity) $= C_p \times K_p \times \left(\frac{T_s}{P_s} \times \frac{\text{Ave. } \Delta P}{M_s}\right)^{1/2}$ = FPM

V_s = ____ x 5129.4 x (____ x ____)$^{1/2}$ = ____ FPM

6. Q_{sd} (Stack Gas Flow Rate) $= \frac{528}{T_s} \times \frac{P_s}{29.92} \times V_s \times A_s \times (1 - B_{ws})$ = DSCFM

= $\frac{528}{\quad} \times \frac{\quad}{29.92} \times \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_ \times (1 - \_\_\_\_)$ = _____ DSCFM

M_d (Molecular Weight of stack gas, dry basis) = 29.0 lb/lb-mole for air or _____ lb/lb-mole by orsat

M_s (Molecular Weight of stack gas, wet basis) = $M_d (1-B_{ws}) + 18 (B_{ws})$ = _____ lb/lb mole

K_p (Pitot tube constant) = 5129.4 $\frac{ft}{min} \left[\frac{(lb/lb\text{-}mole)(in.Hg)}{(°R)\ (in.\ H_2O)}\right]^{1/2}$

SAMPLE RECOVERY DATA

Plant: PINELANDS

Date: 2-28-92

Sampling Location: FLARE OUT

Sample Type: M4

Run Number: 3

Sample Box Number:

Clean-up Man:

Job Number:

Comments:

FRONT HALF

Filter Number:

Description of Filter:

MOISTURE

Impingers

Final Volume:	253 ml	ml	ml
Initial Volume:	200 ml	ml	ml
Net Volume:	ml	ml	ml
Total H_2O:	53		

Silica Gel

Final Volume:	242.6 g	g	g
Initial Volume	234.8 g	g	g
Net Volume	g	g	g
Total Moisture:			

Description of Impinger Catch:

VELOCITY

Project Number _____

Plant PINELANDS

Date 2-28-92

Sample Location FLARE IN

Run Number 1 M1-M4

Operators _____

Ambient Temperature _____

Barometer 1007mb x 0.02953

Static Pressure _____

Pitot Factor _____

10:15

Meter Box Number _____

Meter Box Number _____

Probe Heater Setting _____

Filter Heater Setting _____

Total ml H_2O _____

grams Silica Gel _____

% O_2 _____

% CO_2 _____

Nozzle ID _____

Start Time 10:15

Finish Time _____

Estimates for K-Factor Determination

P_s - _____

$\%O_2$ - _____

$\%CO_2$ - _____

T_s - _____

T_m - _____

B_{WS} - _____

Y_d - _____

dH@ - _____

Stack ID _____

K - _____

_____

Orsat _____

Wet Test _____

Leak Rate _____

Traverse Point	Sampling Time	Gas Meter Reading Init. 657.197	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
	00	660.590	.27	1.3	58C°	64	64	9		
	05	663.950	.52	1.3	58C	66	64	9		
		667.350	.47	1.3	58C	69	65	8		
		670.681	.36	1.3	58C	75	65	8		
		674.055	.35	1.3	58C	80	66	8		
		677.443	.33	1.3	58C	82	67	8		
		680.800	.21	1.3	58C	84	68	8		
		684.160	.26	1.3	58C	87	70	8		
		687.565	.32	1.3	58C	90	71	8		
		690.960	.34	1.3	58C	91	71	8		
		694.370	.35	1.3	58C	92	72	8		
		697.773	.32	1.3	58C	93	73	8		
Total										
Average										

DRY MOLECULAR WEIGHT DETERMINATION

Plant: PINELANDS FLARE

Date: 3/1/90

Sampling Time (24-Hour Clock):

Concurrent with Run #: 1

Sampling Location: INLET

Sample Type (Bag, Integrated, Continuous):

Analytical Method:

Ambient Temperature:

Operator:

Comments:

Gas	Run 1		Run 2		Run 3		Avg. Net Volume	Multiplier	Molecular Weight of Stack Gas (dry basis) M_d, lb/lb-mole
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO_2	35.4		36.2		36.0			44/100	
O_2 (net is actual O_2 reading minus actual O_2 reading)	37.4	2.0	38.0	1.8	38.0	2.0		32/100	
CO (net is actual CO reading minus actual O_2 reading)								28/100	
N_2 (net is 100 minus actual CO reading)								28/100	

SAMPLE RECOVERY DATA

Plant: PINELAND

Date: 2-28-07

Sampling Location: NLT EPA

Sample Type:

Run Number:

Sample Box Number:

Clean-up Man:

Job Number:

Comments:

FRONT HALF

Filter Number:

Description of Filter:

MOISTURE

Impingers			
Final Volume:	100 ml	100 ml	ml
Initial Volume:	100 ml	100 ml	NOT ml
Net Volume:	ml	ml	ml
Total H_2O:			

Silica Gel			
Final Volume:	253.6 g	g	g
Initial Volume	2383 g	g	g
Net Volume	g	g	g
Total Moisture:			

Description of Impinger Catch:

Estimates for K-Factor Determination

P_s = _____
$\%O_2$ = _____
$\%CO_2$ = _____
T_s = _____
T_m = _____
B_{WS} = _____
Y_d = _____
dH@ = _____
Stack ID _____
K = _____

* NOTE SEEING YELLOW IN INPINGERS SULFIDE ODOR APPARENT

Test Number _____
Meter Box Number _____
Meter Box Number _____
Probe Heater Setting _____
Filter Heater Setting _____
Total ml H_2O 194 - 6 ML
grams Silica Gel _____
$\%O_2$ _____
$\%CO_2$ _____
Nozzle ID _____
Start Time 1:32
Finish Time 2:32

GWDS
2-28-92
Sample Location INLET FLARE
Run Number 2
Operators _____
Ambient Temperature _____
Barometer _____
Static Pressure _____
Pitot Factor _____
inches Hg _____
Leak Rate _____

Traverse Point	Sampling Time	Gas Meter Reading Init. 697.876	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
		701.380		1.3	58C	64	64	8		
		704.440		1.3	58C	68	65	8		
		708.050		1.3	58C	75	66	8		
		711.500		1.3	58C	79	67	8		
		714.800		1.3	57C	83	69	8		
		718.200		1.3	57C	86	71	8		
		721.710		1.3	57C	88	72	8		
		725.130		1.3	57C	89	72	8		
		728.601		1.3	57C	87	71	8		
		732.010		1.3	57C	85	70	8		
		735.454		1.3	57C	82	68	8		
		738.892		1.3	57C	80	66	8		
Total										
Average										

RM-39 5/89

PLANT PINELAND ENGINEER _____ TEST NO. VELOCITY 2

DATE 2-28-92 _____ BARO. PRESS. (P_{bar}) 29.82 "Hg

TEST LOCATION FLARE IN TECHNICIAN _____ WET BULB _____

SKETCH STACK/DUCT DIAMETER _____ IN. DRY BULB _____

PITOT TYPE _____ % H_2O _____

PITOT COEFFICIENT (C_p) = _____ REMARKS:

P_{std} = Standard absolute pressure (29.92 in.Hg)

T_{std} = Standard absolute temperature (528°R) or (460 + 68°F)

1.5 FS

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O		Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1	.33		57C	1.5	1				
2	.36				2				
3	.40				3				
4	.62				4				
5	.63				5				
6	.44				6				
7	.30				7				
8	.35				8				
9	.35				9				
10	.39				10				
11	.35				11				
12	.31		✓		12				
	TOTAL					TOTAL			
	AVG.					AVG.			

CALCULATED BY _____

FIELD CALCULATIONS DATE _____

1. T_s (Avg.) = _____ + 460 = _____ °R

2. A_s (Stack/Duct Area) = _____ = _____ sq. ft.

3. P_s (Absolute stack gas pressure) = $P_{Bar} \pm Pg/13.6$ = _____ in. Hg

4. B_{ws} (Water vapor in the gas stream, proportion by volume) = $\frac{\%H_2O}{100}$ = _____ = _____

5. V_s (Avg. stack gas velocity) $= C_p \times K_p \times \left(\frac{T_s}{P_s} \times \frac{\text{Ave. } \Delta P}{M_s}\right)^{\frac{1}{2}}$ = FPM

V_s = ____ x 5129.4 x $\left(\frac{\quad}{\quad} \times \frac{\quad}{\quad}\right)^{\frac{1}{2}}$ = _____ FPM

6. Q_{sd} (Stack Gas Flow Rate) $= \frac{528}{T_s} \times \frac{P_s}{29.92} \times V_s \times A_s \times (1 - B_{ws})$ = DSCFM

$= \frac{528}{\quad} \times \frac{}{29.92} \times \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_ \times (1 - \_\_\_\_)$ = _____ DSCFM

M_d (Molecular Weight of stack gas, dry basis) = 29.0 lb/lb-mole for air or _____ lb/lb-mole by orsat

M_s (Molecular Weight of stack gas, wet basis) = $M_d (1-B_{ws}) + 18 (B_{ws})$ = _____ lb/lb mole

K_p (Pitot tube constant) = 5129.4 $\frac{ft}{min} \left[\frac{(lb/lb\text{-}mole)(in.Hg)}{(°R)(in.\ H_2O)}\right]^{\frac{1}{2}}$

SAMPLE RECOVERY DATA

Plant: PINELANDS

Date: 2-28-92

Sampling Location: FLARE INLET

Sample Type:

Run Number: M4 - 2

Sample Box Number:

Clean-up Man:

Job Number:

Comments:

FRONT HALF

Filter Number:

Description of Filter:

MOISTURE

Impingers

Final Volume:	200 ml	ml	ml
Initial Volume:	200 ml	ml	ml
Net Volume:	ml	ml	ml
Total H_2O:			

Silica Gel

Final Volume:	250.7 g	g	g
Initial Volume	235.2 g	g	g
Net Volume	g	g	g
Total Moisture:			

Description of Impinger Catch:

DRY MOLECULAR WEIGHT DETERMINATION

Plant: PINELANDS FLARE Date: _____

Sampling Time (24-Hour Clock): _____

Concurrent with Run #: 2

Sampling Location: INLET

Sample Type (Bag, Integrated, Continuous): _____

Analytical Method: _____

Ambient Temperature: _____ Operator: _____

Comments: _____

Gas	Run 1		Run 2		Run 3		Avg. Net Volume	Multiplier	Molecular Weight of Stack Gas (dry basis) M_d, lb/lb-mole
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO_2	34.2		34.2					44/100	
O_2 (net is actual O_2 reading minus actual O_2 reading)	37.5		37.4					32/100	
CO (net is actual CO reading minus actual O_2 reading)								28/100	
N_2 (net is 100 minus actual CO reading)								28/100	

Project Number

Plant Pingland

Date 2-28-92

Sample Location ~~OUTLET~~ INLET

Run Number 3 - M4

Operators

Ambient Temperature

Barometer

Static Pressure

Pitot Factor

Estimates for K-Factor Determination

P_s =

$\%O_2$ =

$\%CO_2$ =

T_s =

T_m =

B_{WS} =

Y_d =

dHG =

Stack ID

K =

1

Test Number

Meter Box Number

Meter Box Number

Probe Heater Setting

Filter Heater Setting

Total ml H_2O 201 + 1 ML

grams Silica Gel

$\%\ O_2$

$\%\ CO_2$

Nozzle ID

Start Time 4:18

Finish Time

Inches Hg .006

Leak Rate 11"

Traverse Point	Sampling Time	Gas Meter Reading Init. 738.975	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
		742.395	1.3							
		745.700	1.3			50	50	9		
		749.000	1.3			53	49	9		
		752.300	1.3			63	50	9		
		755.598	1.3			68	50	9		
		758.910	1.3			71	51	9		
		762.240	1.3			74	53	9		
		765.550	1.3			77	57	9		
		768.900	1.3			78	60	9		
		772.270	1.3			80	60	9		
		775.621	1.3			82	61	9		
		779.986	1.3			84	63	9		
						86	64	9		
Total										
Average										

RM-39 5/89

VELOCITY 3

PLANT Pinelands ENGINEER _____ TEST NO. _____

DATE 2-28-92 _____ BARO.PRESS. (P_{bar}) _____ "HG

TEST LOCATION INLET TECHNICIAN _____ WET BULB _____

SKETCH STACK/DUCT DIAMETER _____ IN. DRY BULB _____

RUN 3 PITOT TYPE _____ % H_2O _____

PITOT COEFFICIENT (C_p) = _____ REMARKS:

P_{std} = Standard absolute pressure (29.92 in.Hg)

T_{std} = Standard absolute temperature (528°R) or (460 + 68°F)

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1	.32		57C	1.3
2	.35			
3	.38			
4	.38			
5	.38			
6	.35			
7	.29			
8	.34			
9	.37			
10	.38			
11	.31			
12	.37			
	TOTAL			
	AVG.			

	Sampling Point	ΔP in. H_2O	T_s Stack Temp. °F	Pg Stack Static Pressure in. H_2O
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
	TOTAL			
	AVG.			

CALCULATED BY _____

DATE _____

FIELD CALCULATIONS

1. T_s (Avg.) = _____ + 460 = _____ °R

2. A_s (Stack/Duct Area) = _____ = _____ sq. ft.

3. P_s (Absolute stack gas pressure) = $P_{Bar} \pm Pg/13.6$ = _____ in. Hg

4. B_{ws} (Water vapor in the gas stream, proportion by volume) = $\frac{\%H_2O}{100}$ = _____ = _____

5. V_s (Avg. stack gas velocity) $C_p \times K_p \times \left(\frac{T_s}{P_s} \times \frac{\text{Avg. } \Delta P}{M_s}\right)^{\frac{1}{2}}$ = FPM

V_s = ____ x 5129.4 x $\left(\frac{\quad}{\quad} \times \frac{\quad}{\quad}\right)^{\frac{1}{2}}$ = _____ FPM

6. Q_{sd} (Stack Gas Flow Rate) = $\frac{528}{T_s} \times \frac{P_s}{29.92} \times V_s \times A_s \times (1 - B_{ws})$ = DSCFM

= $\frac{528}{\quad} \times \frac{\quad}{29.92} \times \_\_\_\_ \times \_\_\_\_ \times \_\_\_\_ \times (1 - \_\_\_\_)$ = _____ DSCFM

M_d (Molecular Weight of stack gas, dry basis) = 29.0 lb/lb-mole for air or _____ lb/lb-mole by orsat

M_s (Molecular Weight of stack gas, wet basis) = $Md(1-B_{ws}) + 18(B_{ws})$ = _____ lb/lb mole

K_p (Pitot tube constant) = 5129.4 $\frac{\text{ft}}{\text{min}} \left[\frac{(\text{lb/lb-mole})(\text{in.Hg})}{(°R)(\text{in. } H_2O)}\right]^{\frac{1}{2}}$

SAMPLE RECOVERY DATA

Plant: PINELANDS

Date: 2-28-92

Sampling Location: FLARE INLET

Sample Type: ML

Run Number: 3

Sample Box Number:

Clean-up Man:

Job Number:

Comments:

FRONT HALF

Filter Number:

Description of Filter:

MOISTURE

Impingers

Final Volume:	701 ml	ml	ml
Initial Volume:	700 ml	ml	ml
Net Volume:	ml	ml	ml
Total H_2O:	1		

Silica Gel

Final Volume:	254.0 g	g	g
Initial Volume	240.9 g	g	g
Net Volume	g	g	g
Total Moisture:			

Description of Impinger Catch:

DRY MOLECULAR WEIGHT DETERMINATION

Plant: PINELANDS FLARE Date: _____

Sampling Time (24-Hour Clock): _____

Concurrent with Run #: 3

Sampling Location: INLET

Sample Type (Bag, Integrated, Continuous): _____

Analytical Method: _____

Ambient Temperature: _____ Operator: _____

Comments: _____

Gas	Run 1		Run 2		Run 3		Avg. Net Volume	Multiplier	Molecular Weight of Stack Gas (dry basis) M_d, lb/lb-mole
	Actual Reading	Net	Actual Reading	Net	Actual Reading	Net			
CO_2	34.7	34.7	34.4	34.4	34.3	34.3		44/100	
O_2 (net is actual O_2 reading minus actual O_2 reading)	37.8	3.1	37.5	3.1	37.5	3.2		32/100	
CO (net is actual CO reading minus actual O_2 reading)								28/100	
N_2 (net is 100 minus actual CO reading)								28/100	

Project Number

Plant PINELANDS

Date 2-28-92

Sample Location FLARE IN

Run Number NMHC -1

Operators TB

Ambient Temperature

Barometer 1007 mb * .02953

Static Pressure

Pitot Factor

Inches Hg

Leak Rate 0

Estimates for K-Factor Determination

P_s -

$\%O_2$ -

$\%CO_2$ -

T_s -

T_m -

B_{WS} -

Y_d -

dH@ -

Stack ID

K -

VOST Pump

Test Number

~~Meter Box Number~~ 1

Meter Box Number

Probe Heater Setting

Filter Heater Setting

Total ml H_2O

grams Silica Gel

$\%O_2$

$\%CO_2$

Nozzle ID

Start Time 1020

Finish Time

Traverse Point	Sampling Time	Gas Meter Reading Init. ~~47.60~~ 52.400	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
	5	56.41		1.2		15		0		
	13	61.75		1.2		16		0		
	15			1.2		17		0		
	20	66.10		1.2		18		0		
	26.5	69.25		1.2		18		0		
	30	71.77		1.2		18		0		
	35	74.35		1.2		19		0		
	40.5	77.47		1.2		20		0		
	46	81.02		1.2		20		0		
	51	84.09		1.2		21		0		
	56	86.90		1.2		21		0		
	60	89.592		1.2		21		0		
		37.192 * (293/290) * (765.1/760) = 37.839 liters								
		37.8 liters								

.39 5/89

Project Number _____

Plant PINELANDS

Date 2-28-92

Sample Location FLARE IN

Run Number NMHC-2

Operators TB

Ambient Temperature _____

Barometer 998 mb

Static Pressure _____

Pitot Factor _____

Estimates for K-Factor Determination

P_s - _____

$\%O_2$ - _____

$\%CO_2$ - _____

T_s - _____

T_m - _____

B_{WS} - _____

Y_d - _____

dH@ - _____

Stack ID 9.75"

K - _____

Inches Hg _____

Leak Rate 0

Pump

Test Number _____

~~Meter Box~~ Number 1

Meter Box Number _____

Probe Heater Setting _____

Filter Heater Setting _____

Total ml H_2O _____

grams Silica Gel _____

% O_2 _____

% CO_2 _____

Nozzle ID _____

Start Time 13:29

Finish Time 14:29

Traverse Point	Sampling Time	Gas Meter Reading Init. _____	Vel. Press. dP	Orif. Press. dH ROTA SET	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.	
	13:34			40							
				40							
				40							
				40							
				40							
				40							
				40							
				40							
				40							
				40							
				40							
				40							
	14:29			40							
				60 * .436 = 26.2 liters							
Total				~~26.2 liters~~							
Average		26.2 liters									

FORM-39 5/89

Project Number _____

Plant PINELANDS

Date 2-28-92

Sample Location INLET

Run Number NMHC-3

Operators TB

Ambient Temperature _____

Barometer 998 mb

Static Pressure _____

Pitot Factor _____

Estimates for K-Factor Determination

P_g - _____

$\%O_2$ - _____

$\%CO_2$ - _____

T_s - _____

T_m - _____

B_{WS} - _____

Y_d - _____

dH@ - _____

Stack ID 9.75"

K - _____

Pump

Test Number _____

Meter Box Number 1

Meter Box Number _____

Probe Heater Setting _____

Filter Heater Setting _____

Total ml H_2O _____

grams Silica Gel _____

$\%O_2$ _____

$\%CO_2$ _____

Nozzle ID _____

Start Time 16:20

Finish Time 17:20

Inches Hg _____

Leak Rate _____

Traverse Point	Sampling Time	Gas Meter Reading Init. _____	Vol. Press. dP	Orif. Press. dH ROTA SET	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
	16:25			60						
				60						
				60						
				60						
				60						
				60						
				60						
				60						
				60						
				60						
				60						
	17:20			60						
				60 * .681	= 40.9 liters					
Total										
Average		40.9 liters								

FORM-39 5/89

Plant PINELANDS

Date 2-28-92

Sample Location FLARE OUT

Run Number NMHC -1

Operators TB

Ambient Temperature

Barometer 1007 mb

Static Pressure

Pitot Factor

Inches Hg

Leak Rate 0

Estimates for K-Factor Determination

P_s =

$\%O_2$ =

$\%CO_2$ =

T_s =

T_m =

B_{WS} =

Y_d =

dH@ =

Stack ID

K =

Test Number

Meter Box Number

Meter Box Number

Probe Heater Setting

Filter Heater Setting

Total ml H_2O

grams Silica Gel

% O_2

% CO_2

Nozzle ID

Start Time 1020

Finish Time

Traverse Point	Sampling Time	Gas Meter Reading Init. ~~31.460~~	Vel. Press. dP	Orif. Press. dH	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
		32.00								
	5.5	34.51		1.2			15			
	11.5	37.09		1.3			16			
	15.5	39.81		1.4			17			
		40.12	STOP	SUBTRACT	THIS VOL					
	25	41.49	RESTART							
	33	45.01		1.2			19			
	39	47.60		1.4			19			
	45	50.80		1.4			19			
	51	53.37		1.4			20			
	59	58.39		1.4			20			
	65	59.721		1.4			20			
		27.721 * (293/296) *		(705.3/760)		=	28.293 liters			
Total										
Average										

25

ORM-39 5/89

Plant PINELANDS ~~OCPS~~

Date 2-28-92

Sample Location OUTLET

Run Number NMHC-2

Operators

Ambient Temperature

Barometer

Static Pressure

Pitot Factor

Inches Hg

Leak Rate

Estimates for K-Factor Determination

P_s -

$\%O_2$ -

$\%CO_2$ -

T_s -

T_m -

B_{WS} -

Y_d -

dH@ -

Stack ID

K -

Test Number 1

Pump

Meter Box Number #2

Meter Box Number

Probe Heater Setting

Filter Heater Setting

Total ml H_2O

grams Silica Gel

$\%O_2$

$\%CO_2$

Nozzle ID

Start Time 13:24

Finish Time

Traverse Point	Sampling Time	Gas Meter Reading Init.	Vel. Press. dP	~~Orifice Pressure~~ dH Rota. SET ss	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
	5			10						
	10			10						
	13:45			10						
	13:51			10						
	13:58			10						
	14:03			10						
	14:08			10						
	14:13			10						
	14:18			10						
	14:23			10						
	14:29			10						
				.395 x 60.	= 23.7 liters					
Total										
Average		23.7 liters								

ORM-39 5/89

Project Number _____

Plant PINELANDS

Date 2-28-92

Sample Location OUTLET

Run Number NMHC-#3

Operators TB

Ambient Temperature _____

Barometer 998 mb

Static Pressure _____

Pitot Factor _____

Inches Hg _____

Leak Rate 0

Estimates for K-Factor Determination

P_s - _____

$\%O_2$ - _____

$\%CO_2$ - _____

T_s - _____

T_m - _____

B_{WS} - _____

Y_d - _____

dH@ - _____

Stack ID _____

K - _____

Test Number _____

Meter Box Number _____

Meter Box Number _____

Probe Heater Setting _____

Filter Heater Setting _____

Total ml H_2O _____

grams Silica Gel _____

$\%O_2$ _____

$\%CO_2$ _____

Nozzle ID _____

Start Time 16:20

Finish Time _____

Traverse Point	Sampling Time	Gas Meter Reading Init. _____	Vel. Press. dP	Orif. Press. dH Rota	Orif. Press. dH Set	Stack Temp. T_s	Meter Temp. T_m In	Meter Temp. T_m Out	Pump Vacuum	Impinger Temp.	Temp.
	1625				10						
	1630				10						
	1635				10						
	1640				10						
	1645				10						
	1650				10						
	1655				10						
	1700				10						
	1705				10						
	1710				10						
	1715				10						
	1720				10						
				.395 × 60		= 23.7 liters					
Total											
Average		23.7 liters									

FORM-39 5/89

APPENDIX B

LABORATORY CALIBRATION DATA

Inlet bags by TCD for Methane only

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Inlet Samples

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 26.45 % Std GC Run # 10

Compound	rt	area	RF
Methane	4.45	865177	32710

Sample: 26.45 % Std GC Run # 11

Compound	rt	area	RF
Methane	4.45	858677	32464

Sample: 49.24 % Std GC Run # 7

Compound	rt	area	RF
Methane	4.29	1571293	31911

Sample: 49.24 % Std GC Run # 9

Compound	rt	area	RF
Methane	4.28	1585232	32194

Sample: 66.88 % Std GC Run # 12

Compound	rt	area	RF
Methane	4.19	2186384	32691

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Inlet Samples

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

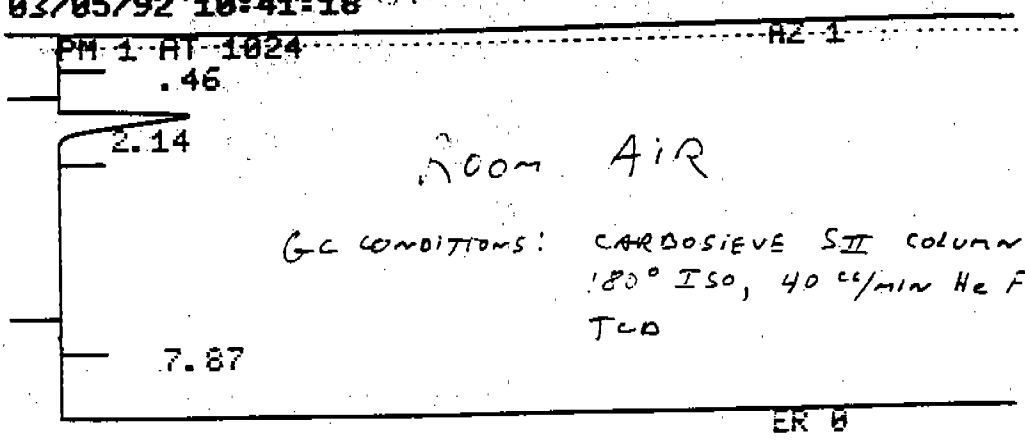
Sample: 66.88 % Std GC Run # 13

Compound	rt	area	RF
Methane	4.19	2157867	32265

AVG RF

Compound	RF
Methane	32372

CHANNEL A INJECT 03/05/92 10:41:18



Room Air

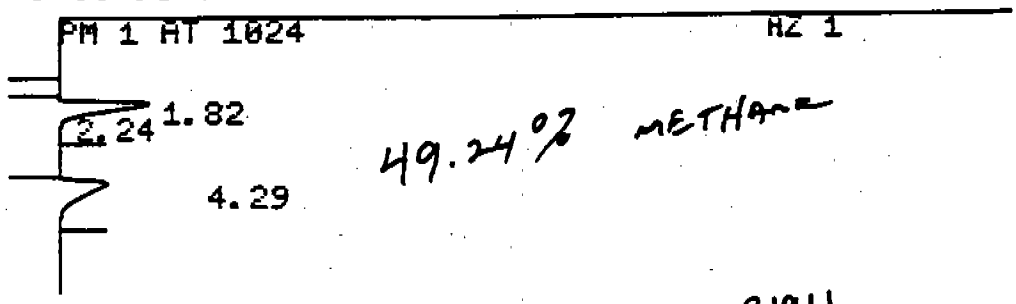
GC conditions: CARBOSIEVE SII column 180° ISO, 40 cc/min He FLO TCD

PINELANDS 1498 03/05/92 10:41:18 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 5 INDEX 5

PEAK#	AREA%	RT	AREA BC
1	0.112	0.46	4431 01
2	99.782	2.14	3943566 01
3	0.106	7.87	4197 01
TOTAL	100.		3952194

CHANNEL A INJECT 03/06/92 09:53:03



49.24% METHANE

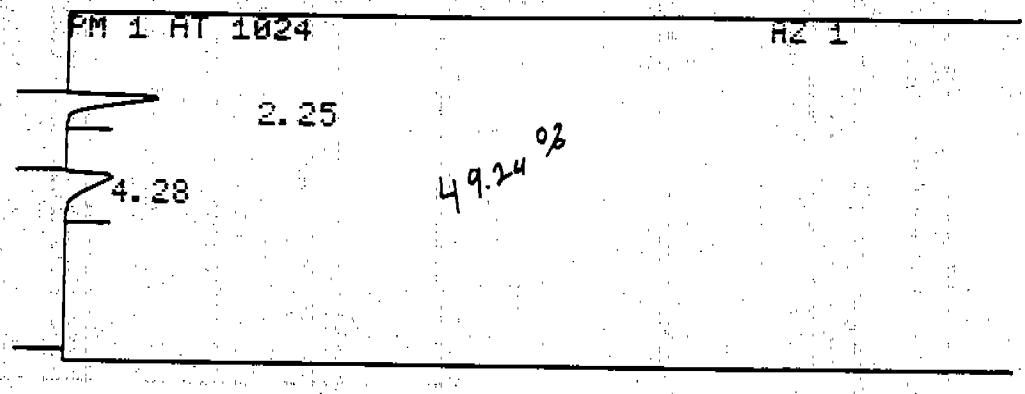
RF = 31911

PINELANDS 1498 03/06/92 09:53:03 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 7 INDEX 7

PEAK#	AREA%	RT	AREA BC
1	0.03	1.82	1103 02
2	56.772	2.24	2065078 03
3	43.197	4.29	1571293 01
TOTAL	100.		3637474

CHANNEL A INJECT 03/06/92 10:54:06



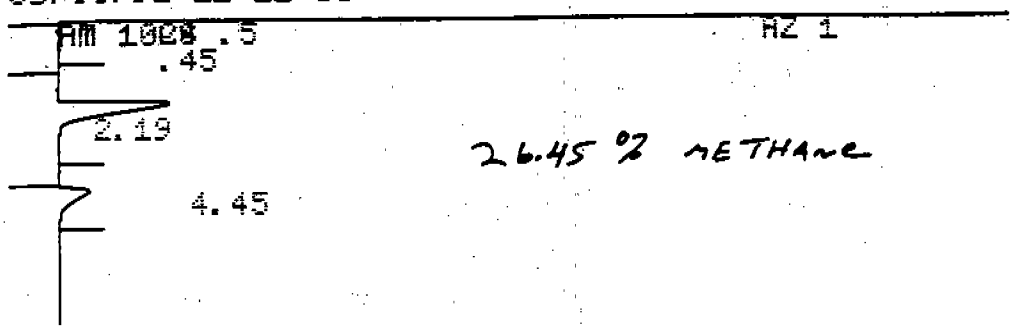
PINELANDS 1498 03/06/92 10:54:06 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 9 INDEX 9

PEAK#	AREA%	RT	AREA BC
1	56.488	2.25	2057938 01
2	43.512	4.28	1585232 01
TOTAL	100.		3643170

RF = 32194

HANNEL A INJECT 03/06/92 11:12:58



26.45 % METHANE

INELANDS 1498 03/06/92 11:12:58 CH= "A" PS= 1.

ILE 1. METHOD 5. RUN 10 INDEX 1 CALIB

NALYST: JLS

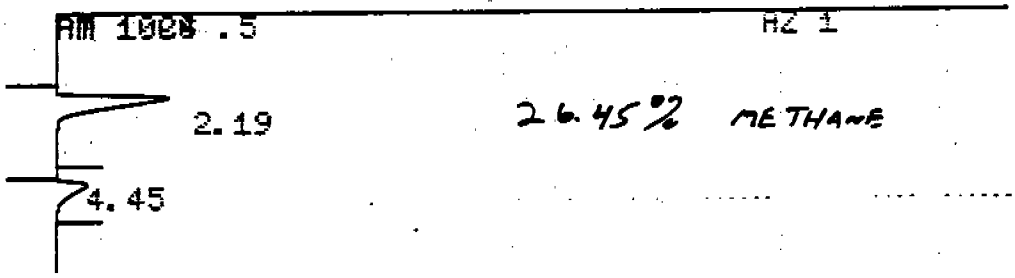
AME	%	RT	AREA	BC	RF
1	0.	0.45	12662	01	
2	0.	2.19	2988269	01	
ETHANE	~~26.00~~ 26.45	4.45	865177	01	~~33173.965~~ 32710
OTALS	26.08		3866108		

EW FILE:

AME	RF	RT
ETHANE	33173.965	4.37

A= 1

HANNEL A INJECT 03/06/92 11:25:06



26.45% METHANE

NELANDS 1498 03/06/92 11:25:06 CH= "A" PS= 1.

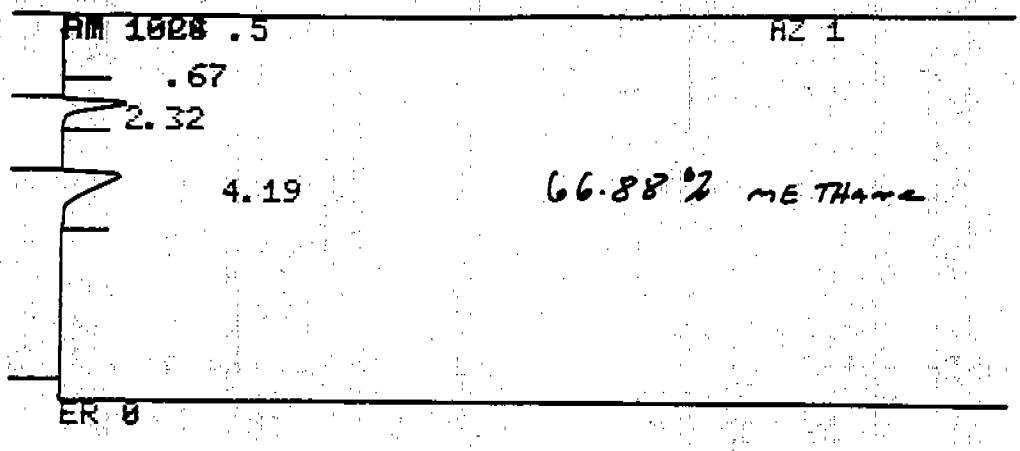
LE 1. METHOD 5. RUN 11 INDEX 1 CALIB

ALYST: JLS

ME	%	RT	AREA	BC	RF
1	0.	2.19	2969278	01	
THANE	~~26.08~~	4.45	858677	01	~~32924.732~~

CA= 1
CC(1)=69.76

CHANNEL A INJECT 03/06/92 11:34:35



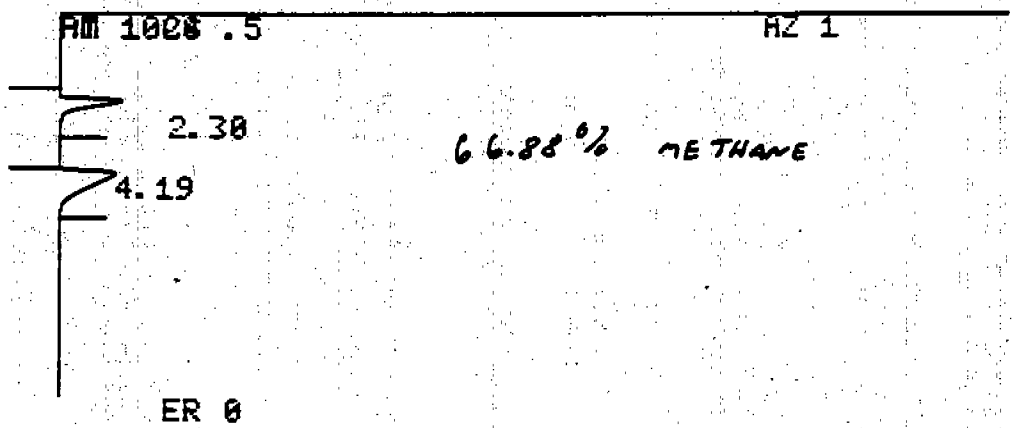
PINELANDS 1498 03/06/92 11:34:35 CH= "A" PS= 1.

FILE 1. METHOD 5. RUN 12 INDEX 1 CALIB

ANALYST: JLS

NAME	%	RT	AREA	BC	RF
1	0.	0.67	11484	01	
2	0.	2.32	1186526	01	
METHANE	~~69.76~~ 66.88	4.19	2186384	01	~~21341.514~~ 32691
TOTALS	69.76		3384394		

HANNEL A INJECT 03/06/92 11:52:20



INELANDS 1498 03/06/92 11:52:20 CH= "A" PS= 1.

ILE 1. METHOD 5. RUN 13 INDEX 1

NALYST: JLS

AME	%	RT	AREA	BC	RF
1	0.	2.3	1187667	01	
ETHANE	~~68.85~~	4.19	2157867	01	~~21341.514~~

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Inlet ~~TPH~~ NMOC Samples (BAGS)

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 95.4 ppm Std GC Run # 149807

Compound	rt	area	RF
Methane	0.57	459502	4817

Sample: 95.4 ppm Std GC Run # 149815

Compound	rt	area	RF
Methane	0.58	465333	4878

Sample: 952 ppm Std GC Run # 149816

Compound	rt	area	RF
Methane	0.58	4533076	4762

Sample: 952 ppm Std GC Run # 149817

Compound	rt	area	RF
Methane	0.57	4570109	4801

Sample: 2950 ppm Std GC Run # 149818

Compound	rt	area	RF
Methane	0.57	13976888	4738

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Inlet TPH Samples

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 2950 ppm Std GC Run # 149819

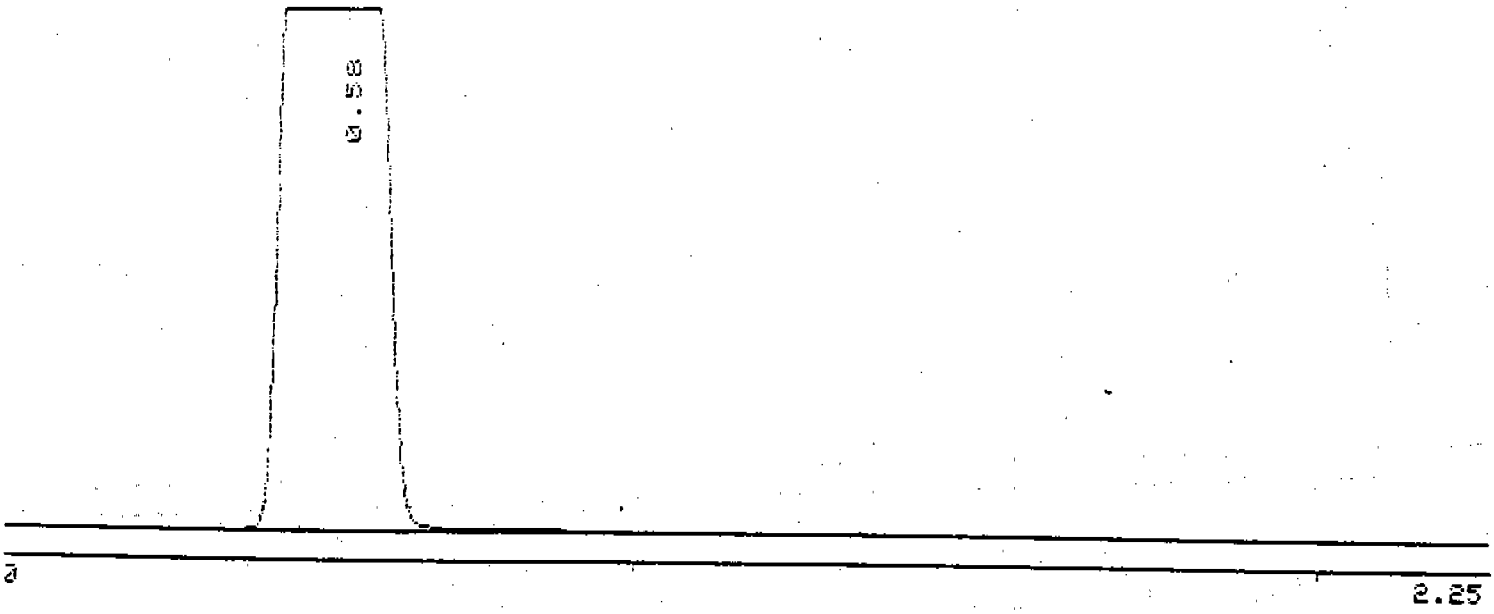
Compound	rt	area	RF
Methane	0.58	13989196	4742

AVG RF

Compound	RF
Methane	4789

.4 PPM METHANE STD Inlet NMOC Sample (bag)

JECTED AT 02/29/92 17:42:06 FILENAME: PINELANDS 1 FROM /10.A/
E FILE: 149815.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



< FILE: 149815.RAW FROM /10.A/ INJECTED AT: 02/29/92 17:42:06

E 1 METHOD 0 RUN 9 INDEX 9 CH= PS= 1

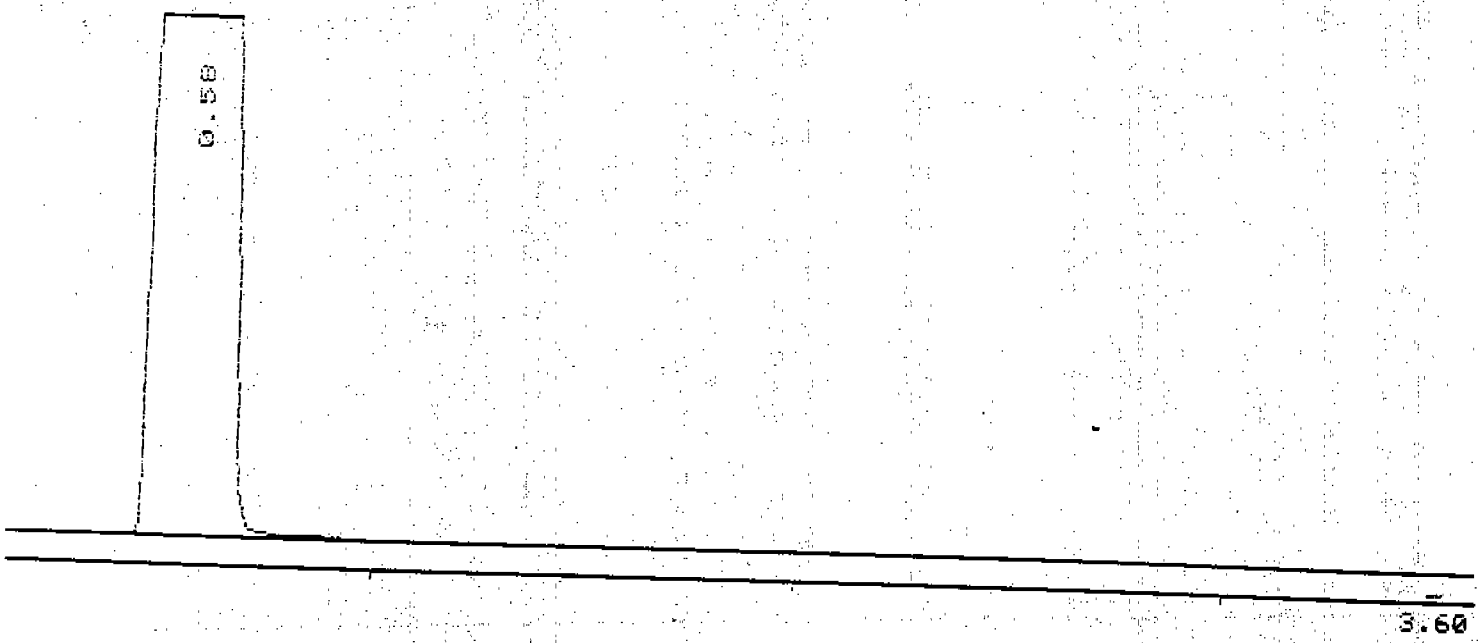
<#	AREA%	RT	AREA BC
	100.	0.58	465333 01
AL	100.		465333

Rf = 4877

. PPM METHANE STD

EITED AT 02/29/92 17:47:58
FILE: 149816.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 5
ATTENUATION = 16.0



FILE: 149816.RAW FROM /10.A/ INJECTED AT: 02/29/92 17:47:58

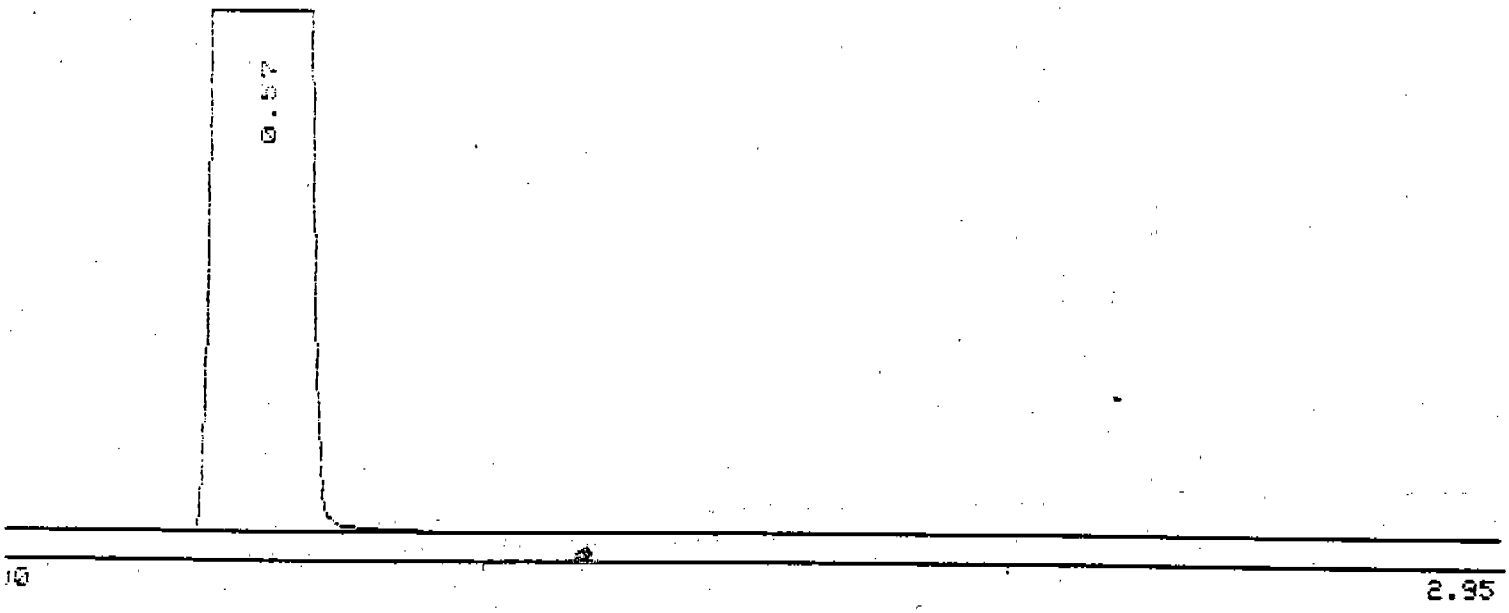
1 METHOD 0 RUN 10 INDEX 10 CH= PS= 1

#	AREA%	RT	AREA	BC
	100.	0.58	4533076	01
L	100.		4533076	

RF = 4762

.2 PPM METHANE STD

JECTED AT 02/29/92 17:54:36 FILENAME: PINELANDS 1 FROM /10.A/
3K FILE: 149817.RAW PEAK WIDTH = 8 ATTENUATION = 16.0



3K FILE: 149817.RAW FROM /10.A/ INJECTED AT: 02/29/92 17:54:36

.E 1 METHOD 0 RUN 11 INDEX 11 CH= PS= 1

3K#	AREA%	RT	AREA	BC
	100.	0.57	4570109	01
TAL	100.		4570109	

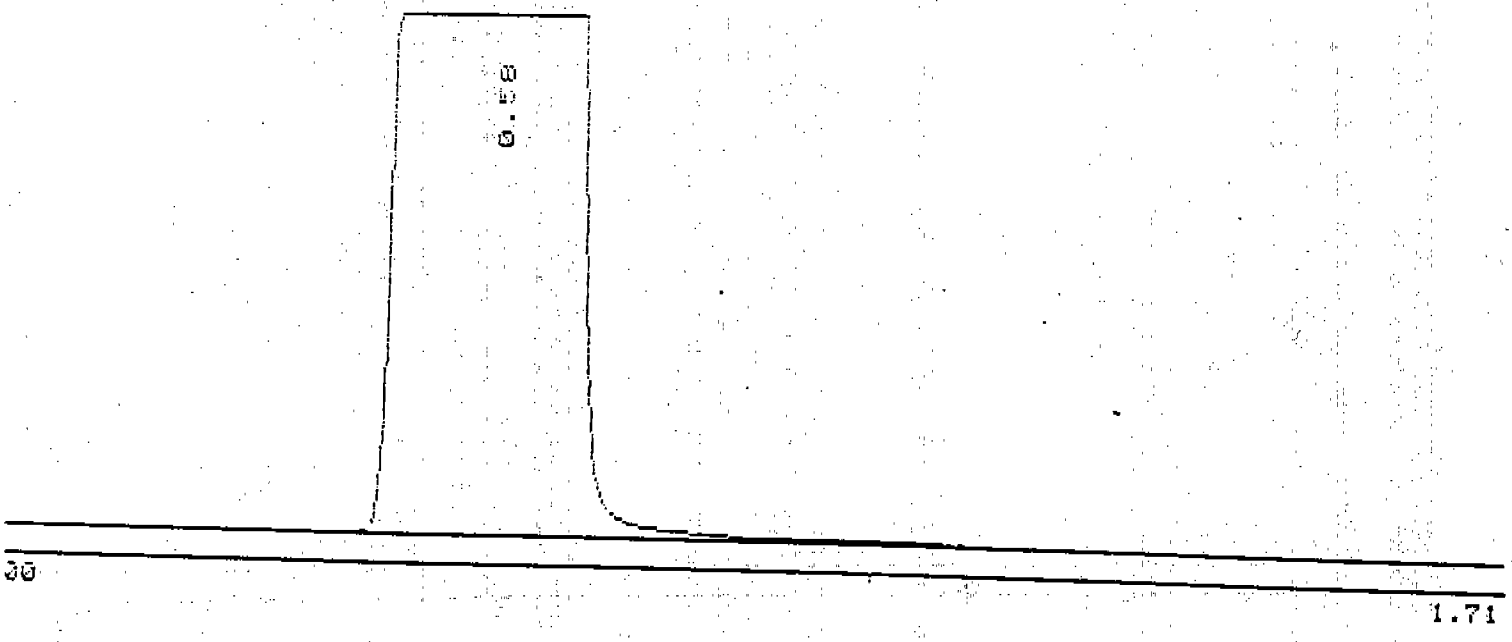
4800

'50 PPM METHANE STD

'JE:TED AT 02/29/92 18:00:09
:E FILE: 149818.RAW

PEAK WIDTH = 6

FILENAME: PINELANDS 1 FROM /10.A/
ATTENUATION = 16.0



SK FILE: 149818.RAW FROM /10.A/ INJECTED AT: 02/29/92 18:00:09

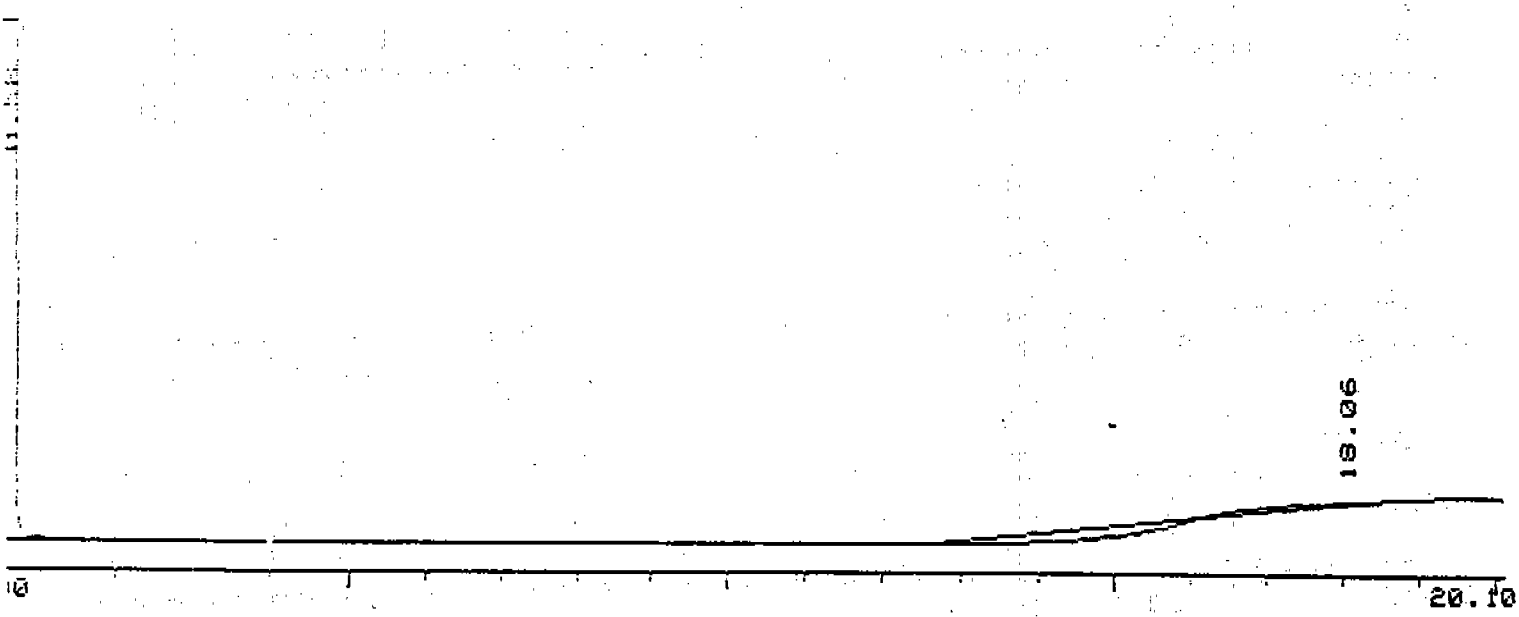
-E 1 METHOD 0 RUN 12 INDEX 12 CH= PS= 1

AK#	AREA%	RT	AREA	BC
1	100.	0.58	13976888	01
TAL	100.		13976888	

4738

50 PPM METHANE STD

JECTED AT 02/29/92 18:03:59 FILENAME: PINELANDS 1 FROM /10.A/
3K FILE: 149819.RAW PEAK WIDTH = 5 ATTENUATION = 16.0



3K FILE: 149819.RAW FROM /10.A/ INJECTED AT: 02/29/92 18:03:59

CH= PS= 1

E 1 METHOD 0 RUN 13 INDEX 13

K#	AREA%	RT	AREA	BC
	100.	0.58	13989196	01
AL	100.		13989196	

4742

4784

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Outlet Samples (BAG)

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 10.5 ppm Std GC Run # 149802

Compound	rt	area	RF
Methane	0.51	40033	3813

Sample: 10.5 ppm Std GC Run # 149803

Compound	rt	area	RF
Methane	0.56	40299	3838

Sample: 50 ppm Std GC Run # 149804

Compound	rt	area	RF
Methane	0.58	247650	4953

Sample: 50 ppm Std GC Run # 149805

Compound	rt	area	RF
Methane	0.57	242168	4843

Sample: 95.4 ppm Std GC Run # 149806

Compound	rt	area	RF
Methane	0.58	458037	4801

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Outlet Samples

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 95.4 ppm Std GC Run # 149807

Compound	rt	area	RF
Methane	0.57	459502	4817

AVG RF

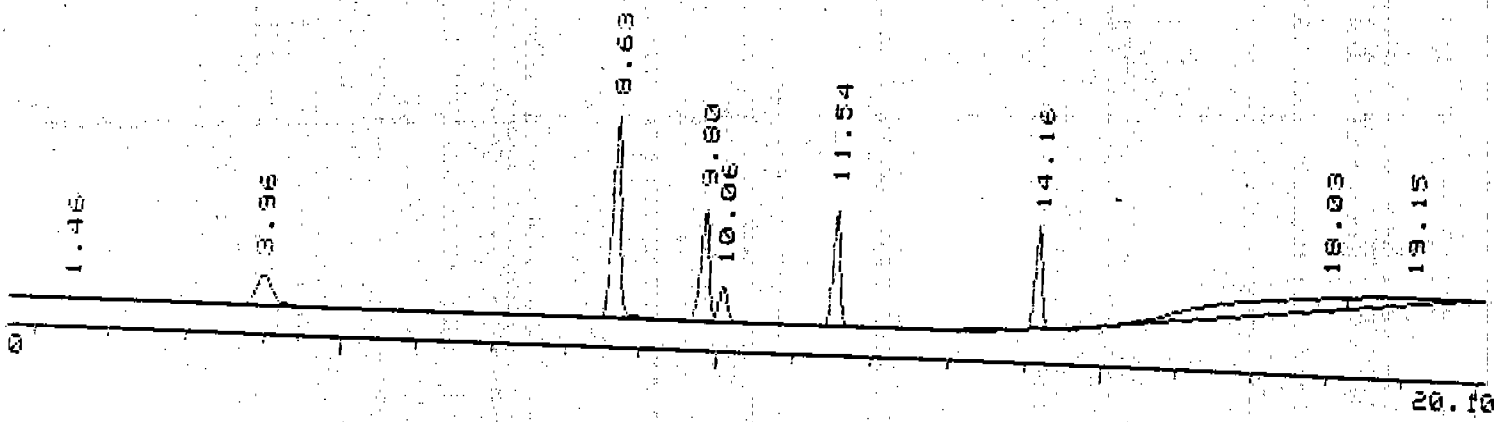
Compound	RF
Methane	4511

.5 PPM METHANE STD outlet samples (bag)

CONDITIONS: 1% SP1000 COLUMN. 35 deg for 5 min then to 250 deg at 40 deg/min then hold for 10 min. 40 cc/min N2 flow. FID

JECTED AT 02/29/92 11:48:16
K FILE: 149802.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



K FILE: 149802.RAW FROM /10.A/ INJECTED AT: 02/29/92 11:48:16

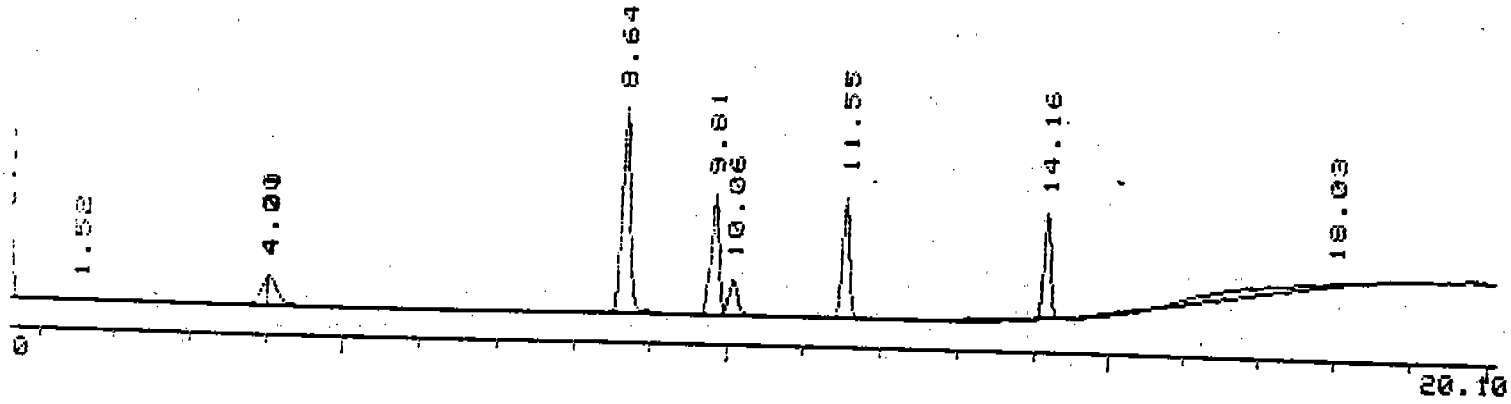
E 1 METHOD 0 RUN 30 INDEX 30 CH= PS= 1

K#	AREA%	RT	AREA	BC
	8.754	0.51	40033	01
	0.033	1.46	152	01
	5.933	3.96	27131	01
	20.518	8.63	93831	01
	10.591	9.8	48433	02
	3.58	10.06	16373	03
	9.713	11.54	44419	01
	7.673	14.16	35089	02
	25.107	18.03	114816	02
	8.098	19.15	37034	03
AL	100.		457311	

.5 PPM METHANE STD

JECTED AT 02/29/92 12:17:04
SK FILE: 149803.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



K FILE: 149803.RAW FROM /10.A/ INJECTED AT: 02/29/92 12:17:04

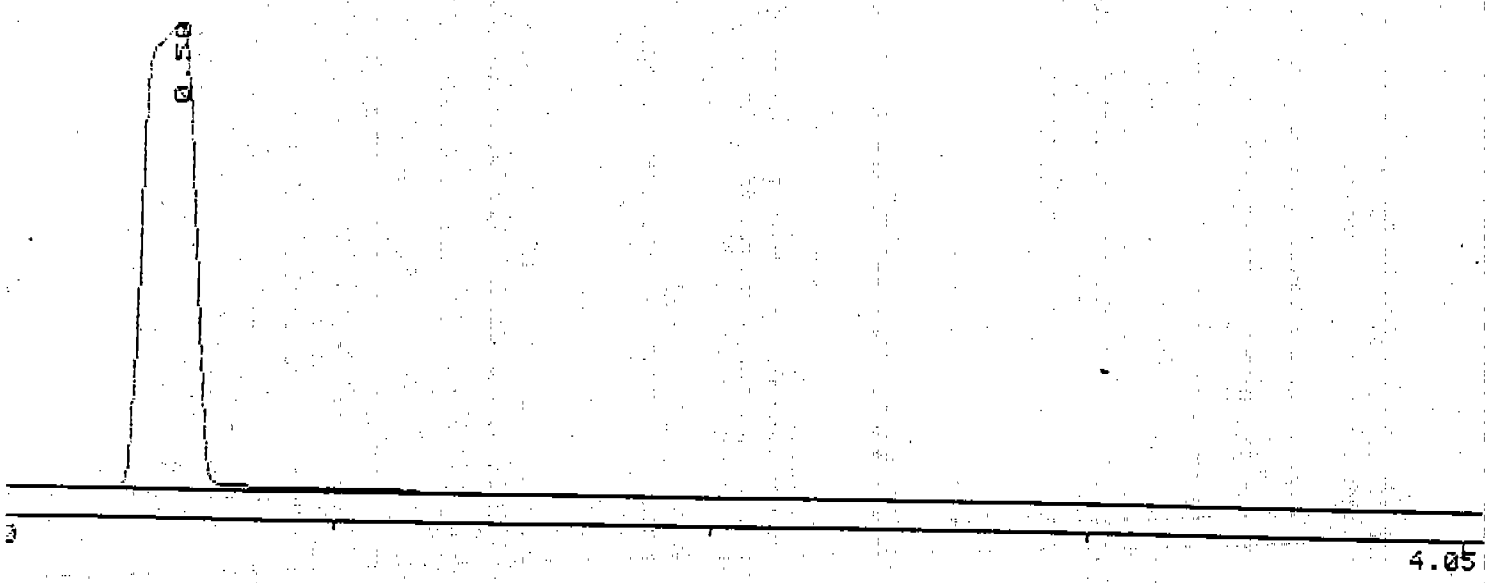
E 1 METHOD 0 RUN 19 INDEX 19 CH= PS= 1

K#	AREA%	RT	AREA BC
	11.359	0.55	40299 01
	0.036	1.52	129 01
	3.471	4.	12314 02
	4.306	4.01	15277 03
	26.419	8.64	93729 01
	14.149	9.81	50199 02
	4.693	10.06	16647 03
	12.806	11.55	45435 01
	10.045	14.16	35636 02
	12.716	18.03	45115 03
AL	100.		354780

.0 PPM METHANE STD

TED AT 02/29/92 12:46:45
K FILE: 149804.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



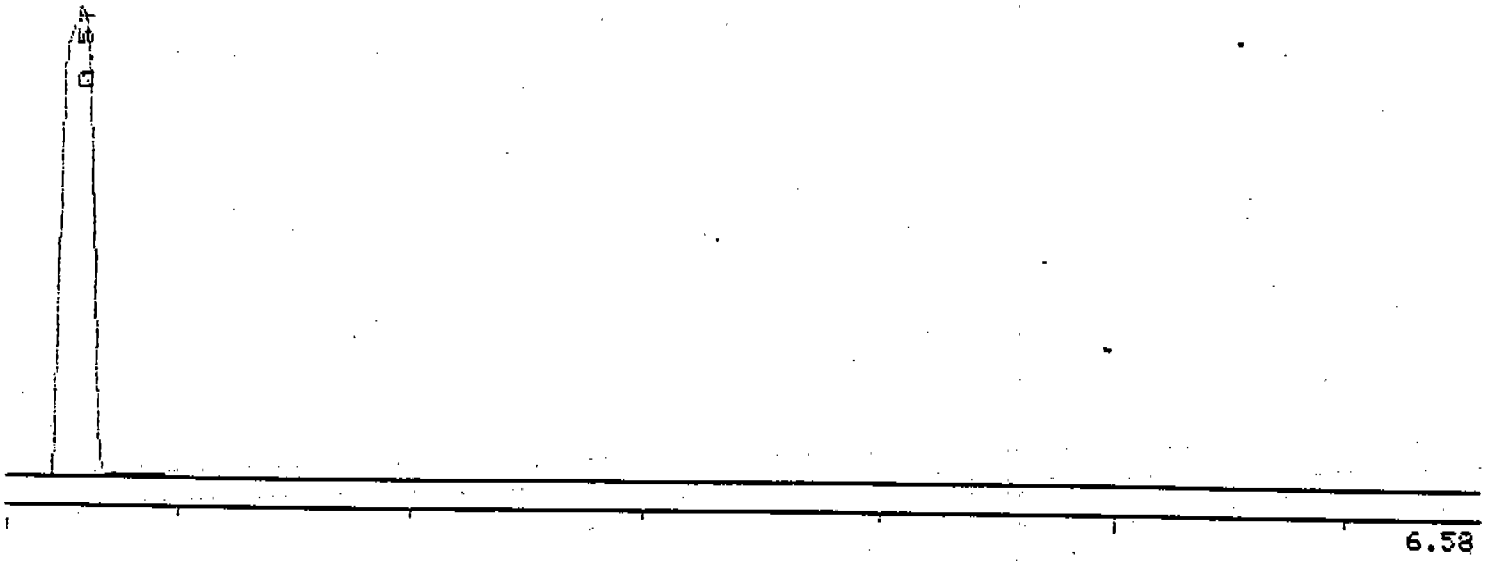
K FILE: 149804.RAW FROM /10.A/ INJECTED AT: 02/29/92 12:46:45

E 1 METHOD 0 RUN 25 INDEX 25 CH= PS= 1

C#	AREA%	RT	AREA	BC
	100.	0.58	247650	01
AL	100.		247650	

0 PPM METHANE STD

ECTED AT 02/29/92 12:53:56 FILENAME: PINELANDS 1 FROM /10.A/
< FILE: 149805.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



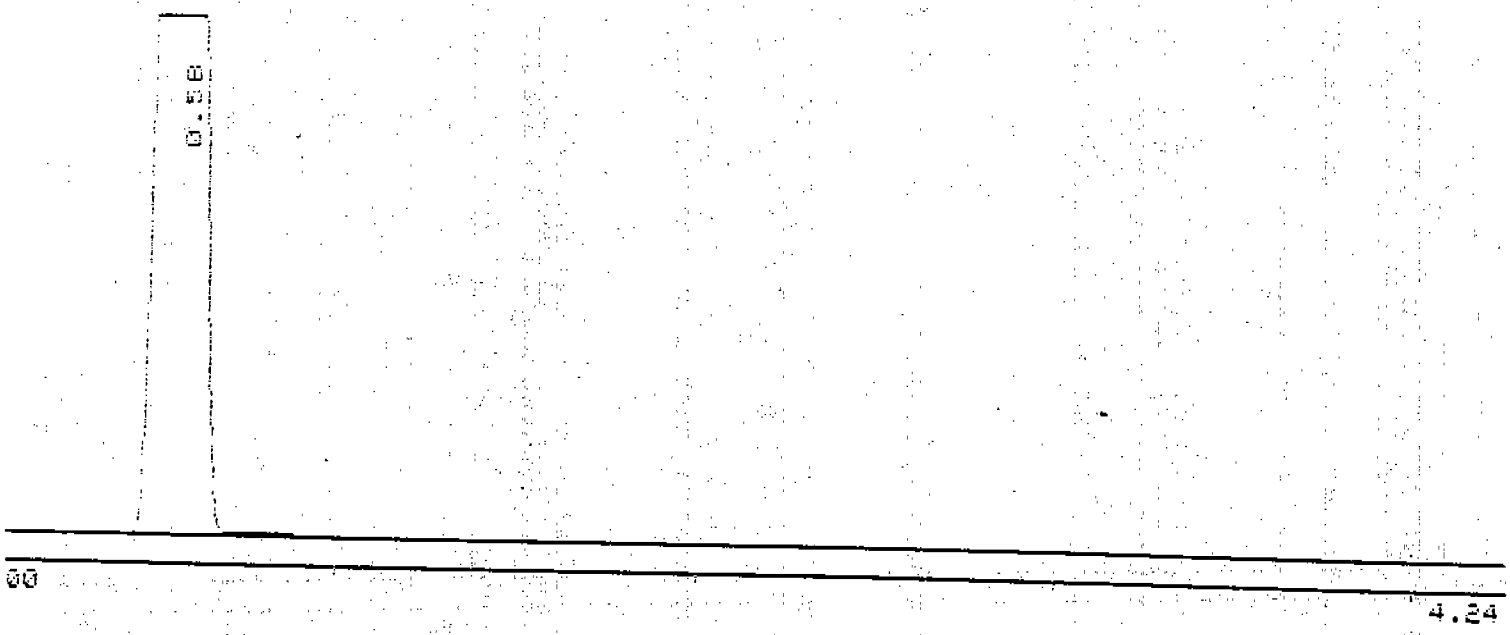
: FILE: 149805.RAW FROM /10.A/ INJECTED AT: 02/29/92 12:53:56

: 1 METHOD 0 RUN 26 INDEX 26 CH= PS= 1

#	AREA%	RT	AREA	BC
	100.	0.57	242168	01
L	100.		242168	

3.4 PPM METHANE STD

JECTED AT 02/29/92 13:05:10
SK FILE: 149806.RAW
FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 5
ATTENUATION = 16.0



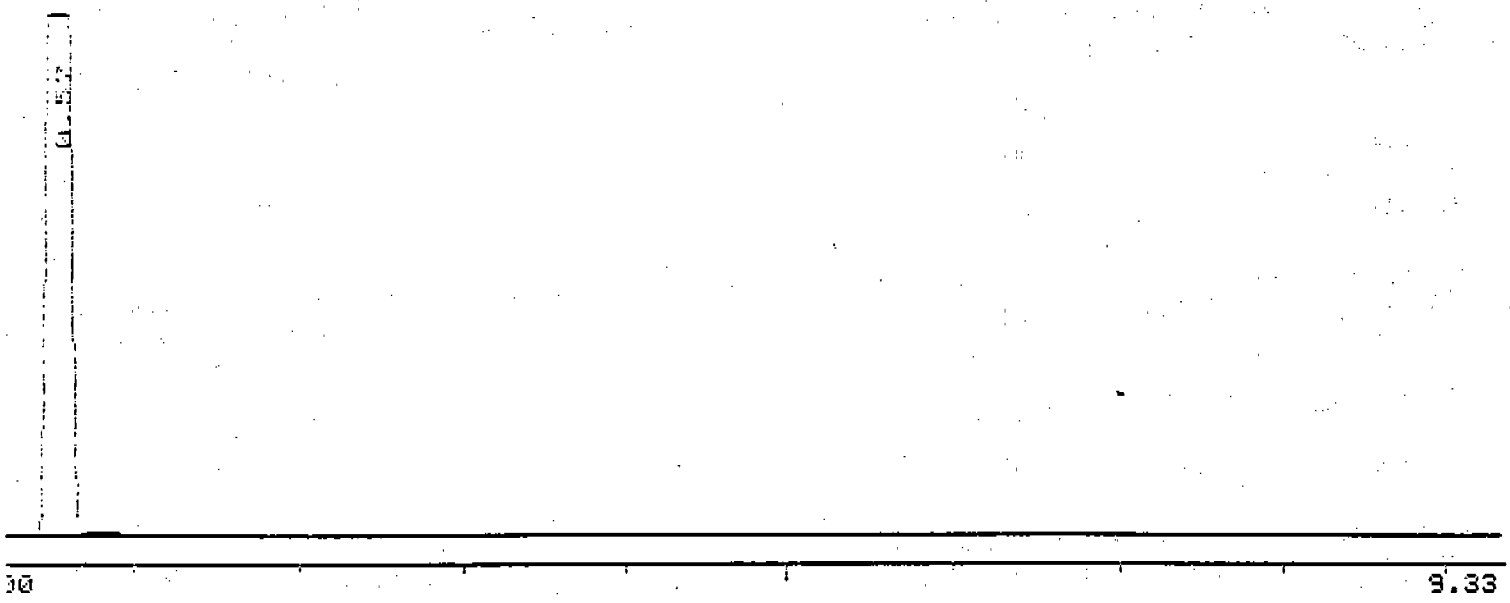
SK FILE: 149806.RAW FROM /10.A/ INJECTED AT: 02/29/92 13:05:10

E 1 METHOD 0 RUN 27 INDEX 27 CH= PS= 1

AK#	AREA%	RT	AREA	BC
1	100.	0.58	458037	01
TAL	100.		458037	

.4 PPM METHANE STD

JECTED AT 02/29/92 13:31:04 FILENAME: PINELANDS 1 FROM /10.A/
3K FILE: 149807.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



3K FILE: 149807.RAW FROM /10.A/ INJECTED AT: 02/29/92 13:31:04

CH= PS= 1

LE 1 METHOD 0 RUN 28 INDEX 28

3K#	AREA%	RT	AREA	BC
	100.	0.57	459502	01
TAL	100.		459502	

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Impinger Catch Samples

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 95.4 ppm Std GC Run # 149852

Compound	rt	area	RF
Methane	0.53	6596	69.14

Sample: 95.4 ppm Std GC Run # 149853

Compound	rt	area	RF
Methane	0.56	6718	70.42

Sample: 952 ppm Std GC Run # 149850

Compound	rt	area	RF
Methane	0.73	62768	65.93

Sample: 952 ppm Std GC Run # 149851

Compound	rt	area	RF
Methane	0.72	63086	66.27

Sample: 2950 ppm Std GC Run # 149854

Compound	rt	area	RF
Methane	0.52	243586	82.57

Pinelands Landfill
Project # 1498
Methane Standard Calibration Curve for Impinger Catch Samples

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: 2950 ppm Std GC Run # 149855

Compound	rt	area	RF
Methane	0.57	222479	75.42

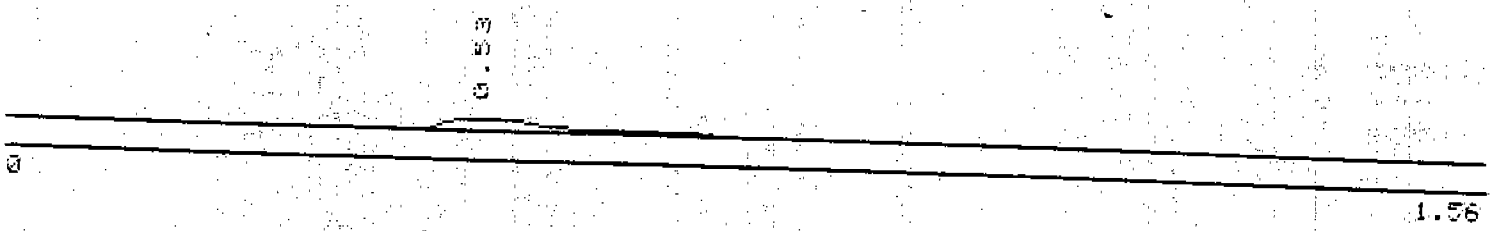
AVG RF

Compound	RF
Methane	71.62

. # PPM METHANE STD condensate sample (water)

TESTED AT 03/04/92 12:06:50
BK FILE: 149852.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



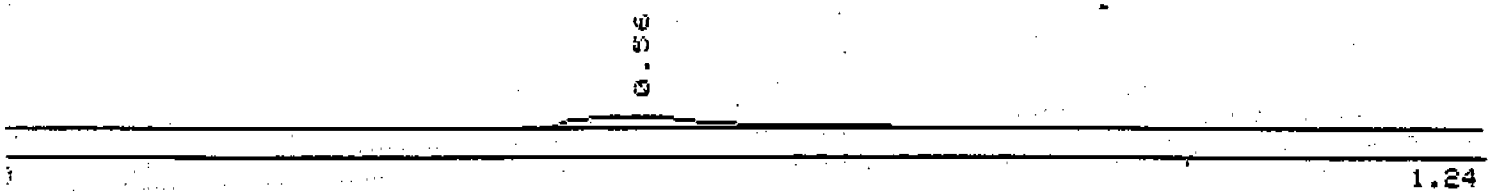
K FILE: 149852.RAW FROM /10.A/ INJECTED AT: 03/04/92 12:06:50

E 1 METHOD 0 RUN 3 INDEX 3 CH= PS= 1

K#	AREA%	RT	AREA BC
	100.	0.53	6596 01
AL	100.		6596

4 PPM METHANE STD

ITED AT 03/04/92 12:11:30 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149853.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



FILE: 149853.RAW FROM /10.A/ INJECTED AT: 03/04/92 12:11:30

CH= PS= 1

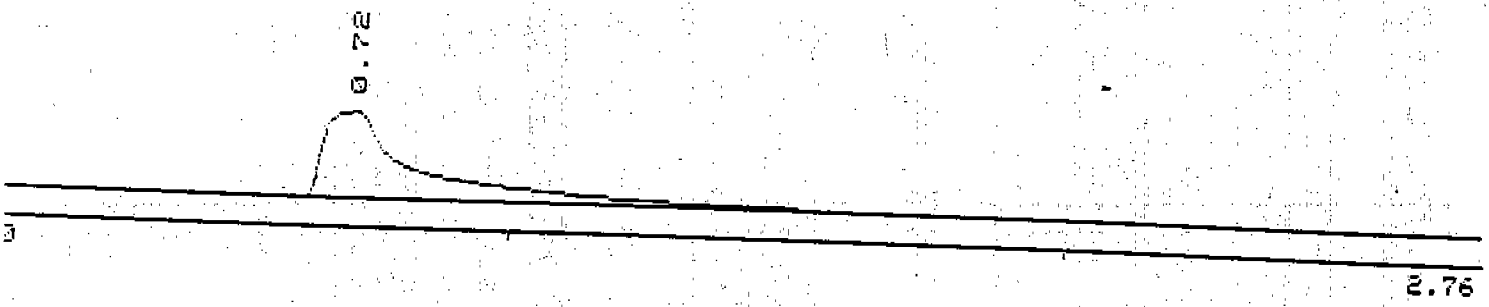
1 METHOD 0 RUN 4 INDEX 4

#	AREA%	RT	AREA	BC
	100.	0.56	6718	01
L	100.		6718	

2 PPM METHANE STD

ECTED AT 03/04/92 11:52:27
FILE: 149851.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



FILE: 149851.RAW FROM /10.A/ INJECTED AT: 03/04/92 11:52:27

E 1 METHOD 0 RUN 2 INDEX 2 CH= PS= 1

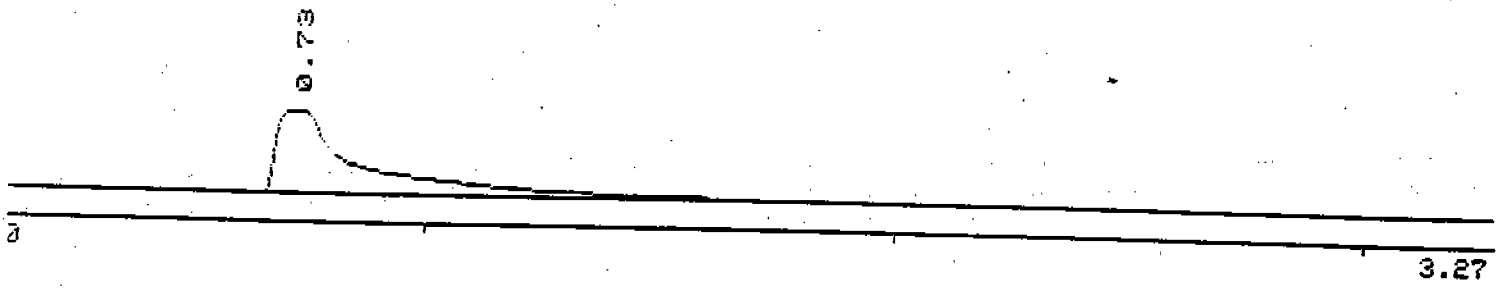
<#	AREA%	RT	AREA	BC
	100.	0.72	63086	01
AL	100.		63086	

2 PPM METHANE STD

JECTED AT 03/04/92 11:46:25
K FILE: 149850.RAW

PEAK WIDTH = 6

FILENAME: PINELANDS 1 FROM /10.A/
ATTENUATION = 16.0



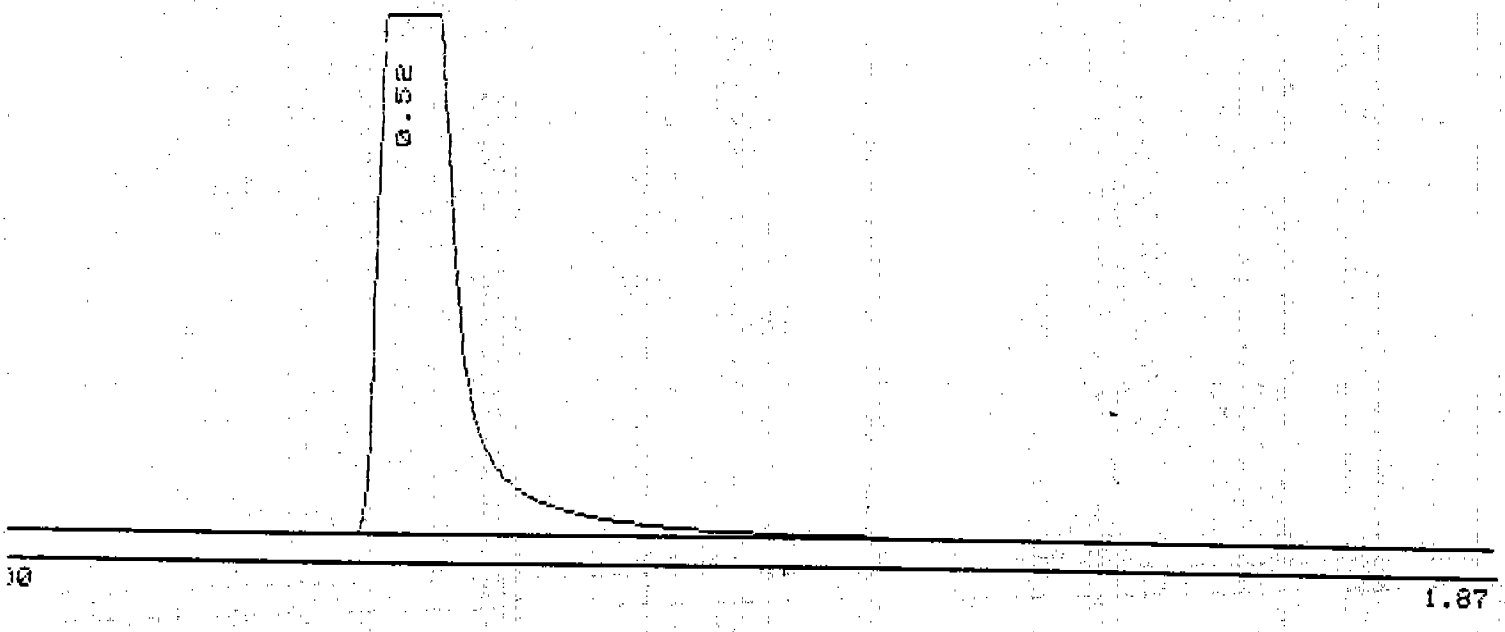
K FILE: 149850.RAW FROM /10.A/ INJECTED AT: 03/04/92 11:46:25

E 1 METHOD 0 RUN 1 INDEX 1 CH= PS= 1

K#	AREA%	RT	AREA	BC
	100.	0.73	62768	01
AL	100.		62768	

50 PPM METHANE STD

JECTED AT 03/04/92 12:15:56 FILENAME: PINELANDS 1 FROM /10.A/
3K FILE: 149854.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



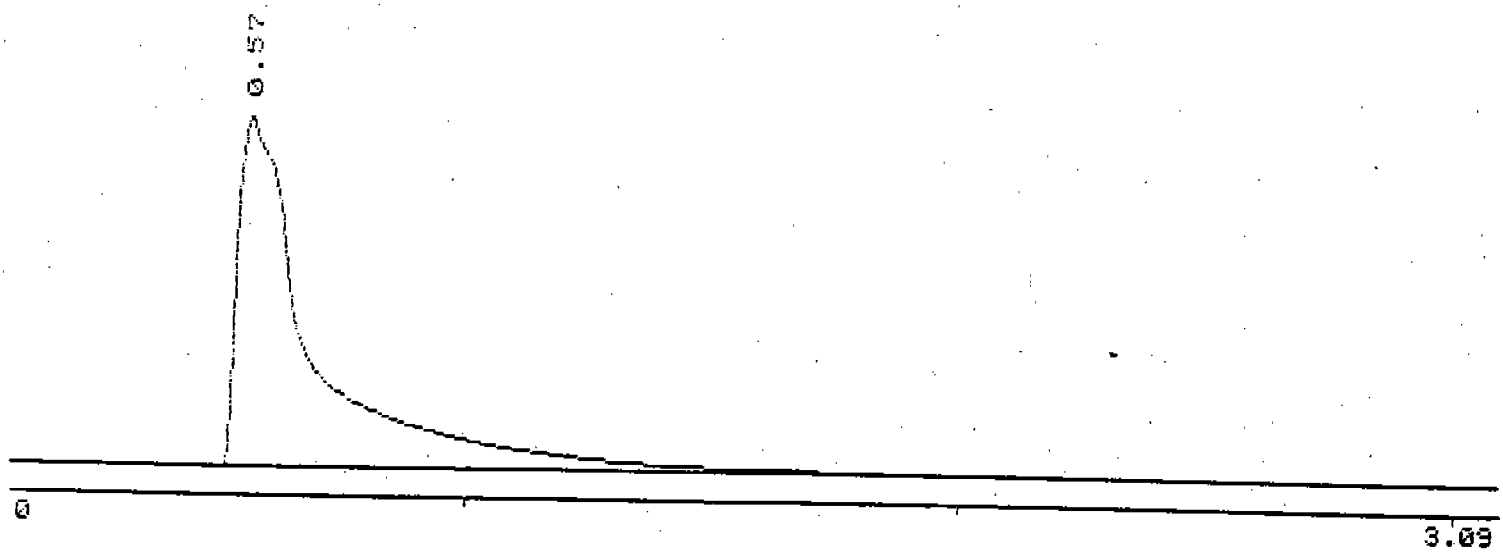
3K FILE: 149854.RAW FROM /10.A/ INJECTED AT: 03/04/92 12:15:56

LE 1 METHOD 0 RUN 5 INDEX 5 CH= PS= 1

3K#	AREA%	RT	AREA	BC
	100.	0.52	243586	01
TAL	100.		243586	

'50 PPM METHANE STD

JECTED AT 03/04/92 14:10:15 FILENAME: PINELANDS 1 FROM /10.A/
3K FILE: 149855.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



3K FILE: 149855.RAW FROM /10.A/ INJECTED AT: 03/04/92 14:10:15

E 1 METHOD 0 RUN 6 INDEX 6 CH= PS= 1

K#	AREA%	RT	AREA	BC
	100.	0.57	222479	01
AL	100.		222479	

APPENDIX C

LABORATORY SAMPLE DATA

Pinelands Landfill
Project # 1498
Gas Bag Analysis for Methane and Non-Methane Organic Compounds

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: Outlet Run 1

Compound	RESULT ppm
Methane	7.54
NMOC	2.98

Sample: Outlet Run 2

Compound	RESULT ppm
Methane	2.20
NMOC	5.92

Sample: Outlet Run 3

Compound	RESULT ppm
Methane	0.36
NMOC	0.78

Sample: Inlet Run 1

Compound	RESULT %	RESULT ppm
Methane	53.76	
NMOC		782.38

Sample: Inlet Run 2

Compound	RESULT %	RESULT ppm
Methane	51.07	
NMOC		860.12

Pinelands Landfill
Project # 1498
Gas Bag Analysis for Methane and Non-Methane Organic Compounds

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

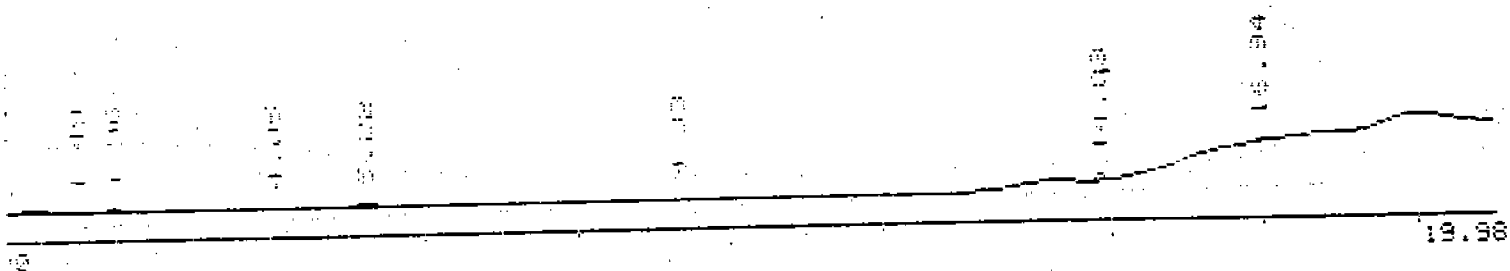
Sample: Inlet Run 3

Compound	RESULT %	RESULT ppm
Methane	51.90	
NMOC		906.14

PINELANDS
TEST RUN 1

SECTION 1

INJECTED AT 02/29/92 14:22:33 FILENAME: PINELANDS 1 FROM /10.A/
DATA FILE: 149809.RAW PEAK WIDTH = 0 ATTENUATION = 16.0



% FILE: 149809.RAW FROM /10.A/ INJECTED AT: 02/29/92 14:22:33

CH= TG= 1

= 1 METHOD 0 RUN 19 INDEX 19

PK#	AREA%	RT	AREA BC
	0.002	0.39	1 02
	75.792	0.49	35166 02
	1.36	1.19	631 00
	5.339	1.76	2477 02
	0.672	4.05	312 01
	6.164	5.22	2860 01
	1.729	9.33	802 01
	5.918	14.33	2746 02
	3.024	16.94	1403 00
AL	100.		46398

ELANDS

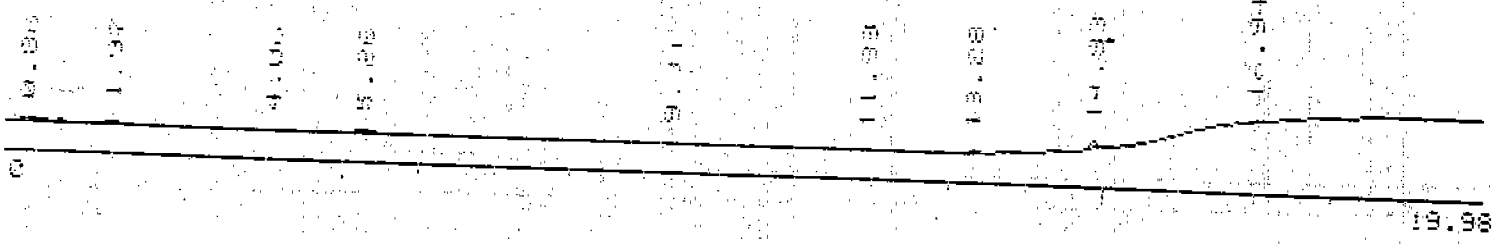
LET RUN 1

SET ID= 2

TED AT 02/29/92 15:03:11
V FILE: 149510.RAW

PEAK WIDTH = 8

FILENAME: PINELANDS FROM /10.A/
ATTENUATION = 16.0



K FILE: 149510.RAW FROM /10.A/ INJECTED AT: 02/29/92 15:03:11

= 1 METHOD 0 RUN 25 INDEX 25 CH= PS= 1

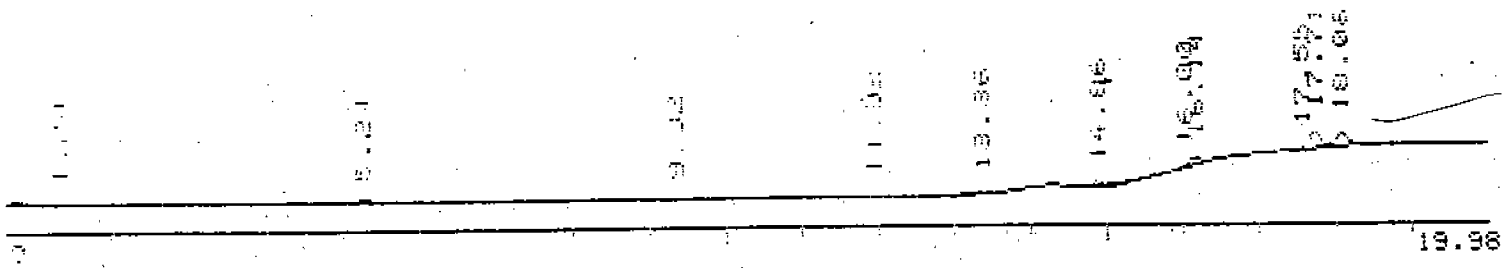
K#	AREA%	RT	AREA BC
	0.002	0.41	1 00
	67.698	0.47	32068 02
	9.419	0.86	4573 02
	5.583	1.77	2701 02
	0.597	4.06	290 01
	5.768	5.26	2800 01
	1.567	6.34	761 01
	0.161	11.89	78 01
	0.655	13.28	318 02
	5.583	14.83	2711 00
	2.987	16.94	1450 00
AL	100.		48551

/ELANDS

RUN 2

SECTION 1

TED AT 02/29/92 15:42:20 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149811.RAW PEAK WIDTH = 1 ATTENUATION = 16.0

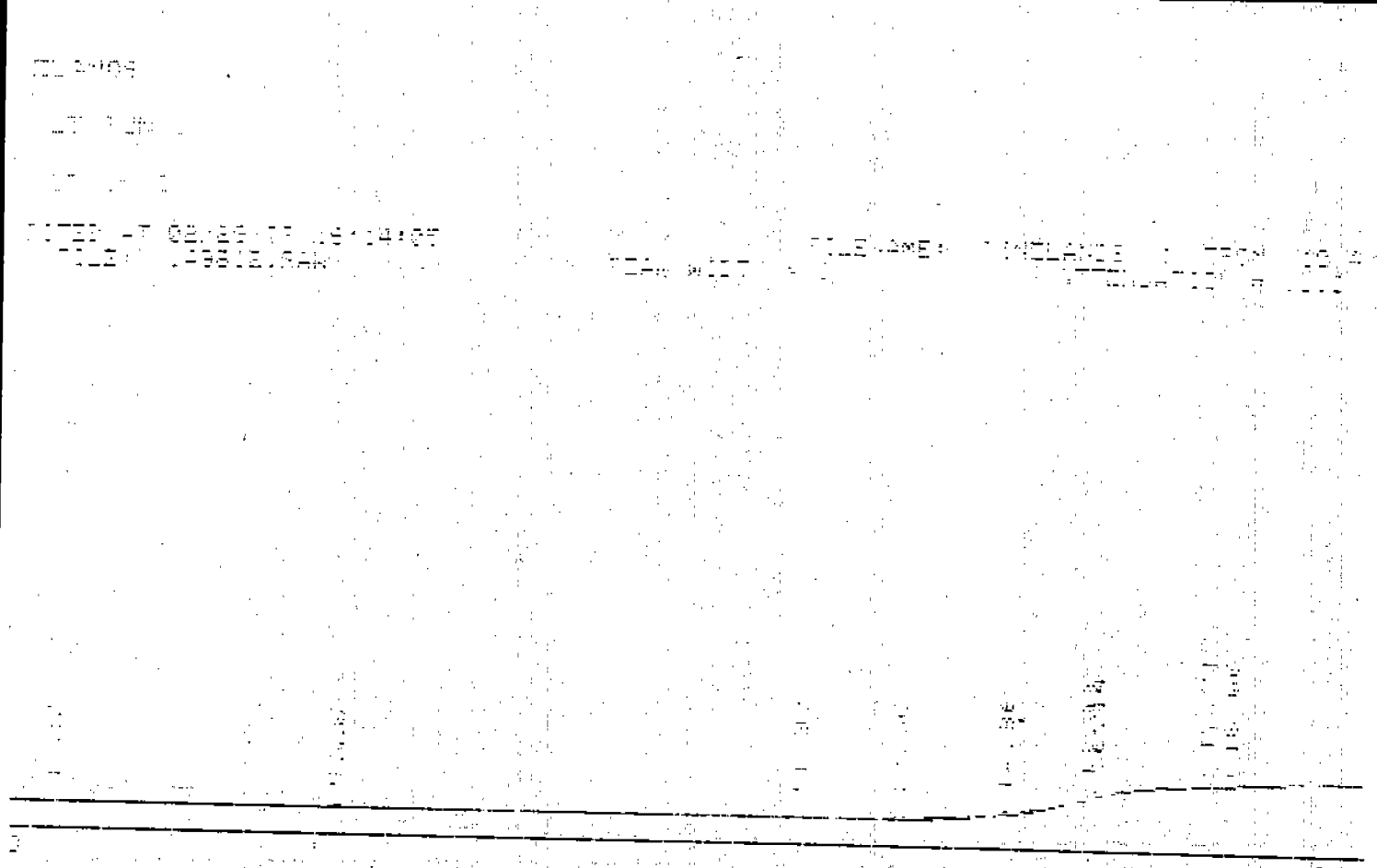


K FILE: 149811.RAW FROM /10.A/ INJECTED AT: 02/29/92 15:42:20

CH= PS= 1

E 1 METHOD 0 RUN 12 INDEX 12

K#	AREA%	RT	AREA	BC
	0.005	0.42	2	00
	26.536	0.48	10073	03
	0.374	1.29	142	01
	6.07	8.24	2304	01
	0.603	8.32	229	01
	0.166	11.92	63	01
	3.809	14.86	1446	02
	8.638	16.14	3279	00
	0.401	17.55	152	00
	27.948	17.71	10609	00
	25.45	18.06	9661	03
L	100.		37960	



FILE: 14901I.RAW FROM /10.A/ INJECTED AT: 02/27/92 14:14:05

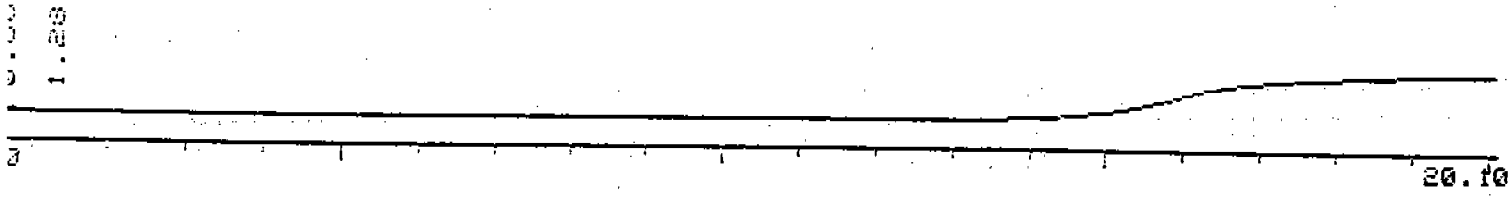
METHOD : RUN : 3 INDEX : 2

#	AREA%	RT	AREA	BC
	1.006	9.47	1	VB
	17.659	10.48	9757	BB
	.748	11.17	413	VV
	.718	11.35	397	01
	.141	11.91	78	01
	.964	12.16	533	BB
	9.185	13.14	5240	BB
	19.4	17.71	10371	BB
	35.087	21.16	9132	VB
			55274	

IELANDS

LET RUN 3

ECTED AT 02/29/92 16:43:32 FILENAME: PINELANDS 1 FROM /10.A/
K FILE: 149813.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



K FILE: 149813.RAW FROM /10.A/ INJECTED AT: 02/29/92 16:43:32

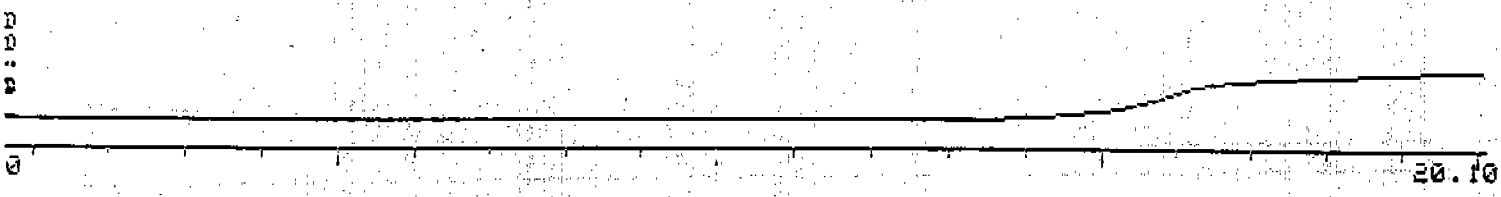
E 1 METHOD 0 RUN 6 INDEX 6 CH= PS= 1

K#	AREA%	RT	AREA BC
	35.498	0.49	1673 02
	14.661	0.58	691 02
	47.168	0.66	2223 03
	2.673	1.28	126 01
AL	100.		4713

JELANDS

TLET RUN 3

TECTED AT 02/29/92 17:12:47 FILENAME: PINELANDS 1 FROM /10.A/
K FILE: 149814.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



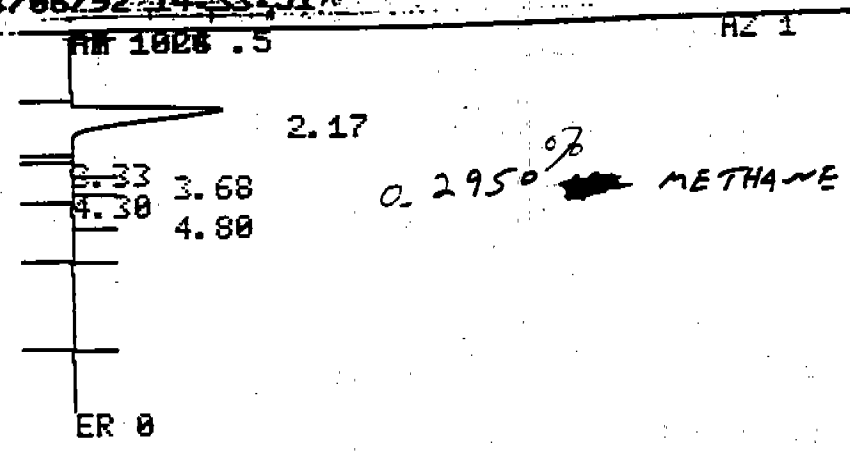
K FILE: 149814.RAW FROM /10.A/ INJECTED AT: 02/29/92 17:12:47

CH= PS= 1

E 1 METHOD 0 RUN 7 INDEX 7

K#	AREA%	RT	AREA	BC
	28.722	0.49	1613	02
	12.375	0.58	695	02
	58.903	0.66	3308	03
AL	100.		5616	

CHANNEL A INJECT 03/06/92 14:33:51 AZ 1



0.2950% METHANE

'INELANDS 1498 03/06/92 14:33:51 CH= "A" PS= 1.

'ILE 1. METHOD 5. RUN 15 INDEX 1 CALIB

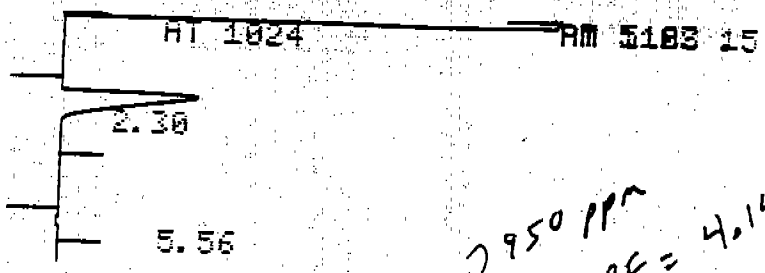
'NALYST: JLS

'AME	%	RT	AREA BC	RF
1	0.	2.17	4675089 02	
2	0.	3.33	2893 02	RF = 40854
3	0.	3.68	3198 03	
ETHANE	2950.	4.3	275 01	~~0.093~~
5	0.	4.8	12052 01	
OTALS	2950.		4693507	

EW FILE:

AME	RF	RT
ETHANE	0.093	4.41

HANNEL A INJECT 03/01/92 00:06:05



2950 ppm
RF = 4.14.6

NELANDS 1498 03/01/92 00:06:05 CH= "A" PS= 1.

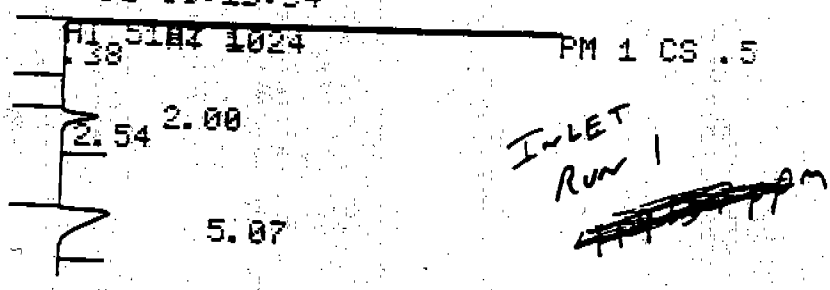
LE 1. METHOD 0. RUN 17 INDEX 17

AK# AREA% RT AREA BC

1	99.711	2.3	4218844 01
2	0.289	5.56	12231 01

TAL 100. 4231075

ANNEL A INJECT 03/01/92 00:13:34



INLET
Run 1

NELANDS 1498 03/01/92 00:13:34 CH= "A" PS= 1.

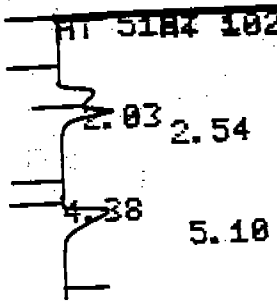
LE 1. METHOD 0. RUN 18 INDEX 18

AK# AREA% RT AREA BC

1	0.604	0.38	14068 02
2	0.599	2.	13970 02
3	24.135	2.54	562536 03
4	74.662	5.07	1740232 01

AL 100. 2330806

CHANNEL A INJECT 03/01/92 00:21:08 PM 1 CS .5



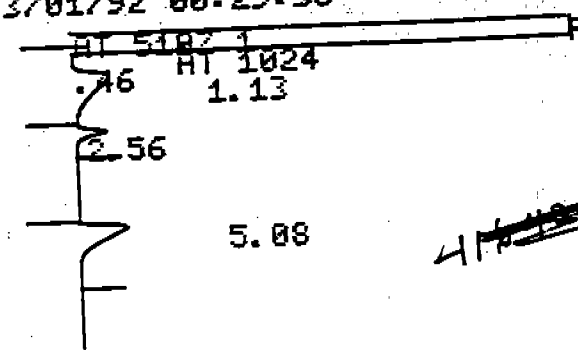
Inj 60 Run 2

PINELANDS 1498 03/01/92 00:21:08 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 19 INDEX 19

PEAK#	AREA%	RT	AREA BC
1	27.829	2.03	1146132 02
2	31.914	2.54	1314361 02
3	0.111	4.38	4585 02
4	40.145	5.1	1653343 03
TOTAL	100.		4118421

CHANNEL A INJECT 03/01/92 00:29:38 PM 1 CS .5



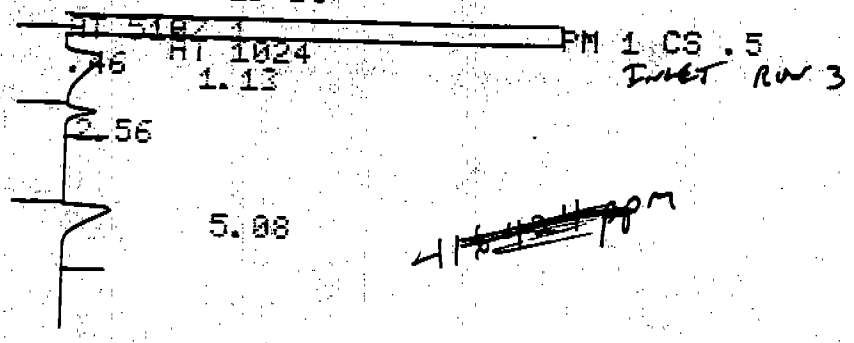
Inj Run 3

PINELANDS 1498 03/01/92 00:29:38 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 20 INDEX 20

PEAK#	AREA%	RT	AREA BC
1	0.058	0.46	2306 02
2	43.843	1.13	1731423 02
3	12.381	2.56	488943 03
4	43.718	5.08	1726495 01
TOTAL	100.		3949167

NNEL A INJECT 03/01/92 00:29:38

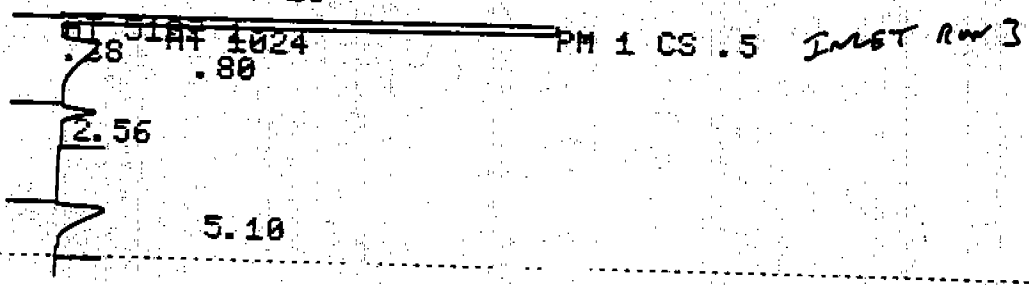


ELANDS 1498 03/01/92 00:29:38 CH= "A" PS= 1.

E 1. METHOD 0. RUN 20 INDEX 20

K#	AREA%	RT	AREA BC
1	0.058	0.46	2306 02
2	43.843	1.13	1731423 02
3	12.381	2.56	488943 03
4	43.718	5.08	1726495 01
AL	100.		3949167

NNEL A INJECT 03/01/92 00:38:25



021

ELANDS 1498 03/01/92 00:38:25 CH= "A" PS= 1.

E 1. METHOD 0. RUN 21 INDEX 21

K#	AREA%	RT	AREA BC
	0.07	0.38	2836 02
	44.639	0.8	1796365 02
	14.69	2.56	591156 03
	40.601	5.1	1633890 01
	100.		4024247

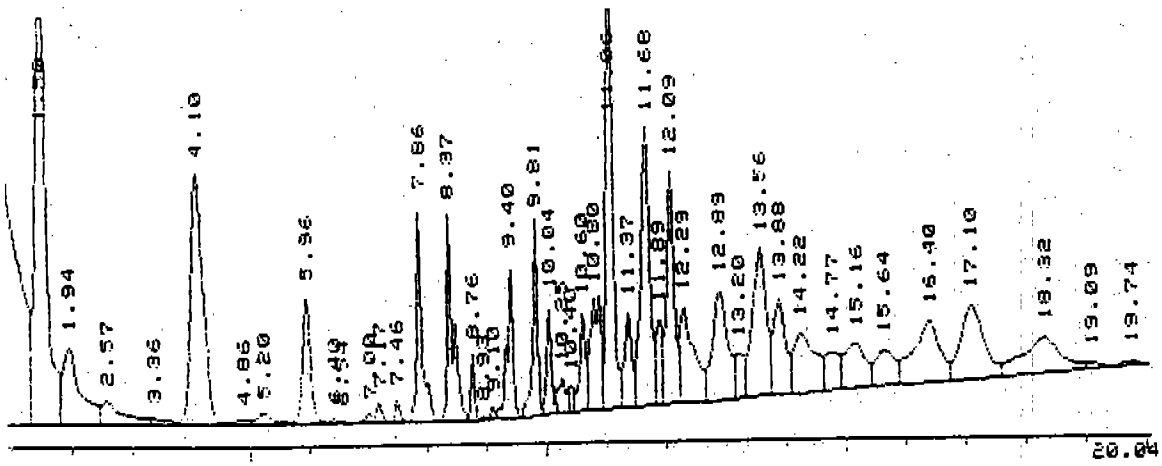
ELANDS

ST RUN 1

NMOC (bag)

CTED AT 02/29/92 22:07:23
FILE: 149832.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



FILE: 149832.RAW FROM /10.A/ INJECTED AT: 02/29/92 22:07:23

CH= PS= 1

1 METHOD 0 RUN 16 INDEX 16

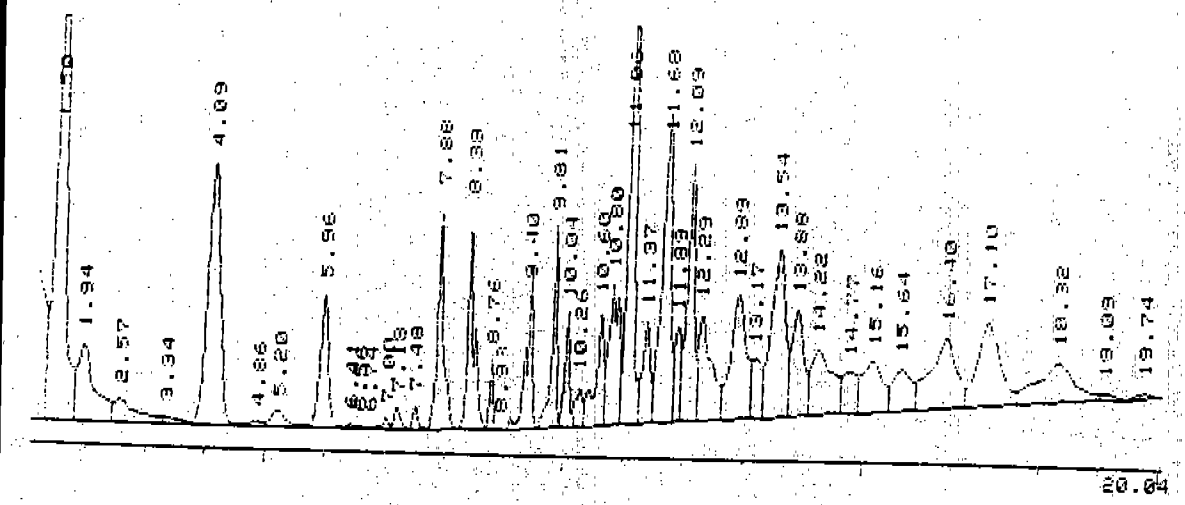
#	AREA%	RT	AREA	BC
	88.616	0.57	29167324	02
	1.38	1.5	454353	02
	0.37	1.94	121815	02
	0.141	2.57	46336	02
	0.025	3.36	8147	02
	0.828	4.1	272634	08
	0.013	4.86	4187	06
	0.037	5.2	12296	06
	0.277	5.96	91189	02
	0.006	6.4	1841	02
	0.003	6.54	1190	02
	0.013	7.	4311	02
	0.028	7.17	9091	02
	0.026	7.46	8445	02
	0.295	7.86	97195	02
	0.322	8.37	105923	02
	0.065	8.76	21513	02
	0.002	8.93	678	02
	0.013	9.1	4237	02
	0.242	9.4	79920	02
	0.218	9.81	71834	02
	0.145	10.04	47794	02
	0.07	10.25	23090	02
	0.03	10.4	9673	02
	0.164	10.6	54012	02
	0.306	10.8	100797	02
	1.093	11.06	359597	02
	0.196	11.37	64496	02
	0.613	11.68	201996	02
	0.129	11.89	42306	02
	0.479	12.09	157837	02
	0.32	12.29	105042	02
	0.414	12.89	136434	02
	0.1	13.2	33020	02
	0.53	13.56	174417	02
	0.302	13.88	99393	02
	0.345	14.22	113492	02
	0.143	14.77	47005	02
	0.243	15.16	79899	02
	0.191	15.64	62922	02
	0.428	16.4	140983	02
	0.444	17.1	146140	02
	0.359	18.32	118128	02
	0.02	19.09	6694	02

LANDS

T RUN 2

TED AT 02/29/92 22:45:30
FILE: 149833.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



FILE: 149833.RAW FROM /10.A/ INJECTED AT: 02/29/92 22:45:30

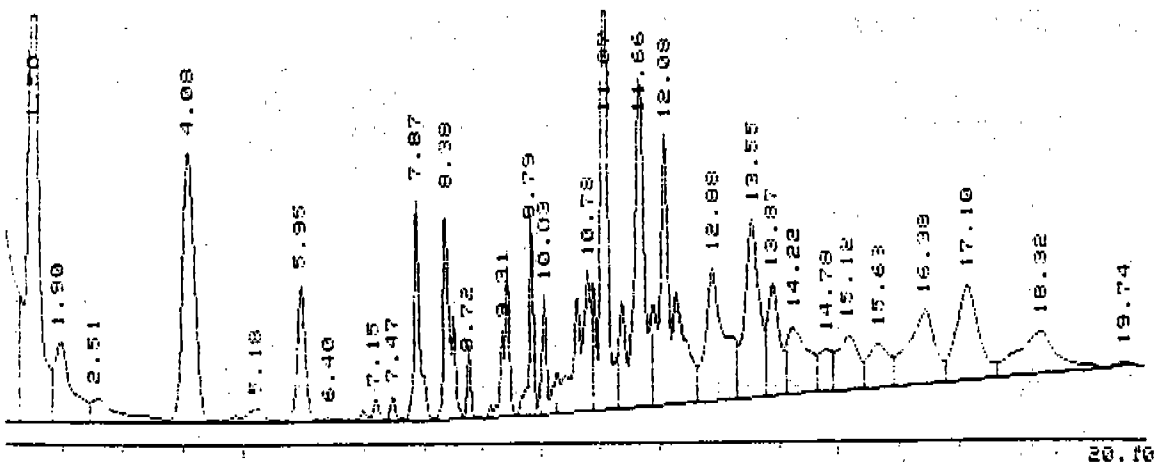
1 METHOD 0 RUN 17 INDEX 17 CH= PS= 1

AREA%	RT	AREA BC
87.631	0.57	29185519 02
1.396	1.5	464760 02
0.358	1.94	119459 02
0.142	2.57	47329 02
0.024	3.34	7954 02
0.845	4.09	281274 02
0.017	4.86	5684 02
0.061	5.2	20282 02
0.289	5.96	96420 02
0.006	6.41	1919 02
0.003	6.56	1118 02
0.001	6.74	325 02
0.013	7.	4357 02
0.033	7.18	10939 02
0.028	7.48	9361 02
0.326	7.88	108357 02
0.343	8.38	114231 02
0.068	8.76	22731 02
0.002	8.93	588 02
0.259	9.4	86299 02
0.235	9.81	78274 02
0.15	10.04	49949 02
0.076	10.26	25264 02
0.245	10.6	81925 02
0.374	10.8	124341 02
1.181	11.06	393483 02
0.214	11.37	71398 02
0.675	11.68	224626 02
0.142	11.89	47454 02
0.526	12.09	175011 02
0.34	12.29	113228 02
0.485	12.89	161420 02
0.143	13.17	47522 02
0.61	13.54	203174 02
0.332	13.88	111151 02
0.369	14.22	122729 02
0.145	14.77	48355 02
0.271	15.16	90145 02
0.211	15.64	70292 02
0.483	16.4	160896 02
0.506	17.1	168483 02
0.402	18.32	133986 02
0.023	19.09	7624 02
0.016	19.74	5354 02

LANDS

T RUN 3

ITED AT 02/29/92 23:26:51 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149834.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



FILE: 149834.RAW FROM /10.A/ INJECTED AT: 02/29/92 23:26:51

CH= PS= 1

1 METHOD 0 RUN 18 INDEX 18

*	AREA%	RT	AREA	BC
	87.075	0.54	29237263	02
	1.521	1.5	510601	02
	0.368	1.9	123767	02
	0.166	2.51	55859	02
	0.869	4.08	291520	02
	0.071	5.18	23998	02
	0.298	5.95	99924	02
	0.009	6.4	3202	02
	0.046	7.15	15292	02
	0.03	7.47	10221	02
	0.324	7.87	108731	02
	0.35	8.38	117618	02
	0.071	8.72	23760	02
	0.265	9.31	88902	02
	0.268	9.79	89956	02
	0.154	10.03	52092	02
	0.589	10.78	197708	02
	1.373	11.07	461092	02
	0.968	11.66	324786	02
	0.971	12.08	326228	02
	0.634	12.88	212841	02
	0.696	13.55	233741	02
	0.336	13.87	112693	02
	0.364	14.22	122176	02
	0.129	14.78	43382	02
	0.298	15.12	100153	02
	0.226	15.63	75906	02
	0.506	16.38	169676	02
	0.561	17.1	188362	02
	0.456	18.32	153274	02
	0.008	19.74	2629	03
	100.		33577163	

Pinelands Landfill
Project # 1498
Impinger Catch Analysis for Non-Methane Organic Compounds

Date: 3-3-92 Disk: JS-6 File # 14980303.WK1

Sample: Outlet Run 1

Compound	RESULT ppm
NMOC	0.828

Sample: Outlet Run 2

Compound	RESULT ppm
NMOC	0.575

Sample: Outlet Run 3

Compound	RESULT ppm
NMOC	0.145

Sample: Inlet Run 1

Compound	RESULT ppm
NMOC	25.597

Sample: Inlet Run 2

Compound	RESULT ppm
NMOC	22.317

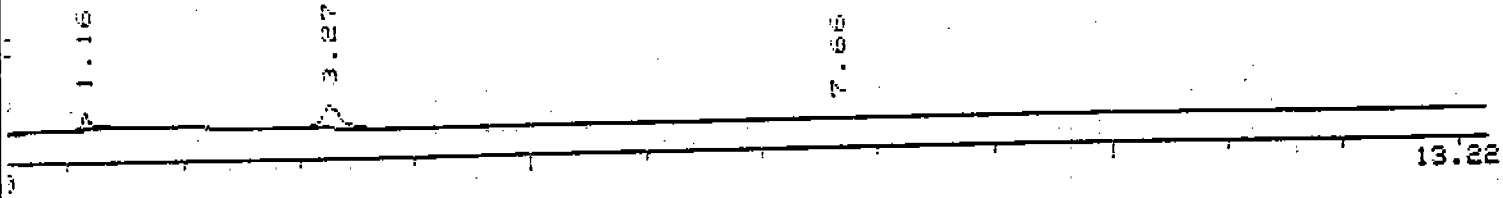
Sample: Inlet Run 3

Compound	RESULT ppm
NMOC	15.561

condensate samples

LANDS
GER CATCH
ET RUN 1

TED AT 03/04/92 15:48:49 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149858.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



FILE: 149858.RAW FROM /10.A/ INJECTED AT: 03/04/92 15:48:49

CH= PS= 1

1 METHOD 0 RUN 8 INDEX 8

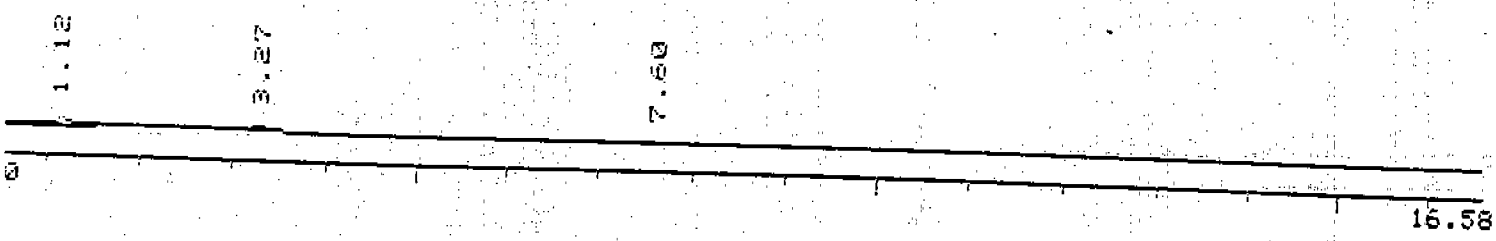
#	AREA%	RT	AREA BC
	9.781	0.47	2168 02
	22.757	1.16	5044 03
	64.313	3.27	14255 01
	3.149	7.66	698 01
	100.		22165

NELANDS

PINGER CATCH
TLET RUN 2

JECTED AT 03/04/92 16:19:47
3K FILE: 149859.RAW

FILENAME: PINELANDS 1 FROM /10.A/
PEAK WIDTH = 6
ATTENUATION = 16.0



K FILE: 149859.RAW FROM /10.A/ INJECTED AT: 03/04/92 16:19:47

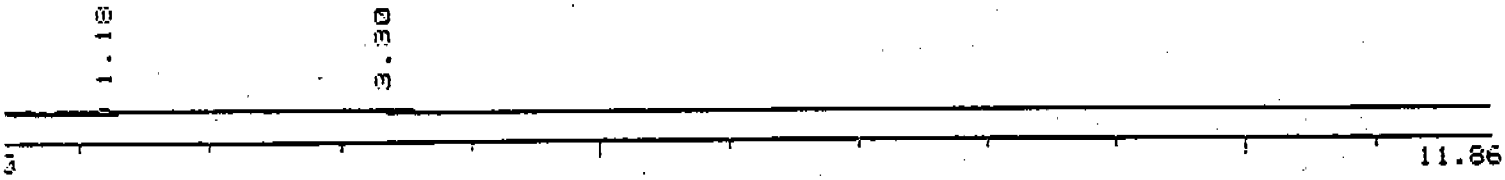
E 1 METHOD 0 RUN 9 INDEX 9 CH= PS= 1

<#	AREA%	RT	AREA BC
	19.97	0.46	2280 02
	65.21	1.12	7445 03
	11.921	3.27	1361 01
	2.899	7.6	331 01
AL	100.		11417

ELANDS

INGER CATCH
LET RUN 3

ECTED AT 03/04/92 16:53:50 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149860.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



FILE: 149860.RAW FROM /10.A/ INJECTED AT: 03/04/92 16:53:50

CH= PS= 1

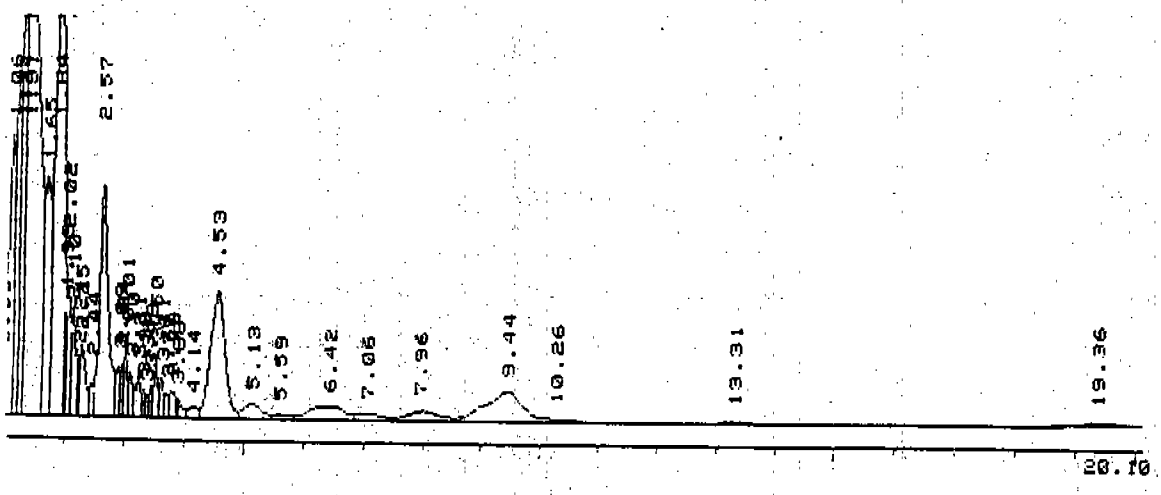
E 1 METHOD 0 RUN 29 INDEX 29

#	AREA%	RT	AREA BC
	46.224	0.3	3770 02
	24.803	1.18	2023 03
	28.973	3.3	2363 01
AL	100.		8156

ELANDS

NGER CATCH
T RUN 1

CTED AT 03/05/92 23:23:40 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149876.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



FILE: 149876.RAW FROM /10.A/ INJECTED AT: 03/05/92 23:23:40

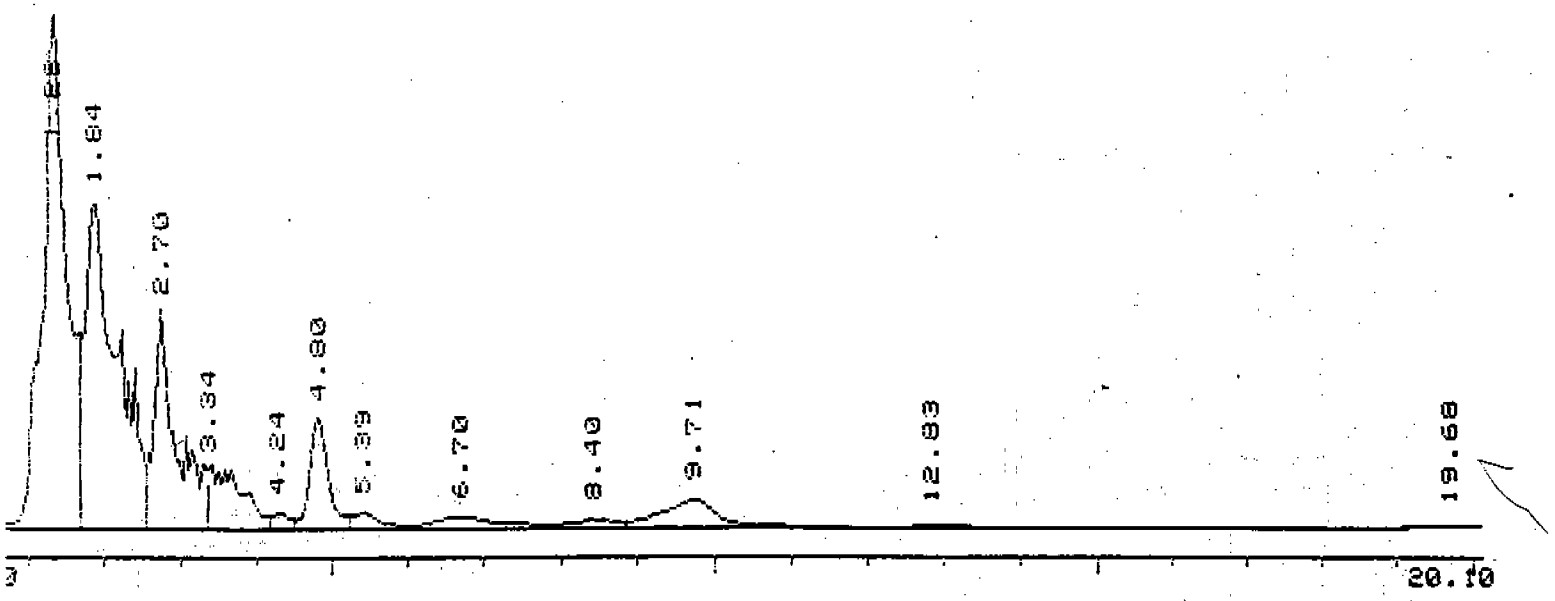
1 METHOD 0 RUN 14 INDEX 14 CH= PS= 1

#	AREA%	RT	AREA	BC
	0.063	0.52	1665	02
	0.123	0.66	3266	02
	0.635	0.93	16820	02
	5.109	1.06	135345	02
	3.838	1.15	101642	02
	11.202	1.24	296759	02
	26.047	1.31	689970	02
	4.733	1.65	125383	02
	14.402	1.84	381485	02
	0.462	1.98	12246	02
	1.295	2.02	34305	02
	1.668	2.1	44173	02
	0.295	2.21	7811	02
	1.465	2.25	38824	02
	0.504	2.44	13340	02
	6.914	2.57	183151	02
	0.833	2.89	22062	02
	0.455	2.94	12074	02
	0.765	3.01	20265	02
	0.573	3.1	15158	02
	0.636	3.21	16859	02
	0.242	3.3	6415	02
	0.183	3.36	4835	02
	0.287	3.42	7596	02
	0.715	3.5	18948	02
	0.614	3.61	16255	02
	0.32	3.71	8489	02
	0.447	3.79	11847	02
	0.078	3.88	2056	02
	0.278	3.88	7373	02
	0.378	4.14	10011	02
	6.04	4.53	160007	02
	0.911	5.13	24132	02
	0.261	5.59	6903	02
	1.599	6.42	42344	02
	0.508	7.06	13458	02
	0.985	7.96	26097	02
	3.739	9.44	99041	02
	0.066	10.26	1759	03
	0.062	13.31	1639	01
	0.27	19.36	7154	01
	100.		2648962	

IELANDS

INGER CATCH
ET RUN 2

ECTED AT 03/06/92 00:35:23 FILENAME: PINELANDS 1 FROM /10.A/
FILE: 149878.RAW PEAK WIDTH = 6 ATTENUATION = 16.0



K FILE: 149878.RAW FROM /10.A/ INJECTED AT: 03/06/92 00:35:23

CH= PS= 1

E 1 METHOD 0 RUN 15 INDEX 15

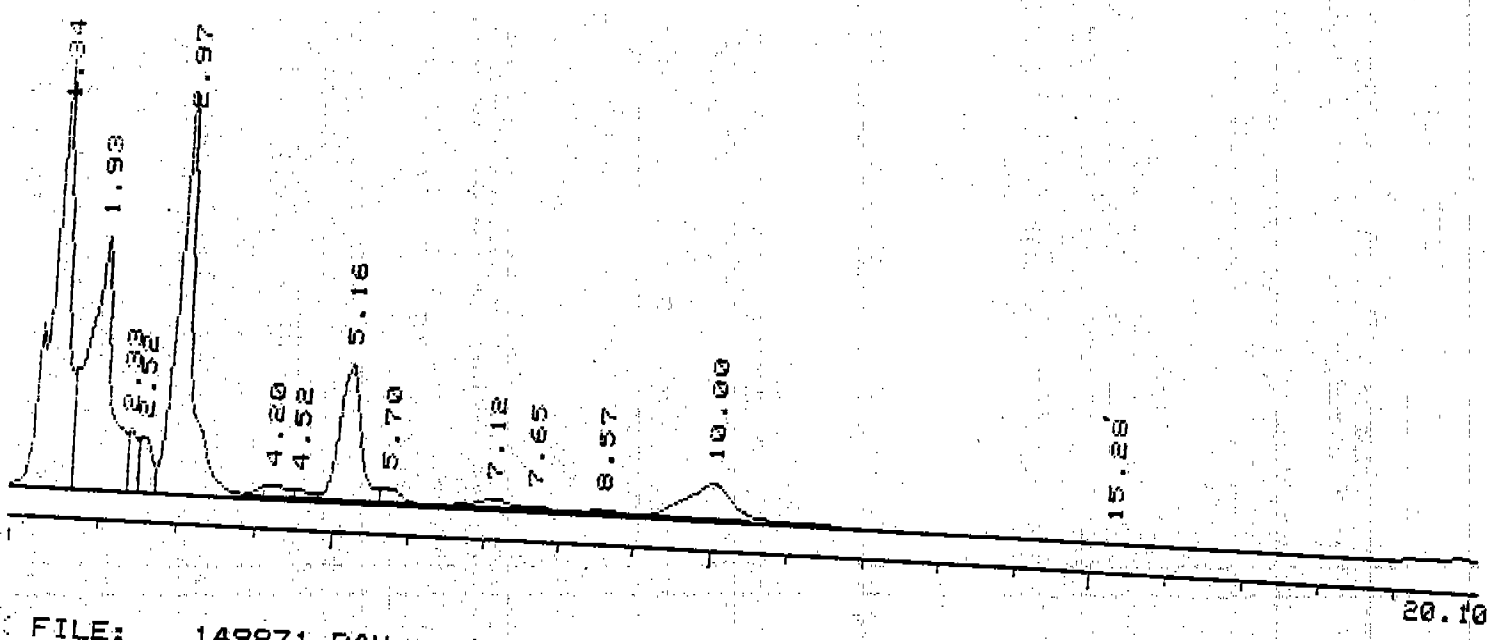
<#	AREA%	RT	AREA	BC
	34.083	1.28	644801	02
	29.834	1.84	564421	02
	13.861	2.7	262231	02
	5.979	3.34	113110	02
	0.832	4.24	15736	02
	6.292	4.8	119048	02
	1.31	5.39	24781	02
	2.281	6.7	43153	02
	1.018	8.4	19259	02
	4.272	9.71	80808	03
	0.237	12.83	4485	01
	0.001	19.68	26	01
AL	100.		1891859	

IELANDS

INGER CATCH
ET RUN 3

ECTED AT 03/05/92 18:07:04
FILE: 149871.RAW

PEAK WIDTH = 6 FILENAME: PINELANDS 1 FROM /10.A/
ATTENUATION = 16.0



FILE: 149871.RAW FROM /10.A/ INJECTED AT: 03/05/92 18:07:04

1 METHOD 0 RUN 16 INDEX 16 CH= PS= 1

#	AREA%	RT	AREA BC
	0.204	0.46	3079 02
	26.337	1.34	397721 02
	21.849	1.93	329953 02
	2.14	2.33	32316 02
	2.189	2.52	33061 02
	26.744	2.97	403874 08
	1.03	4.2	15558 06
	0.44	4.52	6643 06
	9.486	5.16	143253 06
	1.033	5.7	15601 06
	1.271	7.12	19193 06
	0.276	7.65	4170 06
	0.394	8.57	5940 06
	6.527	10.	98567 07
	0.08	15.28	1214 01
	100.		1510143