Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

APPENDIX K/ST

OEPA Stack Test Review Summary Form

COMPANY NAME Barrett Paving - Sidney OH

COUNTY Shelby Cty DATE SENT

PREMISE/ SOURCE NO. 08-1775 SCC CODE

SOURCE DESCRIPTION Portable drum mix asphaltic concrete plant #3

CONTROL EQUIPMENT venturi scrubber

MONITORING EQUIPMENT (CEM) —

TEST FIRM HAYDEN DATE(S) OF TEST 8/1/94

FINAL TEST REPORT RECEIVED ON NOV 17, 1994

POLLUTANT(S) TESTED PM, LEAD

AUDIT SAMPLE SUBMITTED (please circle): YES or NO (if yes) PASSED or FAILED

EMISSION RATES*:	PM	Pb	OPERATING RATES*:	
ACTUAL**	3.35 #/HR	0.0244 #/hr	MAXIMUM**	300 T/HR
ALLOWABLE**	6.5 #/hr	0.35 #/hr	DURING TEST PERIOD**	255 T/HR

TEST RESULTS: PASSED or FAILED or RETEST

WERE ALL THE RUNS WITNESSED BY THE OEPA/LOCAL INSPECTOR(S) YES or NO WITNESSED BY MARK HUNE OF OEPA
IF NO, THEN EXPLAIN UNDER COMMENTS:

COMMENTS: IT IS IMPORTANT TO NOTE THAT BARRETT OPERATED AT 85% OF CAPACITY DURING THIS TEST.

I HEREBY VERIFY THAT THE INFORMATION CONTAINED WITHIN THE STACK TEST REPORT HAS BEEN REVIEWED AND IT HAS BEEN DETERMINED THAT THE TEST PROCEDURES, ANALYSES, AND CALCULATIONS ARE:

[X] AN ACCEPTABLE DEMONSTRATION OF CONFORMANCE WITH THE APPROVED TESTING METHODOLOGY

[ ] AN UNACCEPTABLE DEMONSTRATION OF CONFORMANCE WITH THE APPROVED TESTING METHODOLOGY

11/28/94
Date of Review

Reviewed by Sidney W. Adams

* Based on three run averages
** Specify applicable units

7/22/93

==========

PARTICULATE EMISSION TEST DATA

FACILITY :BARRETT PAVING SIDNEY
PROCESS/RUN NUMBER :
SOURCE/RUN :2
TEST DATE :8/1/94

****

VOLUME METERED AT STD. CONDITIONS	= 32.97769103491864 DSCF	
VOLUME WATER COLLECTED AT STP.	= 4.932936 SCF	
PERCENT MOISTURE BY VOLUME	= 13.01201374341918 %	
MOLECULAR WEIGHT OF STACK GAS	= 27.53388329372126 LB/LB-MOL	
PERCENT EXCESS AIR	= 174.042764793635 %	
AVERAGE STACK GAS VELOCITY	= 15.97723567552022 FT/SEC	23605
ABSOLUTE STACK PRESSURE	= 29.52485294117647 IN. HG	
STACK FLOW RATE AT ACTUAL COND.	= 23967.77078156139 ACFM	18333
STACK FLOW RATE AT STD. COND.	= 18606.21180682631 DSCFM	
STACK EMISSIONS	= 2.397954420649605E-002 GR/DSCF	2.41
	= 3.426676867108286E-006 LB/DSCF	3.44
STACK EMISSION RATE	= 3.825448534978127 LB/HR	3.78
ISOKINETIC VARIATION	= 100.3086514751851 %	101.89

****

TIME OF TEST	= 62.5 MIN
VOLUME METERED	= 31.9 CU.FT
DRY GAS METER CALB. FACT.	= 1.005
TEST BAR. PRESSURE	= 29.53 IN HG
AVERAGE DELTA H	= .9472
AVG. METER TEMP.	= 47.6 DEG. F
VOL. H2O (IMPINGERS)	= 96.90000000000001 ML
WEIGHT GAIN OF SILICA GEL	= 7.9 GM
%CO2	= 2.5 %
%CO	= 0 %
%O2	= 14 %
%N2	= 83.5 %
STATIC P OF STACK	=-7.000000000000001E-002 IN. H2O
STACK TEMP.	= 123.6 DEG. F
PITOT COEFFICIENT	= .85
AVG. ROOT DELTA P	= .2595
STACK DIAMETER	= 0 IN.
MASS PARTICULATE	= 51.35 MG
NOZZLE DIAMETER	= .36 IN

****

==========

PARTICULATE EMISSION TEST DATA

FACILITY :BARRETT PAVING
PROCESS/RUN NUMBER :
SOURCE/RUN :3
TEST DATE :8/1/94

****

VOLUME METERED AT STD. CONDITIONS	= 35.15718822248942 DSCF	
VOLUME WATER COLLECTED AT STP.	= 6.250896000000001 SCF	
PERCENT MOISTURE BY VOLUME	= 15.09583482880629 %	
MOLECULAR WEIGHT OF STACK GAS	= 27.43455083382305 LB/LB-MOL	
PERCENT EXCESS AIR	= 144.585817243527 %	
AVERAGE STACK GAS VELOCITY	= 15.99632928930287 FT/SEC	15.85
ABSOLUTE STACK PRESSURE	= 29.50632352941177 IN. HG	
STACK FLOW RATE AT ACTUAL COND.	= 23996.41349346902 ACFM	23767
STACK FLOW RATE AT STD. COND.	= 18022.55459248204 DSCFM	17859
STACK EMISSIONS	= 2.117888368341412E-002 GR/DSCF	2.13
	= 3.026462478359877E-006 LB/DSCF	3.04
STACK EMISSION RATE	= 3.272675114300363 LB/HR	3.258
ISOKINETIC VARIATION	= 99.08635343674332 %	100.08

****

TIME OF TEST	= 62.5 MIN
VOLUME METERED	= 34.304 CU.FT
DRY GAS METER CALB. FACT.	= 1.005
TEST BAR. PRESSURE	= 29.51 IN HG
AVERAGE DELTA H	= 1.1296
AVG. METER TEMP.	= 51.9 DEG. F
VOL. H2O (IMPINGERS)	= 122.9 ML
WEIGHT GAIN OF SILICA GEL	= 9.9 GM
%CO2	= 3.7 %
%CO	= 0 %
%O2	= 13 %
%N2	= 83.3 %
STATIC P OF STACK	=-5E-002 IN. H2O
STACK TEMP.	= 128.4 DEG. F
PITOT COEFFICIENT	= .85
AVG. ROOT DELTA P	= .2582
STACK DIAMETER	= 0 IN.
MASS PARTICULATE	= 48.35 MG
NOZZLE DIAMETER	= .38 IN

****

==========

PARTICULATE EMISSION TEST DATA

FACILITY :BARRETT PAVING SIDNEY OHIO
PROCESS/RUN NUMBER :
SOURCE/RUN :4
TEST DATE :8/1/94

****

VOLUME METERED AT STD. CONDITIONS	= 34.03837611880438 DSCF	
VOLUME WATER COLLECTED AT STP.	= 6.373278 SCF	
PERCENT MOISTURE BY VOLUME	= 15.77089119208902 %	
MOLECULAR WEIGHT OF STACK GAS	= 27.35953857073507 LB/LB-MOL	
PERCENT EXCESS AIR	= 144.585817243527 %	
AVERAGE STACK GAS VELOCITY	= 15.00290322471617 FT/SEC	15.10
ABSOLUTE STACK PRESSURE	= 29.41558823529412 IN. HG	
STACK FLOW RATE AT ACTUAL COND.	= 22506.15518546123 ACFM	22504
STACK FLOW RATE AT STD. COND.	= 16290.95426404877 DSCFM	16296
STACK EMISSIONS	= 2.142258483350978E-002 GR/DSCF	2.15
	= 3.061287372708547E-006 LB/DSCF	3.08
STACK EMISSION RATE	= 2.992277554674299 LB/HR	3.008
ISOKINETIC VARIATION	= 106.1302201262731 %	106.18

****

TIME OF TEST	= 62.5 MIN
VOLUME METERED	= 33.012 CU.FT
DRY GAS METER CALB. FACT.	= 1.03281
TEST BAR. PRESSURE	= 29.42 IN HG
AVERAGE DELTA H	= 1.036
AVG. METER TEMP.	= 61.18 DEG. F
VOL. H2O (IMPINGERS)	= 127.7 ML
WEIGHT GAIN OF SILICA GEL	= 7.7 GM
%CO2	= 3.7 %
%CO	= 0 %
%O2	= 13 %
%N2	= 83.3 %
STATIC P OF STACK	=-6E-002 IN. H2O
STACK TEMP.	= 143.8 DEG. F
PITOT COEFFICIENT	= .84
AVG. ROOT DELTA P	= .2412
STACK DIAMETER	= 0 IN.
MASS PARTICULATE	= 47.35 MG
NOZZLE DIAMETER	= .38 IN

****

MAX 300 T/HR

PARTICULATE EMISSION TEST REVIEW SHEET

1. Facility Name: Cam Paving
2. Run Number: 1 2 3 4
3. Test Date: 8/1/94
4. Time of Test: ~~75~~ 62.5 62.5 (min) 62.5
5. Volume Metered: ~~29.299~~ 31.9 34.304 (ft^3) 33.012
6. Dry Gas Meter Calb. Factor: ~~1.035~~ 1.005 1.0381
7. Test Barometric Pressure: ~~29.50~~ 29.53 29.51 (in. Hg) 29.42
8. Avg. Delta H: ~~.5509~~ .1472 1.1296 (in. H_2O) 1.036
9. Avg. Meter Temp: ~~30.5~~ 47.6 51.9 (Deg. F) 61.18
10. Volume H_2O (Impingers): ~~77~~ 96.9 122.9 (ML) 127.7
11. Weight Gain of Silica Gel: ~~2.3~~ 7.9 9.9 (GM) 7.7
12. % CO_2: ~~4~~ 2.5, 3.7, 3.9
13. % CO: 0
14. % O_2: ~~13.3~~ 14 13 13.5
15. % N_2: ~~80.7~~ 83.5, 83.3, 83.3
16. Static Pressure of Stack: ~~-.015~~, -.07, -.05 (in. H_2O) -0.06
17. Stack Temp: ~~115.4~~ 123.6 128.4 (Deg. F) 143.8
18. Pitot Coefficient: ~~.84~~ .85 .85 .84
19. Avg. Root Delta P: ~~.3022~~ .2595 .2582 .3307 .2412
20. Stack Diameter: 60 x 60 (in.)
21. Mass Particulate: 51.35, 48.35 47.35 (mg)
22. Nozzle Diameter: ~~0.347~~, .360, .380 (in.) .380

Coal Data

1. % Hydrogen: _____
2. % Carbon: _____
3. % Sulfur: _____
4. % Nitrogen: _____
5. % Oxygen: _____
6. F Factor: _____
7. Gross Calorific Value: _____

RECEIVED

NOV 17 1994

REGIONAL AIR POLLUTION
CONTROL AGENCY

COMPLIANCE TEST REPORT
DETERMINATION OF FILTERABLE PARTICULATE AND LEAD EMISSIONS
BARRETT PAVING MATERIALS, INC.
SIDNEY, OHIO

prepared for

BARRETT PAVING MATERIALS, INC.
727 East Ash Street
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prepared by:

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P.N. 266.013
November 4, 1994

HAYDEN
ENVIRONMENTAL GROUP

Executive Summary

Hayden Environmental Group, Inc. was retained by Barrett Paving Materials, Inc to determine the particulate and lead emission rates from their asphalt plant located in Sidney, Ohio. The evaluation was performed to demonstrate compliance with Ohio Environmental Protection Agency regulations restricting emissions from stationary sources. The evaluation was a retest of the compliance test performed on August 1, 1994. Emission samples were collected and analyzed using USEPA Reference Methods for stationary source sampling. The tests were conducted on October 12-13, 1994. The results of the tests are summarized below:

Summary of Particulate and Lead Emissions

Run No.	Particulate Emission Rate (lb/hr)[a]	Lead Emission Rate (lb/hr)[a]
2	3.79	2.11E-02
3	3.26	2.37E-02
4	3.01	2.85E-02
Averages	3.35	2.44E-02

[a] pounds per hour

Permit Allowables:
Lead - 0.35 lbs/hr

PM - 6.5 lbs/hr
0.04 gr/dscf

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3.0 Sampling Site Description 1
Figure 3.1 Sample Site Detail 2

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4.3 Dry Molecular Weight (USEPA Method 3) 3
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APPENDIX A Process Data
APPENDIX B Field Data
APPENDIX C Laboratory Data
APPENDIX D Calculations
APPENDIX E Quality Assurance Procedures and Results

1.0 Introduction

Hayden Environmental Group, Inc. (Hayden) was retained by Barrett Paving Materials, Inc (Barrett) to perform a particulate and lead emissions evaluation on their asphalt plant located in Sidney, Ohio. The evaluation, which was performed on October 12-13, 1994, was a retest of the compliance test performed on August 1, 1994. Triplicate tests were conducted using USEPA Reference Methods 1, 2, 3, 4, 5, and 12. Mr. Jim Meckstroth and Mr. Kevin Pflum of Barrett coordinated the test schedules with plant operations. Mr. Mark Hines of the Ohio Environmental Protection Agency (OEPA) Southwest District Office (SWDO) was on-site to verify process conditions and witness test procedures. The emission tests were performed by the Hayden test team of Mr. Bruce Sarven, Mr. Bert Forsyth, and Mr. Matt Hayden. The emission and fuel samples were analyzed by Hayden Laboratories located in Miamisburg, Ohio.

2.0 Process Description

Barrett produces asphaltic paving materials at their drum mix asphalt plant located in Sidney, Ohio. The plant was manufactured by Astec and rated for an maximum production of approximately 300 tons per hour and typically operates between 250-300 tons per hour.

In the asphalt production process, raw aggregate of various sizes and proportions are fed from bins into an oil-fired rotary drum kiln where it is heated, mixed and dried. Asphalt cement is mixed with the dried materials as it exits the drum drier. Recycled asphalt can also be added to the drum. The finished product is loaded into one of two storage silos, one with a capacity of approximately 85 tons and the other 90 tons. The drum kiln can be fired with either #4 diesel fuel or recycled oil.

Exhaust emissions from the drum kiln are ducted through an emissions control system consisting of a venturi scrubber system. The exhaust gases from the scrubber system are vented to the atmosphere through an exhaust stack.

The kiln was fired with recycled oil during the emissions testing. Production rates and process operating conditions were monitored and recorded by Barrett personnel. A summary of the production rates are shown in Appendix A. The results from the fuel oil analysis are included in Appendix C.

3.0 Sampling Site Description

Emissions from the baghouse are vented through a vertical, square stack measuring 60 inches on a side. Five sampling ports are located 206 inches or 3.4 equivalent stack diameters downstream and 72 inches or 1.2 equivalent stack diameters upstream from the closest air flow disturbances. A drawing of the sampling site is provided in Figure 3.1.

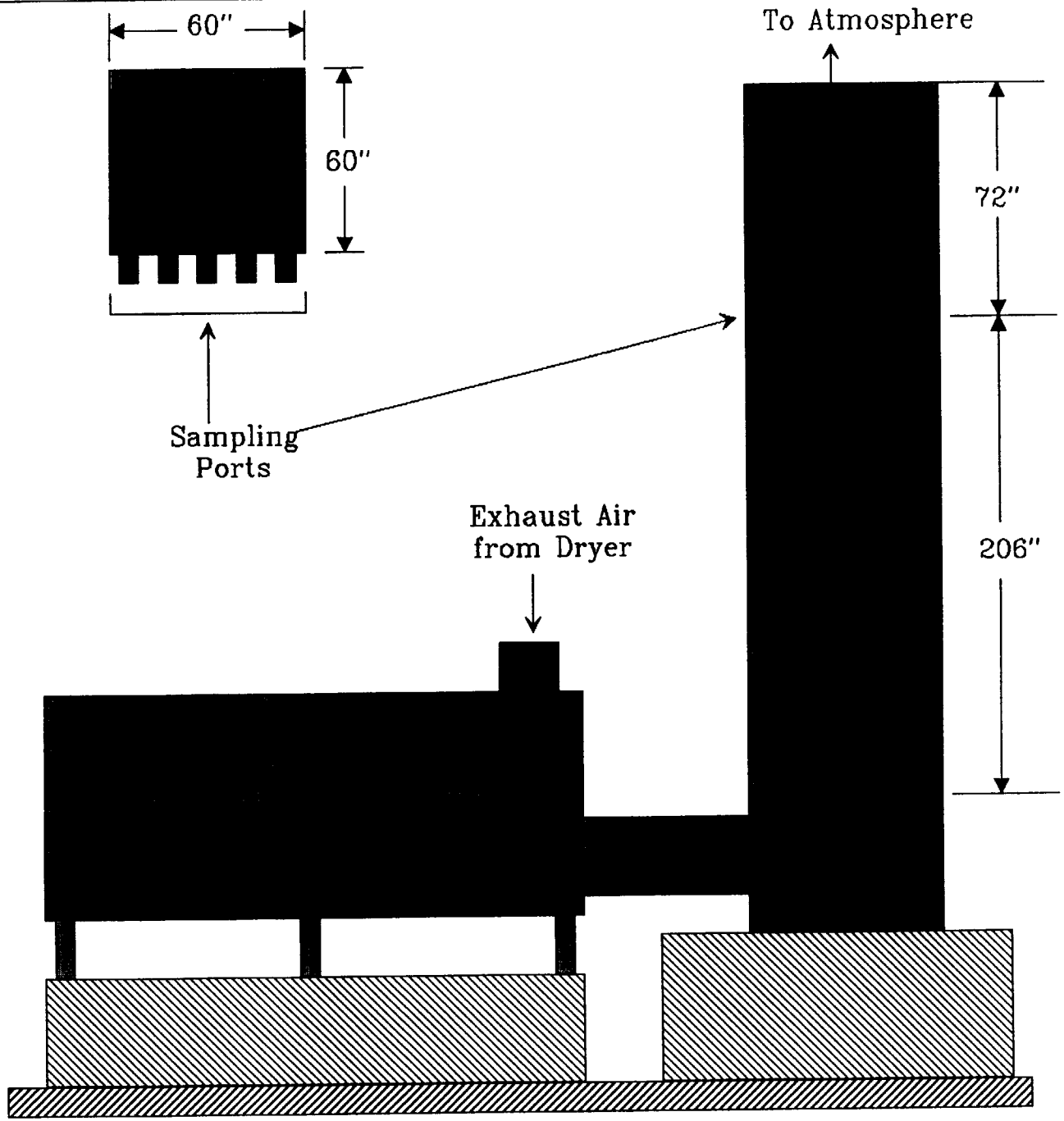

Figure 3.1. Sampling Site Detail

4.0 Sampling and Analytical Procedures

The sampling and analytical procedures conformed to the most recent revisions of USEPA Reference Methods for stationary sources. Specifically, USEPA Reference Methods 1, 2, 3, 4, 5, and 12 were used. A brief description of each procedure is included below:

4.1 Measurement Sites (USEPA Method 1)

The location of measurement sites and the number of traverse points were determined using USEPA Reference Method 1, "Sample and Velocity Traverses for Stationary Sources."

4.2 Velocities and Volumetric Flow Rates (USEPA Method 2)

The stack gas velocity and volumetric flow rate were determined using USEPA Reference Method 2, "Determination of Stack Gas Velocity and Volumetric Flow Rate." Stack gas velocities were measured on a 10" Dwyer oil manometer using a calibrated S-Type pitot tube. Stack gas temperatures were measured with a calibrated type "K" thermocouple and Omega digital temperature readout.

4.3 Dry Molecular Weight (USEPA Method 3)

The stack gas dry molecular weight was determined using USEPA Reference Method 3, "Gas Analysis for Carbon Dioxide, Oxygen, Excess Air, and Dry Molecular Weight." Several grab samples of the stack gas were collected and analyzed during each test with Fyrite combustion gas analyzers which directly measure concentrations of O_2 and CO_2.

4.4 Moisture (USEPA Method 4)

The stack gas moisture content was determined using USEPA Reference Method 4, "Determination of Moisture Content in Stack Gases." The samples were collected in a series of chilled impingers. The moisture collected within the impingers was analyzed by gravimetric analysis.

4.5 Particulate Matter (USEPA Method 5)

The particulate emissions were determined using USEPA Reference Method 5, "Determination of Particulate Emissions from Stationary Sources." The stack gas samples were collected isokinetically through a heated glass or stainless steel lined probe, a heated (248°$\pm$25°F) tared glass fiber filter, and a series of cooled impingers (to condense the moisture). The acetone from each probe rinse was transferred to a tared beaker before being evaporated at a temperature below its boiling point. The filter and the residue from the probe rinse were analyzed by gravimetric analysis. A drawing of the sample train is included in Figure 4.1.

4.6 Lead (USEPA Method 12)

The Lead (Pb) emissions were determined using USEPA Reference Method 12, "Determination of Inorganic Lead Emissions from Stationary Sources." The Pb emissions were collected in conjunction with the particulate emissions. The impingers of the Method 5 train were charged with 0.1N nitric acid to absorb any lead passing through the filter. Following the acetone rinse, the front half glassware was rinsed with 0.1N nitric acid to recover any lead that was not removed with the acetone rinse. The particulate from the filter and acetone rinse were digested and re-suspended in nitric acid after the particulate had been analyzed. The re-suspended filter and acetone rinse was combined with the 0.1N nitric acid probe rinse and impinger solution. The Pb was analyzed by an inductively coupled argon plasma spectrophotometer (ICAP). A simplified drawing of the particulate and lead sampling train is included in Figure 4.1.

4.7 Fuel Analysis

A composite sample of the fuel oil was collected during the emissions testing by Barrett personnel. The sample was analyzed for arsenic (As), cadmium (Cd), chromium (Cr), lead (Pb), mercury (Hg), total halogens, polychlorinated biphenyls (PCBs), flash point, and heat content. The metals content of the fuel oil, except for Hg, was analyzed on an inductively coupled argon plasma spectrophotometer (ICAP). The Hg content of the fuel oil was analyzed by cold vapor atomic absorption spectroscopy (CVAAS). The total halogen content of the fuel oil was analyzed by ion chromatograph (IC). The PCBs were analyzed on a gas chromatograph (GC) with electron capture detector.

The Hayden Environmental Group Inc. Air Sampling Quality Assurance Program includes procedures for equipment calibration that follow USEPA and manufacturers guidelines, use of and strict adherence to standard published procedures, and traceability protocols for the recording and calculation of data.

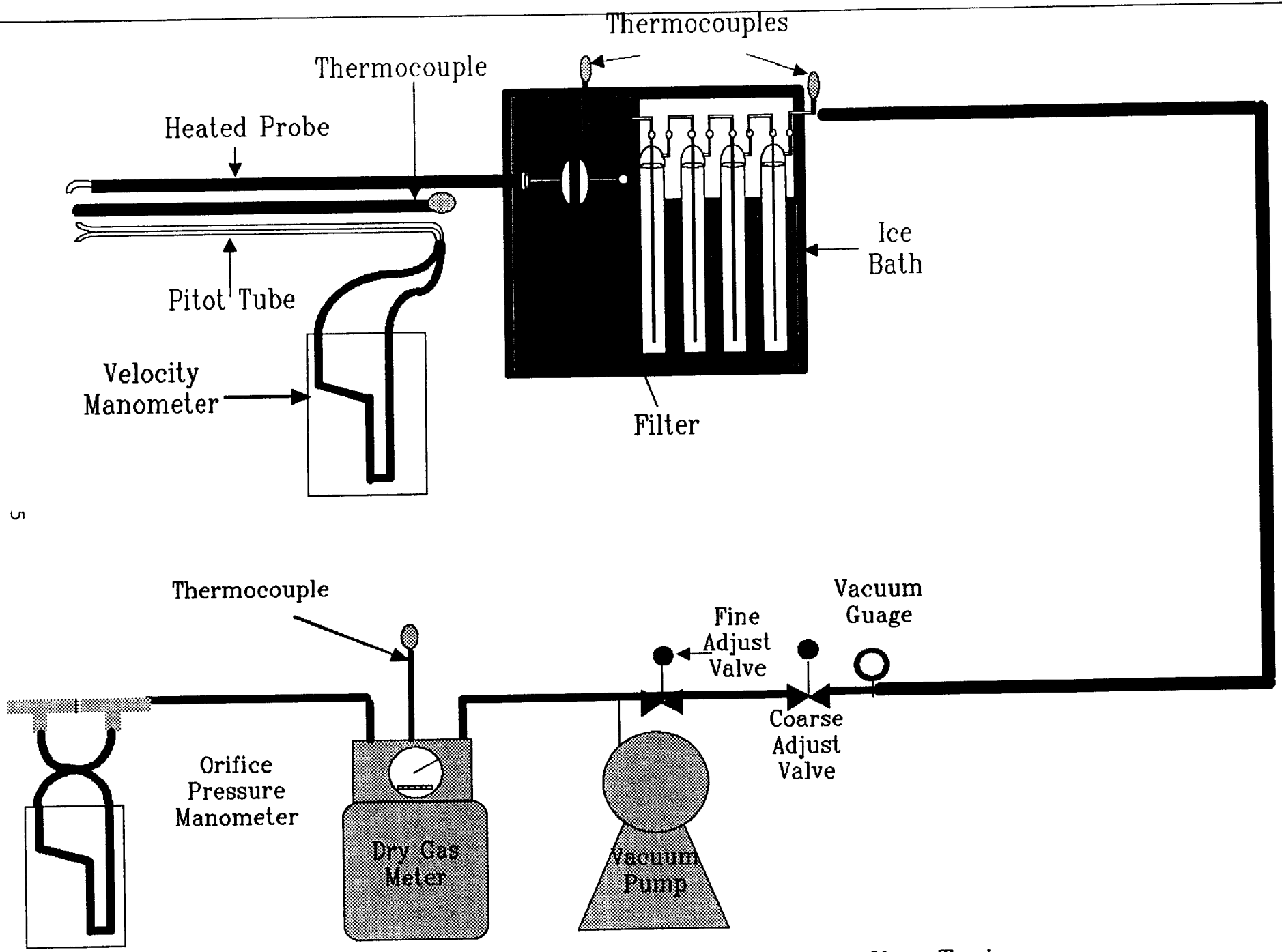

Figure 4.1 Particulate and Lead Sampling Train

5.0 Test Results

Table 5.1 summarizes the exhaust stack gas conditions. The stack gas velocity averaged 15.5 feet per second (fps). The volumetric flow rate averaged 23,293 actual cubic feet per minute (acfm) or 17,496 dry standard cubic feet per minute (dscfm) at 132°F and 14.6% moisture. The stack gas concentration of oxygen and carbon dioxide were 13.4% and 3.4%, respectively.

Table 5.2 summarizes the exhaust stack particulate and lead emissions. The average stack gas particulate concentration was 2.23E-02 grains per dry standard cubic foot (gr/dscf) or 3.19E-06 pounds per dry standard cubic foot (lb/dscf). The particulate emission rate averaged 3.35 pounds per hour (lb/hr). The average stack gas lead concentration was 0.377 micrograms per liter (μg/L) or 2.35E-08 lb/dscf. The lead emission rate averaged 2.44E-02 lb/hr.

BARRETT PAVING MATERIALS, INC., SIDNEY OHIO

Table 5.1 Summary of Stack Gas Conditions

Run No.	Time Date	Velocity (fps)[a]	Flow Rate (acfm)[b]	Flow Rate (dscfm)[c]	Temp. (°F)[d]	Moisture (%)	O_2 (%)	CO_2 (%)
2	1009-1117 10/12/94	15.7	23,606	18,333	124	13.0	13.3	4.0
3	1241-1349 10/12/94	15.9	23,768	17,859	128	15.1	14.0	2.5
4	0722-0829 10/13/94	15.0	22,504	16,297	144	15.8	13.0	3.7
Averages		15.5	23,293	17,496	132	14.6	13.4	3.4

[a] feet per second
[b] actual cubic feet per minute
[c] dry standard cubic feet per minute
[d] degrees Fahrenheit

BARRETT PAVING MATERIALS, INC., SIDNEY OHIO

Table 5.2 Summary of Particulate Emissions

Run No.	Time Date	Particulate			Lead		
		Concentration		Emission Rate (lb/hr)[c]	Concentration		Emission Rate (lb/hr)[c]
		(gr/dscf)[a]	(lb/dscf)[b]		(μg/L)[d]	(lb/dscf)[b]	
2	1009-1117 10/12/94	2.41E-02	3.44E-06	3.79	0.308	1.92E-08	2.11E-02
3	1231-1349 10/12/94	2.13E-02	3.04E-06	3.26	0.355	2.22E-08	2.37E-02
4	0722-0829 10/13/94	2.15E-02	3.08E-06	3.01	0.467	2.91E-08	2.85E-02
Averages		2.23E-02	3.19E-06	3.35	0.377	2.35E-08	2.44E-02

[a] grains per dry standard cubic foot
[b] pounds per dry standard cubic foot
[c] pounds per hour
[d] micrograms per liter

6.0 Discussion and Interpretation

At the conclusion of the first test run, OEPA, Barrett, and Hayden personnel identified a problem with the burner in the kiln. The burner conditions were not optimized, resulting in incomplete combustion and unrepresentative conditions. All parties agreed that this test run would be discarded and the samples were not analyzed. The burner was adjusted and a fourth test run conducted to provide three valid test results.

BARRETT PAVING MATERIALS, INC., SIDNEY OHIO

Table A.1 Summary of Production and Operating Conditions

Run No.	Time Date	Asphalt Production		
		Operation time (minutes)	Asphalt produced (tons)	Production Rate (TPH)[a]
2	1011-1111 10/12/94	60	253	253
3	1239-1344 10/12/94	65	275	254
4	1325-1445	60	257	257
Averages		62	262	255

[a] tons per hour

07:36 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	250.6	139.75
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.9	6.45
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 146.20
MIX TPH =259.4
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 6.45, TPH= 8.9, ACT %= 3.43
AC ACCUM. PERCENT= 4.41%

07:41 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	249.2	160.55
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.7	7.18
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 167.73
MIX TPH =257.9
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 7.18, TPH= 8.7, ACT %= 3.37
AC ACCUM. PERCENT= 4.28%

07:46 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	249.5	181.40
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.8	7.92
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 189.32
MIX TPH =258.3
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 7.92, TPH= 8.8, ACT %= 3.40
AC ACCUM. PERCENT= 4.18%

07:51 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	251.1	202.24
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.9	8.65
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 210.89
MIX TPH =260.0
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 8.65, TPH= 8.9, ACT %= 3.42

AC ACCUM. PERCENT= 4.10%

07:56 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	250.0	223.15
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.8	9.39
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 232.54
MIX TPH =259.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.9%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 9.39, TPH= 8.8, ACT %= 3.38
AC ACCUM. PERCENT= 4.03%

00:01 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	252.2	244.18
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.9	10.12
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 254.30
MIX TPH =261.1
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 10.12, TPH= 8.9, ACT %= 3.40
AC ACCUM. PERCENT= 3.97%

08:06 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	253.6	265.27
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.9	10.87
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 276.14
MIX TPH =262.5
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 10.87, TPH= 8.9, ACT %= 3.39
AC ACCUM. PERCENT= 3.93%

08:11 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	253.6	286.40
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.9	11.61
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 298.01
MIX TPH =262.5
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 11.61, TPH= 8.9, ACT %= 3.39
AC ACCUM. PERCENT= 3.89%

08:16 10/12/94 JMF #= 250 MIX #= 3

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	352.9	307.52
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.9	12.35
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 319.87
MIX TPH =261.8
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 12.35, TPH= 8.9, ACT %= 3.39
AC ACCUM. PERCENT= 3.86%

08:21 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	249.8	328.43
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.9	13.09
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 341.52
MIX TPH =258.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 13.09, TPH= 8.9, ACT %= 3.44
AC ACCUM. PERCENT= 3.83%

08:26 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	250.5	349.22
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.8	13.82
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 363.04
MIX TPH =259.3
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 13.82, TPH= 8.8, ACT %= 3.39
AC ACCUM. PERCENT= 3.80%

08:31 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.8	369.94
RCY	.0	.0	.0	.00
AC	3.4	3.38	8.6	14.56
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 384.50
MIX TPH =255.4
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 14.56, TPH= 8.6, ACT %= 3.36
AC ACCUM. PERCENT= 3.78%

08:36 10/12/94 JMF #= 250 MIX #= 4

DES % ACT % TPH TONS

AGG 96.6 96.6 248.3 [illegible]
RCY .0 .0 .0 .00
AC 3.4 3.43 8.9 15.28
MF .0 .0 .0 .00
ASA .0 .0 .00 .00
TOTAL MIX TONS= 405.91
MIX TPH =257.2
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 15.28, TPH= 8.9, ACT %= 3.45
AC ACCUM. PERCENT= 3.76%

08:41 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.3	411.20
RCY	.0	.0	.0	.00
AC	3.4	3.38	8.6	16.01
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 427.21
MIX TPH =255.0
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 16.01, TPH= 8.6, ACT %= 3.37
AC ACCUM. PERCENT= 3.74%

08:46 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.8	431.80
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.7	16.73
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 448.53
MIX TPH =255.4
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 16.73, TPH= 8.7, ACT %= 3.40
AC ACCUM. PERCENT= 3.72%

08:51 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	247.5	452.45
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.7	17.46
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 469.91
MIX TPH =256.2
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 17.46, TPH= 8.7, ACT %= 3.39
AC ACCUM. PERCENT= 3.71%

08:56 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	249.6	473.22
RCY	.0	.0	.0	.00

AC	3.4	[illegible]	8.9	[illegible]
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 491.41
MIX TPH =258.5
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 18.19, TPH= 8.9, ACT %= 3.44
AC ACCUM. PERCENT= 3.70%

09:01 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	249.3	494.05
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.9	18.92
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 512.97
MIX TPH =258.2
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 18.92, TPH= 8.9, ACT %= 3.44
AC ACCUM. PERCENT= 3.68%

09:06 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	248.3	514.81
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.7	19.65
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 534.46
MIX TPH =257.0
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 19.65, TPH= 8.7, ACT %= 3.38
AC ACCUM. PERCENT= 3.67%

09:11 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	247.2	535.42
RCY	.0	.0	.0	.00
AC	3.4	3.38	8.6	20.38
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 555.80
MIX TPH =255.8
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 20.38, TPH= 8.6, ACT %= 3.36
AC ACCUM. PERCENT= 3.66%

10:11 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.1	716.45
RCY	.0	.0	.0	.00
AC	3.4	3.38	8.6	28.77
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 745.22
MIX TPH =254.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 28.77, TPH= 8.6, ACT %= 3.37
AC ACCUM. PERCENT= 3.86%

10:16 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	243.9	736.83
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.6	29.49
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 766.32
MIX TPH =252.5
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 29.49, TPH= 8.6, ACT %= 3.40
AC ACCUM. PERCENT= 3.84%

10:21 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	243.3	757.04
RCY	.0	.0	.0	.00
AC	3.4	3.36	8.5	30.20
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 787.24
MIX TPH =251.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 30.20, TPH= 8.5, ACT %= 3.37
AC ACCUM. PERCENT= 3.83%

10:26 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.7	777.44
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.6	30.91
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 808.35
MIX TPH =255.4
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%

VIRGIN AC TONS= 30.91, TPH= 8.5, ACT %= 3.36
AC ACCUM. PERCENT= 3.82%

10:31 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	237.3	797.38
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.4	31.62
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 829.00
MIX TPH =245.6
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 31.62, TPH= 8.4, ACT %= 3.42
AC ACCUM. PERCENT= 3.81%

10:36 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	242.6	817.73
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.6	32.34
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 850.07
MIX TPH =251.2
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 32.34, TPH= 8.6, ACT %= 3.42
AC ACCUM. PERCENT= 3.80%

10:41 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	247.2	838.30
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.7	33.06
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 871.36
MIX TPH =256.0
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 33.06, TPH= 8.7, ACT %= 3.39
AC ACCUM. PERCENT= 3.79%

10:46 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.9	858.79
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.8	33.78
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 892.57
MIX TPH =255.6
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 33.78, TPH= 8.8, ACT %= 3.44

10:51 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	245.9	879.30
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.6	34.50
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 913.80
MIX TPH =254.6
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.5%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 34.50, TPH= 8.6, ACT %= 3.37
AC ACCUM. PERCENT= 3.77%

10:56 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	245.9	899.78
RCY	.0	.0	.0	.00
AC	3.4	3.42	8.7	35.22
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 935.00
MIX TPH =254.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 35.22, TPH= 8.7, ACT %= 3.41
AC ACCUM. PERCENT= 3.76%

11:01 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	247.3	920.32
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.8	35.94
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 956.26
MIX TPH =256.1
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 35.94, TPH= 8.8, ACT %= 3.43
AC ACCUM. PERCENT= 3.75%

11:06 10/12/94 JMF #= 250 MIX #= 4

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	245.6	940.74
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.7	36.66
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 977.40
MIX TPH =254.4
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 36.66, TPH= 8.7, ACT %= 3.41
AC ACCUM. PERCENT= 3.75%

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	844.5	961.20
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.7	37.38
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 998.58

MIX TPH =253.1

AC SP. GR. =1.033

AGG MOIST. = 4.0%

RCY MOIST. = 1.8%

AC IN RCY. = 5.0%

VIRGIN AC TONS= 37.38, TPH= 8.7, ACT %= 3.43

AC ACCUM. PERCENT= 3.74%

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11:49 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.2 248.1  1011.61
RCY   .0     .0    .0       .00
AC   4.2    4.24 11.0     39.83
MF    .0     .0    .0       .00
ASA   .0     .0   .00       .00
TOTAL MIX TONS= 1051.44
MIX TPH =259.1
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    39.83, TPH=  11.0, ACT %=  4.24
AC ACCUM. PERCENT=   3.78%

11:54 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.8 246.3  1031.80
RCY   .0     .0    .0       .00
AC   4.2    4.21 10.8     40.72
MF    .0     .0    .0       .00
ASA   .0     .0   .00       .00
TOTAL MIX TONS= 1072.52
MIX TPH =257.1
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    40.72, TPH=  10.8, ACT %=  4.20
AC ACCUM. PERCENT=   3.79%

11:59 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.8 246.9  1052.39
RCY   .0     .0    .0       .00
AC   4.2    4.19 10.8     41.62
MF    .0     .0    .0       .00
ASA   .0     .0   .00       .00
TOTAL MIX TONS= 1094.01
MIX TPH =257.7
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    41.62, TPH=  10.8, ACT %=  4.19
AC ACCUM. PERCENT=   3.80%

12:04 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.8 248.8  1073.07
RCY   .0     .0    .0       .00
AC   4.2    4.24 11.0     42.52
MF    .0     .0    .0       .00
ASA   .0     .0   .00       .00
TOTAL MIX TONS= 1115.59
MIX TPH =259.8
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
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VIRGIN AC TONS= 42.52, TPH= 11.0, ACT %= 4.20
AC ACCUM. PERCENT= 3.81%

12:09 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	247.6	1093.77
RCY	.0	.0	.0	.00
AC	4.2	4.25	11.0	43.43
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1137.20
MIX TPH =258.6
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 43.43, TPH= 11.0, ACT %= 4.25
AC ACCUM. PERCENT= 3.81%

12:14 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	249.0	1114.39
RCY	.0	.0	.0	.00
AC	4.2	4.19	10.9	44.34
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1158.73
MIX TPH =259.9
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 44.34, TPH= 10.9, ACT %= 4.19
AC ACCUM. PERCENT= 3.82%

12:19 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	250.0	1135.20
RCY	.0	.0	.0	.00
AC	4.2	4.24	11.1	45.25
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1180.45
MIX TPH =261.1
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 45.25, TPH= 11.1, ACT %= 4.25
AC ACCUM. PERCENT= 3.83%

12:24 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	249.5	1156.06
RCY	.0	.0	.0	.00
AC	4.2	4.23	11.0	46.16
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1202.22
MIX TPH =260.5
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 46.16, TPH= 11.0, ACT %= 4.22

AC ACCUM. PERCENT= [illegible]

12:29 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	248.9	1176.72
RCY	.0	.0	.0	.00
AC	4.2	4.19	10.9	47.07
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1223.79
MIX TPH =259.8
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 47.07, TPH= 10.9, ACT %= 4.19
AC ACCUM. PERCENT= 3.84%

12:34 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	250.3	1197.61
RCY	.0	.0	.0	.00
AC	4.2	4.20	11.0	47.98
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1245.59
MIX TPH =261.3
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 47.98, TPH= 11.0, ACT %= 4.20
AC ACCUM. PERCENT= 3.85%

12:39 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	248.0	1218.25
RCY	.0	.0	.0	.00
AC	4.2	4.20	10.9	48.89
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1267.14
MIX TPH =258.8
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 48.89, TPH= 10.9, ACT %= 4.21
AC ACCUM. PERCENT= 3.85%

12:44 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	243.9	1238.67
RCY	.0	.0	.0	.00
AC	4.2	4.24	10.8	49.79
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1288.46
MIX TPH =254.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 49.79, TPH= 10.8, ACT %= 4.24
AC ACCUM. PERCENT= 3.86%

```
12:49 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.6 245.9  1259.20
RCY   .0    .0    .0      .00
AC   4.2   4.23 10.9    50.68
MF    .0    .0    .0      .00
ASA   .0    .0   .00      .00
TOTAL MIX TONS= 1309.86
MIX TPH =256.8
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    50.68, TPH=  10.9, ACT %=  4.24
AC ACCUM. PERCENT=   3.86%

12:54 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.7 246.3  1279.81
RCY   .0    .0    .0      .00
AC   4.2   4.27 11.0    51.59
MF    .0    .0    .0      .00
ASA   .0    .0   .00      .00
TOTAL MIX TONS= 1331.40
MIX TPH =257.2
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    51.59, TPH=  11.0, ACT %=  4.27
AC ACCUM. PERCENT=   3.87%

12:59 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.8 245.6  1300.27
RCY   .0    .0    .0      .00
AC   4.2   4.17 10.7    52.49
MF    .0    .0    .0      .00
ASA   .0    .0   .00      .00
TOTAL MIX TONS= 1352.76
MIX TPH =256.3
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    52.49, TPH=  10.7, ACT %=  4.17
AC ACCUM. PERCENT=   3.88%

13:04 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
AGG 95.8  95.8 245.2  1320.55
RCY   .0    .0    .0      .00
AC   4.2   4.17 10.7    53.37
MF    .0    .0    .0      .00
ASA   .0    .0   .00      .00
TOTAL MIX TONS= 1373.92
MIX TPH =255.9
AC SP. GR. =1.033
AGG MOIST. =  4.0%
RCY MOIST. =  1.8%
AC IN RCY. =  5.0%
VIRGIN AC TONS=    53.37, TPH=  10.7, ACT %=  4.18
AC ACCUM. PERCENT=   3.88%

13:09 10/12/94     JMF #=     250     MIX #=     2
    DES % ACT % TPH     TONS
```

AGG 95.8 95.8 240.4 1340.27
RCY .0 .0 .0 .00
AC 4.2 4.21 10.8 54.26
MF .0 .0 .0 .00
ASA .0 .0 .00 .00
TOTAL MIX TONS= 1395.15
MIX TPH =256.2
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 54.26, TPH= 10.8, ACT %= 4.21
AC ACCUM. PERCENT= 3.88%

13:14 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.3	242.3	1361.06
RCY	.0	.0	.0	.00
AC	4.2	4.19	10.6	55.15
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1416.21
MIX TPH =252.0
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 55.15, TPH= 10.6, ACT %= 4.19
AC ACCUM. PERCENT= 3.89%

13:19 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.7	242.0	1381.38
RCY	.0	.0	.0	.00
AC	4.2	4.25	10.7	56.04
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1437.42
MIX TPH =252.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 56.04, TPH= 10.7, ACT %= 4.23
AC ACCUM. PERCENT= 3.89%

13:24 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	239.9	1401.40
RCY	.0	.0	.0	.00
AC	4.2	4.22	10.6	56.92
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1458.32
MIX TPH =250.5
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 56.92, TPH= 10.6, ACT %= 4.23
AC ACCUM. PERCENT= 3.90%

13:29 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	234.9	1421.03
RCY	.0	.0	.0	.00

AC 4.2 4.19 10.2 [illegible]
MF .0 .0 .0 .00
ASA .0 .0 .00 .00
TOTAL MIX TONS= 1470.88
MIX TPH =243.1
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 57.79, TPH= 10.3, ACT %= 4.20
AC ACCUM. PERCENT= 3.90%

13:34 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.9	242.3	1441.23
RCY	.0	.0	.0	.00
AC	4.2	4.14	10.5	58.67
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1499.90
MIX TPH =252.8
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 58.67, TPH= 10.5, ACT %= 4.15
AC ACCUM. PERCENT= 3.91%

13:39 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	243.1	1461.48
RCY	.0	.0	.0	.00
AC	4.2	4.16	10.6	59.55
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1521.03
MIX TPH =253.7
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 59.55, TPH= 10.6, ACT %= 4.17
AC ACCUM. PERCENT= 3.91%

13:44 10/12/94 JMF #= 250 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	95.8	95.8	241.7	1481.76
RCY	.0	.0	.0	.00
AC	4.2	4.17	10.5	60.44
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 1542.20
MIX TPH =252.2
AC SP. GR. =1.033
AGG MOIST. = 4.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 60.44, TPH= 10.5, ACT %= 4.16
AC ACCUM. PERCENT= 3.91%

07:27 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	250.6	47.92
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.8	1.89
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 49.81
MIX TPH =259.4
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 1.89, TPH= 8.8, ACT %= 3.39
AC ACCUM. PERCENT= 3.79%

07:32 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	251.5	68.85
RCY	.0	.0	.0	.00
AC	3.4	3.37	8.8	2.62
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 71.47
MIX TPH =260.2
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 2.62, TPH= 8.8, ACT %= 3.38
AC ACCUM. PERCENT= 3.66%

07:37 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	250.2	89.76
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.9	3.36
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 93.12
MIX TPH =259.1
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 3.36, TPH= 8.9, ACT %= 3.43
AC ACCUM. PERCENT= 3.60%

07:42 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.7	250.6	110.65
RCY	.0	.0	.0	.00
AC	3.4	3.35	8.7	4.09
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 114.74
MIX TPH =259.3
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%

VIRGIN AC TONS= [illegible] TPH= [illegible] ACT %= [illegible]
AC ACCUM. PERCENT= 3.56%

07:47 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	251.2	131.59
RCY	.0	.0	.0	.00
AC	3.4	3.44	8.9	4.83
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 136.42
MIX TPH =260.1
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 4.83, TPH= 8.9, ACT %= 3.42
AC ACCUM. PERCENT= 3.54%

07:52 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	250.9	152.50
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.8	5.57
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 158.07
MIX TPH =259.7
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 5.57, TPH= 8.8, ACT %= 3.38
AC ACCUM. PERCENT= 3.52%

07:57 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	249.6	173.33
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.8	6.30
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 179.63
MIX TPH =258.4
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 6.30, TPH= 8.8, ACT %= 3.40
AC ACCUM. PERCENT= 3.50%

08:02 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	245.9	193.92
RCY	.0	.0	.0	.00
AC	3.4	3.43	8.7	7.03
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 200.95
MIX TPH =254.6
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 7.03, TPH= 8.7, ACT %= 3.41

08:07 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	246.0	214.41
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.6	7.75
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 222.16
MIX TPH =254.7
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 7.75, TPH= 8.6, ACT %= 3.37
AC ACCUM. PERCENT= 3.48%

08:12 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	245.5	234.84
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.6	8.47
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 243.31
MIX TPH =254.1
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 8.47, TPH= 8.6, ACT %= 3.38
AC ACCUM. PERCENT= 3.48%

08:17 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	244.6	255.26
RCY	.0	.0	.0	.00
AC	3.4	3.40	8.6	9.19
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 264.45
MIX TPH =253.2
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 9.19, TPH= 8.6, ACT %= 3.39
AC ACCUM. PERCENT= 3.47%

08:22 10/13/94 JMF #= 404 MIX #= 2

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	244.3	275.65
RCY	.0	.0	.0	.00
AC	3.4	3.39	8.6	9.91
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 285.56
MIX TPH =252.8
AC SP. GR. =1.033
AGG MOIST. = 3.0%
RCY MOIST. = 1.8%
AC IN RCY. = 5.0%
VIRGIN AC TONS= 9.91, TPH= 8.6, ACT %= 3.40
AC ACCUM. PERCENT= 3.47%

	DES %	ACT %	TPH	TONS
AGG	96.6	96.6	243.8	896.01
RCY	.0	.0	.0	.00
AC	3.4	3.41	8.6	10.62
MF	.0	.0	.0	.00
ASA	.0	.0	.00	.00

TOTAL MIX TONS= 306.63

MIX TPH =252.4

AC SP. GR. =1.033

AGG MOIST. = 3.0%

RCY MOIST. = 1.8%

AC IN RCY. = 5.0%

VIRGIN AC TONS= 10.62, TPH= 8.6, ACT %= 3.40

AC ACCUM. PERCENT= 3.46%

SAMPLE RECOVERY DATA

Client: BARRETT PN: 266.013 Date: 10/12/94
Source: ASPHALT PLANT Site: SEAVARON [illegible] Run#: 2
Sample Date: 10/12/94 Recovery Date: 10/12/94

Filter No: 8556 Glassware Set No: _____ Sample Box No: 4

IMPINGER DATA

Gravimetric: _____ Volumetric: _____

	#1	#2	#3	#4	#5	Total
Contents	.1 HNO_3	.1 HNO_3	MT	SG		
Final	610.9	552.7	456.8	704.4		
Initial	542.0	546.6	454.8	697.1		
Net	68.9	6.1	2.0	7.3		84.3

MH

RGB

RECOVERED SAMPLE

Description of Particulate on Filter: HEAVY PARTICULATE LOAD BLACK

Color of Silica Gel: 100 % BLUE

Recovered By: _____

HAYDEN ENVIRONMENTAL GROUP, INC.

$O_2 = 13.0/13.5 = 13.25$
$CO_2 = 4.0/4.0 = 4.0$

EMISSION TESTING FIELD DATA

Client: BARRETT
PN: 266.013
Date: 10/12/94
Source: ASPHALT PLANT
Site: A SCRUBBER OUTLET
Sample Type: PART AND LEAD
Run: 2
Operators: RS, MH
Barometric Pressure (Pb): 29.53
Static Pressure (Pg): -0.07

Meter Box #: N-1
Sample Box #: Z
Filter #:
Probe Length/Type: 6FT GLASS
Stack Thermocouple #: 6B
Oven Thermocouple #: O-1
Impinger Thermocouple #: I-2
Pitot Tube #: 6A
Stack I.D.: 60x60
Record Data Every 2.5 Minutes

Meter ΔH@: 1.879
Meter Y Factor: 1.005
C Factor: 0.85
Reference ΔP: 0.135
Nozzle I.D.: _ _ _ Avg. 0.360
Pre-Test Leak Rate: 0.018 cfm@ 10 "Hg
Post-Test Leak Rate: 0.002 cfm@ 5 "Hg
Pitot Tube Leak Check: Pre: __ Post: __
Orsat Train Leak Check: Pre: __ Post: __
Page 1 of 2

Traverse Point Number	Sampling Time (min)	Clock Time (hr)	Meter Reading (cu ft.)	Velocity Pressure ΔP ("H2O)	Orifice Pressure ΔH@ ("H2O) Desired	Orifice Pressure ΔH@ ("H2O) Actual	Train Vacuum ("Hg)	Temperatures (°F) Stack	Filter	Probe	IMP	Meter	
	0	1009	633.143										
1	2.5		634.450	0.07	0.94	0.94	1.0	125	228		49	43	40
2	5.0		635.575	0.05	0.68	0.68	1.0	126	238		47	44	41
3	7.5		636.890	0.06	0.84	0.84	1.0	127	238		46	45	42
4	10.0		638.080	0.08	1.10	1.10	1.0	126	230		46	45	42
5	12.5		639.243	0.05	0.68	0.68	1.0	122	237		47	46	42
1	15.0		640.370	0.05	0.68	0.68	1.0	115	230		47	46	43
2	17.5		641.450	0.05	0.68	0.68	1.0	127	240		46	46	43
3	20.0		642.670	0.05	0.68	0.68	1.0	127	240		46	47	44
4	22.5		643.830	0.05	0.68	0.68	1.0	123	237		47	48	44
5	25.0		644.914	0.06	0.84	0.84	1.0	121	243		46	49	45

HAYDEN ENVIRONMENTAL GROUP INC.

EMISSION TESTING FIELD DATA

Client: BARNETT Run #: 2 Date: 10/12/94 Page 2 of 2

Traverse Point Number	Sampling Time (min)	Clock Time (hr)	Meter Reading (cu ft.)	Velocity Pressure ΔP ("H2O)	Orifice Pressure ΔH@ ("H2O) Desired	Orifice Pressure ΔH@ ("H2O) Actual	Train Vacuum ("Hg)	Temperatures (°F) Stack	Filter	Probe	IMP	Meter	
	25.0		644.914										
1	27.5		646.140	0.06	0.84	0.84	1.0	124	244		46	49	46
2	30.0		647.250	0.05	0.68	0.68	1.0	122	239		46	50	46
3	32.5		648.370	0.05	0.68	0.68	1.0	123	233		45	50	47
4	35.0		649.485	0.05	0.68	0.68	1.0	125	234		46	50	47
5	37.5		650.605	0.05	0.68	0.68	1.0	122	234		46	51	47
1	40.0		651.880	0.07	0.94	0.94	1.0	121	238		47	51	48
2	42.5		653.120	0.06	0.84	0.84	1.0	122	236		47	52	48
3	45.0		654.340	0.06	0.84	0.84	1.0	123	238		46	52	49
4	47.5		655.665	0.08	1.10	1.10	1.0	125	238		47	53	49
5	50.0		656.967	0.08	1.10	1.10	1.0	124	240		47	52	49
1	52.5		658.560	0.09	1.25	1.25	5.0	121	243		48	52	49
2	55.0		659.995	0.09	1.25	1.25	5.0	125	235		49	53	50
3	57.5		661.560	0.09	1.25	1.25	3.0	125	233		49	52	50
4	60.0		663.200	0.13	1.70	1.70	4.0	125	236		50	52	50
5	62.5	1117	665.943	0.15	2.05	2.05	4.0	122	237		50	52	50
			31.909	~~0.2597~~		0.9472		123.6				47.6	
				0.2595									

HAYDEN ENVIRONMENTAL GROUP, INC.

SAMPLE RECOVERY DATA

Client: BARRETT PN: 266.013 Date: 10/12/94
Source: ASPHALT PLANT Site: SCRUBBER OUTLET Run#: 2
Sample Date: 10/12/94 Recovery Date: 10/12/94

Filter No: 8998 Glassware Set No: _____ Sample Box No: 1

IMPINGER DATA

Gravimetric: _____ Volumetric: _____

	#1	#2	#3	#4	#5	Total
Contents	.1 HNO_3	.1 HNO_3	MT	SG		
Final	630.0	554.7	447.1	666.[illegible]		
Initial	542.6	546.6	445.7	658.2		
Net	87.4	8.1	1.4	7.9		104.8

RECOVERED SAMPLE

Description of Particulate on Filter: BROWN PARTICULATE / NUMBER STILL VISIBLE

Color of Silica Gel: 100% BLUE

Recovered By: [illegible]

HAYDEN ENVIRONMENTAL GROUP, INC.

O_2 = 14.0 14.0
CO_2 = 2.5

EMISSION TESTING FIELD DATA

Client: BARRETT
PN: 266.013
Date: 10/12/94
Source: ASPHALT PLANT
Site: SCRUBBER OUTLET
Sample Type: PART AND LEAD
Run: 3
Operators: BI
Barometric Pressure (Pb): 29.51
Static Pressure (Pg): -0.05

Meter Box #: N-1
Sample Box #: 3
Filter #: 7709
Probe Length/Type: 5' GLASS
Stack Thermocouple #: 5A
Oven Thermocouple #: 0-3
Impinger Thermocouple #: I-2
Pitot Tube #: 56
Stack I.D.: 60x60
Record Data Every 2.5 Minutes

Meter ΔH@: 1.879
Meter Y Factor: 1.005
C Factor: 0.85
Reference ΔP: 0.11
Nozzle I.D.: _ _ _ Avg. 0.380
Pre-Test Leak Rate: 0.010 cfm@ 10 "Hg
Post-Test Leak Rate: 0.006 cfm@ 7 "Hg
Pitot Tube Leak Check: Pre: ✓ Post: ✓
Orsat Train Leak Check: Pre: _ Post: _
Page 1 of 2

Traverse Point Number	Sampling Time (min)	Clock Time (hr)	Meter Reading (cu ft.)	Velocity Pressure ΔP ("H2O)	Orifice Pressure ΔH@ ("H2O) Desired	Orifice Pressure ΔH@ ("H2O) Actual	Train Vacuum ("Hg)	Temperatures (°F) Stack	Filter	Probe	IMP	Meter	
	0	1241	666.997										
1	2.5		668.450	0.07	1.15	1.15	3.0	124	245		57	45	44
2	5.0		669.750	0.07	1.15	1.15	3.0	125	235		58	46	45
3	7.5		671.180	0.07	1.15	1.15	3.0	127	248		56	46	45
4	10.0		672.650	0.08	1.35	1.35	3.0	127	239		52	48	46
5	12.5		673.923	0.05	0.83	0.83	3.0	126	242		50	49	46
1	15.0		675.245	0.06	1.00	1.00	3.0	125	248		49	49	46
2	17.5		676.590	0.06	1.00	1.00	3.0	128	245		50	49	46
3	20.0		677.770	0.05	0.83	0.83	3.0	128	242		50	49	46
4	22.5		678.995	0.05	0.83	0.83	3.0	128	250		50	50	47
5	25.0		680.239	0.05	0.83	0.83	3.0	129	250		50	50	47

HAYDEN ENVIRONMENTAL GROUP INC.

EMISSION TESTING FIELD DATA

Client: Barnett Run #: 3 Date: 10/12/94 Page 2 of 2

Traverse Point Number	Sampling Time (min)	Clock Time (hr)	Meter Reading (cu ft.)	Velocity Pressure ΔP ("H2O)	Orifice Pressure ΔH@ ("H2O) Desired	Orifice Pressure ΔH@ ("H2O) Actual	Train Vacuum ("Hg)	Temperatures (°F) Stack	Temperatures (°F) Filter	Temperatures (°F) Probe	Temperatures (°F) IMP	Temperatures (°F) Meter	Temperatures (°F) Meter
	25		680.779										
1	27.5		681.670	0.07	1.15	1.15	3.0	119	253		50	50	47
2	30.0		683.000	0.07	1.15	1.15	3.0	129	242		50	50	48
3	32.5		684.260	0.05	0.83	0.83	3.0	129	233		50	51	48
4	35.0		685.460	0.05	0.83	0.83	3.0	129	249		50	51	48
5	37.5		686.795	0.06	1.00	1.00	3.0	128	252		50	51	49
1	40.0		688.120	0.07	1.15	1.15	3.0	128	246		51	52	49
2	42.5		689.450	0.07	1.15	1.15	3.0	129	230		51	51	49
3	45.0		690.705	0.06	1.00	1.00	3.0	127	234		52	52	49
4	47.5		692.095	0.07	1.15	1.15	3.0	129	231		51	53	51
5	50.0		693.339	0.05	0.83	0.83	3.0	128	256		50	54	51
1	52.5		694.795	0.08	1.35	1.35	3.0	138	259		52	66	53
2	55.0		696.305	0.09	1.50	1.50	3.0	141	245		55	68	64
3	57.5		697.955	0.10	1.70	1.70	4.0	136	243		58	69	64
4	60.0		699.940	0.15	2.50	2.50	7.0	128	235		59	67	63
5	62.5	1349	701.231	0.05	0.83	0.83	5.0	125	238		61	65	62
			34.304	0.2582		1.1296		128.4				51	1.9

HAYDEN ENVIRONMENTAL GROUP, INC.

O2 13.0/12.5/13.5
CO2 3.5/4.0 3.5

EMISSION TESTING FIELD DATA

Client: Barrett Sidney
PN: 266.013
Date: 10/13/94
Source: Bypass Plant Scrubber
Site: Outlet
Sample Type: MMT/LOAD
Run: 4
Operators: B.T / M.H
Barometric Pressure (Pb): 29.42 "Hg
Static Pressure (Pg): -0.06

Meter Box #: N-2
Sample Box #:
Filter #:
Probe Length/Type: 5' GLASS
Stack Thermocouple #: 68
Oven Thermocouple #: OV-
Impinger Thermocouple #: I-1
Pitot Tube #: 6A
Stack I.D.: 60X60
Record Data Every 2.5 Minutes

Meter ΔH@: 1.7662
Meter Y Factor: 1.03281
C Factor: 0.85
Reference ΔP: 0.11
Nozzle I.D.: Avg. .380
Pre-Test Leak Rate: 0.002 cfm@ 10 "Hg
Post-Test Leak Rate: 0.001 cfm@ 10 "Hg
Pitot Tube Leak Check: Pre: ✓ Post: ✓
Orsat Train Leak Check: Pre: Post:
Page 1 of 2

Traverse Point Number	Sampling Time (min)	Clock Time (hr)	Meter Reading (cu ft.)	Velocity Pressure ΔP ("H2O)	Orifice Pressure ΔH@ ("H2O) Desired	Orifice Pressure ΔH@ ("H2O) Actual	Train Vacuum ("Hg)	Temperatures (°F) Stack	Filter	Probe	IMP	Meter 6	Meter 7
	0	0722	609.618										
A1	2.5		610.588	0.03	0.50	0.50	1	135	270	808	60	57	55
2	5.0		611.40	0.03	0.50	0.50	1	145	266		58	56	55
3	7.5		612.520	0.03	0.50	0.50	1	144	264		57	56	55
4	10.0		613.500	0.04	0.66	0.66	1	144	265		57	57	56
5	12.5		614.534	0.02	0.38	0.38	1	145	261		56	58	56
B1	15.0		615.311	0.02	0.38	0.38	1	137	258		55	59	57
2	17.5		616.139	0.02	0.38	0.38	1	138	259		56	60	57
3	20.0		617.651	0.07	1.15	1.15	1.5	146	266		57	60	57
4	22.5		618.911	0.07	1.15	1.15	1.5	145	260		58	59	55
5	25.0	0748	620.597	0.06	0.99	0.99	1.5	136	266		57	51	45
						0.863							

HAYDEN ENVIRONMENTAL GROUP, INC.

P.N.# 266.013

EMISSION TESTING FIELD DATA

Client: BARRETT SIDING Run #: 4 Date: 10/13/94 Page 2 of 2

Traverse Point Number	Sampling Time (min)	Clock Time (hr)	Meter Reading (cu ft.)	Velocity Pressure ΔP ("H2O)	Orifice Pressure ΔH@ ("H2O) Desired	Orifice Pressure ΔH@ ("H2O) Actual	Train Vacuum ("Hg)	Temperatures (°F) Stack	Filter	Probe	IMP	Meter	
	23.0	0749	620.397										
C1	27.5		621.661	0.07	1.15	1.15	1.5	145	258	800	60	64	60
2	30.0		622.948	0.07	1.15	1.15	1.5	147	255		60	65	60
3	32.5		624.388	0.06	0.99	0.99	1.0	153	280		61	65	59
4	35.0		625.851	0.06	0.99	0.99	1.0	144	264		60	65	59
5	37.5		627.311	0.06	0.99	0.99	1.0	143	260		59	64	58
D1	40.0		628.289	0.03	0.50	0.50	1.0	133	258		58	64	58
2	42.5		629.890	0.08	1.35	1.35	2.0	148	255		58	68	63
3	45.0		631.209	0.07	1.15	1.15	2.0	147	260		59	69	63
4	47.5		632.812	0.08	1.35	1.35	2.0	147	254		58	69	63
5	50.0		634.473	0.09	1.50	1.50	3.0	147	255		59	70	64
E1	52.5		635.832	0.06	0.99	0.99	2.5	146	258		59	70	64
2	55.0		636.999	0.07	1.15	1.15	2.0	139	257		58	70	64
3	57.5		638.757	0.10	1.70	1.70	3.0	147	254		60	70	64
4	60.0		640.44	.110	1.85	1.85	5.0	147	256		61	69	64
5	62.5	0929	642.630	1.50	2.50	2.50	7.5	148	254		60	69	64
			33.012	~~ΔP=0.276~~		1.04		1438					61.18
						1.036							
				0.2417		1.05							
				.3307									

HAYDEN ENVIRONMENTAL GROUP, INC.

SAMPLE RECOVERY DATA

Client: BARNETT PN: 266.013 Date: 10/10/94
Source: ASPHALT PLANT Site: SCRUBBER Run#: 3
Sample Date: 10/10/94 Recovery Date: 10/10/94

Filter No: 7709 Glassware Set No: _____ Sample Box No: 3

IMPINGER DATA

Gravimetric: _____ Volumetric: _____

	#1	#2	#3	#4	#5	Total
Contents	1 HNO3	1 HNO3	MT	SG		
Final	610.2 ~~HNO3~~	543.6 ~~[illegible]~~	424.1 ~~[illegible]~~	664.1 ~~[illegible]~~		
Initial	660.1 551.6	531.0	422.3	654.2		
Net	108.5 ~~58.6~~	12.6 ~~28.3~~	1.8 ~~38.8~~	9.9 ~~49~~		132.8 ~~168.9~~

RECOVERED SAMPLE

Description of Particulate on Filter: BROWN COATING NUMBER SLIGHTLY VISIBLE

Color of Silica Gel: 100% BLUE

Recovered By: BI

HAYDEN ENVIRONMENTAL GROUP, INC.

SAMPLE RECOVERY DATA

Client: BARRET PN: 266 013 Date: 10/13/94
Source: Sidney Asphalt Plant Site: Scrubber outlet Run#: 4
Sample Date: 10/13/94 Recovery Date: 10/13/94

Filter No: 5774 Glassware Set No: _____ Sample Box No: _____

IMPINGER DATA

Gravimetric: _____ Volumetric: _____

	#1	#2	#3	#4	#5	Total
Contents	~~H2O~~ HNO3	HNO3	MT	S.G.		
Final	703.9	492.6	454.8	673.5		
Initial	548.2	523.1	452.3	665.8		
Net	155.7	-30.5	0.5	7.7		1354

RECOVERED SAMPLE

Description of Particulate on Filter: _____

Color of Silica Gel: _____

Recovered By: _____

HAYDEN ENVIRONMENTAL GROUP, INC.

HAYDEN
LABORATORIES

October 28, 1994

Mr. Jim Medostrath
BARRETT PAVING MATERIALS
727 E. Ash Street
Piqua, OH 45356

Subject: HEG Lab Task # 94100145
HEG Sample Number(s) 9413397 - 9413401

Project # : 266.013
Project Name: Barrett Paving Materials

Dear Mr. Medostrath:

Thank you for choosing Hayden Laboratories for your environmental or industrial hygiene laboratory needs. We are pleased to present this analytical report for the sample(s) you submitted to our laboratory October 13, 1994.

If you have any questions regarding the results or if you need additional information pertaining to the analyses, please contact one of the persons listed below at 513/866-5908. We can provide additional report copies, method summaries or quality control data reports that you may require for full documentation of your samples. Please request pricing for these additional reports.

We hope to continue to provide you with quality analytical services and support. If you have any comments on the services we have provided, we would appreciate hearing from you.

Sincerely,

HAYDEN LABORATORIES

Pamela S. Miller
Laboratory Director

Sue Barto
Client Services Manager

cc: Client File

A Division of Hayden Environmental Group, Inc.
6015 Manning Road, Miamisburg, Ohio 45342, USA • (513) 866-5908 • (800) 548-4031 • FAX (513) 866-9505

LABORATORY ANALYSIS REPORT

Report Date : 10/28/94
HEG Task # : 94100145
HEG P/N, Acct: 266.013

Mr. Jim Medostrath
BARRETT PAVING MATERIALS
727 E. Ash Street
Piqua, OH 45356

Date Received: 10/13/94
Proj #: 266.013

P.O. Number:
Proj Name: Barrett Paving Materials

HEG Sample # : 9413397 Sample Date: 10/12/94 Sample Priority: Normal
Sample ID : Run 2

Parameter	Units	Results	Comments
EPA Method 5	mg	8.8	72
Acetone	mg	42.8	
Filter	mL	415	5[illegible]
Sample Volume Submitted			
Lead	ug	288	
Sample Volume Submitted	mL	495	

HEG Sample # : 9413398 Sample Date: 10/12/94 Sample Priority: Normal
Sample ID : Run 3

Parameter	Units	Results	Comments
EPA Method 5	mg	6.8	72
Acetone	mg	41.8	
Filter	mL	440	
Sample Volume Submitted			
Lead	ug	354	
Sample Volume Submitted	mL	675	

HAYDEN LABORATORIES

LABORATORY ANALYSIS REPORT

Mr. Jim Medostrath
BARRETT PAVING MATERIALS
727 E. Ash Street
Piqua, OH 45356

Report Date : 10/28/94
HEG Task # : 94100145
HEG P/N, Acct: 266.013

==========

HEG Sample # : 9413399 Sample Date: 10/13/94 Sample Priority: Normal
Sample ID : Run 4

Parameter	Units	Results	Comments
EPA Method 5			
Acetone	mg	7.8	72
Filter	mg	39.8	
Sample Volume Submitted	mL	323	
Lead	ug	451	47.3
Sample Volume Submitted	mL	530	

==========

HEG Sample # : 9413400 Sample Date: 10/13/94 Sample Priority: Normal
Sample ID : Blank

Parameter	Units	Results	Comments
EPA Method 5			
Acetone	mg	0.05	
Filter	mg	0.2	
Sample Volume Submitted	mL	435	
Lead	ug	< 5.00	
Sample Volume Submitted	mL	475	

HAYDEN LABORATORIES

LABORATORY ANALYSIS REPORT

Mr. Jim Medostrath
BARRETT PAVING MATERIALS
727 E. Ash Street
Piqua, OH 45356

Report Date : 10/28/94
HEG Task # : 94100145
HEG P/N, Acct: 266.013

==========

HEG Sample # : 9413401 Sample Date: 10/13/94 Sample Priority: Normal
Sample ID : Fuel-1

Parameter	Units		Results	Comments
T.Chlorine,ASTM D808	%		0.14	
Flashpoint	deg. C		58.4	
Heat of Combustion	BTU/lb		18939	
Lead	mg/kg		38.8	
Chromium	mg/kg		5.82	
Cadmium	mg/kg	<	0.48	
Mercury	mg/kg	<	0.1	
Arsenic	mg/kg		1.19	
				02
PCB, Oil				
Aroclor 1016	mg/kg	<	2.4	
Aroclor 1221	mg/kg	<	2.4	
Aroclor 1232	mg/kg	<	2.4	
Aroclor 1242	mg/kg	<	2.4	
Aroclor 1248	mg/kg	<	2.4	
Aroclor 1254	mg/kg	<	2.4	
Aroclor 1260	mg/kg	<	2.4	
Total	mg/kg	<	2.4	

72 Sample was corrected with the result of blank submitted

02 Sample matrix interferences

HAYDEN LABORATORIES

HEG / LIMS
Analysis Date Report
Report Date: 10/28/94

HEG Lab Task # 94100145
HEG Client: HAYDEN ENVIRONMENTAL GROUP, INC.

Date Received : 10/13/94 Date Reported: 10/28/94

Sample #: 9413397 Sample Date: 10/12/94
Sample ID: Run 2

Analysis Date	Analyst	Test Performed	Hold Time (Days)
10/27/94	kw	Lead total, volumesubmitted ICP	180
10/25/94	ovp	EPA5-Particulate	28

Sample #: 9413398 Sample Date: 10/12/94
Sample ID: Run 3

Analysis Date	Analyst	Test Performed	Hold Time (Days)
10/27/94	kw	Lead total, volumesubmitted ICP	180
10/25/94	ovp	EPA5-Particulate	28

Sample #: 9413399 Sample Date: 10/13/94
Sample ID: Run 4

Analysis Date	Analyst	Test Performed	Hold Time (Days)
10/27/94	kw	Lead total, volumesubmitted ICP	180
10/25/94	ovp	EPA5-Particulate	28

Sample #: 9413400 Sample Date: 10/13/94
Sample ID: Blank

Analysis Date	Analyst	Test Performed	Hold Time (Days)
10/27/94	kw	Lead total, volumesubmitted ICP	180
10/25/94	ovp	EPA5-Particulate	28

HEG / LIMS
Analysis Date Report
Report Date: 10/28/94

Sample #: 9413401 Sample Date: 10/13/94
Sample ID: Fuel-1

Analysis Date	Analyst	Test Performed	Hold Time (Days)
10/19/94	jep	PCB Extraction(Oil)	28
10/25/94	jrw	Arsenic total, furnace, solid	180
10/20/94	ksw	Polychlorinated Bi-phenyls-Oil	40
10/26/94	kw	Mercury total, solid	28
10/19/94	kw	Solid Sample Prep for metals	28
10/26/94	msn	Cadmium total solidICP	180
10/26/94	msn	Chromium total solidICP	180
10/26/94	msn	Lead total solidICP	180
10/19/94	rst	Flashpoint	28
10/26/94	sub	Total Halogens****(as Chlorine)	28
10/26/94	sub	BTU *** Heat on Combustion	28

CHAIN OF CUSTODY

Project Number:	266.013	Sealed By Signature:	Bruce Arven
Company:	BARNETT	Date Sealed:	10/13/94
City:	SIDNEY	Time Sealed:	1330
State:	OHIO	Seal Number:	

Container Type (petri dish, 1000 ml polyethylene, 1000 ml glass etc.)	Sample media (acetone, 0.1N HNO_3, etc.)	Analyses	Run Numbers (Number of bottles are recorded in the squares below)								
			2	3	4	BLANK	FUEL-1				
1000 ML POLY	ACETONE	PARTICULATE AND LEAD	1	1	1	1	-				
PETRI DISH	FILTER	PARTICULATE AND LEAD	1	1	1	1	-				
1000 ML POLY	NITRIC	LEAD	1	1	1	1	-				
1000 ML POLY	FUEL OIL	(ARSENIC, CADMIUM, CHROMIUM,	-	-	-	-	2				
		LEAD, MERCURY, TOTAL HALOGENS,									
		POLYCHLORINATED BIPHENYLS, FLASH POINT AND BTU VALUE)									

Received By:		Affiliation:			Date:			Time:		
Received By:		Affiliation:			Date:			Time:		
Opened at lab by:	Virginia Koehler	Date opened:	10/13/94	Time opened:	1818	Seal Number:	AA	Seal Intact:	Y	N

HAYDEN ENVIRONMENTAL GROUP INC.

NOMENCLATURE

A_n = Area of sampling nozzle, ft^2

A_s = Cross-sectional area of stack at sampling site, ft^2

B_{ws} = Proportion water vapor in stack gas by volume

CO = Percent carbon monoxide in stack gas by volume,dry basis, %

CO_2 = Percent carbon dioxide in stack gas by volume, dry basis, %

C_p = Pitot tube coefficient

C_1 = Concentration of particulate in stack gas, grains/dscf

C_2 = Concentration of particulate in stack gas, lb/dscf

$C_{Pb\,1}$ = Concentration of lead in stack gas, μg/L

$C_{Pb\,2}$ = Concentration of lead in stack gas, lb/dscf

Dia = Diameter of stack at sampling site, inches

ER = Particulate emission rate, lb/hr

ER_{Pb} = Lead emission rate, lb/hr

ΔH = Average pressure drop across orifice

%I = Percent isokinetic sampling rate, %

M_d = Molecular weight of stack gas, dry conditions, lb/lb-mole

Mn = Particulate catch, mg

M_s = Molecular weight of stack gas, stack conditions, lb/lb-mole

N_2 = Percent nitrogen in stack gas by volume, dry basis, %

O_2 = Percent oxygen in stack gas by volume, dry basis, %

Δp = Average velocity head of stack gas, inches H_2O

$\sqrt{\Delta p}$ = Average square root of velocity head pressure, inches H_2O

P_b = Barometric pressure, inches Hg

P_g = Static pressure of stack gas, inches H_2O

P_s = Absolute stack gas pressure, inches Hg

Q_a = Volumetric stack gas flow rate, stack conditions, acfm

Q_{std} = Volumetric stack gas flow rate, dry standard conditions, dscfm

θ = Elapsed time of test, minutes

T_m = Average dry gas meter temperature, °F

T_s = Average stack gas temperature, °F

V_{lc} = Mass of water collected, g

V_m = Volume of gas measured by dry gas meter, ft^3

V_{mc} = Volume of dry gas meter corrected for leak rate, ft^3

V_{mstd} = Volume of dry gas meter corrected to standard conditions, ft^3

V_s = Stack gas velocity, fps

V_{wstd} = Volume of water collected, standard conditions, ft^3

Y = dry gas meter calibration factor, dimensionless

Note: Standard conditions = 68°F and 29.92 inches Hg.

EXAMPLE CALCULATION RUN # 2

1. Volume Metered, Standard Conditions (68°F, 29.92 In Hg)

$$V_{mstd} = (17.647)\times(V_m)\times(Y)\times\frac{(P_b)+\frac{(\Delta H)}{(13.6)}}{(T_m+460)}$$

$$V_{mstd} = (17.647)\times(31.900)\times(1.005)\times\frac{(29.53)+\frac{(0.95)}{(13.6)}}{(47.6+460)} = 32.991$$

2. Volume Water Vapor Collected, Standard Conditions

$$V_{wstd} = (0.04707)\times(V_{lc})$$
$$V_{wstd} = (0.04707)\times(104.8) = 4.933$$

3. Proportion Water Vapor, By Volume

$$B_{ws} = \frac{(V_{wstd})}{(V_{wstd}+V_{mstd})}$$
$$B_{ws} = \frac{(4.933)}{(4.933+32.991)} = 0.1301$$

4. Molecular Weight of Stack Gas, Dry Conditions

$$M_d = (0.44\times CO_2)+(0.32\times O_2)+(0.28\times(N_2+CO))$$
$$M_d = (0.44\times 4.0)+(0.32\times 13.3)+(0.28\times 82.7) = 29.17$$

5. Molecular Weight of Stack Gas, Stack Conditions

$$M_s = (M_d\times(1-B_{ws}))+(18\times B_{ws})$$
$$M_s = 29.17\times(1-0.1301)+(18\times 0.1301) = 27.72$$

6. Stack Gas Velocity, fps

$$V_s = (85.49)\times(c_p)\times(\sqrt{\Delta p})\times\sqrt{\frac{(T_s+460)}{(P_s)\times(M_s)}}$$

$$V_s = (85.49)\times(0.84)\times(0.260)\times\sqrt{\frac{(123.6+460)}{(29.52)\times(27.72)}} = 15.74$$

7. Stack Gas Flow Rate, acfm

$$Q_a = (60)\times(V_s)\times(6.944E-03)\times(L)\times(W)$$
$$Q_a = (60)\times(15.74)\times(6.944E-03)\times(60.0)\times(60.0) = 23{,}605.5$$

8. Stack Gas Flow Rate, dscf

$$Q_{std} = (17.647)\times(Q_a)\times(1-B_{ws})\times\frac{(P_s)}{(T_s+460)}$$

$$Q_{std} = (17.647)\times(23{,}605.5)\times(1-0.1301)\times\frac{(29.52)}{(123.6+460)} = 18{,}333.2$$

9. Isonkinetic Variation, %

$$\%I = 0.0944\times\frac{(T_s+460)\times(V_{mstd})}{(P_s)\times(V_s)\times(A_n)\times(\theta)\times(1-B_{ws})}$$

$$\%I = 0.0944\times\frac{(123.6+460)\times(32.991)}{(29.52)\times(15.74)\times(7.07E-04)\times(62.5)\times(1-0.1301)} = 101.89$$

10. Filterable Particulate Concentration, gr/dscf

$$0C_1 = \frac{(0.0154)\times(Mn)}{(V_{mstd})}$$

$$C_1 = \frac{(0.0154)\times(51.6)}{(32.991)} = 2.41E-02$$

11. Filterable Particulate Concentration, lb,dscf

$C_2 = (1.429E\text{-}04) \times (C_1)$
$C_2 = (1.429E\text{-}04) \times (2.41E\text{-}02) = 3.44E\text{-}06$

12. Filterable Particulate Emission Rate, lb/hr

$ER = (C_2) \times (Q_{std}) \times (60)$
$ER = (3.44E\text{-}06) \times (18{,}333.2) \times (60) = 3.786$

13. Lead Concentration, μg/L ?

$$C_{Pb1} = \frac{(Mn)}{(28.316) \times (V_{mstd})}$$

$$C_{Pb1} = \frac{(288)}{(28.316) \times (32.991)} = 0.308$$

mg

32.977 f3

M_N = part total (mg)
= 51.35

= .05499 mg/f3 .001 mg/mg x 28.32
= .00155 mg/L

13. Lead Concentration, lb/dscf

$$C_{Pb2} = (C_{Pb1}) \times \frac{(1.0E\text{-}06) \times (0.0022)}{(0.03532)}$$

$$C_{Pb2} = (0.308) \times \frac{(1.0E\text{-}06) \times (0.0022)}{(0.03532)} = 1.92E\text{-}08$$

$9.7 E^{-11}$

14. Lead Emission Rate, lb/hr

$ER_{Pb} = (C_{Pb2}) \times (Q_{std}) \times (60)$
$ER = (1.92E\text{-}08) \times (18{,}333.2) \times (60) = 2.11E\text{-}02$

$1.08 E^{-4}$

CLIENT/PROJECT #:	Barrett		
SAMPLE LOCATION:	Scrubber Outlet		
DATE/TIME:	10/12/94 1009-1117		
RUN #:	2		
STATIC PRESSURE("H2O):	-0.07	"HG	29.52
BAROMETRIC("HG):	29.53		
SAMPLE TIME(min):	62.50	Vm(corr)	31.900
ACTUAL METER VOLUME:	31.900	DSCF	32.991
SQ. ROOT /\P:	0.260		
AVG ORIFICE /\H:	0.95		
AVG STACK TEMP °F:	123.6	°R	583.6
AVG METER TEMP °F:	47.6		
Cp PITOT :	0.84		
NOZZLE DIA.(inches):	0.360	An(ft^2)	7.07E-04
METER GAMMA:	1.005		
LEAK RATE(IF>0.02):			
CIRC STACK? 1=Y,0=N:	0	As(ft^2)	25.00
DIA OR DIM (inches):	3600.00		
% O2 :	13.25	DRY MOLE WT	29.17
% CO2 :	4.00	ST MOLE WT	27.72
VOL CONDENSATE(ml):	104.80	% H2O	13.01
FILTER GAIN(mg):	42.80		
RINSE GAIN(mg):	8.80	NET WT(mg)	51.60
ANALYTE #1 :	Lead		
MOLE WEIGHT:	207.2		
µg/sample :	288		
PPM :			

********** CALCULATED RESULTS **********

Gas Velocity (Vs):	15.74	FT/SEC
Stack Gas Flow (Qs):	23605.5	ACFM
:	18333.2	DSCFM
Stack Gas Temp :	124	Deg F
Moisture (H2O):	13.01	%
Isokinetic :	101.89	%

FILTERABLE PARTICULATE SUMMARY

Concentration (Cs):	2.41E-02	Gr/DSCF
:	3.44E-06	lb/DSCF
Emission Rate (Er):	3.786	lb/hr

EMISSION DATA FOR Lead

Concentration (Cs):	1.92E-08	lb/DSCF
:	0.308	µg/L
Emission Rate (Er):	2.11E-02	lb/hr

COMMENTS:

CLIENT/PROJECT #:	Barrett
SAMPLE LOCATION:	Scrubber Outlet
DATE/TIME:	~~10~~/12/94 1241-1349
RUN #:	3

STATIC PRESSURE("H2O):	-0.05	"HG	29.51
BAROMETRIC("HG):	29.51		
SAMPLE TIME(min):	62.50	Vm(corr)	34.304
ACTUAL METER VOLUME:	34.304	DSCF	35.171
SQ. ROOT /\P:	0.258		
AVG ORIFICE /\H:	1.13		
AVG STACK TEMP °F:	128.4	°R	588.4
AVG METER TEMP °F:	51.9		
Cp PITOT :	0.84		
NOZZLE DIA.(inches):	0.380	An(ft^2)	7.88E-04
METER GAMMA:	1.005		
LEAK RATE(IF>0.02):			
CIRC STACK? 1=Y,0=N:	0	As(ft^2)	25.00
DIA OR DIM (inches):	3600.00		
% O2 :	14.00	DRY MOLE WT	28.96
% CO2 :	2.50	ST MOLE WT	27.31
VOL CONDENSATE(ml):	132.80	% H2O	15.09
FILTER GAIN(mg):	41.80		
RINSE GAIN(mg):	6.80	NET WT(mg)	48.60
ANALYTE #1 :	Lead		
MOLE WEIGHT:	207.2		
µg/sample :	354		
PPM :			

********** CALCULATED RESULTS **********

Gas Velocity (Vs):	15.85	FT/SEC
Stack Gas Flow (Qs):	23767.9	ACFM
:	17859.1	DSCFM
Stack Gas Temp :	128	Deg F
Moisture (H2O):	15.09	%
Isokinetic :	100.08	%

FILTERABLE PARTICULATE SUMMARY

Concentration (Cs):	2.13E-02	Gr/DSCF
:	3.04E-06	lb/DSCF
Emission Rate (Er):	3.258	lb/hr

EMISSION DATA FOR Lead

Concentration (Cs):	2.22E-08	lb/DSCF
:	0.355	µg/L
Emission Rate (Er):	2.37E-02	lb/hr

COMMENTS:

CLIENT/PROJECT #:	Barrett			
SAMPLE LOCATION:	Scrubber Outlet			
DATE/TIME:	10/13/94 0722-0829			
RUN #:	4			
STATIC PRESSURE("H20):	-0.06		"HG	29.42
BAROMETRIC("HG):	29.42			
SAMPLE TIME(min):	62.50		Vm(corr)	33.012
ACTUAL METER VOLUME:	33.012		DSCF	34.051
SQ. ROOT /\P:	0.241			
AVG ORIFICE /\H:	1.04		°R	603.8
AVG STACK TEMP °F:	143.8			
AVG METER TEMP °F:	61.2			
Cp PITOT :	0.84			
NOZZLE DIA.(inches):	0.380		An(ft^2)	7.88E-04
METER GAMMA:	1.033			
LEAK RATE(IF>0.02):	0		As(ft^2)	25.00
CIRC STACK? 1=Y,0=N:	3600.00			
DIA OR DIM (inches):	13.00	DRY MOLE WT		29.11
% O2 :	3.70	ST MOLE WT		27.36
% CO2 :	135.40		% H20	15.77
VOL CONDENSATE(ml):	39.80			
FILTER GAIN(mg):	7.80	NET WT(mg)		47.60
RINSE GAIN(mg):				
ANALYTE #1 : Lead				
MOLE WEIGHT:	207.2			
µg/sample :	451			
PPM :				

********** CALCULATED RESULTS **********

Gas Velocity (Vs):	15.00	FT/SEC
Stack Gas Flow (Qs):	22504.1	ACFM
:	16296.9	DSCFM
Stack Gas Temp :	144	Deg F
Moisture (H20):	15.77	%
Isokinetic :	106.18	%

FILTERABLE PARTICULATE SUMMARY

Concentration (Cs):	2.15E-02	Gr/DSCF
:	3.08E-06	lb/DSCF
Emission Rate (Er):	3.008	lb/hr

EMISSION DATA FOR Lead

Concentration (Cs):	2.91E-08	lb/DSCF
:	0.467	µg/L
Emission Rate (Er):	2.85E-02	lb/hr

COMMENTS:

QUALITY ASSURANCE PROCEDURES AND RESULTS

The sampling equipment used in this test series has been calibrated in accordance with procedures outlined in the USEPA Reference Methods for stationary source sampling and also in the Quality Assurance Handbook for Air Pollution Measurement Systems. All pertinent calibration data for the equipment used in this test series are included in this appendix. The following calibration procedures are employed.

a. **Probe-tips (Nozzles)**
Probe-tips are inspected before use to detect damage or irregularities. If the nozzle shows signs of damage, it is repaired and measured before use. The nozzle diameter is determined in the field by measuring three diameters with a precision micrometer. The average of the three measurements is the nozzle diameter.

b. **Pitot Tubes**
The S-type pitot tubes are built to the design specifications cited in Reference Method 2 and are calibrated annually in a wind tunnel. Standard pitot tubes are supplied from the manufacturer with a coefficient of 0.99. The pitot tubes, connecting lines, and manometers are leak-checked in the field before and after each test run.

c. **Thermocouples**
Thermocouples are calibrated upon receipt and annually thereafter. The thermocouples are calibrated at 32°F, ambient temperature, 212°F, and approximately 450°F.

d. **Fyrite Analyzers**
The fyrite analyzers are leak-checked on-site and the reagents are replenished as needed.

e. **Method 5 Control Consoles**
The dry gas meter and the orifice in the Method 5 control consoles are calibrated at six (6) points from 0 to 4 inches of mercury. The dry gas meter coefficient (y-factor) and the orifice constant (Delta H) are established from this calibration. The dry gas meter is calibrated after each test series to confirm the y-factors is used in all sample volume calculations. Hayden Environmental participates in the USEPA Method 5 Dry Gas Meter Inter-Laboratory Performance Audit.

f. **Barometers**
The aneroid field barometers are calibrated with a stationary mercury column barometer prior to each use. The reference barometer is permanently mounted in the Hayden Environmental Laboratory.

Meter Post Test Calibration

Client	Barrett	P.N.	266.013	Date	10/27/94
Ref. Meter	1334637	Yr	0.9996	Pb	29.70
Meter Box	N-1	Pre Test Y	1.005	▲ H	1.04
Vacumn	7.5	Calib. Time	10		

Performed By: Bert G. Forsyth Env. Tech.

Run#	Vr(f-i)	Tr(avg)	Vd(f-i)	Td(avg)	Y
1	5.572	68.0	5.581	75.0	1.009
2	5.562	68.0	5.621	77.5	1.004
3	5.568	68.0	5.616	79.5	1.010
Average Y					1.008

$$Y = Y_r * \frac{(V_r) * (T_d + 460) * (Pb)}{(V_d) * (T_r + 460) * (Pb + \frac{\Delta H}{13.6})}$$

HAYDEN
ENVIRONMENTAL GROUP, INC.

DGM/ORIFICE CALIBRATION

DATE 5/23/94

BAROMETRIC PRESSURE 29.66 in. Hg

CALIBRATOR Bert Foyt

METER BOX NO. N-1

REFERENCE METER NO. 1334637

REFERENCE Y 0.9996

ORIFICE SETTING in. H_2O	REFERENCE METER GAS VOLUME V_R ft^3	REFERENCE METER TEMP. T_R °F	DRY GAS METER GAS VOLUME V_D ft^3	DRY GAS METER IN TEMP T_i °F	DRY GAS METER OUT TEMP T_o °F	TIME ⊖ min.	VACUUM
0.5	113.617	81°F	037.627	82°	80°	12.6	5
	108.555	81°F	032.618	82°	79°		
	5.062	81	5.009	80.75°			
1.0	120.230	81°F	044.170	82°	78°		5
	114.621	81°F	038.618	83°	79°	10	
	5.609	81°	5.552	80.5°			
1.5	128.097	82°	051.947	84	79		5
	121.328	81°	045.251	84°	78°	10.1	
	6.769	81.5°	6.696	81.25°			
2.0	136.520	82°	060.290	84°	77°	10	5
	128.776	82°	052.627	84°	79°		
	7.744	82°	7.663	81°			
3.0	147.748	82°	071.356	86°	78°	10	5
	138.123	82°	061.858	85	79°		
	9.625	82°	9.498	82°			
4.0	159.996	82	083.418	87	79	10	5
	148.941	82°	072.531	85°	77°		
	11.055	82°	10.887	82°			

Leak Check ✓ Bert Foyt

037.618

HAYDEN ENVIRONMENTAL GROUP, INC.

Meter Box #	N-1	N-1	N-1
Date	5/23/94	5/23/94	5/23/94
Reference Meter #	1334637	1334637	1334637
Y Reference	0.9996	0.9996	0.9996
Barometric Pressure	29.66	29.66	29.66
Orifice Setting ^ H (" H20)	0.5	1	1.5
Total Gas Volume Reference	5.062	5.609	6.769
Average Temperature Reference	81	81	81.5
Total Gas Volume Dry Gas Meter	5.009	5.552	6.696
Average Temperature Dry Gas Meter	80.75	80.5	81.25
Time (min)	12.6	10	10.1
Vacumn	5	5	5

******* Calculations **********

Meter Box Y	1.0085	1.0064	1.0063
Meter Box ^ H@	1.792	1.840	1.934

Meter Box #	N-1	N-1	N-1
Date	5/23/94	5/23/94	5/23/94
Reference Meter #	1334637	1334637	1334637
Y Reference	0.9996	0.9996	0.9996
Barometric Pressure	29.66	29.66	29.66
Orifice Setting ^ H (" H20)	2	3	4
Total Gas Volume Reference	7.744	9.625	11.055
Average Temperature Reference	82	82	82
Total Gas Volume Dry Gas Meter	7.663	9.498	10.887
Average Temperature Dry Gas Meter	81	82	82
Time (min)	10	10	10
Vacumn	5	5	5

******* Calculations **********

Meter Box Y	1.0033	1.0055	1.0051
Meter Box ^ H@	1.935	1.876	1.896

Average y	1.00584
Average delta H	1.87876

Meter Box Field Check

Meter Box #: N-1

Y: 1.00584

delta H: 1.8788

Date: 5/24/94

Calibrator: BL

Leak Check: ✓

Barometric: 29.57

Run No.	Initial Volume	Final Volume	Net Volume	Initial Temp.	Final Temp.	Avg. Temp.	Y_c Comparison
1	097.903	105.275	7.372	76/73	77/71	74.25	1.030
2	105.275	112.594	7.319	75/70	76/69	72.5	1.036
3	112.594	119.949	7.355	76/69	76/69	72.5	1.030

$$y_c = \frac{10}{Vm} \times \sqrt{\frac{(0.0319) \times (Tm)}{(Pb)}}$$

Compare with Y_c

$0.97 * Y < Y_c < 1.03 * Y$

$0.97 * Y =$ 0.976

$1.03 * Y =$ 1.036

HAYDEN ENVIRONMENTAL GROUP, INC.

THERMOCOUPLE CALIBRATION

THERMOCOUPLE I. D.: 5A LENGTH: 5' DATE: 8/20/10

CALIBRATED BY: B. S.

REFERENCE THERMOMETER: 1248

SOURCE	REFERENCE THERMOMETER TEMPERATURE °C	TEST THERMOCOUPLE TEMPERATURE °C	TEMPERATURE DIFFERENCE °C
AM. AIR	25.2	25.4	0.2
ICE BATH	2.1	1.8	0.3
BOIL H_2O	99.5	99.8	0.3
HOT OIL	162.3	161.5	0.8

HAYDEN ENVIRONMENTAL GROUP, INC.

THERMOCOUPLE CALIBRATION

THERMOCOUPLE I. D.: 6B LENGTH: 6' DATE: 8/18/93

CALIBRATED BY: Bert H. Foyt

REFERENCE THERMOMETER: 1248

SOURCE	REFERENCE THERMOMETER TEMPERATURE	TEST THERMOCOUPLE TEMPERATURE	TEMPERATURE DIFFERENCE
Am. Air	25.0	24.8	0.2
ICE BATH	6.0	5.6	0.4
Boil H_2O	100.0	99.7	0.3
HOT OIL	159.6	159.4	0.2

HAYDEN ENVIRONMENTAL GROUP, INC.

THERMOCOUPLE CALIBRATION

Thermocouple I.D.: OV-1 Length: Oven Therm. Date: 8/19/93

Calibrated By: Bert G. Forgot

Reference Thermometer: 1248

Source	Reference Thermometer Temperature °F	Test Thermocouple Temperature °F	Temperature Difference °F
AM. AIR	24.7	24.6	0.1
ICE BATH	6.5	~~6~~ 5.7	0.8
BOILING H_2O	100.0	99.0	1.0
HOT OIL	172.0	172.9	0.9

HAYDEN
ENVIRONMENTAL GROUP, INC.

THERMOCOUPLE CALIBRATION

Thermocouple I.D.: OV-2 Length: Oven Therm. Date: 8/19/93

Calibrated By: Bert G. Forsyth

Reference Thermometer: 1248

Source	Reference Thermometer Temperature °F	Test Thermocouple Temperature °F	Temperature Difference °F
Am. Air	25.0	24.7	0.3
Ice Bath	9.0	7.9	1.1
Boiling H_2O	100.0	99.0	1.0
Hot Oil	165.5	166.7	1.2

THERMOCOUPLE CALIBRATION

Thermocouple I.D.: OV-3 Length: Oven Therm Date: 8/19/93

Calibrated By: Bert Y. Forsyth

Reference Thermometer: 1248

Source	Reference Thermometer Temperature °F	Test Thermocouple Temperature °F	Temperature Difference °F
AM. AIR	25.0	25.0	0.0
ICE BATH	8.0	7.7	0.3
BOILING H_2O	100.0	99.1	0.9
HOT OIL	175.5	176.2	0.7

THERMOCOUPLE CALIBRATION

Thermocouple I.D.: OV-4 Length: Oven Therm. Date: 8/19/93

Calibrated By: Bert H. Foyt

Reference Thermometer: 1248

Source	Reference Thermometer Temperature °F	Test Thermocouple Temperature °F	Temperature Difference °F
Am. Air	25.0	25.1	0.1
Ice Bath	7.0	5.7	1.3
Boiling H_2O	100.0	99.1	0.9
Hot Oil	167.5	168.4	0.9

THERMOCOUPLE CALIBRATION

Thermocouple I.D.: F-1 Length: Imp. Head Date: 8/19/93

Calibrated By: Bert Y. Forsyth

Reference Thermometer: 1248

Source	Reference Thermometer Temperature °F	Test Thermocouple Temperature °F	Temperature Difference °F
Am. Air	24.7	24.0	0.7
ICE BATH	6.5	4.7	1.8
Boil H_2O	99.0	98.7	0.3
HOT OIL	159.5	158.6	0.9

THERMOCOUPLE CALIBRATION

Thermocouple I.D.: I-2 Length: Emp. Head Date: 8/19/93

Calibrated By: Brett H. Forsyth

Reference Thermometer: 1248

Source	Reference Thermometer Temperature °F	Test Thermocouple Temperature °F	Temperature Difference °F
Am. Air	24.7	24.3	0.4
Ice Bath	7.0	6.2	0.8
Boiling H_2O	100.0	99.0	1.0
Hot Oil	157.0	156.6	0.4