

GW - 21

REPORTS

YEAR(S):

12/6/1996

REPORT



Phase II Site Assessment of the Indian Basin Gas Plant

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AUG 28 1997

Environmental Bureau
Oil Conservation Division

**Prepared For:
Marathon Oil Company**

**Prepared By:
Indian Environmental Services**
(A Division of Indian Fire & Safety, Inc.)

Date Prepared: 12/6/96
Project Number: 96023

**COMPREHENSIVE
SITE CHARACTERIZATION REPORT
INDIAN BASIN REMEDIATION PROJECT
NEW MEXICO
1991 - 1997**

VOLUME I OF II

August 12, 1997

Prepared for:

**Marathon Oil Company
P.O. Box 552
Midland, Texas 79702**

Prepared by:

**Fluor Daniel GTI, Inc.
2501 Yale Boulevard S.E., Suite 204
Albuquerque, New Mexico 87106
(505) 242-3113**

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AUG 28 1997

**Environmental Bureau
Oil Conservation Division**

FLUOR DANIEL GTI



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Notice

This report was prepared for Marathon Oil Company and is considered privileged and confidential information by our client. The report and all of its contents may not be used for any other purpose without written permission from Marathon Oil Company and/or Indian Environmental Services. The scope of work is limited to matters expressly covered. The site assessment was performed in accordance with standards of care and due diligence normally practiced by recognized consulting firms in performing services of a similar nature.

Introduction

The Marathon Oil Company (Marathon or Client) Indian Basin Gas Plant (Site, Plant, Facility or IBGP) is an operating natural gas processing facility located in Section 23, Township 21 South, Range 23 East, NMPM, of Eddy County, New Mexico. In October 1996, Indian Environmental Services, A Division of Indian Fire & Safety, Inc. (Indian) was contracted by the Client to begin a Phase II assessment of the Site.

The scope of work for this project was limited to the following:

1. Selection of Soil Boring Sites
2. Perform Soil Borings
3. Collecting Samples at Given Intervals
4. Packaging and Shipping Samples for Analysis
5. Collecting and Assembling Data for Modeling

On-site activities commenced on October 10, 1996 and were completed on October 18, 1996. The following is a report summarizing the methods used for completion of the scope of work and assembly of information gathered from on-site investigation and off-site laboratory analysis.

Selection of Soil Boring Sites

On October 10, 1996 with Client representatives present, the boring sites were selected and marked prior to the actual boring being performed. Boring sites were set out on a 200 foot grid starting outside of the northeast corner of the Facility and ending outside of the southwest corner of the Site. This grid was used to establish a pattern that would allow for samples to be taken upgradient, within and downgradient of the Plant.

Following the initial selection of the boring sites, each area was screened using a line location device to ensure that no subsurface obstructions (pipelines, electrical lines, etc.) would be encountered once boring operations were started. Any area of uncertainty was excavated manually until it was confirmed that it was safe to proceed. A diagram is provided showing the location of the borings as Figure 1.

Performance of Soil Borings and Sampling

Soil borings were achieved using two different devices. Shallow borings between the 0-1 foot intervals were made using a hydraulically operated auger. Once the boring reached the desired depth, a sample was taken from the bottom of the borehole. For borings deeper than 1 foot, a hydraulically operated hammer style "Strata Probe" was used. Once the unit reached the desired sampling depth, samples were taken using a split-spoon style sampling device. Due to the nature of the geology within the area, not all borings reached the desired total depth.

Once a sample was taken, it was evaluated on-site for color, odor, general composition and screened using either a Photoionization Detector (PID) or a Flameionization Detector (FID). The sample was then placed into a sample jar, labeled and prepared for shipping to the laboratory for further analyses. A table containing the on-site evaluation of the samples and any relative notations for the borings is provided as Figure 2.

Packaging and Shipping of Samples

After each sample was taken, it was placed in a clean glass jar with a hydrocarbon resistant lid. Each sample jar was filled to capacity to minimize any headspace, labeled with respect to its location then placed in a protective bag and sealed.

The bagged jar was then placed in a container along with ice to keep it chilled until removed at the laboratory. Samples were shipped daily using common carrier with overnight service. No samples taken exceeded any holding times relative to the analysis performed.

Quality Assurance/Quality Control

All boring equipment used was thoroughly decontaminated prior to the commencement of boring operations. Initial decontamination consisted of a complete washdown using clean freshwater and a phosphate-free detergent. Washdown included the drilling units, probes, rods, tips, bits, augers and any other device that might come in contact with the boring. Once washed, the above mentioned were then rinsed twice prior to initial use.

During boring operations, all tools used were washed between each boring then triple rinsed. All sampling devices were decontaminated between each sampling event using the same methods.

All instruments used during on-site screening were calibrated daily before use and again if the unit was turned off.

Analysis & Reporting

All samples were shipped to Trace Analysis, Inc. in Lubbock, Texas for the following analysis:

Volatile & Semi-volatile Organic Compounds (EPA Method 8240)
Polynuclear Aromatics (EPA Method 8310)
Polychlorinated Biphenols (PCB's)(EPA SW 846-3350, 8080)*
Mercury (EPA Method SW 846-305, 7471)
Soil Characterization **

* Random samples were submitted for PCB analysis, not all samples were analyzed.

** Only four samples were taken and submitted for soil characterization.

Following receipt of the analysis, the information was compiled as follows:

A summary of all analysis was prepared that lists all of the samples taken and the results of the analysis performed with the exception of the soil characterizations which are listed on a separate table.

The analytical reports are presented by boring with all analytical reports relative to each boring separated. Where more than one sample is listed on a page (i.e., mercury and PCB's reports), the analysis has been copied and the results relative to that particular boring are highlighted.

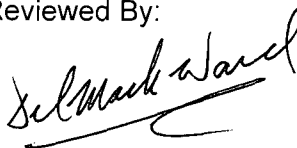
Chain of custody documents have been compiled and placed in a separate section for review. Any other documents from the laboratory have been provided in a separate section as well.

Prepared By:

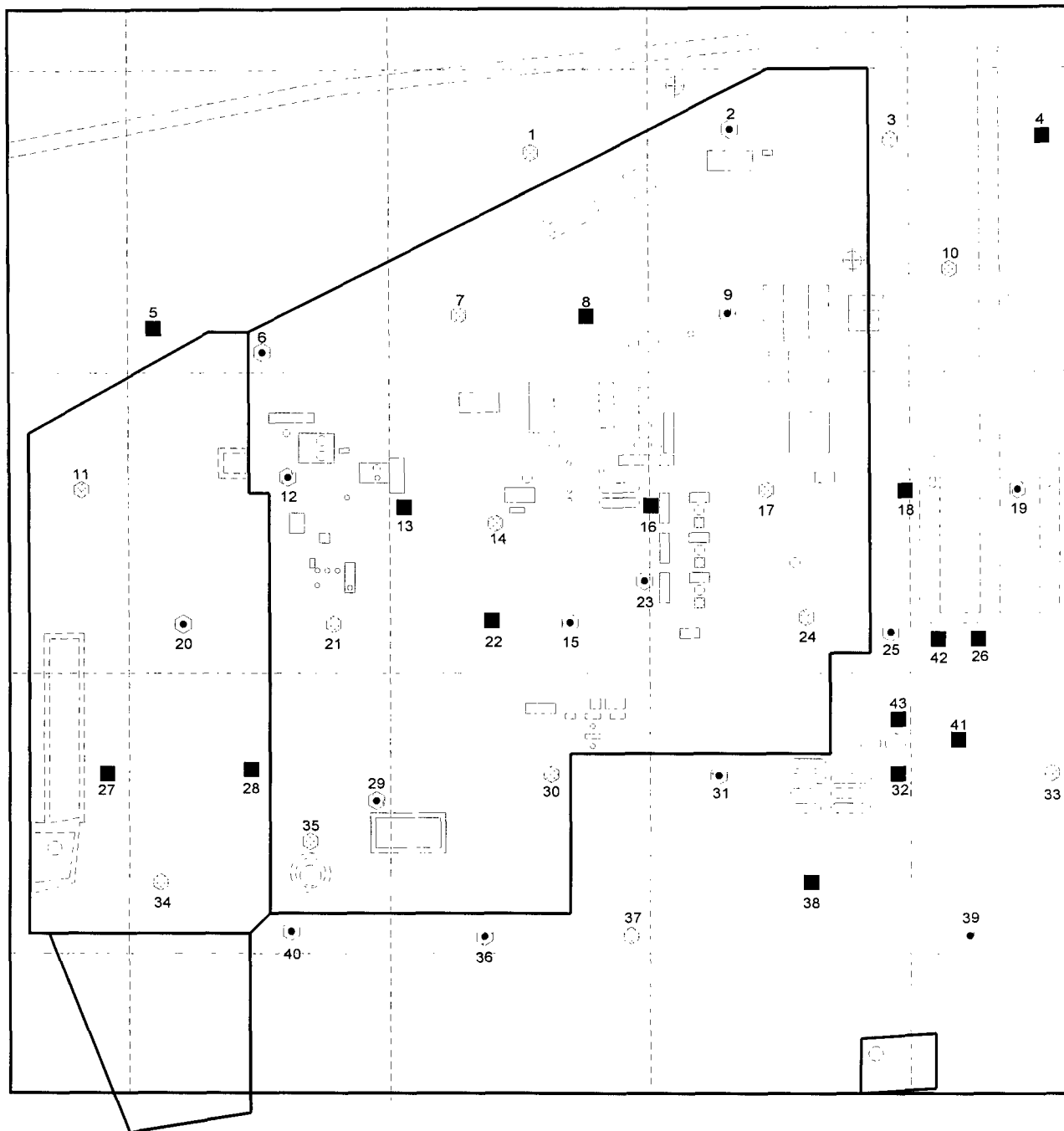


Fred Holmes
Project Manager
Indian Environmental Services

Reviewed By:



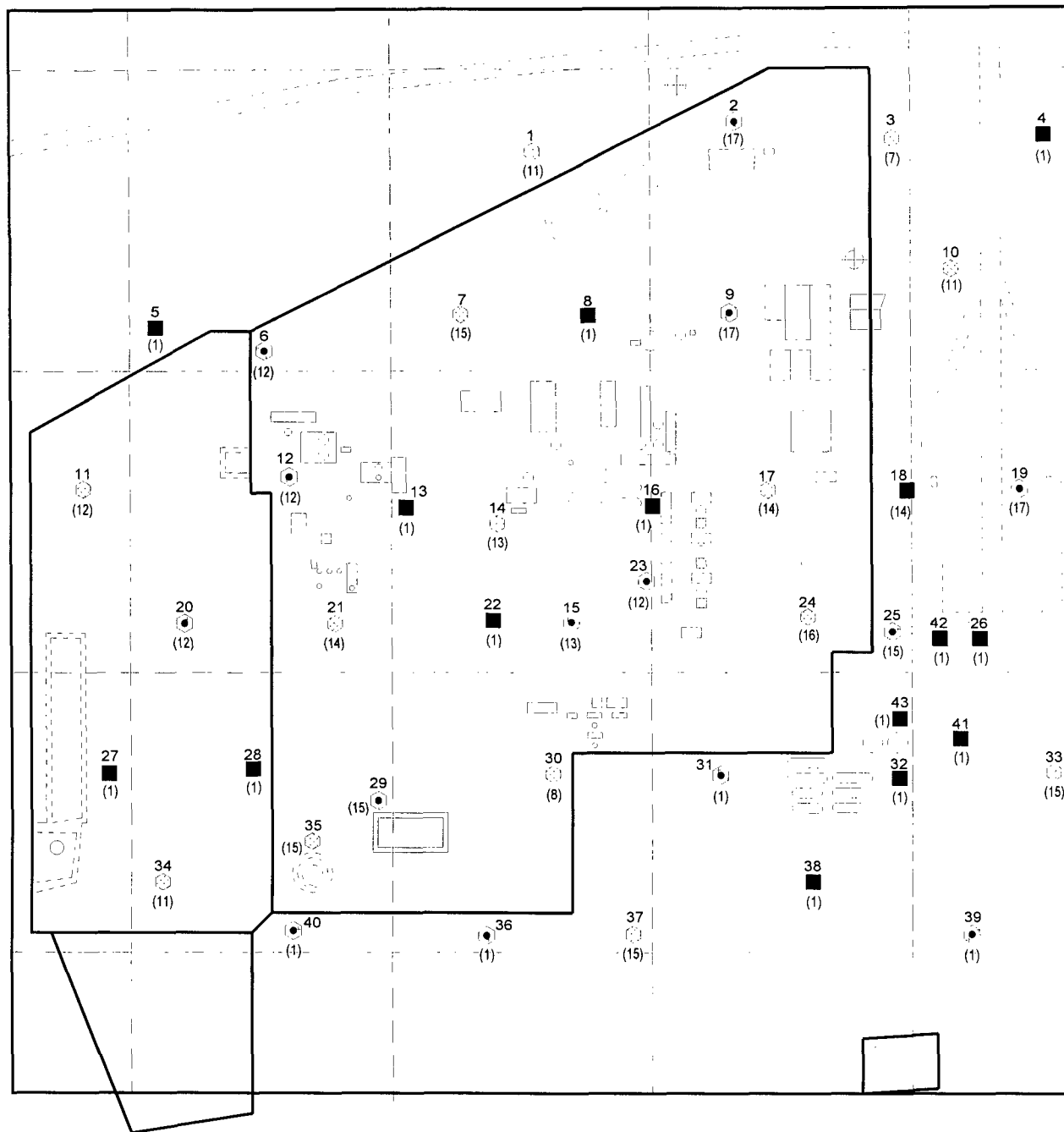
Del Mack Ward
Environmental Response Specialist III
Indian Environmental Services



LEGEND	
■	0-1 Ft. Boring
⊗	10-15 Ft.
⊙	20-25 Ft. Boring
⊕	Existing MW

20000200 Feet MARATHON OIL COMPANY INDIAN BASIN GAS PLANT SITE ASSESSMENT BORING LOCATION MAP PREPARED BY INDIAN ENVIRONMENTAL SERVICES (A Division of Indian Fire & Safety, Inc.) Date Prepared 12/96	
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Figure 1, Page 1



LEGEND	
■	0-1 Ft. Boring
⊙	10-15 Ft.
⊕	20-25 Ft. Boring
+	Existing MW
()	Actual Boring Depth

200 0 200 Feet

MARATHON OIL COMPANY

INDIAN BASIN GAS PLANT
SITE ASSESSMENT
BORING LOCATION & DEPTH MAP

PREPARED BY
INDIAN ENVIRONMENTAL SERVICES
(A Division of Indian Fire & Safety, Inc.)

Date Prepared 10/99

Figure 2

Marathon Oil Company
Indian Basin Gas Plant, Phase II Assessment
Figure 3, (Continued)

Sample Number	Description	PID	FID	Notes
16-1-1	Brown Silty Clay	0		No Odor
17-15-1	Brown Silty Clay	0		No Odor
17-15-14	Tan Silty Clay with Cobbles	10		Slight Odor, Refusal
18-1-1	Brown Silty Clay	0		Strong Odor
18-1-13	Tan Silty Clay with Cobbles		120	No Odor, FID at Opening
18-1-14	Tan Silty Clay with Cobbles		2	Faint Odor, Encountered Water
18-1-14	Water		9	No Odor
19-25-1	Red Silty Clay	0		No Odor
19-25-11	Cobbles with silt	0		No Odor
19-25-17	Encountered Water	12		Strong Odor (Hydrocarbon)
20-25-1	Brown Clayey Silt	0		No Odor
20-25-12	Brown Clay with Cobbles	0		No Odor, Refusal Afterwards
21-15-1	Brown tan Silty Clay	0		No Odor
21-15-14	Cobbly Tan Silty Clay	0		No Odor, Refusal Afterwards
22-1-1	Tan Silty Clay	0		No Odor
23-25-1	Tan Silty Clay	0		No Odor
23-25-12	Tan Silty Clay with Cobbles	0		No Odor, Refusal Afterwards
24-15-1	Tan Silty Clay	0		No Odor
24-15-15	Black Stained Cobbly Silt	10		Strong Odor
24-15-16	Black Stained Cobbly Silt	12		Strong Odor
25-25-1	Red Clayey Silt	.5	0	No Odor
25-25-14	Moist/Wet Black Stained Cobbly Silt	4	35	Strong Odor (Hydrocarbon)
25-25-14	Water	20	400	Strong Odor (Hydrocarbon)
25-25-15	Black Stained Cobbly Silt	5	25	Slight Odor (Hydrocarbon)
26-1-1	Tan Silty Sand	0		No Odor
27-1-1	Tan Silty Clay	0		No Odor
28-1-1	Tan Silty Clay	0		No Odor
29-25-1	Tan Silty Clay	0		No Odor

Marathon Oil Company
Indian Basin Gas Plant, Phase II Assessment
Figure 3, (Continued)

Sample Number	Description	PID	FID	Notes
29-25-15	Black Stained Cobbley Silt	15		Strong Odor (Hydrocarbon), Refusal
30-15-1	Brown Clayey Silt	0		No Odor
30-15-8	Tan Silt with Cobbles	0		No Odor, Refusal at 9'
31-25-1	Brown Clayey Silt	0	0	No Odor, Refusal at 4'
32-1-1	Tan Silty Sand	0		No Odor
33-15-1	Red Clayey Silt	0	0	No Odor
33-15-7	Cobbled Tan Silty Clay	0	0	No Odor
33-15-15	Tan Clayey Silt	2	5	Slight Hydrocarbon Odor
34-15-1	Brown Clayey Silt	0		No Odor
34-15-11	Tan Clay with Cobbles	0		No Odor, Refusal at 13'
35-15-1	Brown Silty Clay	0		Slight Odor
35-15-13	Tan Silty Clay with Cobbles	8		Strong Odor (Hydrocarbon)
35-15-15	Gray/Blk Silty Clay with Cobbles	10		Strong Odor (Hydrocarbon)
36-25-1	Brown Clayey Silt	0		No Odor, Refusal at 5'
37-15-1	Brown Clayey Silt	0	0	No Odor
37-15-15	Moist Clayey Silt with Cobbles	2		Slight Odor
38-1-1	Brown Clayey Silt	0		No Odor
39-25-1	Brown Clayey Silt	0		No Odor, Refusal at 5'
40-25-1	Brown Clayey Silt	0		No Odor, Refusal at 4'
41-1-1	Brown Clayey Silt	1		Slight Odor
42-1-1	Tan Clayey Silty Sand	0		No Odor
43-1-1	Moist Brown Clayey Silt	0		No Odor, Observed Slight Staining

Boring Number	Target Depth (ft.)	Sampling Int. (ft.)	Matrix	Mercury (mg/kg)	PCBs (mg/kg)	8240 Compounds												8310 Compounds																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
						Carbon disulfide	Ethylbenzene	m & p-Xylene	Benzene	Vinyl Acetate	Tetrachloroethane	Styrene	o-Xylene	None Detected	Acenaphthylene	Anthracene	Benzo (a) Anthracene	Benzo (a) Pyrene	Benzo (b) Fluoranthene	Benzo (g,h,i) Perylene	Benzo (k) Fluoranthene	Chrysene	Dibenzo (a,h) Anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene	1-Methylnaphthalene	2-Methylnaphthalene																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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Legend & Notes

- Legend & Notes**
1. ND = Not Detected
 2. Detection limits are provided on Pages 4 & 5.
 3. K = 1000
 4. Cap = Capillary Fringe
 5. Only the values for compounds found are shown. All others tested for were non detect.
 6. All 8240 and 8310 values are in ug/kg for soil and ug/L for water.
 7. Soils Characterizations are provided on Page 3.
 8. BR = Sample broken during shipment and unable to analyze

Soils Characterization
Summary

Boring Number	Test	Test Method	Test Results
2-25-14	Description: Tan Clayey Sand		
	FOC	ASTM D2974C	0.4%
	Moist Density	13-2	129.8 pcf (2.08 g/cc)
	Dry Bulk Density	13-2	124.2 pcf (1.99 g/cc)
	Water Content by Weight	ASTM D2216	4.5%
	Water Content by Volume	ASTM D2216	12.7%
	Porosity, Total	Calculated	0.2953
	Porosity, Air	Calculated	0.2059
	Porosity, Water	Calculated	0.0894
	Hydraulic Conductivity	28-4.2	8.57×10^{-6} cm/sec
	Intrinsic Permeability	28-4.2	8.74×10^{-11} cm ²
9-15-1	Description: Tan Clayey Sand		
	FOC	ASTM D2974C	2.3%
	Moist Density	13-2	125.2 pcf (2.01 g/cc)
	Dry Bulk Density	13-2	107.6 pcf (1.71 g/cc)
	Water Content by Weight	ASTM D2216	16.4%
	Water Content by Volume	ASTM D2216	43.9%
	Porosity, Total	Calculated	0.3576
	Porosity, Air	Calculated	0.0753
	Porosity, Water	Calculated	0.2823
	Hydraulic Conductivity	28-4.2	2.38×10^{-4} cm/sec
	Intrinsic Permeability	28-4.2	2.43×10^{-9} cm ²
2-25-1	Description: Tan Clayey Sand		
	FOC	ASTM D2974C	1.6%
	Moist Density	13-2	119.9 pcf (1.92 g/cc)
	Dry Bulk Density	13-2	105.0 pcf (1.68 g/cc)
	Water Content by Weight	ASTM D2216	14.2%
	Water Content by Volume	ASTM D2216	37.2%
	Porosity, Total	Calculated	0.3588
	Porosity, Air	Calculated	0.1202
	Porosity, Water	Calculated	0.2386
	Hydraulic Conductivity	28-4.2	2.69×10^{-6} cm/sec
	Intrinsic Permeability	28-4.2	2.74×10^{-11} cm ²
9-15-4	Description: Tan Clayey Sand		
	FOC	ASTM D2974C	0.2%
	Moist Density	13-2	119.0 pcf (1.91 g/cc)
	Dry Bulk Density	13-2	114.0 pcf (1.83 g/cc)
	Water Content by Weight	ASTM D2216	4.4%
	Water Content by Volume	ASTM D2216	12.3%
	Porosity, Total	Calculated	0.3486
	Porosity, Air	Calculated	0.2683
	Porosity, Water	Calculated	0.0803
	Hydraulic Conductivity	28-4.2	2.95×10^{-6} cm/sec
	Intrinsic Permeability	28-4.2	3.01×10^{-11} cm ²

Indian Basin Gas Plant Assessment
8240 Detection Limits

Compounds	Detection Limits (ug/kg)
Dichlorofluoromethane	25
Chloromethane	25
Vinyl Chloride	25
Bromomethane	125
Chloroethane	25
Trichlorofluoromethane	25
1,1-Dichloroethene	25
Iodomethane	125
Carbon Disulfide	25
Methylene Chloride	125
trans-1,2-Dichloroethene	25
1,1-Dichloroethane	25
Vinyl Acetate	25
2-Butanone	1250
Chloroform	25
1,1,1-Trichloroethane	25
1,2-Dichloroethane	25
Benzene	25
Carbon Tetrachloride	25
1,2-Dichloropropane	25
Trichloroethene	25
Bromodichloromethane	25
cis-1,3-Dichloropropene	25
4-Methyl-2-pentanone	1250
trans-1,3-Dichloropropene	25
Toulene	25
1,1,2-Trichloroethane	25
2-Hexanone	1250
Dibromochlormethane	25
Tetrachloroethene	25
Chlorobenzene	25
Ethylbenzene	25
m & p-Xylene	25
Bromoform	25
Styrene	25
o-Xylene	25
1,1,2,2-Tetrachloroethane	25
trans 1,4,Dichloro-2butene	125
cis 1,4,Dichloro-2butene	125
1,4-Dichlorobenzene	50
1,3-Dichlorobenzene	50
1,2-Dichlorobenzene	50

Indian Basin Gas Plant Assessment
8310 Detection Limits

Compounds	Detection Limits (ug/kg)
Acenaphthene	10
Acenaphthylene	11
Anthracene	0.59
Benzo (a) Anthracene	1.3
Benzo (a) Pyrene	2.5
Benzo (b) Fluoranthene	1
Benzo (g,h,i) Perylene	3.9
Benzo (k) Fluoranthene	1.1
Chrysene	1.5
Dibenzo (a,h) Anthracene	7.1
Fluoranthene	3.3
Fluorene	1.6
Indeno (1,2,3-cd) Pyrene	1.9
Naphthalene	13
Phenanthrene	1.1
Pyrene	2.4
1-Methylnaphthalene	13
2-Methylnaphthalene	13

NOTE: The actual detection limits vary dependent upon each analysis. For the sake of consistency, the highest reporting limit found is the one listed with the exception of Sample Numbers 23-25-1 and 28-1-1. These samples required large dilution factors which raised the detection limits significantly.

Compounds	Detection Limits (mg/kg)
Mercury	0.25
PCB's	0.25

Note: The detection limits for PCB's were raised on three samples due to matrix interferences.

60755-58

303

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

BOB MENZIE

Phone #:

915-687-8312

FAX #:

8305

Company Name & Address:

MARATHON

Project #:

44999

Project Name:

LUB. BASIN CP. ASSESSMENT.

Project Location:

Sampler Signature:

LUB BASIN



LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX			PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	DATE	TIME
60755-58	2-25-17			X								
60755-58	20-25-1			X								
87	4-1-1			X								
88	39-25-1			X								
89	4-25-1			X								
60755	2-25-14	1		✓								
96	9-15-1	1		✓								
57	2-25-1	1		✓								
58	9-15-4	1		✓								

Relinquished by:

Date:

Time:

Received by:

Date:

Time:

Relinquished by:

Date:

Time:

Received by:

Date:

Time:

Relinquished by:

Date:

Time:

Received at Laboratory by:

Date:

Time:

M. J. J. 10-18-96 10:00

REMARKS

ADDITIONAL ANALYSIS

REQUESTED ON SAMPLES

BEING SENT - SAMPLES

ALREADY SENT.

295MD

10-18-96

add samples per FH 10-17-96

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Phone #:

Company Name & Address:**Project Name :****Sampler Signature:**[illegible]

REMARKS	
Relinquished by: <i>W.L.C.</i>	Date: <i>10-15-96</i> Time: <i>1145</i>
Received by: <i>Robert J. Mager</i>	Date: <i>10-14-96</i> Time: <i>1645</i>
Relinquished by: <i>Robert J. Mager</i>	Date: <i>10-15-96</i> Time: <i>0600</i>
Received by: <i>[Signature]</i>	Date: <i>10/13/96</i> Time: <i>0600</i>
Relinquished by: <i>[Signature]</i>	Date: <i>10-15-96</i> Time: <i>1030</i>
Received at Laboratory by: <i>[Signature]</i>	Date: <i>10-15-96</i> Time: <i>1030</i>

REMARKS

* Not enough sample for H_0 , H_A , P_A



60469-83

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: BOB WENZEL		Phone #: 815-697-8312		FAX #: 8308		ANALYSIS REQUEST		SPECIAL HANDLING	
Company Name & Address: WIRE AT WORK		Plant fax 505 457-2544							
Project #: 441999		Project Name: 1 AA BASIN							
Project Location: LADBAUGH C.R. ASSESSMENT		Sampler Signature: <i>[Signature]</i>							

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		TIME	DATE	BTEX, MTBE	TPH	Total Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	8240/ 8260	8270	Turn around # of days	Fax ASAP	Hold					
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME																			
60469	1-15-1	2	4oz	X																												
70	1-15-11	2	4oz	X																												
71	3-15-1	2	4oz	X																												
72	3-15-7	2	4oz	X																												
73	4-1-1	2	4oz	X																												
74	5-1-1	2	4oz	X																												
75	10-15-11	1	4oz	X																												
76	10-15-1	2	4oz	X																												
77	18-1-1	2	4oz	X																												
78	19-25-1	2	4oz	X																												
79	19-25-11	2	4oz	X																												

Relinquished by:	Date:	Time:	Received by:	Date:	Time:	REMARKS <i>[Handwritten notes and signatures]</i>
Relinquished by:	Date:	Time:	Received by:	Date:	Time:	
Relinquished by:	Date:	Time:	Received by:	Date:	Time:	

CJ

60521 440 205

TraceAnalysis, Inc.

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Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

BOB MENZIE

Phone #: 915-687-8312

FAX #:

8305

Company Name & Address:

MARATHON OIL CO.

Project #:

44999

Project Name:

IND. BASIN ASSESSMENT

Project Location:

IND. BASIN

Sampler Signature:



LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX			PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	DATE	TIME
60521	18-1-13	2	4oz	X					X		10/15/96	0900
22	18-1-13.5W	1	4oz	X					X		10/15/96	0915
23	18-1-13.5D	1	4oz	X					X		10/15/96	0915
24	25-25-1	2	8oz	X					X		10/15/96	1025
25	25-25-14	2	8oz	X					X		10/15/96	1045
26	25-25-14W	2	4oz	X					X		10/15/96	1210
27	33-15-1	2	8oz	X					X		10/15/96	1245
28	33-15-7	2	8oz	X					X		10/15/96	1310
29	33-15-15	2	8oz	X					X		10/15/96	1330
30	33-25-1 AT	2	8oz	X					X		10/15/96	1405
31	25-25-15(CAP)	1	3oz	X					X		10/15/96	1045

Relinquished by:

Signature: 10/15/96 1600

Date: Time:

Relinquished by:

Signature: 10/15/96 1600

Date: Time:

Relinquished by:

Signature: 10-16-96 11:20

Date: Time:

Received at Laboratory by:

Date: Time:

Received by:

Date: Time:

REMARKS

Received by: Date: Time:

Received by: Date: Time:

ANALYSIS REQUEST

TPH	
Total Metals Ag As Ba Cd Cr Pb Hg Se	X
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	X
TCLP Volatiles	X
TCLP Semi Volatiles	X
RCI	X
8240/8260	X
8270	X
8310 (PAHs)	X
8080 (PEBS)	X

SPECIAL HANDLING

Turn around # of days	
Fax ASAP	
Hold	

PA6E 10F2

18-1-13/0.000

25-25-1/Probe

25-25-14W

1.00A broken in transit

290 A3A

C7

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Phone #:**FAX #:****Company Name & Address:**

Project Name :

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX					PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE		HCL	HNO3	ICE	NONE	DATE	TIME
60532	8-1-1	2	802	X							X		10/15	
33	13-1-1	2		X							X			
34	16-1-1	2		X							X			
35	22-1-1	2		X							X			
36	23-25-1	2		X							X			
37	27-1-1	2		X							X			
38	28-1-1	2		X							X			
39	29-25-1	2		X							X			
40	35-15-1	2	802	X							X		10/15	

Received by:

Date: _____ Time: _____

Received by:

Date: _____ Time: _____

Received at 10

Date: _____ Time: _____

REMARKS

Page 242

16-1-1, Boring
1 container

Received at Laboratory by: McDowell Date: 10-10-96 Time: 11:20 C

11

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Bob Merzle

Phone #: 915-687-8312

FAX #: 8305

Company Name & Address:

Marathon Oil Co

Project #:

66677

Project Name :

Indian Basin Assessment

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		BTEX, MTBE	TPH	Total Metals Ag As Ba Cd	TCLP Metals Ag As Ba Cd	TCLP Volatiles	TCLP Semi Volatiles	RCI	8240/8260	8270	8310 (PAHs)	8080 (PCPs)	Turn around # of day	Fax ASAP	Hold			
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME																	
60576	2-25-1	2	20g	X							X		10-16	1245	X	X	X	X	X	X	X	X	X	X	X	8080 (PCPs)	8310 (PAHs)			
776-25-1		2	20g	X							X			1330	X	X	X	X	X	X	X	X	X	X	X	X				
7811-15-1		2	20g	X							X			1045	X	X	X	X	X	X	X	X	X	X	X	X				
7911-15-12		2	20g	X							X			1045	X	X	X	X	X	X	X	X	X	X	X	X				
8012-25-1		2	20g	X							X			315	X	X	X	X	X	X	X	X	X	X	X	X				
8120-25-1		2	20g	X							X			1130	X	X	X	X	X	X	X	X	X	X	X	X				
8220-25-12		1	20g	X							X			1145	X	X	X	X	X	X	X	X	X	X	X	X				
8331-25-1		2	20g	X							X			10-16	0830	X	X	X	X	X	X	X	X	X	X	X				
8434-15-1		2	20g	X							X			0845	X	X	X	X	X	X	X	X	X	X	X	X				
8534-15-11		1	20g	X							X			0900	X	X	X	X	X	X	X	X	X	X	X	X				
8636-25-1		2	20g	X							X			0915	X	X	X	X	X	X	X	X	X	X	X	X				

Relinquished by:

Date: 10/16/96 Time: 600

Date: _____
Time: _____

REMARKS

Relinquished by:

Date: _____ Time: _____

Date: _____ Time: _____

7

Relinquished by:

Date: _____ **Time:** _____

Date: _____ Time: _____

7

REMARKS

Page 10 of 2



291AC

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Page 2 of 2

Received at Laboratory by: M. J. J. J. Date: 12-17-61 Time: 10:00

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

Project Manager:

Bob Menzie

Phone #: 815-687-8312

FAX #: 8305

Company Name & Address:

Marathon Oil Co

Project #:

44999

Project Name:

Indian Basin Assessment

Project Location:

Indian Basin

Sampler Signature:

[Signature]

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME
60069	4-25-1	2	802	X						X		10/17/96	11:30
70	24-15-1	2	802	X						X		10/19/96	08:30
71	17-15-1	2	802	X						X		10/19/96	09:00
72	24-15-1	2	802	X						X		10/19/96	09:00
73	21-15-1	2	802	X						X		10/19/96	11:15
74	29-25-15	2	802	X						X		10/17/96	
75	35-15-13	2	802	X						X		10/17/96	
76	35-15-15	2	802	X						X		10/17/96	
77	30-15-8	1	402	X						X		10/17/96	
78	19-25-17W	2	402	X						X		10/17/96	
79	24-15-16	2	802	X						X		10/17/96	12:30

Relinquished by:

[Signature] 10/17/96 11:00

Relinquished by:

[Signature] 10/17/96 11:00

Relinquished by:

[Signature] 10/17/96 11:00

Received by:

Date: Time:

Received by:

Date: Time:

Received at Laboratory by:

Date: Time:

10-18-96 10:00

change 24-15-1 → 30-15-1 per FH

CT

PAGE 1 of 2

10-17-96

ML

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

ANALYSIS REQUEST

SPECIAL HANDLING

TPH
Total Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Metals Ag As Ba Cd Cr Pb Hg Se
TCLP Volatiles
TCLP Semi Volatiles
RCI
(8240) / 8260
8270
8310 (P.H.'s)
8080 (P.C.B.)
Turn around # of days
Fax ASAP
Hold

REMARKS

292 PA

No Containers

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Bob Anderson

Phone #: 915-687-8312
FAX #: 8305

Company Name & Address:

MARATHON OIL CO.

Project #:

44999

Project Name:

Project Location:

Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD			SAMPLING	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	DATE	TIME
100680	9-25-15	2	802	X						X	10/17/96	1300
81	9-25-17	2	802	X						X	10/17/96	1330
82	9-25-12	2	802	X						X	10/17/96	1350
83	2-25-17	2	802	X						X	10/17/96	1415
84	24-15-15	2	802	X						X	9/17/96	1415
85	14-15-1	2		X							10/11/96	

ANALYSIS REQUEST	SPECIAL HANDLING
BTX, MTBE	
TPH	
Total Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Metals Ag As Ba Cd Cr Pb Hg Se	
TCLP Volatiles	
TCLP Semi Volatiles	
RCI	
8248 / 8260	
8270	
8310 (PAHs)	
8080 (PCBS)	
Turn around # of days	
Fax ASAP	
Hold	

REMARKS

Relinquished by: <i>[Signature]</i>	Date: 10/17/96	Time: 1600	Received by: <i>[Signature]</i>	Date: 10/18/96	Time: 10:00
Relinquished by: <i>[Signature]</i>	Date: 10/17/96	Time: 1600	Received by: <i>[Signature]</i>	Date: 10/18/96	Time: 10:00
Relinquished by: <i>[Signature]</i>	Date: 10/17/96	Time: 1600	Received by: <i>[Signature]</i>	Date: 10/18/96	Time: 10:00

PAGE 2 of 2

14-15-1 Ann Hg 8240 8310 PCB

upn FH 10-18-96

TraceAnalysis, Inc.

6701 Aberdeen Avenue Lubbock, Texas 79424
Tel (806) 794 1296 Fax (806) 794 1298
1 (800) 378 1296

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager:

Bob Menzies

Phone #:

915-687-8312

FAX #:

8305

Company Name & Address:

Marathon Oil Co

Project #:

114999

Project Location:

Indian Basin

Project Name:

Indian Basin Assessment

Sampler Signature:

[Signature]

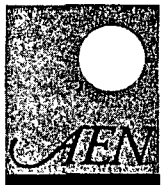
LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX				PRESERVATIVE METHOD				SAMPLING		TPH	Total Metals Ag As	TCLP Metals Ag As	TCLP Volatiles	TCLP Semi Volatiles	RCI	(8240) 8260	8270	8310 (PAHs)	Turn around # of days	Fax ASAP	Hold	
				WATER	SOIL	AIR	SLUDGE	HCL	HNO3	ICE	NONE	DATE	TIME													
60721	15-25-1	2	202	X							X		10-17	1400	X	X				X						
22	15-25-13	2	202	X							X		10-17	1430	X	X				X						
23	17-15-14	2	202	X							X		10-17	1500	X	X				X						
24	21-15-14	2	202	X							X		10-17	1530	X	X				X						
25	23-25-12	2	202	X							X		10-18	0800	X	X				X						
26	23-25-12	2	202	X							X		10-18	0900	X	X				X						
27	23-15-1	2	202	X							X		10-18	0930	X	X				X						
28	23-15-15	2	202	X							X		10-18	1000	X	X				X						
29	24-15-13	1	402	X							X		10-18	1030	X	X				X						
30	25-12	1	402	X							X		10-18	1130	X	X				X						

REMARKS

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
[Signature]	10/18	1600	[Signature]	10-19-81	
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by:	Date:	Time:
			[Signature]	10-19-81	

Samples Packaged Loose - 1 of 8-15-1
Received broken sample packaged
COPES Rec'd broken in Aluminum Foil

293AC



American Environmental Network, Inc.

11 EAST OLIVE ROAD • PENSACOLA, FL 32514 • (904) 474-1001

SIGNATURE PAGE

Reviewed by:

AEN Project Manager

Client: TRACE ANALYSIS, INC.
LUBBOCK, TEXAS

Project Name: INDIAN BASIN ASSESSMENT
Project Number: 44999
Project Location: INDIAN BASIN
Accession Number: 610460

Project Manager: DAN LOKEY
Sampled By: N/S

Analysis Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610460
Client:	TRACE ANALYSIS, INC.
Project Number:	44999
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 18
Date 15-Nov-96

"Method Report Summary"

Accession Number: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
60576 2-25-1	ACENAPHTHENE	UG/KG	18
	BENZO (a) ANTHRACENE	UG/KG	5.1
	BENZO (a) PYRENE	UG/KG	25
	CHRYSENE	UG/KG	610
	DIBENZO (a, h) ANTHRACENE	UG/KG	130
60577 6-25-1	INDENO (1, 2, 3-cd) PYRENE	UG/KG	5.3
	BENZO (a) ANTHRACENE	UG/KG	4.9
	BENZO (a) PYRENE	UG/KG	6.3
	BENZO (k) FLUORANTHENE	UG/KG	2.9
	CHRYSENE	UG/KG	3.0
60579 11-15-12	PHENANTHRENE	UG/KG	5.1
	PYRENE	UG/KG	7.5
	BENZO (k) FLUORANTHENE	UG/KG	5
	PYRENE	UG/KG	10
	BENZO (a) PYRENE	UG/KG	17
60580 12-25-1	BENZO (k) FLUORANTHENE	UG/KG	23
	BENZO (a) ANTHRACENE	UG/KG	20
	BENZO (a) PYRENE	UG/KG	33
	BENZO (b) FLUORANTHENE	UG/KG	21
	BENZO (g, h, i) PERYLENE	UG/KG	5
60583 31-25-1	CHRYSENE	UG/KG	22
	DIBENZO (a, h) ANTHRACENE	UG/KG	12
	PYRENE	UG/KG	46
	BENZO (a) PYRENE	UG/KG	31
	BENZO (g, h, i) PERYLENE	UG/KG	32
60586 36-25-1	BENZO (k) FLUORANTHENE	UG/KG	10
	ACENAPHTHENE	UG/KG	10
	BENZO (b) FLUORANTHENE	UG/KG	3
	BENZO (g, h, i) PERYLENE	UG/KG	4
	BENZO (k) FLUORANTHENE	UG/KG	2
60589 40-25-1	PYRENE	UG/KG	3
	BENZO (b) FLUORANTHENE	UG/KG	1
	BENZO (g, h, i) PERYLENE	UG/KG	4
	BENZO (k) FLUORANTHENE	UG/KG	2
	FLUORENE	UG/KG	2
60591 42-1-1	PYRENE	UG/KG	7
	BENZO (a) ANTHRACENE	UG/KG	2
	BENZO (b) FLUORANTHENE	UG/KG	11
	BENZO (g, h, i) PERYLENE	UG/KG	5
	BENZO (k) FLUORANTHENE	UG/KG	4
60592 43-1-1	FLUORANTHENE	UG/KG	4
	PYRENE	UG/KG	17

Quality Control Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610460
Client:	TRACE ANALYSIS, INC.
Project Number:	44999
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 1
Date 15-Nov-96

"QC Report"

Title: Soil Blank
Batch: PAS048
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Blank Id: A Date Analyzed: 24-OCT-96 Date Extracted: 21-OCT-96

Parameters:	Units:	Results:	Reporting Limits:
ACENAPHTHENE	UG/KG	ND	10
ACENAPHTHYLENE	UG/KG	ND	10
ANTHRACENE	UG/KG	ND	10
BENZO(a)ANTHRACENE	UG/KG	ND	10
BENZO(a)PYRENE	UG/KG	ND	10
BENZO(b)FLUORANTHENE	UG/KG	ND	10
BENZO(g,h,i)PERYLENE	UG/KG	ND	10
BENZO(k)FLUORANTHENE	UG/KG	ND	10
CHRYSENE	UG/KG	ND	10
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	10
FLUORANTHENE	UG/KG	ND	10
FLUORENE	UG/KG	ND	10
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	10
NAPHTHALENE	UG/KG	ND	10
PHENANTHRENE	UG/KG	ND	10
PYRENE	UG/KG	ND	10
1-METHYLNAPHTHALENE	UG/KG	ND	10
2-METHYLNAPHTHALENE	UG/KG	ND	10
2-CHLOROANTHRACENE	%REC/SURR	89	17-160
ANALYST	INITIALS	JBT	

Comments:

[0] Page 2
Date 15-Nov-96

"QC Report"

Title: Soil Reagent
 Batch: PAS048
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

RS Date Analyzed: 24-OCT-96
 RSD Date Analyzed: 24-OCT-96

RS Date Extracted: 21-OCT-96
 RSD Date Extracted: 21-OCT-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
ACENAPHTHYLENE	10.0	<10	9.9	99	8.6	86	14	33	42-123
BENZO(k) FLUORANTHENE	10.0	<10	10.0	100	8.9	89	12	30	56-145
CHRYSENE	10.0	<10	9.9	99	8.8	88	12	30	63-141
PHENANTHRENE	10.0	<10	10.1	101	9.0	90	12	30	62-127
PYRENE	10.0	<10	9.8	98	8.9	89	10	30	55-136

Surrogates:
 2-CHLOROANTHRACENE 102 92 17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
 UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
 * = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
 SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

[0] Page 3
Date 15-Nov-96

"QC Report"

Title: Soil Matrix
Batch: PAS048
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Dry Weight %: 85 MS Date Analyzed: 26-OCT-96 MS Date Extracted: 21-OCT-96
Sample Spiked: 610460-17 MSD Date Analyzed: 26-OCT-96 MSD Date Extracted: 21-OCT-96

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
ACENAPHTHYLENE	392	<11.8	200	51	154	39	27	40	17-141
BENZO(k) FLUORANTHENE	392	<11.8	296	76	276	70	8	55	22-151
CHRYSENE	392	<11.8	302	77	279	71	8	75	10-170
PHENANTHRENE	392	<11.8	320	82	292	74	10	53	12-161
PYRENE	392	17.5	319	77	282	67	14	66	28-158

Surrogates:
2-CHLOROANTHRACENE 76 74 17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG = MICROGRAMS
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/M3 = MILLIGRAM PER CUBIC METER.
PPMV = PART PER MILLION BY VOLUME.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRYWEIGHT BASIS.

ND = NOT DETECTED ABOVE REPORTING LIMIT.

RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

AEN/GC/FID

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

AEN/GC/FIX

AEN GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

AEN/GC/FPD

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

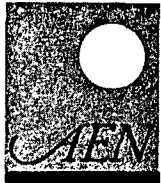
AEN/GC/PID

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

AEN/GC/TCD

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

SW = STEVE WILHITE
PL = PAUL LESCHENSKY
RW = ROBERT WOLFE
BV = BEN VAUGHN
BC = BETH COLEMAN
KS = KENDALL SMITH
KK = KERRY LEMONT
DWB = DAVID W. BOWERS
RP = ROB PEREZ
JBT = JENNIFER TORRANCE
LP = LAVERNE PETERSON



American Environmental Network, Inc.

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SIGNATURE PAGE

Reviewed by:


AEN Project Manager

Client: TRACE ANALYSIS, INC.
LUBBOCK, TEXAS

Project Name: INDIAN BASIN ASSESSMENT
Project Number: N/S
Project Location: INDIAN BASIN
Accession Number: 610407

Project Manager: DAN LOKEY
Sampled By: N/S

Analysis Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610407
Client:	TRACE ANALYSIS, INC.
Project Number:	N/S
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 15
Date 15-Nov-96

"Method Report Summary"

Accession Number: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
60469 1-15-1	BENZO(k) FLUORANTHENE	UG/KG	1.7
	INDENO(1,2,3-cd) PYRENE	UG/KG	3.9
60470 1-15-11	BENZO(g,h,i) PERYLENE	UG/KG	3.4
	BENZO(k) FLUORANTHENE	UG/KG	1.5
	PYRENE	UG/KG	2.8
	1-METHYLNAPHTHALENE	UG/KG	12
60471 3-15-1	BENZO(a) ANTHRACENE	UG/KG	6.8
	BENZO(a) PYRENE	UG/KG	4.4
	BENZO(b) FLUORANTHENE	UG/KG	16
	PYRENE	UG/KG	7.2
60473 4-1-1	BENZO(b) FLUORANTHENE	UG/KG	1.8
	PYRENE	UG/KG	3.8
60474 5-1-1	ACENAPHTHENE	UG/KG	130
	BENZO(a) ANTHRACENE	UG/KG	59
	BENZO(g,h,i) PERYLENE	UG/KG	10
	CHRYSENE	UG/KG	14
	INDENO(1,2,3-cd) PYRENE	UG/KG	28
60477 18-1-1	BENZO(a) ANTHRACENE	UG/KG	1.2
	BENZO(a) PYRENE	UG/KG	24
	FLUORENE	UG/KG	5.6
	PHENANTHRENE	UG/KG	6.2
	PYRENE	UG/KG	15
60480 26-1-1	BENZO(a) ANTHRACENE	UG/KG	11
	BENZO(a) PYRENE	UG/KG	37
	BENZO(b) FLUORANTHENE	UG/KG	24
	BENZO(g,h,i) PERYLENE	UG/KG	31
	CHRYSENE	UG/KG	11
	DIBENZO(a,h) ANTHRACENE	UG/KG	28
	FLUORANTHENE	UG/KG	46
	PHENANTHRENE	UG/KG	13
	PYRENE	UG/KG	25
	1-METHYLNAPHTHALENE	UG/KG	35
	2-METHYLNAPHTHALENE	UG/KG	58
60481 32-1-1	BENZO(a) PYRENE	UG/KG	18
	BENZO(g,h,i) PERYLENE	UG/KG	58
	FLUORANTHENE	UG/KG	3.6
	PHENANTHRENE	UG/KG	79
	PYRENE	UG/KG	30
60482 38-1-1	BENZO(a) PYRENE	UG/KG	16
	DIBENZO(a,h) ANTHRACENE	UG/KG	34

Quality Control Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610407
Client:	TRACE ANALYSIS, INC.
Project Number:	N/S
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 1
Date 15-Nov-96

"QC Report"

Title: Soil Blank
Batch: PAS046
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Blank Id: B Date Analyzed: 25-OCT-96 Date Extracted: 19-OCT-96

Parameters:	Units:	Results:	Reporting Limits:
ACENAPHTHENE	UG/KG	ND	10
ACENAPHTHYLENE	UG/KG	ND	10
ANTHRACENE	UG/KG	ND	10
BENZO(a) ANTHRACENE	UG/KG	ND	10
BENZO(a) PYRENE	UG/KG	ND	10
BENZO(b) FLUORANTHENE	UG/KG	ND	10
BENZO(g,h,i) PERYLENE	UG/KG	ND	10
BENZO(k) FLUORANTHENE	UG/KG	ND	10
CHRYSENE	UG/KG	ND	10
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	10
FLUORANTHENE	UG/KG	ND	10
FLUORENE	UG/KG	ND	10
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	10
NAPHTHALENE	UG/KG	ND	10
PHENANTHRENE	UG/KG	ND	10
PYRENE	UG/KG	ND	10
1-METHYLNAPHTHALENE	UG/KG	ND	10
2-METHYLNAPHTHALENE	UG/KG	ND	10
2-CHLOROANTHRACENE	%REC/SURR	89	17-160
ANALYST	INITIALS	JBT	

Comments:

[0] Page 2
Date 15-Nov-96

"QC Report"

Title: Soil Reagent
Batch: PAS046
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

RS Date Analyzed: 23-OCT-96
RSD Date Analyzed: 23-OCT-96

RS Date Extracted: 18-OCT-96
RSD Date Extracted: 18-OCT-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	10.0	<10	6.0	60	5.5	55	9	33 42-123
BENZO (k) FLUORANTHENE	10.0	<10	9.7	97	9.5	95	2	30 56-145
CHRYSENE	10.0	<10	9.5	95	9.2	92	3	30 63-141
PHENANTHRENE	10.0	<10	9.3	93	9.0	90	3	30 62-127
PYRENE	10.0	<10	9.4	94	8.7	87	8	30 55-136
Surrogates:								
2-CHLOROANTHRACENE				94		89		17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
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SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE
PROGRAM AND REFERENCED METHOD.

[0] Page 3
Date 15-Nov-96

"QC Report"

Title: Soil Matrix
 Batch: PAS046
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Dry Weight %: 97 MS Date Analyzed: 23-OCT-96 MS Date Extracted: 18-OCT-96
 Sample Spiked: 610406-4 MSD Date Analyzed: 23-OCT-96 MSD Date Extracted: 18-OCT-96

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	10.3	6.7	19.6	125	14	71	55*	40 17-141
BENZO(k) FLUORANTHENE	10.3	<10.3	11.1	108	9.90	96	12	55 22-151
CHRYSENE	10.3	<10.3	11.5	112	10.4	101	10	75 10-170
PHENANTHRENE	10.3	8.97	23.6	142	19.7	104	31	53 12-161
PYRENE	10.3	4.43	19.4	145	16.5	117	21	66 28-158

Surrogates:
 2-CHLOROANTHRACENE 207* 174* 17-160

Comments:

MATRIX SPIKE/MATRIX SPIKE DUPLICATE HAD RECOVERY(S) AND/OR
 RPD(S) OUTSIDE ACCEPTANCE LIMITS DUE TO MATRIX INTERFERENCE.
 REFER TO REAGENT SPIKE/REAGENT SPIKE DUPLICATE DATA.

Notes:

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 PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

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N/A = NOT APPLICABLE
D = DILUTED OUT
UG = MICROGRAMS
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/M3 = MILLIGRAM PER CUBIC METER.
PPMV = PART PER MILLION BY VOLUME.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS

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ORGANIC SOILS ARE REPORTED ON A DRYWEIGHT BASIS.

ND = NOT DETECTED ABOVE REPORTING LIMIT.

RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

AEN/GC/FID

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

AEN/GC/FIX

AEN GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

AEN/GC/FPD

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

AEN/GC/PID

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

AEN/GC/TCD

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

SW = STEVE WILHITE
PL = PAUL LESCHENSKY
RW = ROBERT WOLFE
BV = BEN VAUGHN
BC = BETH COLEMAN
KS = KENDALL SMITH
KK = KERRY LEMONT
DWB = DAVID W. BOWERS
RP = ROB PEREZ
JBT = JENNIFER TORRANCE
LP = LAVERNE PETERSON



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SIGNATURE PAGE

Reviewed by:

AEN Project Manager

Client: TRACE ANALYSIS, INC.
LUBBOCK, TEXAS

Project Name: INDIAN BASIN ASSESSMENT
Project Number: N/S
Project Location: INDIAN BASIN
Accession Number: 610444

Project Manager: DAN LOKEY
Sampled By: N/S

Analysis Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610444
Client:	TRACE ANALYSIS, INC.
Project Number:	N/S
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 20
Date 11-Dec-96

"Method Report Summary"

Accession Number: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
60521 18-1-13	BENZO(a) PYRENE	UG/KG	16
	BENZO(b) FLUORANTHENE	UG/KG	0.90
	DIBENZO(a,h) ANTHRACENE	UG/KG	14
	INDENO(1,2,3-cd) PYRENE	UG/KG	3.2
60524 25-25-1	BENZO(g,h,i) PERYLENE	UG/KG	45
60529 33-15-15	BENZO(a) ANTHRACENE	UG/KG	2.7
	FLUORENE	UG/KG	1.7
	PHENANTHRENE	UG/KG	11
	PYRENE	UG/KG	5.5
60530 39-25-1	ACENAPHTHENE	UG/KG	120
	ANTHRACENE	UG/KG	7.1
	BENZO(a) ANTHRACENE	UG/KG	25
	BENZO(a) PYRENE	UG/KG	38
	BENZO(b) FLUORANTHENE	UG/KG	28
	BENZO(g,h,i) PERYLENE	UG/KG	60
	BENZO(k) FLUORANTHENE	UG/KG	14
	CHRYSENE	UG/KG	30
	DIBENZO(a,h) ANTHRACENE	UG/KG	19
	FLUORANTHENE	UG/KG	110
	FLUORENE	UG/KG	3
	INDENO(1,2,3-cd) PYRENE	UG/KG	31
	PHENANTHRENE	UG/KG	42
	PYRENE	UG/KG	100
	1-METHYLNAPHTHALENE	UG/KG	49
	2-METHYLNAPHTHALENE	UG/KG	21
60532 8-1-1	BENZO(a) ANTHRACENE	UG/KG	4.0
	BENZO(a) PYRENE	UG/KG	18
	BENZO(b) FLUORANTHENE	UG/KG	2.0
	BENZO(g,h,i) PERYLENE	UG/KG	7.5
	BENZO(k) FLUORANTHENE	UG/KG	2.2
60533 13-1-1	BENZO(a) ANTHRACENE	UG/KG	3.3
	BENZO(a) PYRENE	UG/KG	17
	BENZO(b) FLUORANTHENE	UG/KG	7.6
	BENZO(g,h,i) PERYLENE	UG/KG	58
	BENZO(k) FLUORANTHENE	UG/KG	3.3
	FLUORANTHENE	UG/KG	27
	PHENANTHRENE	UG/KG	1.3
	PYRENE	UG/KG	13
60534 16-1-1	BENZO(a) PYRENE	UG/KG	27
	BENZO(b) FLUORANTHENE	UG/KG	18
	BENZO(g,h,i) PERYLENE	UG/KG	14
	BENZO(k) FLUORANTHENE	UG/KG	53
	DIBENZO(a,h) ANTHRACENE	UG/KG	62
	INDENO(1,2,3-cd) PYRENE	UG/KG	17

[0] Page 21
Date 11-Dec-96

"Method Report Summary"

Accession Number: 610444
Client: TRACE ANALYSIS, INC.
Project Number: N/S
Project Name: INDIAN BASIN ASSESSMENT
Project Location: INDIAN BASIN
Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
60535 22-1-1	BENZO (a) PYRENE	UG/KG	16
60536 23-25-1	ACENAPHTHENE	UG/KG	510
	ANTHRACENE	UG/KG	52
	BENZO (a) ANTHRACENE	UG/KG	94
	BENZO (a) PYRENE	UG/KG	100
	BENZO (b) FLUORANTHENE	UG/KG	74
	BENZO (g, h, i) PERYLENE	UG/KG	76
	BENZO (k) FLUORANTHENE	UG/KG	40
	CHRYSENE	UG/KG	88
	DIBENZO (a, h) ANTHRACENE	UG/KG	54
	FLUORANTHENE	UG/KG	300
	FLUORENE	UG/KG	35
	INDENO (1, 2, 3-cd) PYRENE	UG/KG	38
	NAPHTHALENE	UG/KG	160
	PHENANTHRENE	UG/KG	170
	PYRENE	UG/KG	170
60537 27-1-1	2-METHYLNAPHTHALENE	UG/KG	150
	BENZO (a) PYRENE	UG/KG	140
	CHRYSENE	UG/KG	13
	DIBENZO (a, h) ANTHRACENE	UG/KG	500
60538 28-1-1	ACENAPHTHENE	UG/KG	2500
	BENZO (k) FLUORANTHENE	UG/KG	100
	PHENANTHRENE	UG/KG	54
	PYRENE	UG/KG	1800
60539 29-25-1	ACENAPHTHYLENE	UG/KG	44

Quality Control Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610444
Client:	TRACE ANALYSIS, INC.
Project Number:	N/S
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 1
Date 15-Nov-96

"QC Report"

Title: Soil Blank
Batch: PAS047
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Blank Id: A Date Analyzed: 25-OCT-96 Date Extracted: 21-OCT-96

Parameters:	Units:	Results:	Reporting Limits:
ACENAPHTHENE	UG/KG	ND	10
ACENAPHTHYLENE	UG/KG	ND	10
ANTHRACENE	UG/KG	ND	10
BENZO (a) ANTHRACENE	UG/KG	ND	10
BENZO (a) PYRENE	UG/KG	ND	10
BENZO (b) FLUORANTHENE	UG/KG	ND	10
BENZO (g, h, i) PERYLENE	UG/KG	ND	10
BENZO (k) FLUORANTHENE	UG/KG	ND	10
CHRYSENE	UG/KG	ND	10
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	10
FLUORANTHENE	UG/KG	ND	10
FLUORENE	UG/KG	ND	10
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	10
NAPHTHALENE	UG/KG	ND	10
PHENANTHRENE	UG/KG	ND	10
PYRENE	UG/KG	ND	10
1-METHYLNAPHTHALENE	UG/KG	ND	10
2-METHYLNAPHTHALENE	UG/KG	ND	10
2-CHLOROANTHRACENE	%REC/SURR	80	17-160
ANALYST	INITIALS	JBT	

Comments:

[0] Page 2
Date 15-Nov-96

"QC Report"

Title: Soil Reagent
 Batch: PAS047
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

RS Date Analyzed: 28-OCT-96
 RSD Date Analyzed: 28-OCT-96

RS Date Extracted: 21-OCT-96
 RSD Date Extracted: 21-OCT-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	10.0	<10	6.4	64	6.0	60	6	42-123
BENZO (k) FLUORANTHENE	10.0	<10	8.1	81	9.2	92	13	56-145
CHRYSENE	10.0	<10	8.1	81	9.1	91	12	63-141
PHENANTHRENE	10.0	<10	8.1	81	9.2	92	13	62-127
PYRENE	10.0	<10	7.9	79	9.1	91	14	55-136
Surrogates:								
2-CHLOROANTHRACENE				86		98		17-160

Comments:

Notes:

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[0] Page 3
Date 15-Nov-96

"QC Report"

Title: Soil Matrix
 Batch: PAS047
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Dry Weight %: 89 MS Date Analyzed: 29-OCT-96 MS Date Extracted: 21-OCT-96
 Sample Spiked: 610444-19 MSD Date Analyzed: 29-OCT-96 MSD Date Extracted: 21-OCT-96

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	11.2	<11.2	8.88	79	6.74	60	27	40 17-141
BENZO(k) FLUORANTHENE	11.2	<11.2	9.55	85	8.2	73	15	55 22-151
CHRYSENE	11.2	<11.2	9.89	88	8.54	76	15	75 10-170
PHENANTHRENE	11.2	<11.2	9.89	88	8.88	79	11	53 12-161
PYRENE	11.2	<11.2	10.7	96	8.88	79	19	66 28-158

Surrogates:
 2-CHLOROANTHRACENE 88 75 17-160

Comments:

Notes:

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UG/KG = PARTS PER BILLION.
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AEN/GC/FID
AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

AEN/GC/FIX
AEN GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

AEN/GC/FPD
AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

AEN/GC/PID
AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

AEN/GC/TCD
AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

SW = STEVE WILHITE
PL = PAUL LESCHENSKY
RW = ROBERT WOLFE
BV = BEN VAUGHN
BC = BETH COLEMAN
KS = KENDALL SMITH
KK = KERRY LEMONT
DWB = DAVID W. BOWERS
RP = ROB PEREZ
JBT = JENNIFER TORRANCE
LP = LAVERNE PETERSON



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SIGNATURE PAGE

Reviewed by:

AEN Project Manager

Client: TRACE ANALYSIS, INC.
LUBBOCK, TEXAS

Project Name: INDIAN BASIN ASSESSMENT
Project Number: 44999
Project Location: INDIAN BASIN
Accession Number: 610508

Project Manager: DAN LOKEY
Sampled By: N/S

Analysis Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610508
Client:	TRACE ANALYSIS, INC.
Project Number:	44999
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 27
Date 15-Nov-96

"Method Report Summary"

Accession Number: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
60669 9-25-1	BENZO (a) PYRENE	UG/KG	16
60670 30-15-1	BENZO (b) FLUORANTHENE	UG/KG	1.3
	FLUORENE	UG/KG	15
60671 17-15-1	FLUORENE	UG/KG	2.1
	PHENANTHRENE	UG/KG	1.7
60673 21-15-1	BENZO (a) PYRENE	UG/KG	15
60674 29-25-15	FLUORANTHENE	UG/KG	53
	FLUORENE	UG/KG	130
	NAPHTHALENE	UG/KG	400
	PHENANTHRENE	UG/KG	470
	PYRENE	UG/KG	60
	1-METHYLNAPHTHALENE	UG/KG	2700
	2-METHYLNAPHTHALENE	UG/KG	1100
60675 35-15-13	BENZO (b) FLUORANTHENE	UG/KG	11
	BENZO (g, h, i) PERYLENE	UG/KG	29
	FLUORANTHENE	UG/KG	6.8
	PHENANTHRENE	UG/KG	130
	PYRENE	UG/KG	92
	1-METHYLNAPHTHALENE	UG/KG	620
	2-METHYLNAPHTHALENE	UG/KG	560
60676 35-15-15	ACENAPHTHENE	UG/KG	ND
	ANTHRACENE	UG/KG	4.4
	BENZO (a) PYRENE	UG/KG	22
	BENZO (b) FLUORANTHENE	UG/KG	1.1
	BENZO (g, h, i) PERYLENE	UG/KG	28
	BENZO (k) FLUORANTHENE	UG/KG	8.4
	FLUORANTHENE	UG/KG	10
	PHENANTHRENE	UG/KG	250
	1-METHYLNAPHTHALENE	UG/KG	1300
	2-METHYLNAPHTHALENE	UG/KG	1400
60677 30-15-8	BENZO (b) FLUORANTHENE	UG/KG	1.2
	INDENO (1, 2, 3-cd) PYRENE	UG/KG	5.5
60679 24-15-16	BENZO (a) ANTHRACENE	UG/KG	1.2
60680 9-25-15	1-METHYLNAPHTHALENE	UG/KG	48
	2-METHYLNAPHTHALENE	UG/KG	37
60681 9-25-17	ACENAPHTHYLENE	UG/KG	23
	1-METHYLNAPHTHALENE	UG/KG	43
60682 2-25-12	ACENAPHTHYLENE	UG/KG	8.7
	1-METHYLNAPHTHALENE	UG/KG	26
60683 2-25-17	BENZO (a) PYRENE	UG/KG	36
	BENZO (b) FLUORANTHENE	UG/KG	13
	BENZO (g, h, i) PERYLENE	UG/KG	28
	BENZO (k) FLUORANTHENE	UG/KG	55
	CHRYSENE	UG/KG	6.9

[0] Page 28
Date 09-Dec-96

"Method Report Summary"

Accession Number: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310

Client Sample Id:	Parameter:	Unit:	Result:
60684 24-15-15	DIBENZO (a,h) ANTHRACENE	UG/KG	310
	INDENO (1,2,3-cd) PYRENE	UG/KG	27
	ACENAPHTHYLENE	UG/KG	36
	BENZO (a) PYRENE	UG/KG	41
	BENZO (b) FLUORANTHENE	UG/KG	22
	BENZO (g,h,i) PERYLENE	UG/KG	35
60722 15-25-13	BENZO (k) FLUORANTHENE	UG/KG	46
	DIBENZO (a,h) ANTHRACENE	UG/KG	310
	INDENO (1,2,3-cd) PYRENE	UG/KG	32
60723 17-15-14	BENZO (a) PYRENE	UG/KG	20
	NAPHTHALENE	UG/KG	40
60724 21-15-14	PHENANTHRENE	UG/KG	15
	1-METHYLNAPHTHALENE	UG/KG	420
	2-METHYLNAPHTHALENE	UG/KG	220
	NAPHTHALENE	UG/KG	MD
	1-METHYLNAPHTHALENE	UG/KG	24
	2-METHYLNAPHTHALENE	UG/KG	21
	ACENAPHTHENE	UG/KG	69
	ANTHRACENE	UG/KG	1.1
	BENZO (a) ANTHRACENE	UG/KG	28
	BENZO (a) PYRENE	UG/KG	34
60725 23-25-12	BENZO (b) FLUORANTHENE	UG/KG	16
	BENZO (g,h,i) PERYLENE	UG/KG	25
	BENZO (k) FLUORANTHENE	UG/KG	9.6
	CHRYSENE	UG/KG	17
	FLUORANTHENE	UG/KG	70
	FLUORENE	UG/KG	10
	PHENANTHRENE	UG/KG	43
	2-METHYLNAPHTHALENE	UG/KG	31
	ACENAPHTHYLENE	UG/KG	38
	BENZO (a) ANTHRACENE	UG/KG	28
60727 7-15-1	BENZO (b) FLUORANTHENE	UG/KG	5.1
	BENZO (k) FLUORANTHENE	UG/KG	38
	CHRYSENE	UG/KG	6.9
	BENZO (a) PYRENE	UG/KG	33
	BENZO (b) FLUORANTHENE	UG/KG	4.1
60728 7-15-15	BENZO (k) FLUORANTHENE	UG/KG	29
	CHRYSENE	UG/KG	2.8
	PHENANTHRENE	UG/KG	51
60730 6-25-12	1-METHYLNAPHTHALENE	UG/KG	210
	2-METHYLNAPHTHALENE	UG/KG	48

Quality Control Report

Analysis: POLYNUCLEAR AROMATICS BY 8310

Accession:	610508
Client:	TRACE ANALYSIS, INC.
Project Number:	44999
Project Name:	INDIAN BASIN ASSESSMENT
Project Location:	INDIAN BASIN
Department:	SEMI-VOLATILE FUELS

[0] Page 1
Date 15-Nov-96

"QC Report"

Title: Soil Blank
Batch: PAS049
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Blank Id: C Date Analyzed: 29-OCT-96 Date Extracted: 24-OCT-96

Parameters:	Units:	Results:	Reporting Limits:
ACENAPHTHENE	UG/KG	ND	10
ACENAPHTHYLENE	UG/KG	ND	10
ANTHRACENE	UG/KG	ND	10
BENZO(a) ANTHRACENE	UG/KG	ND	10
BENZO(a) PYRENE	UG/KG	ND	10
BENZO(b) FLUORANTHENE	UG/KG	ND	10
BENZO(g,h,i) PERYLENE	UG/KG	ND	10
BENZO(k) FLUORANTHENE	UG/KG	ND	10
CHRYSENE	UG/KG	ND	10
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	10
FLUORANTHENE	UG/KG	ND	10
FLUORENE	UG/KG	ND	10
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	10
NAPHTHALENE	UG/KG	ND	10
PHENANTHRENE	UG/KG	ND	10
PYRENE	UG/KG	ND	10
1-METHYLNAPHTHALENE	UG/KG	ND	10
2-METHYLNAPHTHALENE	UG/KG	ND	10
2-CHLOROANTHRACENE	%REC/SURR	102	17-160
ANALYST	INITIALS	JBT	

Comments:

[0] Page 2
Date 15-Nov-96

"QC Report"

Title: Soil Blank
Batch: PAS050
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Blank Id: A Date Analyzed: 29-OCT-96 Date Extracted: 24-OCT-96

Parameters:	Units:	Results:	Reporting Limits:
ACENAPHTHENE	UG/KG	ND	10
ACENAPHTHYLENE	UG/KG	ND	10
ANTHRACENE	UG/KG	ND	10
BENZO(a)ANTHRACENE	UG/KG	ND	10
BENZO(a)PYRENE	UG/KG	ND	10
BENZO(b)FLUORANTHENE	UG/KG	ND	10
BENZO(g,h,i)PERYLENE	UG/KG	ND	10
BENZO(k)FLUORANTHENE	UG/KG	ND	10
CHRYSENE	UG/KG	ND	10
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	10
FLUORANTHENE	UG/KG	ND	10
FLUORENE	UG/KG	ND	10
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	10
NAPHTHALENE	UG/KG	ND	10
PHENANTHRENE	UG/KG	ND	10
PYRENE	UG/KG	ND	10
1-METHYLNAPHTHALENE	UG/KG	ND	10
2-METHYLNAPHTHALENE	UG/KG	ND	10
2-CHLOROANTHRACENE	%REC/SURR	87	17-160
ANALYST	INITIALS	JBT	

Comments:

[0] Page 3
Date 15-Nov-96

"QC Report"

Title: Soil Reagent
Batch: PAS049
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

RS Date Analyzed: 24-OCT-96
RSD Date Analyzed: 24-OCT-96

RS Date Extracted: 22-OCT-96
RSD Date Extracted: 22-OCT-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	10.0	<10	7.4	74	6.2	62	18	33
BENZO (k) FLUORANTHENE	10.0	<10	10.0	100	8.9	89	12	30
CHRYSENE	10.0	<10	9.9	99	8.8	88	12	30
PHENANTHRENE	10.0	<10	10.1	101	9.0	90	12	30
PYRENE	10.0	<10	10.0	100	8.9	89	12	30
Surrogates:								
2-CHLOROANTHRACENE				102		92		17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE
PROGRAM AND REFERENCED METHOD.

[0] Page 4
Date 15-Nov-96

"QC Report"

Title: Soil Reagent
Batch: PAS050
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

RS Date Analyzed: 30-OCT-96
RSD Date Analyzed: 30-OCT-96

RS Date Extracted: 24-OCT-96
RSD Date Extracted: 24-OCT-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	10.0	<10	5.9	59	7.3	73	21	33 42-123
BENZO(k) FLUORANTHENE	10.0	<10	8.6	86	8.7	87	1	30 56-145
CHRYSENE	10.0	<10	8.7	87	8.8	88	1	30 63-141
PHENANTHRENE	10.0	<10	7.5	75	8.8	88	16	30 62-127
PYRENE	10.0	<10	8.3	83	8.7	87	5	30 55-136

Surrogates:
2-CHLOROANTHRACENE 87 86 17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE
PROGRAM AND REFERENCED METHOD.

[0] Page 5
Date 15-Nov-96

"QC Report"

Title: Soil Matrix
Batch: PAS049
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Dry Weight %: 85 MS Date Analyzed: 24-OCT-96 MS Date Extracted: 22-OCT-96
Sample Spiked: 610485-13 MSD Date Analyzed: 24-OCT-96 MSD Date Extracted: 22-OCT-96

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	Rec Lmts
ACENAPHTHYLENE	11.8	126	129	25	131	42	51	67 12-145
BENZO(k) FLUORANTHENE	11.8	<11.8	10.7	91	9.41	80	13	53 22-130
CHRYSENE	11.8	<11.8	10.5	89	9.06	77	14	45 27-140
PHENANTHRENE	11.8	<11.8	13.3	113	11.2	95	17	48 40-121
PYRENE	11.8	2.47	13.6	94	11.1	73	25	49 29-133

Surrogates:
2-CHLOROANTHRACENE 99 83 17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

[0) Page 6
Date 15-Nov-96

"QC Report"

Title: Soil Matrix
Batch: PAS050
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.

Dry Weight %: 100 MS Date Analyzed: 30-OCT-96 MS Date Extracted: 24-OCT-96
Sample Spiked: 610508-7 MSD Date Analyzed: 30-OCT-96 MSD Date Extracted: 24-OCT-96

Parameters:	Spike Added	Sample Conc	MS Conc	MS %Rec	MSD Conc	MSD %Rec	RPD	RPD Lmts	Rec Lmts
ACENAPHTHYLENE	333	<10	202	61	186	56	9	40	17-141
BENZO(k) FLUORANTHENE	333	62	268	62	271	63	2	55	22-151
CHRYSENE	333	53	317	79	298	74	7	75	10-170
PHENANTHRENE	333	192	473	84	470	83	1	53	12-161
PYRENE	333	75	497	127	504	129	2	66	28-158

Surrogates:
2-CHLOROANTHRACENE 119 120 17-160

Comments:

Notes:

N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/KG = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG = MICROGRAMS
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/M3 = MILLIGRAM PER CUBIC METER.
PPMV = PART PER MILLION BY VOLUME.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRYWEIGHT BASIS.

ND = NOT DETECTED ABOVE REPORTING LIMIT.

RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

AEN/GC/FID

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

AEN/GC/FIX

AEN GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

AEN/GC/FPD

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

AEN/GC/PID

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

AEN/GC/TCD

AEN GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

SW = STEVE WILHITE
PL = PAUL LESCHENSKY
RW = ROBERT WOLFE
BV = BEN VAUGHN
BC = BETH COLEMAN
KS = KENDALL SMITH
KK = KERRY LEMONT
DWB = DAVID W. BOWERS
RP = ROB PEREZ
JBT = JENNIFER TORRANCE
LP = LAVERNE PETERSON



ALPHA TESTING, INC.

2209 Wisconsin St., Suite 100
Dallas, Texas 75229
214/620-8911 - 214/263-4937 (Metro)
FAX: 214/406-8023

November 12, 1996

TRACEANALYSIS, INC.

6701 Aberdeen Avenue
Lubbock, Texas 79424
Attention: Melissa Lopez

Indian Basin
2-25-1

Re: Laboratory Testing
Sample No. 60757
ALPHA Report No. 96061-33C

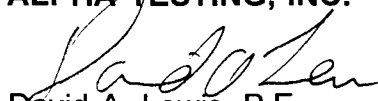
Submitted herewith is the results of the laboratory testing conducted on a soil sample delivered to our laboratory on October 22, 1996. The bulk density and permeability tests were performed in general accordance with the procedures provided in "Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd edition, 1986, by the American Society of Agronomy, Inc./Soil Science Society of America, Inc. Results of the laboratory tests are provided below.

Sample Description: Brown Sandy Clay

Test	Test Method	Test Results
Moist Bulk Density	13-2	119.9 pcf (1.92 g/cc)
Dry Bulk Density		105.0 pcf (1.68 g/cc)
Water Content	ASTM D2216	
by weight		14.2 percent
by volume		37.2 percent
Porosity	calculated	
total		0.3588
air		0.1202
water		0.2386
Hydraulic Conductivity	28-4.2	2.69×10^{-6} cm/sec
Intrinsic Permeability		2.74×10^{-11} cm ²

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance, please contact our office.

Very truly yours,
ALPHA TESTING, INC.



David A. Lewis, P.E.

Manager of Engineering Services

Copies: (2) Client

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

November 14, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/29/96

Analysis Date: 10/29/96

Sampling Date: NA

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin G.P.
Assessment

TA#	FIELD CODE	FOC (%)
T60755	2 - 25 - 14	0.4
T60756	9 - 15 - 1	2.3
T60757	2 - 25 - 1	1.6
T60758	9 - 15 - 4	0.2

RPD

22

METHODS: ASTM D2974C.

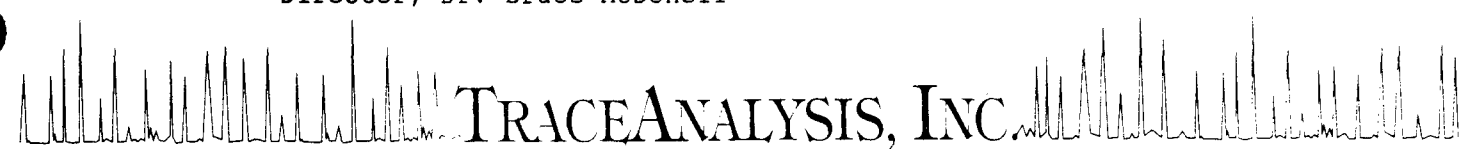
CHEMIST: MS



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-14-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis



ALPHA TESTING, INC.

2209 Wisconsin St., Suite 100
Dallas, Texas 75229
214/620-8911 - 214/263-4937 (Metro)
FAX: 214/406-8023

November 12, 1996

TRACEANALYSIS, INC.

6701 Aberdeen Avenue
Lubbock, Texas 79424
Attention: Melissa Lopez

Indian Basin
2-25-14

Re: Laboratory Testing
Sample No. 60755
ALPHA Report No. 96061-33A

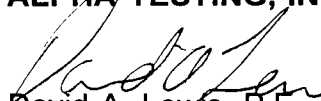
Submitted herewith is the results of the laboratory testing conducted on a soil sample delivered to our laboratory on October 22, 1996. The bulk density and permeability tests were performed in general accordance with the procedures provided in "Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd edition, 1986, by the American Society of Agronomy, Inc./Soil Science Society of America, Inc. Results of the laboratory tests are provided below.

Sample Description: Tan Clayey Sand

Test	Test Method	Test Results
Moist Bulk Density	13-2	129.8 pcf (2.08 g/cc)
Dry Bulk Density		124.2 pcf (1.99 g/cc)
Water Content	ASTM D2216	4.5 percent
by weight		12.7 percent
by volume		
Porosity	calculated	
total		0.2953
air		0.2059
water		0.0894
Hydraulic Conductivity	28-4.2	8.57×10^{-6} cm/sec
Intrinsic Permeability		8.74×10^{-11} cm ²

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance, please contact our office.

Very truly yours,
ALPHA TESTING, INC.


David A. Lewis, P.E.

Manager of Engineering Services

Copies: (2) Client

6701 Aberdeen Avenue

Lubbock, Texas 79424

86•794•1296

X 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

November 14, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/29/96

Analysis Date: 10/29/96

Sampling Date: NA

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin G.P.
Assessment

TA#	FIELD CODE	FOC (%)
T60755	2 - 25 - 14	0.4
T60756	9 - 15 - 1	2.3
T60757	2 - 25 - 1	1.6
T60758	9 - 15 - 4	0.2

RPD

22

METHODS: ASTM D2974C.

CHEMIST: MS



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-14-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis



ALPHA TESTING, INC.

2209 Wisconsin St., Suite 100
Dallas, Texas 75229
214/620-8911 - 214/263-4937 (Metro)
FAX: 214/406-8023

November 12, 1996

TRACEANALYSIS, INC.

6701 Aberdeen Avenue
Lubbock, Texas 79424
Attention: Melissa Lopez

Indian Basin
9-15-1

Re: Laboratory Testing
Sample No. 60756
ALPHA Report No. 96061-33B

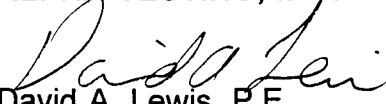
Submitted herewith is the results of the laboratory testing conducted on a soil sample delivered to our laboratory on October 22, 1996. The bulk density and permeability tests were performed in general accordance with the procedures provided in "Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd edition, 1986, by the American Society of Agronomy, Inc./Soil Science Society of America, Inc. Results of the laboratory tests are provided below.

Sample Description: Tan Clayey Sand

<u>Test</u>	<u>Test Method</u>	<u>Test Results</u>
Moist Bulk Density	13-2	125.2 pcf (2.01 g/cc)
Dry Bulk Density		107.6 pcf (1.71 g/cc)
Water Content		
by weight	ASTM D2216	16.4 percent
by volume		43.9 percent
Porosity		
total	calculated	0.3576
air		0.0753
water		0.2823
Hydraulic Conductivity	28-4.2	2.38×10^{-4} cm/sec
Intrinsic Permeability		2.43×10^{-9} cm ²

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance, please contact our office.

Very truly yours,
ALPHA TESTING, INC.


David A. Lewis, P.E.
Manager of Engineering Services

Copies: (2) Client

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

November 14, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/29/96

Analysis Date: 10/29/96

Sampling Date: NA

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin G.P.
Assessment

TA#	FIELD CODE	FOC (%)
T60755	2 - 25 - 14	0.4
T60756	9 - 15 - 1	2.3
T60757	2 - 25 - 1	1.6
T60758	9 - 15 - 4	0.2

RPD

22

METHODS: ASTM D2974C.

CHEMIST: MS



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-14-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis



ALPHA TESTING, INC.

2209 Wisconsin St., Suite 100
Dallas, Texas 75229
214/620-8911 - 214/263-4937 (Metro)
FAX: 214/406-8023

November 12, 1996

TRACEANALYSIS, INC.
6701 Aberdeen Avenue
Lubbock, Texas 79424
Attention: Melissa Lopez

Indian Basin
9-15-4

Re: Laboratory Testing
Sample No. 60758
ALPHA Report No. 96061-33D

Submitted herewith is the results of the laboratory testing conducted on a soil sample delivered to our laboratory on October 22, 1996. The bulk density and permeability tests were performed in general accordance with the procedures provided in "Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd edition, 1986, by the American Society of Agronomy, Inc./Soil Science Society of America, Inc. Results of the laboratory tests are provided below.

Sample Description: Tan Clayey Sand

<u>Test</u>	<u>Test Method</u>	<u>Test Results</u>
Moist Bulk Density	13-2	119.0 pcf (1.91 g/cc)
Dry Bulk Density		114.0 pcf (1.83 g/cc)
Water Content	ASTM D2216	
by weight		4.4 percent
by volume		12.3 percent
Porosity	calculated	
total		0.3486
air		0.2683
water		0.0803
Hydraulic Conductivity	28-4.2	2.95×10^{-6} cm/sec
Intrinsic Permeability		3.01×10^{-11} cm ²

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance, please contact our office.

Very truly yours,
ALPHA TESTING, INC.



David A. Lewis, P.E.
Manager of Engineering Services

Copies: (2) Client

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

November 14, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/29/96

Analysis Date: 10/29/96

Sampling Date: NA

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin G.P.
Assessment

TA#	FIELD CODE	FOC (%)
T60755	2 - 25 - 14	0.4
T60756	9 - 15 - 1	2.3
T60757	2 - 25 - 1	1.6
T60758	9 - 15 - 4	0.2

RPD

22

METHODS: ASTM D2974C.

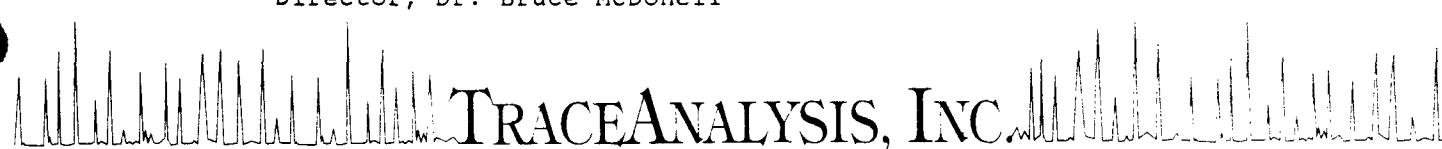
CHEMIST: MS



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

11-14-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60469

FIELD CODE: 1-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60469

FIELD CODE: 1-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	95
Toluene-d8	94
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/86

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 1
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	001	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60469 1-15-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 83	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.3	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.53	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.3	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.94	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.5	
BENZO(k)FLUORANTHENE	UG/KG	1.7	0.99	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.4	
FLUORANTHENE	UG/KG	ND	3	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	3.9	1.7	
NAPHTHALENE	UG/KG	ND	12	
PHENANTHRENE	UG/KG	ND	0.98	
PYRENE	UG/KG	ND	2.2	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	74	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60470

FIELD CODE: 1-15-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60470

FIELD CODE: 1-15-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
93
103

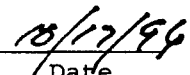
ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell



Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 2
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	002	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60470 1-15-11	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 94	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.83	
BENZO(g,h,i) PERYLENE	UG/KG	3.4	3.1	
BENZO(k) FLUORANTHENE	UG/KG	1.5	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.86	
PYRENE	UG/KG	2.8	1.9	
1-METHYLNAPHTHALENE	UG/KG	12	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	66	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60576

FIELD CODE: 2-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Bromomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60576

FIELD CODE: 2-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	103
Toluene-d8	98
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

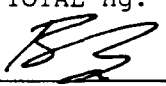
TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 1
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	001	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60576 2-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: N/A	Analysis Date:	13-NOV-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	18	8.6	
ACENAPHTHYLENE	UG/KG	ND	9.4	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a)ANTHRACENE	UG/KG	5.1	1.1	
BENZO(a)PYRENE	UG/KG	25	2.1	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.87	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.2	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.91	
CHRYSENE	UG/KG	610	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	130	5.9	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	5.3	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.9	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	56	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60682

FIELD CODE: 2-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Bromomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60682

FIELD CODE: 2-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

99
96
99

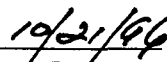
ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr Blair Leftwich
Director, Dr. Bruce McDonell



Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 13
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	013	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60682 2-25-12	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 100	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.7	
ACENAPHTHYLENE	UG/KG	8.7	8.5	
ANTHRACENE	UG/KG	ND	0.44	
BENZO(a)ANTHRACENE	UG/KG	ND	0.95	
BENZO(a)PYRENE	UG/KG	ND	1.9	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.78	
BENZO(g,h,i)PERYLENE	UG/KG	ND	2.9	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.82	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.3	
FLUORANTHENE	UG/KG	ND	2.5	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.7	
PHENANTHRENE	UG/KG	ND	0.81	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	26	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	67	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60683

FIELD CODE: 2-25-17

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60683

FIELD CODE: 2-25-17

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

94
95
97

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96

Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 14
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	014	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60683 2-25-17	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 97	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.9	
ACENAPHTHYLENE	UG/KG	ND	8.8	
ANTHRACENE	UG/KG	ND	0.45	
BENZO (a) ANTHRACENE	UG/KG	ND	0.98	
BENZO (a) PYRENE	UG/KG	36	2.0	
BENZO (b) FLUORANTHENE	UG/KG	13	0.80	
BENZO (g, h, i) PERYLENE	UG/KG	28	3.0	
BENZO (k) FLUORANTHENE	UG/KG	55	0.85	
CHRYSENE	UG/KG	6.9	1.1	
DIBENZO (a, h) ANTHRACENE	UG/KG	310	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.2	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	27	1.4	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.84	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	37	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60471

FIELD CODE: 3-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60471

FIELD CODE: 3-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
94
102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/86
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

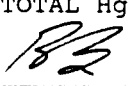
98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

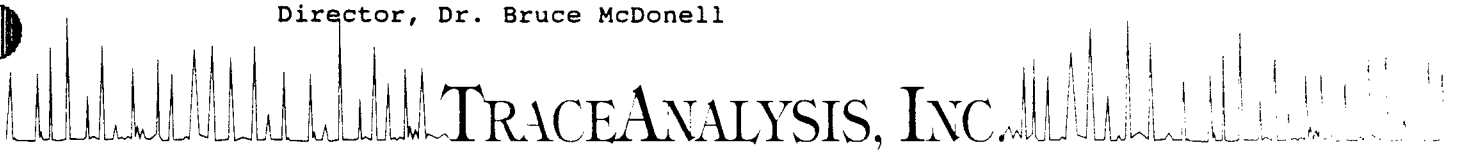
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 3
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	003	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60471 3-15-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 94	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a)ANTHRACENE	UG/KG	6.8	1	
BENZO(a)PYRENE	UG/KG	4.4	2	
BENZO(b)FLUORANTHENE	UG/KG	16	0.83	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.1	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.86	
PYRENE	UG/KG	7.2	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	79	17-160	
ANALYST	INITIALS	SW		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60472

FIELD CODE: 3-15-7

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60472

FIELD CODE: 3-15-7

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds

Unidentified Hydrocarbon

RT

18.07

CONC (ug/kg)

30

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
94
102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/94

Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 4
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	004	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60472 3-15-7	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 95	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.1	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.82	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.1	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.86	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.85	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	68	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60473

FIELD CODE: 4-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Bromomethane	125	ND				
Carbon disulfide	25	38				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60473

FIELD CODE: 4-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
95
102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 5
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	005	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60473 4-1-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 95	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.1	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO (a) ANTHRACENE	UG/KG	ND	1	
BENZO (a) PYRENE	UG/KG	ND	2	
BENZO (b) FLUORANTHENE	UG/KG	1.8	0.82	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.1	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.86	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.85	
PYRENE	UG/KG	3.8	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	125	17-160	
ANALYST	INITIALS	SW		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60474

FIELD CODE: 5-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	67				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60474

FIELD CODE: 5-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	98
Toluene-d8	94
4-Bromofluorobenzene	102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96

Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

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Analytical Results for

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

SAMPLE NO.	FIELD CODE	TOTAL PCBs (mg/kg)
T60474	5-1-1	<0.25
QC	Quality Control	0.485

QUALITY CONTROL SUMMARY

RPD = 0

Extraction Accuracy = 107%

Instrument Accuracy = 97%

METHODS: EPA SW 846-8080.

CHEMIST: MB

PCB QC: 0.5 mg/L of 42/54/60 PCB.

PCB SPIKE: 1.0 mg/kg of 1260 PCB.



Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-18-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 6
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
Client: TRACE ANALYSIS, INC.
Project Number: N/S
Project Name: INDIAN BASIN ASSESSMENT
Project Location: INDIAN BASIN
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Matrix: SOIL
QC Level: IIMS

Lab Id: 006 Sample Date/Time: 14-OCT-96 N/S
Client Sample Id: 60474 5-1-1 Received Date: 16-OCT-96
Batch: PAS046 Extraction Date: 19-OCT-96
Blank: B Dry Weight %: 85 Analysis Date: 28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	130	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a)ANTHRACENE	UG/KG	59	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.92	
BENZO(g,h,i)PERYLENE	UG/KG	10	3.4	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.96	
CHRYSENE	UG/KG	14	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	28	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	46	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60577

FIELD CODE: 6-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60577

FIELD CODE: 6-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

96
98
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 2
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	002	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60577 6-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	09-NOV-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO (a) ANTHRACENE	UG/KG	4.9	1.1	
BENZO (a) PYRENE	UG/KG	6.3	2.1	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.88	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.3	
BENZO (k) FLUORANTHENE	UG/KG	2.9	0.92	
CHRYSENE	UG/KG	3.0	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	6.0	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	5.1	0.91	
PYRENE	UG/KG	7.5	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	132	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60730

FIELD CODE: 6-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Propyl bromide	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60730

FIELD CODE: 6-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	87
Toluene-d8	94
4-Bromofluorobenzene	102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr Blair Leftwich
Director, Dr. Bruce McDonell

10/21/86
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg Hg.
TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 26
Date 09-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	026	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60730 6-25-12	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 96	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO (a) ANTHRACENE	UG/KG	ND	0.99	
BENZO (a) PYRENE	UG/KG	ND	2.0	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.81	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.85	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	51	0.84	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	210	10	
2-METHYLNAPHTHALENE	UG/KG	48	10	
2-CHLOROANTHRACENE	%REC/SURR	29	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60727

FIELD CODE: 7-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60727

FIELD CODE: 7-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

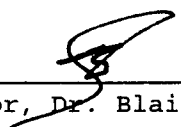
% RECOVERY

Dibromofluoromethane	93
Toluene-d8	94
4-Bromofluorobenzene	101

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

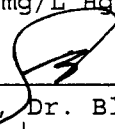
October 21, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit	0.25
RPD	0
% Extraction Accuracy	88
% Instrument Accuracy	98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg Hg.
TOTAL Hg QC: 0.005 mg/L Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell



DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 24, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

Extraction Date: 10/23/96
Analysis Date: 10/23/96
Sampling Date: 10/17-18/96
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60721	15-25-1	<0.25
T60727	7-15-1	<0.25
QC	Quality Control	0.49

Reporting Limit 0.25

RPD 2
% Extraction Accuracy 110
% Instrument Accuracy 98

METHODS: EPA SW 846-3550, 8080.
CHEMIST: MB
TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.
TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-5-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 23
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	023	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60727 7-15-1	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 85	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	38	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a) ANTHRACENE	UG/KG	28	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.2	
BENZO(b) FLUORANTHENE	UG/KG	5.1	0.92	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.4	
BENZO(k) FLUORANTHENE	UG/KG	38	0.96	
CHRYSENE	UG/KG	6.9	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	70	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60728

FIELD CODE: 7-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60728

FIELD CODE: 7-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
Unidentified hydrocarbon	16.39	577
Unidentified hydrocarbon	16.59	306
2,6-dimethyl-octane	18.02	504
1-methyl-3-propyl-cyclohexane	19.55	341
4-methyl-decane	19.94	513
Unidentified hydrocarbon	20.75	552
Unidentified hydrocarbon	21.87	486
Unidentified hydrocarbon	22.07	470
Unidentified hydrocarbon	22.36	401
Unidentified hydrocarbon	22.96	387

SURROGATES

% RECOVERY

Dibromofluoromethane	84
Toluene-d8	92
4-Bromofluorobenzene	101

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/24/86
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

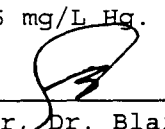
Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg Hg.
TOTAL Hg QC: 0.005 mg/L Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 24
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	024	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60728 7-15-15	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 100	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.7	
ACENAPHTHYLENE	UG/KG	ND	8.5	
ANTHRACENE	UG/KG	ND	0.44	
BENZO (a) ANTHRACENE	UG/KG	ND	0.95	
BENZO (a) PYRENE	UG/KG	33	1.9	
BENZO (b) FLUORANTHENE	UG/KG	4.1	0.78	
BENZO (g, h, i) PERYLENE	UG/KG	ND	2.9	
BENZO (k) FLUORANTHENE	UG/KG	29	0.82	
CHRYSENE	UG/KG	2.8	1.1	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	5.3	
FLUORANTHENE	UG/KG	ND	2.5	
FLUORENE	UG/KG	ND	1.2	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.7	
PHENANTHRENE	UG/KG	ND	0.81	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	20	17-160	
ANALYST	INITIALS	PL		

Comments:

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Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60532

FIELD CODE: 8-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	56				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60532

FIELD CODE: 8-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

99
97
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 11
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	011	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60532 8-1-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 91	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.5	
ACENAPHTHYLENE	UG/KG	ND	9.3	
ANTHRACENE	UG/KG	ND	0.48	
BENZO(a)ANTHRACENE	UG/KG	4.0	1	
BENZO(a)PYRENE	UG/KG	18	2.1	
BENZO(b)FLUORANTHENE	UG/KG	2.0	0.86	
BENZO(g,h,i)PERYLENE	UG/KG	7.5	3.2	
BENZO(k)FLUORANTHENE	UG/KG	2.2	0.90	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.8	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.89	
PYRENE	UG/KG	ND	2.0	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	87	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60669

FIELD CODE: 9-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60669

FIELD CODE: 9-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			122
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
95
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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806 • 794 • 1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 1
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	001	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60669 9-25-1	Received Date:	22-OCT-96
Batch: PAS049		Extraction Date:	24-OCT-96
Blank: C	Dry Weight %: 87	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.9	
ACENAPHTHYLENE	UG/KG	ND	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	16	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.90	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.94	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.1	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.93	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	72	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60680

FIELD CODE: 9-25-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	114			114
Vinyl chloride	50	ND	117			117
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	104	1	99	104
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	104			104
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	98			98
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		2	110	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	106			106
Trichloroethene	50	ND		3	108	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	102	3	109	102
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60680

FIELD CODE: 9-25-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	100	1	109	100
Ethylbenzene	50	ND	98			98
m & p-Xylene	50	ND				
Bromoform	50	ND	105			105
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	107			107
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	82
Toluene-d8	94
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96

Date

8701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10-18-96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10-17-96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/kg Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

Environmental Research and Analysis

[0] Page 11
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
Client: TRACE ANALYSIS, INC.
Project Number: 44999
Project Name: INDIAN BASIN ASSESSMENT
Project Location: INDIAN BASIN
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Matrix: SOIL
QC Level: IIMS

Lab Id: 011 Sample Date/Time: 17-OCT-96 N/S
Client Sample Id: 60680 9-25-15 Received Date: 22-OCT-96
Batch: PAS050 Extraction Date: 24-OCT-96
Blank: A Dry Weight %: 97 Analysis Date: 30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.9	
ACENAPHTHYLENE	UG/KG	ND	8.8	
ANTHRACENE	UG/KG	ND	0.45	
BENZO(a)ANTHRACENE	UG/KG	ND	0.98	
BENZO(a)PYRENE	UG/KG	ND	2.0	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.80	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.0	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.85	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.84	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	48	10	
2-METHYLNAPHTHALENE	UG/KG	37	10	
2-CHLOROANTHRACENE	%REC/SURR	86	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60681

FIELD CODE: 9-25-17

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60681

FIELD CODE: 9-25-17

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

95
95
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 12
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	012	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60681 9-25-17	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	23	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO (a) ANTHRACENE	UG/KG	ND	1.1	
BENZO (a) PYRENE	UG/KG	ND	2.1	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.88	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.3	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	6	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	43	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	68	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60476

FIELD CODE: 10-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Bromomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60476

FIELD CODE: 10-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	100
Toluene-d8	94
4-Bromofluorobenzene	103

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 8
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
Client: TRACE ANALYSIS, INC.
Project Number: N/S
Project Name: INDIAN BASIN ASSESSMENT
Project Location: INDIAN BASIN
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Matrix: SOIL
QC Level: IIMS

Lab Id: 008 Sample Date/Time: 14-OCT-96 N/S
Client Sample Id: 60476 10-15-1 Received Date: 16-OCT-96
Batch: PAS046 Extraction Date: 19-OCT-96
Blank: B Dry Weight %: 83 Analysis Date: 28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.3	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.53	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.3	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.94	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.5	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.99	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.4	
FLUORANTHENE	UG/KG	ND	3	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.7	
NAPHTHALENE	UG/KG	ND	12	
PHENANTHRENE	UG/KG	ND	0.98	
PYRENE	UG/KG	ND	2.2	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	63	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60475

FIELD CODE: 10-15-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60475

FIELD CODE: 10-15-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
95
104

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96

Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 7
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	007	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60475 10-15-11	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 92	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.4	
ACENAPHTHYLENE	UG/KG	ND	9.2	
ANTHRACENE	UG/KG	ND	0.48	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2.1	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.85	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.2	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.89	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.8	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.88	
PYRENE	UG/KG	ND	2.0	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	64	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60578

FIELD CODE: 11-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Bromomethane	125	ND				
Carbon disulfide	25	ND				
Ethylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60578

FIELD CODE: 11-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

101
97
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/86
Date

6701 Aberdeen Avenue

Lubbock, Texas 79404

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 3
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	003	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60578 11-15-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 97	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.9	
ACENAPHTHYLENE	UG/KG	ND	8.8	
ANTHRACENE	UG/KG	ND	0.45	
BENZO(a)ANTHRACENE	UG/KG	ND	0.98	
BENZO(a)PYRENE	UG/KG	ND	2.0	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.80	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.0	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.85	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.84	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	76	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60579

FIELD CODE: 11-15-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60579

FIELD CODE: 11-15-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

101
97
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 22, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin G. P. Assessment

Extraction Date: 10/21/96

Analysis Date: 10/21/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60579	11-15-12	<0.25
T60585	34-15-11	<0.25
T60588	37-15-15	<0.25
QC	Quality Control	0.48

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

103

% Instrument Accuracy

96

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

10-22-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 4
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	004	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60579 11-15-12	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 94	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO (a) ANTHRACENE	UG/KG	ND	1	
BENZO (a) PYRENE	UG/KG	ND	2	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.83	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.1	
BENZO (k) FLUORANTHENE	UG/KG	5	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.86	
PYRENE	UG/KG	10	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	80	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60580

FIELD CODE: 12-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	115			115
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	103	8	102	103
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	109			109
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	104			104
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	110			110
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	108	7	107	108
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60580

FIELD CODE: 12-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	107	7	100	107
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	113			113
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	115			115
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	97
Toluene-d8	96
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98
METHODS:	EPA SW 846-3051, 7471.	
CHEMIST:	CB	
TOTAL Hg SPIKE:	2.50 mg/kg TOTAL Hg.	
TOTAL Hg QC:	0.005 mg/L TOTAL Hg.	



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 5
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	005	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60580 12-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 90	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.6	
ACENAPHTHYLENE	UG/KG	ND	9.4	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	17	2.1	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.87	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.2	
BENZO(k)FLUORANTHENE	UG/KG	23	0.91	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.9	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.9	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	74	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60726

FIELD CODE: 12-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	87	104
Isopropyl bromide	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60726

FIELD CODE: 12-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

100
101
100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit	0.25
RPD	0
% Extraction Accuracy	88
% Instrument Accuracy	98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg Hg.
TOTAL Hg QC: 0.005 mg/L Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 22
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	022	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60726 12-25-12	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 85	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	69	7.8	
ACENAPHTHYLENE	UG/KG	ND	8.7	
ANTHRACENE	UG/KG	1.1	0.44	
BENZO(a)ANTHRACENE	UG/KG	28	0.96	
BENZO(a)PYRENE	UG/KG	34	1.9	
BENZO(b)FLUORANTHENE	UG/KG	16	0.79	
BENZO(g,h,i)PERYLENE	UG/KG	25	2.9	
BENZO(k)FLUORANTHENE	UG/KG	9.6	0.83	
CHRYSENE	UG/KG	17	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.4	
FLUORANTHENE	UG/KG	70	2.5	
FLUORENE	UG/KG	10	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.8	
PHENANTHRENE	UG/KG	43	0.82	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	31	10	
2-CHLOROANTHRACENE	%REC/SURR	58	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60533

FIELD CODE: 13-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60533

FIELD CODE: 13-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	95
Toluene-d8	97
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 12
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	012	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60533 13-1-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 87	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.9	
ACENAPHTHYLENE	UG/KG	ND	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO (a) ANTHRACENE	UG/KG	3.3	1.1	
BENZO (a) PYRENE	UG/KG	17	2.2	
BENZO (b) FLUORANTHENE	UG/KG	7.6	0.90	
BENZO (g, h, i) PERYLENE	UG/KG	58	3.3	
BENZO (k) FLUORANTHENE	UG/KG	3.3	0.94	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	6.1	
FLUORANTHENE	UG/KG	27	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	1.3	0.93	
PYRENE	UG/KG	13	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	73	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60685

FIELD CODE: 14-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60685

FIELD CODE: 14-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	97
Toluene-d8	95
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/l Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 22, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/21/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60685	14-15-1	<0.25
QC	Quality Control	0.48

Reporting Limit	0.25
-----------------	------

RPD	2
% Extraction Accuracy	103
% Instrument Accuracy	96

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-22-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 16
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	016	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60685 14-15-1	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 84	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.2	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.3	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.93	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.5	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.98	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.3	
FLUORANTHENE	UG/KG	ND	3.0	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.7	
NAPHTHALENE	UG/KG	ND	12	
PHENANTHRENE	UG/KG	ND	0.96	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	57	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60729

FIELD CODE: 14-15-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	87	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60729

FIELD CODE: 14-15-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	100
Toluene-d8	102
4-Bromofluorobenzene	102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17-18/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

0

% Extraction Accuracy

88

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 24, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/23/96

Analysis Date: 10/23/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin

Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60729	14-15-13	<2.5
QC	Quality Control	0.49

Reporting Limit	2.5
-----------------	-----

RPD	2
% Extraction Accuracy	110
% Instrument Accuracy	98

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-24-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 25
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	025	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60729 14-15-13	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 92	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.4	
ACENAPHTHYLENE	UG/KG	ND	9.2	
ANTHRACENE	UG/KG	ND	0.48	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2.1	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.85	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.2	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.89	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.8	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.88	
PYRENE	UG/KG	ND	2.0	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	31	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60721

FIELD CODE: 15-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60721

FIELD CODE: 15-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	97
Toluene-d8	94
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

Date

6701 Aberdeen Avenue
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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit	0.25
RPD	0
% Extraction Accuracy	88
% Instrument Accuracy	98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg Hg.
TOTAL Hg QC: 0.005 mg/L Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6731 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FX 806•794•1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 24, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

Extraction Date: 10/23/96
Analysis Date: 10/23/96
Sampling Date: 10/17-18/96
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60721	15-25-1	<0.25
T60727	7-15-1	<0.25
QC	Quality Control	0.49

Reporting Limit 0.25

RPD 2
% Extraction Accuracy 110
% Instrument Accuracy 98

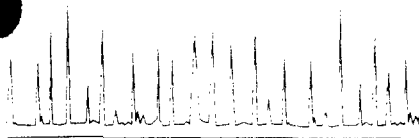
METHODS: EPA SW 846-3550, 8080.
CHEMIST: MB
TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.
TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

12-5-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 17
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	017	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60721 15-25-1	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.1	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.88	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.0	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	68	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60722

FIELD CODE: 15-25-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	118			118
Vinyl chloride	50	ND	116			116
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	15	6	103	115
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	115			115
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	106			106
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		4	103	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	113			113
Trichloroethene	50	ND		4	101	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	112	5	100	112
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60722

FIELD CODE: 15-25-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	112	5	101	112
Ethylbenzene	50	399	112			112
m & p-Xylene	50	306				
Bromoform	50	ND	117			117
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	122			122
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
Methyl-cyclohexane	13.22	2,920
cis-1,3-dimethyl-cyclohexane	14.64	3,870
Ethyl-cyclohexane	16.13	5,000
4-methyl-octane	16.38	4,790
(1.alpha)-1,2,4-trimethyl-cyclohexane	16.57	4,550
Unidentified hydrocarbon	18.27	2,870
Unidentified hydrocarbon	18.54	7,400
1-methyl-3-propyl-cyclohexane	19.54	5,070
2,6-dimethyl-nonane	19.93	4,350
Butyl-cyclohexane	20.72	6,000

SURROGATES	% RECOVERY
Dibromofluoromethane	100
Toluene-d8	103
4-Bromofluorobenzene	106

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue
Lubbock, Texas 79424
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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/19/96
Sample Type: Soil
Project No: 44999
Project Location: Indian Basin

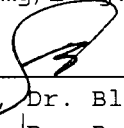
Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg Hg.
TOTAL Hg QC: 0.005 mg/L Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 18
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	018	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60722 15-25-13	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 78	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.9	
ACENAPHTHYLENE	UG/KG	ND	11	
ANTHRACENE	UG/KG	ND	0.56	
BENZO(a) ANTHRACENE	UG/KG	ND	1.2	
BENZO(a) PYRENE	UG/KG	20	2.4	
BENZO(b) FLUORANTHENE	UG/KG	ND	1	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.7	
BENZO(k) FLUORANTHENE	UG/KG	ND	1.1	
CHRYSENE	UG/KG	ND	1.4	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.8	
FLUORANTHENE	UG/KG	ND	3.2	
FLUORENE	UG/KG	ND	1.5	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.8	
NAPHTHALENE	UG/KG	ND	12	
PHENANTHRENE	UG/KG	ND	1	
PYRENE	UG/KG	ND	2.3	
1-METHYLNAPHTHALENE	UG/KG	ND	13	
2-METHYLNAPHTHALENE	UG/KG	ND	13	
2-CHLOROANTHRACENE	%REC/SURR	55	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60534

FIELD CODE: 16-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	98	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	28				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60534

FIELD CODE: 16-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
1,3,5-trimethyl-cyclohexane	16.53	33
(c,t)-1-ethyl-3-methyl cyclohexane	17.35	42
2,6-dimethyl-o etane	17.96	67
Unidentified hydrocarbon	18.24	39
Unidentified hydrocarbon	18.36	41
Unidentified hydrocarbon	19.23	34
Unidentified hydrocarbon	19.89	36

SURROGATES

% RECOVERY

Dibromofluoromethane	96
Toluene-d8	98
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

10-21-96

Director, Dr. Blair Leftwich

DATE

Director, Dr. Bruce McDonell

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 13
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	013	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60534 16-1-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 94	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a)ANTHRACENE	UG/KG	ND	1	
BENZO(a)PYRENE	UG/KG	27	2	
BENZO(b)FLUORANTHENE	UG/KG	18	0.83	
BENZO(g,h,i)PERYLENE	UG/KG	14	3.1	
BENZO(k)FLUORANTHENE	UG/KG	53	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	62	5.6	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	17	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.86	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	266*	17-160	
ANALYST	INITIALS	PL		

Comments:

*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
 DUE TO MATRIX INTERFERENCE.

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin

Assessment

TA#: T60671

FIELD CODE: 17-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60671

FIELD CODE: 17-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
2,6-dimethyl-octane	18.02	190
Unidentified hydrocarbon	18.29	85
Propyl-cyclohexane	18.42	85
Unidentified hydrocarbon	18.52	61
Unidentified hydrocarbon	18.55	88
Unidentified hydrocarbon	19.28	65
(1S,3R) - (+) -m-methane	19.55	142
2,6-Dimethyl-nonane	19.94	146
Unidentified hydrocarbon	20.73	66

SURROGATES	% RECOVERY
Dibromofluoromethane	92
Toluene-d8	93
4-Bromofluorobenzene	101

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

5701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 3
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	003	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60671 17-15-1	Received Date:	22-OCT-96
Batch: PAS049		Extraction Date:	24-OCT-96
Blank: C	Dry Weight %: 85	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.92	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.4	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.96	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	2.1	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	1.7	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	61	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60723

FIELD CODE: 17-15-14

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60723

FIELD CODE: 17-15-14

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
Unidentified hydrocarbon	16.39	69
Unidentified hydrocarbon	16.59	61
Nonane	17.20	78
3,6-dimethyl-octane	18.01	96
Propyl-cyclohexane	18.41	58
Unidentified hydrocarbon	18.56	125
Unidentified hydrocarbon	19.40	73
1-methyl-2-propyl-cyclohexane	19.56	51
Unidentified hydrocarbon	19.94	71
Unidentified hydrocarbon	20.74	90

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

93
93
100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

1/21/86
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17-18/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

0

% Extraction Accuracy

88

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 19
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	019	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60723 17-15-14	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 94	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.83	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.1	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	40	10	
PHENANTHRENE	UG/KG	15	0.86	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	420	11	
2-METHYLNAPHTHALENE	UG/KG	220	11	
2-CHLOROANTHRACENE	%REC/SURR	26	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60477

FIELD CODE: 18-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	119			119
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	112	5	79	112
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	114			114
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	110			110
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	105			105
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	105	7	92	105
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60477

FIELD CODE: 18-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	6	92	100
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	79			79
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	80			80
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds

	RT	CONC (ug/kg)
Methyl-cyclohexane	13.24	203
cis-1,3-dimethyl-cyclohexane	14.67	158
1,4-dimethyl-cyclohexane	15.26	85
Ethyl-cyclohexane	16.15	116
1,2,4-trimethyl-cyclohexane	16.58	79
cis-1-ethyl-3-methyl-cyclohexane	17.41	83
3,6-dimethyl-octane	18.02	95
Unidentified hydrocarbon	18.55	69
1-methyl-2-propyl-cyclohexane	19.56	73
Unidentified hydrocarbon	19.95	70

SURROGATES**% RECOVERY**

Dibromofluoromethane	96
Toluene-d8	94
4-Bromofluorobenzene	106

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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Analytical Results for
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin
G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

SAMPLE NO.	FIELD CODE	TOTAL PCBs
		(mg/kg)
T60477	18-1-1	<0.25
QC	Quality Control	0.485

QUALITY CONTROL SUMMARY

RPD = 0

Extraction Accuracy = 107%

Instrument Accuracy = 97%

METHODS: EPA SW 846-8080.

CHEMIST: MB

PCB QC: 0.5 mg/L of 42/54/60 PCB.

PCB SPIKE: 1.0 mg/kg of 1260 PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-18-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 9
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	009	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60477 18-1-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 86	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.0	
ACENAPHTHYLENE	UG/KG	ND	9.9	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a)ANTHRACENE	UG/KG	1.2	1.1	
BENZO(a)PYRENE	UG/KG	24	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.91	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.4	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.95	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	5.6	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	6.2	0.94	
PYRENE	UG/KG	15	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	57	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60521

FIELD CODE: 18-1-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60521

FIELD CODE: 18-1-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
Unidentified Hydrocarbon	16.13	54
Unidentified Hydrocarbon	17.38	66
Unidentified Hydrocarbon	18.00	106
Unidentified Hydrocarbon	18.41	56
Unidentified Hydrocarbon	19.54	60
Unidentified Hydrocarbon	19.92	68

SURROGATES	% RECOVERY
Dibromofluoromethane	101
Toluene-d8	97
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr Blair Leftwich
Director, Dr. Bruce McDonell

10/18/94
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 1
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	001	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60521 18-1-13	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 95	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.1	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO (a) ANTHRACENE	UG/KG	ND	1	
BENZO (a) PYRENE	UG/KG	16	2	
BENZO (b) FLUORANTHENE	UG/KG	0.90	0.82	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.1	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.86	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	14	5.6	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	3.2	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.85	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	79	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60523

FIELD CODE: 18-1-13.5D

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60523

FIELD CODE: 18-1-13.5D

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
Unidentified Hydrocarbon	9.46	41
2,6-dimethyl-Octane	17.98	54
Unidentified Hydrocarbon	19.89	105
Unidentified Hydrocarbon	20.06	31
Unidentified Hydrocarbon	20.33	29
Unidentified Hydrocarbon	22.02	50
Unidentified Hydrocarbon	22.33	29

SURROGATES	% RECOVERY
Dibromofluoromethane	87
Toluene-d8	98
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

10-21-96

Director, Dr. Blair Leftwich

DATE

Director, Dr. Bruce McDonell

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 3
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	003	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60523 18-1-13.5D	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 95	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.1	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.82	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.1	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.86	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.85	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	81	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin
Assessment

TA#: T60522

FIELD CODE: 18-1-13.5W

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	250	ND				
Chloromethane	250	ND	111			111
Vinyl chloride	250	ND	113			113
Bromomethane	1,250	ND				
Chloroethane	250	ND				
Trichlorofluoromethane	250	ND				
1,1-Dichloroethene	250	ND	110	0	90	110
Iodomethane	1,250	ND				
Carbon disulfide	250	ND				
Methylene chloride	1,250	ND				
trans-1,2-Dichloroethene	250	ND				
1,1-Dichloroethane	250	ND	111			111
Vinyl acetate	250	ND				
2-Butanone	12,500	ND				
Chloroform	250	ND	103			103
1,1,1-Trichloroethane	250	ND				
1,2-Dichloroethane	250	ND				
Benzene	250	ND		3	100	
Carbon Tetrachloride	250	ND				
1,2-Dichloropropane	250	ND	109			109
Trichloroethene	250	ND		3	99	
Bromodichloromethane	250	ND				
cis-1,3-Dichloropropene	250	ND				
4-Methyl-2-pentanone	12,500	ND				
trans-1,3-Dichloropropene	250	ND				
Toluene	250	ND	106	2	98	106
1,1,2-Trichloroethane	250	ND				
2-Hexanone	12,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60522

FIELD CODE: 18-1-13.5W

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	250	ND				
Tetrachloroethene	250	ND				
Chlorobenzene	250	ND	103	4	99	103
Ethylbenzene	250	ND	104			104
m & p-Xylene	250	ND				
Bromoform	250	ND	108			108
Styrene	250	ND				
o-Xylene	250	ND				
1,1,2,2-Tetrachloroethane	250	ND	108			108
trans 1,4-Dichloro-2-butene	1,250	ND				
cis 1,4-Dichloro-2-butene	1,250	ND				
1,4-Dichlorobenzene	500	ND				
1,3-Dichlorobenzene	500	ND				
1,2-Dichlorobenzene	500	ND				
Tentatively Identified Compounds		RT	CONC (mg/kg)			
Methyl-cyclohexane		13.21	1370			
1,3-dimethyl-cyclohexane		14.64	1,100			
Ethyl-cyclohexane		16.12	1,140			
(c,t)-1-ethyl-3-methyl-cyclohexane		17.38	971			
Unidentified hydrocarbon		17.99	1,840			
1-methyl-2-propyl-cyclohexane		19.53	1,330			
Unidentified hydrocarbon		19.92	2,150			
Butyl-cyclohexane		20.71	1,050			
Unidentified hydrocarbon		21.86	1,300			
SURROGATES		% RECOVERY				
Dibromofluoromethane		100				
Toluene-d8		97				
4-Bromofluorobenzene		100				

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 2
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	002	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60522 18-1-13.5W	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 94	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.83	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.1	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.86	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	79	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60478

FIELD CODE: 19-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	106			106
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	5	79	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	102			102
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	96			96
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	102			102
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	104	7	92	104
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY
Project No: 44999
Project: Ind. Basin G.P. Assessment

PAGE 2 of 2

TA #: T60478
FIELD CODE: 19-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	101	6	92	101
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	101			101
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	102			102
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES	% RECOVERY
Dibromofluoromethane	97
Toluene-d8	98
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

16/17/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		2
% Extraction Accuracy		91
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BZ
Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-17-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 10
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	010	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60478 19-25-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 87	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.9	
ACENAPHTHYLENE	UG/KG	ND	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.90	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.3	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.94	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.1	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.93	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	76	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60479

FIELD CODE: 19-25-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	106			106
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	5	79	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	102			102
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	96			96
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	102			102
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	104	7	92	104
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60479

FIELD CODE: 19-25-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	101	6	92	101
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	101			101
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	102			102
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

100
100
102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BB

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 11
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	011	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60479 19-25-11	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 93	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.3	
ACENAPHTHYLENE	UG/KG	ND	9.1	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a)ANTHRACENE	UG/KG	ND	1	
BENZO(a)PYRENE	UG/KG	ND	2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.84	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.1	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.88	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.7	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.87	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	82	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Water

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/21/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60678

FIELD CODE: 19-25-17W

8240 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	1	ND				
Chloromethane	1	ND	118			118
Vinyl chloride	1	ND	116			116
Bromomethane	5	ND				
Chloroethane	1	ND				
Trichlorofluoromethane	1	ND				
1,1-Dichloroethene	1	ND	115	6	103	115
Iodomethane	5	ND				
Carbon disulfide	1	ND				
Methylene chloride	5	ND				
trans-1,2-Dichloroethene	1	ND				
1,1-Dichloroethane	1	ND	115			115
Vinyl acetate	1	ND				
2-Butanone	50	ND				
Chloroform	1	ND	106			106
1,1,1-Trichloroethane	1	ND				
1,2-Dichloroethane	1	ND				
Benzene	1	4		4	103	
Carbon Tetrachloride	1	ND				
1,2-Dichloropropane	1	ND	113			113
Trichloroethene	1	ND		4	101	
Bromodichloromethane	1	ND				
cis-1,3-Dichloropropene	1	ND				
4-Methyl-2-pentanone	50	ND				
trans-1,3-Dichloropropene	1	ND				
Toluene	1	ND	112	5	100	112
1,1,2-Trichloroethane	1	ND				
2-Hexanone	50	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60678

FIELD CODE: 19-25-17W

8240 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	%EA	%IA
Dibromochloromethane	1	ND				
Tetrachloroethene	1	ND				
Chlorobenzene	1	ND	112	5	101	112
Ethylbenzene	1	ND	112			112
m & p-Xylene	1	ND				
Bromoform	1	ND	117			117
Styrene	1	ND				
o-Xylene	1	ND				
1,1,2,2-Tetrachloroethane	1	ND	122			122
trans 1,4-Dichloro-2-butene	5	ND				
cis 1,4-Dichloro-2-butene	5	ND				
1,4-Dichlorobenzene	2	ND				
1,3-Dichlorobenzene	2	ND				
1,2-Dichlorobenzene	2	ND				

SURROGATES

% RECOVERY

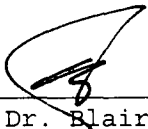
Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

102
102
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/15/96

Sample Type: Water

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60483

FIELD CODE: 19-25-W

8240 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	111			111
Vinyl chloride	50	ND	113			113
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	110	6	103	110
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	111			111
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	103			103
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	590		4	103	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	109			109
Trichloroethene	50	ND		4	101	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	106	5	100	106
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60483

FIELD CODE: 19-25-W

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	103	5	101	103
Ethylbenzene	50	ND	104			104
m & p-Xylene	50	ND				
Bromoform	50	ND	108			108
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	108			108
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

SURROGATES

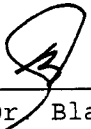
% RECOVERY

Dibromofluoromethane	101
Toluene-d8	97
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60581

FIELD CODE: 20-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY
Project No: 44999
Project: Ind. Basin G.P. Assessment

PAGE 2 of 2

TA #: T60581
FIELD CODE: 20-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES	% RECOVERY
Dibromofluoromethane	97
Toluene-d8	98
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/86
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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Ex 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

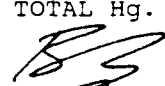
Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98
METHODS: EPA SW 846-3051, 7471.		
CHEMIST: CB		
TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.		
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.		


Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 6
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	006	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60581 20-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 85	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.92	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.4	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.96	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	83	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60582

FIELD CODE: 20-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	115			115
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	103	6	103	103
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	109			109
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	104			104
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	103	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	110			110
Trichloroethene	25	ND		4	101	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	108	5	100	108
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60582

FIELD CODE: 20-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	107	5	101	107
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	113			113
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	115			115
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
96
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

14/21/86

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 7
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	007	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60582 20-25-12	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 98	Analysis Date:	27-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.9	
ACENAPHTHYLENE	UG/KG	ND	8.7	
ANTHRACENE	UG/KG	ND	0.45	
BENZO(a) ANTHRACENE	UG/KG	ND	0.97	
BENZO(a) PYRENE	UG/KG	ND	1.9	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.80	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.0	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.84	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.4	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.9	
PHENANTHRENE	UG/KG	ND	0.83	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	102	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60673

FIELD CODE: 21-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60673

FIELD CODE: 21-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

97
94
96

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/kg Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 5
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	005	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60673 21-15-1	Received Date:	22-OCT-96
Batch: PAS049		Extraction Date:	24-OCT-96
Blank: C	Dry Weight %: 90	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.6	
ACENAPHTHYLENE	UG/KG	ND	9.4	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	15	2.1	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.87	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.2	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.91	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.9	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.9	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	68	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60724

FIELD CODE: 21-15-14

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60724

FIELD CODE: 21-15-14

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

97
94
101

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 20
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	020	Sample Date/Time:	18-OCT-96 N/S
Client Sample Id:	60724 21-15-14	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 75	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	10	
ACENAPHTHYLENE	UG/KG	ND	11	
ANTHRACENE	UG/KG	ND	0.59	
BENZO(a)ANTHRACENE	UG/KG	ND	1.3	
BENZO(a)PYRENE	UG/KG	ND	2.5	
BENZO(b)FLUORANTHENE	UG/KG	ND	1	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.9	
BENZO(k)FLUORANTHENE	UG/KG	ND	1.1	
CHRYSENE	UG/KG	ND	1.5	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	7.1	
FLUORANTHENE	UG/KG	ND	3.3	
FLUORENE	UG/KG	ND	1.6	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.9	
NAPHTHALENE	UG/KG	MD	13	
PHENANTHRENE	UG/KG	ND	1.1	
PYRENE	UG/KG	ND	2.4	
1-METHYLNAPHTHALENE	UG/KG	24	13	
2-METHYLNAPHTHALENE	UG/KG	ND	13	
2-CHLOROANTHRACENE	%REC/SURR	33	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60535

FIELD CODE: 22-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60535

FIELD CODE: 22-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

97
98
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/16/96
Sample Type: Soil
Project No: 44999
Project Location: Ind. Basin

Extraction Date: 10/17/96
Analysis Date: 10/17/96
Sampling Date: 10/15/96
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: Ind. Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 14
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	014	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60535 22-1-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	16	2.1	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.88	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.0	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	94	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60536

FIELD CODE: 23-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60536

FIELD CODE: 23-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	99
Toluene-d8	99
4-Bromofluorobenzene	102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

3701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98
METHODS:	EPA SW 846-3051, 7471.	
CHEMIST:	CB	
TOTAL Hg SPIKE:	2.50 mg/kg TOTAL Hg.	
TOTAL Hg QC:	0.005 mg/L TOTAL Hg.	

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

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Lubbock, Texas 79424

806-794-1296

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/16/96
Sample Type: Soil
Project No: 44999
Project Location: Ind. Basin

Extraction Date: 10/17/96
Analysis Date: 10/17/96
Sampling Date: 10/15/96
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: Ind. Basin
Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60539	29-25-1	<0.25
QC	Quality Control	0.495

Reporting Limit 0.25

RPD 4
% Extraction Accuracy 100
% Instrument Accuracy 99

METHODS: EPA SW 846-3550, 8080.
CHEMIST: MB
TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.
TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 15
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	015	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60536 23-25-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	510	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	52	0.49	
BENZO(a) ANTHRACENE	UG/KG	94	1.1	
BENZO(a) PYRENE	UG/KG	100	2.1	
BENZO(b) FLUORANTHENE	UG/KG	74	0.88	
BENZO(g,h,i) PERYLENE	UG/KG	76	3.3	
BENZO(k) FLUORANTHENE	UG/KG	40	0.92	
CHRYSENE	UG/KG	88	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	54	6.0	
FLUORANTHENE	UG/KG	300	2.8	
FLUORENE	UG/KG	35	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	38	1.6	
NAPHTHALENE	UG/KG	160	11	
PHENANTHRENE	UG/KG	170	0.91	
PYRENE	UG/KG	170	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	150	11	
2-CHLOROANTHRACENE	%REC/SURR	98	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/18/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60725

FIELD CODE: 23-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	114			114
Vinyl chloride	25	ND	117			117
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	4	86	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	104			104
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	98			98
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	96	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	106			106
Trichloroethene	25	ND		2	95	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	102	3	96	102
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60725

FIELD CODE: 23-25-12

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	100	4	98	100
Ethylbenzene	25	ND	98			98
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	107			107
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	92
Toluene-d8	94
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/19/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96
Analysis Date: 10/21/96
Sampling Date: 10/17-18/96
Sample Condition: I & C
Sample Received by: ML
Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60721	15-25-1	<0.25
T60722	15-25-13	<0.25
T60723	17-15-14	<0.25
T60724	21-15-14	<0.25
T60725	23-25-12	<0.25
T60726	12-25-12	<0.25
T60727	7-15-1	<0.25
T60728	7-15-15	<0.25
T60729	14-15-13	<0.25
T60730	6-25-12	<0.25
QC	Quality Control	0.0049

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 21
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
Client: TRACE ANALYSIS, INC.
Project Number: 44999
Project Name: INDIAN BASIN ASSESSMENT
Project Location: INDIAN BASIN
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Matrix: SOIL
QC Level: IIMS

Lab Id: 021 Sample Date/Time: 18-OCT-96 N/S
Client Sample Id: 60725 23-25-12 Received Date: 22-OCT-96
Batch: PAS050 Extraction Date: 24-OCT-96
Blank: A Dry Weight %: 85 Analysis Date: 31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.92	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.4	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.96	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	21	12	
2-CHLOROANTHRACENE	%REC/SURR	29	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60672

FIELD CODE: 24-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60672

FIELD CODE: 24-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

88
96
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 4
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	004	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60672 24-15-1	Received Date:	22-OCT-96
Batch: PAS049		Extraction Date:	24-OCT-96
Blank: C	Dry Weight %: 88	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.1	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.88	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	69	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60684

FIELD CODE: 24-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	114			114
Vinyl chloride	50	ND	117			117
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	104	4	87	104
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	104			104
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	98			98
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		3	96	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	106			106
Trichloroethene	50	ND		2	95	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	102	3	96	102
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60684

FIELD CODE: 24-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	100	4	98	100
Ethylbenzene	50	ND	98			98
m & p-Xylene	50	ND				
Bromoform	50	ND	105			105
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	107			107
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
3,6-dimethyl-octane	18.02	1,580
Decane	19.41	1,150
1-methyl-2-propyl-cyclohexane	19.56	969
4-methyl-decane	19.94	2,060
butyl-cyclohexane	20.74	1,980
Undecane	21.64	774
Unidentified hydrocarbon	21.88	1,400
Unidentified hydrocarbon	22.08	798
Unidentified hydrocarbon	22.30	845
Unidentified hydrocarbon	24.50	868

SURROGATES	% RECOVERY
Dibromofluoromethane	100
Toluene-d8	103
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/l Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory of the American Environmental Research and Analysis

[0] Page 15
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	015	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60684 24-15-15	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 99	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.8	
ACENAPHTHYLENE	UG/KG	36	8.6	
ANTHRACENE	UG/KG	ND	0.44	
BENZO(a)ANTHRACENE	UG/KG	ND	0.96	
BENZO(a)PYRENE	UG/KG	41	1.9	
BENZO(b)FLUORANTHENE	UG/KG	22	0.79	
BENZO(g,h,i)PERYLENE	UG/KG	35	2.9	
BENZO(k)FLUORANTHENE	UG/KG	46	0.83	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	310	5.4	
FLUORANTHENE	UG/KG	ND	2.5	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	32	1.4	
NAPHTHALENE	UG/KG	ND	9.8	
PHENANTHRENE	UG/KG	ND	0.82	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	55	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60679

FIELD CODE: 24-15-16

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	114			114
Vinyl chloride	50	ND	117			117
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	104	1	99	104
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	104			104
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	98			98
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		2	110	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	106			106
Trichloroethene	50	ND		3	108	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	102	3	109	102
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60679

FIELD CODE: 24-15-16

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	100	1	109	100
Ethylbenzene	50	ND	98			98
m & p-Xylene	50	ND				
Bromoform	50	ND	105			105
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	107			107
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
trans-1-ethyl-4-methyl-cyclohexane	17.41	546
2,6-dimethyl-cyclohexane	18.03	1,470
Unidentified hydrocarbon	18.42	651
1-methyl-2-propyl-cyclohexane	19.56	1,030
Unidentified hydrocarbon	19.67	552
4-methyl-decane	19.95	1,760
butyl-cyclohexane	20.75	1,720
Unidentified hydrocarbon	21.89	1,540
Unidentified hydrocarbon	22.08	823
Unidentified hydrocarbon	22.31	1,290

SURROGATES	% RECOVERY
Dibromofluoromethane	99
Toluene-d8	95
4-Bromofluorobenzene	102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Euless, Texas 79424

754-794-1236

754-806-794-1258

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10.20.96

Analysis Date: 10.21.96

Sampling Date: 10.17.96

Sample Condition: F & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

LA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Leader in Advanced Environmental Research and Analysis

[0] Page 10
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	010	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60679 24-15-16	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 93	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.3	
ACENAPHTHYLENE	UG/KG	ND	9.1	
ANTHRACENE	UG/KG	ND	0.47	
BENZO (a) ANTHRACENE	UG/KG	1.2	1	
BENZO (a) PYRENE	UG/KG	ND	2	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.84	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.1	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.88	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	5.7	
FLUORANTHENE	UG/KG	ND	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.87	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	72	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60524

FIELD CODE: 25-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60524

FIELD CODE: 25-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
97
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 4
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	004	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60524 25-25-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 90	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.6	
ACENAPHTHYLENE	UG/KG	ND	9.4	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.1	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.87	
BENZO(g,h,i) PERYLENE	UG/KG	45	3.2	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.91	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.9	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.9	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	89	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60525

FIELD CODE: 25-25-14

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	250	ND				
Chloromethane	250	ND	103			103
Vinyl chloride	250	ND	104			104
Bromomethane	1,250	ND				
Chloroethane	250	ND				
Trichlorofluoromethane	250	ND				
1,1-Dichloroethene	250	ND	98	8	102	95
Bromomethane	1,250	ND				
Carbon disulfide	250	ND				
Methylene chloride	1,250	ND				
trans-1,2-Dichloroethene	250	ND				
1,1-Dichloroethane	250	ND	98			98
Vinyl acetate	250	ND				
2-Butanone	12,500	ND				
Chloroform	250	ND	93			93
1,1,1-Trichloroethane	250	ND				
1,2-Dichloroethane	250	ND				
Benzene	250	ND		7	109	
Carbon Tetrachloride	250	ND				
1,2-Dichloropropane	250	ND	98			98
Trichloroethene	250	ND		7	107	
Bromodichloromethane	250	ND				
cis-1,3-Dichloropropene	250	ND				
4-Methyl-2-pentanone	12,500	ND				
trans-1,3-Dichloropropene	250	ND				
Toluene	250	ND	94	7	107	94
1,1,2-Trichloroethane	250	ND				
2-Hexanone	12,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60525

FIELD CODE: 25-25-14

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	250	ND				
Tetrachloroethene	250	ND				
Chlorobenzene	250	ND	93	7	100	93
Ethylbenzene	250	ND	90			90
m & p-Xylene	250	ND				
Bromoform	250	ND	105			105
Styrene	250	ND				
o-Xylene	250	ND				
1,1,2,2-Tetrachloroethane	250	ND	108			108
trans 1,4-Dichloro-2-butene	1,250	ND				
cis 1,4-Dichloro-2-butene	1,250	ND				
1,4-Dichlorobenzene	500	ND				
1,3-Dichlorobenzene	500	ND				
1,2-Dichlorobenzene	500	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
Ethyl-Cyclohexane	16.09	1,630
1,2,4-trimethyl-cyclohexane	16.53	1,360
cis-1,ethyl-3-methyl-cyclohexane	17.35	1,650
2,6-dimethyl-Octane	17.97	3,140
Propyl-cyclohexane	18.37	2,180
1-methyl-3-propyl-cyclohexane	19.50	1,890
Unidentified Hydrocarbon	19.60	1,260
2,6-dimethyl-nonane	19.89	3,800
Unidentified Hydrocarbon	20.69	2,950
Unidentified Hydrocarbon	21.83	1,670

SURROGATES	% RECOVERY
Dibromofluoromethane	96
Toluene-d8	97
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

RB

10-21-96

Director, Dr. Blair Leftwich

DATE

Director, Dr. Bruce McDonell

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

806•794•1296

FAX 806•794•1298

ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Water

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60526

FIELD CODE: 25-25-14W

8240 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	100	ND				
Chloromethane	100	ND	103			103
Vinyl chloride	100	ND	104			104
Bromomethane	500	ND				
Chloroethane	100	ND				
Trichlorofluoromethane	100	ND				
1,1-Dichloroethene	100	ND	95	6	103	95
Iodomethane	500	ND				
Carbon disulfide	100	ND				
Methylene chloride	500	ND				
trans-1,2-Dichloroethene	100	ND				
1,1-Dichloroethane	100	ND	98			98
Vinyl acetate	100	ND				
2-Butanone	5,000	ND				
Chloroform	100	ND	93			93
1,1,1-Trichloroethane	100	ND				
1,2-Dichloroethane	100	ND				
Benzene	100	2,110		4	103	
Carbon Tetrachloride	100	ND				
1,2-Dichloropropane	100	ND	98			98
Trichloroethene	100	ND		4	101	
Bromodichloromethane	100	ND				
cis-1,3-Dichloropropene	100	ND				
4-Methyl-2-pentanone	5,000	ND				
trans-1,3-Dichloropropene	100	ND				
Toluene	100	ND	94	5	100	94
1,1,2-Trichloroethane	100	ND				
2-Hexanone	5,000	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60526

FIELD CODE: 25-25-14W

8240 Compounds	Reporting Limit	Concentration (ug/L)	QC	RPD	%EA	%IA
Dibromochloromethane	100	ND				
Tetrachloroethene	100	ND				
Chlorobenzene	100	ND	93	5	101	93
Ethylbenzene	100	1,060	90			90
m & p-Xylene	100	ND				
Bromoform	100	ND	105			105
Styrene	100	ND				
o-Xylene	100	ND				
1,1,2,2-Tetrachloroethane	100	ND	108			108
trans 1,4-Dichloro-2-butene	500	ND				
cis 1,4-Dichloro-2-butene	500	ND				
1,4-Dichlorobenzene	200	ND				
1,3-Dichlorobenzene	200	ND				
1,2-Dichlorobenzene	200	ND				
Tentatively Identified Compounds		RT	Conc (ug/l)			
Methyl-cyclopentene		10.48	364			
Cyclohexane		11.50	1,220			
Methyl-Cyclohexane		13.17	999			
Unidentified Hydrocarbon		15.21	210			
Ethyl-cyclohexane		16.09	211			
(1-methylethyl)-Benzene		18.58	159			
Propyl-benzene		19.28	213			

SURROGATES**% RECOVERY**

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

103
99
97

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60531

FIELD CODE: 25-25-15 (CAP)

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	111			111
Vinyl chloride	50	ND	113			113
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	110	0	90	110
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	111			111
Vinyl acetate	50	167				
2-Butanone	2,500	ND				
Chloroform	50	ND	103			103
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		3	100	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	109			109
Trichloroethene	50	ND		3	99	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	106	2	98	106
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60531

FIELD CODE: 25-25-15 (CAP)

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	78				
Chlorobenzene	50	ND	103	4	99	103
Ethylbenzene	50	153	104			104
m & p-Xylene	50	171				
Bromoform	50	ND	108			108
Styrene	50	52				
o-Xylene	50	59				
1,1,2,2-Tetrachloroethane	50	ND	108			108
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				
Tentatively Identified Compounds	RT	CONC (mg/kg)				
Methyl-cyclohexane	13.21	2,220				
cis-1,3-dimethyl-cyclohexane	14.64	2,880				
Ethyl-cyclohexane	16.13	3,020				
Unidentified hydrocarbon	16.36	1,920				
1,3,5-trimethyl Cyclohexane	16.57	2,630				
2,5-dimethyl-Octane	17.78	1,860				
Unidentified hydrocarbon	18.53	3,570				
1-methyl-3-propyl-cyclohexane	19.54	2,630				
2,6-dimethyl-Nonane	19.92	3,120				
butyl-Cyclohexane	20.72	2,750				
SURROGATES	% RECOVERY					
Dibromofluoromethane	100					
Toluene-d8	98					
4-Bromofluorobenzene	102					

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

RB

10-21-96

Director, Dr. Blair Leftwich

DATE

Director, Dr. Bruce McDonell

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 10
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	010	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60531 25-25-15 CAP	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 98	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.9	
ACENAPHTHYLENE	UG/KG	ND	8.7	
ANTHRACENE	UG/KG	ND	0.45	
BENZO (a) ANTHRACENE	UG/KG	ND	0.97	
BENZO (a) PYRENE	UG/KG	ND	1.9	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.80	
BENZO (g,h,i) PERYLENE	UG/KG	ND	3.0	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.84	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO (a,h) ANTHRACENE	UG/KG	ND	5.4	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.2	
INDENO (1,2,3-cd) PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.9	
PHENANTHRENE	UG/KG	ND	0.83	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	86	17-160	
ANALYST	INITIALS	PL		

Comments:

[0] Page 5
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	005	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60525 25-25-14	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 100	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.7	
ACENAPHTHYLENE	UG/KG	ND	8.5	
ANTHRACENE	UG/KG	ND	0.44	
BENZO(a)ANTHRACENE	UG/KG	ND	0.95	
BENZO(a)PYRENE	UG/KG	ND	1.9	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.78	
BENZO(g,h,i)PERYLENE	UG/KG	ND	2.9	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.82	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.3	
FLUORANTHENE	UG/KG	ND	2.5	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.7	
PHENANTHRENE	UG/KG	ND	0.81	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	72	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996
Receiving Date: 10/16/96
Sample Type: Soil
Project No: 44999
Project Location: Ind. Basin

Extraction Date: 10/17/96
Analysis Date: 10/17/96
Sampling Date: 10/15/96
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: Ind. Basin
Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60525	25-25-14	<2.5
T60529	33-15-15	<2.5
QC	Quality Control	0.495

Reporting Limit* 2.5

RPD 4
% Extraction Accuracy 100
% Instrument Accuracy 99

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE


TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60480

FIELD CODE: 26-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	106			106
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	5	79	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	102			102
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	96			96
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	102			102
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	104	7	92	104
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60480

FIELD CODE: 26-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	101	6	92	101
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	101			101
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	102			102
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

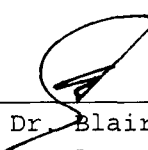
Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

103
96
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

91

% Instrument Accuracy

98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS
Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-17-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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Analytical Results for
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin
G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

SAMPLE NO.	FIELD CODE	TOTAL PCBs
		(mg/kg)
T60480	26-1-1	<0.25
QC	Quality Control	0.485

QUALITY CONTROL SUMMARY

RPD = 0

Extraction Accuracy = 107%

Instrument Accuracy = 97%

METHODS: EPA SW 846-8080.

CHEMIST: MB

PCB QC: 0.5 mg/L of 42/54/60 PCB.

PCB SPIKE: 1.0 mg/kg of 1260 PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-18-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 12
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	012	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60480 26-1-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 90	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.6	
ACENAPHTHYLENE	UG/KG	ND	9.4	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a) ANTHRACENE	UG/KG	11	1.1	
BENZO(a) PYRENE	UG/KG	37	2.1	
BENZO(b) FLUORANTHENE	UG/KG	24	0.87	
BENZO(g,h,i) PERYLENE	UG/KG	31	3.2	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.91	
CHRYSENE	UG/KG	11	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	28	5.9	
FLUORANTHENE	UG/KG	46	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	13	0.9	
PYRENE	UG/KG	25	2	
1-METHYLNAPHTHALENE	UG/KG	35	11	
2-METHYLNAPHTHALENE	UG/KG	58	11	
2-CHLOROANTHRACENE	%REC/SURR	SW	17-160	
ANALYST	INITIALS	NA		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60537

FIELD CODE: 27-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60537

FIELD CODE: 27-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

96
98
100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98
METHODS: EPA SW 846-3051, 7471.		
CHEMIST: CB		
TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.		
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.		

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60539	29-25-1	<0.25
QC	Quality Control	0.495

Reporting Limit

0.25

RPD

4

% Extraction Accuracy

100

% Instrument Accuracy

99

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 16
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	016	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60537 27-1-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 92	Analysis Date:	13-NOV-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	84	
ACENAPHTHYLENE	UG/KG	ND	92	
ANTHRACENE	UG/KG	ND	4.8	
BENZO(a) ANTHRACENE	UG/KG	ND	10	
BENZO(a) PYRENE	UG/KG	140	21	
BENZO(b) FLUORANTHENE	UG/KG	ND	8.5	
BENZO(g,h,i) PERYLENE	UG/KG	ND	32	
BENZO(k) FLUORANTHENE	UG/KG	ND	8.9	
CHRYSENE	UG/KG	13	12	
DIBENZO(a,h) ANTHRACENE	UG/KG	500	58	
FLUORANTHENE	UG/KG	ND	27	
FLUORENE	UG/KG	ND	13	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	15	
NAPHTHALENE	UG/KG	ND	110	
PHENANTHRENE	UG/KG	ND	8.8	
PYRENE	UG/KG	ND	20	
1-METHYLNAPHTHALENE	UG/KG	ND	110	
2-METHYLNAPHTHALENE	UG/KG	ND	110	
2-CHLOROANTHRACENE	%REC/SURR	67	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60538

FIELD CODE: 28-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60538

FIELD CODE: 28-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	97
Toluene-d8	98
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 17
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	017	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60538 28-1-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	15-NOV-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	2500	87	(+)
ACENAPHTHYLENE	UG/KG	ND	960	
ANTHRACENE	UG/KG	ND	49	
BENZO (a) ANTHRACENE	UG/KG	ND	110	
BENZO (a) PYRENE	UG/KG	ND	210	
BENZO (b) FLUORANTHENE	UG/KG	ND	88	
BENZO (g,h,i) PERYLENE	UG/KG	ND	330	
BENZO (k) FLUORANTHENE	UG/KG	100	9.2	(+)
CHRYSENE	UG/KG	ND	120	
DIBENZO (a,h) ANTHRACENE	UG/KG	ND	600	
FLUORANTHENE	UG/KG	ND	280	
FLUORENE	UG/KG	ND	130	
INDENO (1,2,3-cd) PYRENE	UG/KG	ND	160	
NAPHTHALENE	UG/KG	ND	1100	
PHENANTHRENE	UG/KG	54	9.1	(+)
PYRENE	UG/KG	1800	20	(+)
1-METHYLNAPHTHALENE	UG/KG	ND	1100	
2-METHYLNAPHTHALENE	UG/KG	ND	1100	
2-CHLOROANTHRACENE	%REC/SURR	D	17-160	
ANALYST	INITIALS	PL		

Comments:

D = DILUTED OUT.

(+) 1:10 DILUTION, ALL OTHERS AT 1:100 DILUTION.

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60539

FIELD CODE: 29-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	103			103
Vinyl chloride	50	ND	104			104
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	98	8	102	95
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	98			98
Vinyl acetate	50	ND				
2-Butanone	250	ND				
Chloroform	50	ND	93			93
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		7	109	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	98			98
Trichloroethene	50	ND		7	107	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	250	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	94	7	107	94
1,1,2-Trichloroethane	50	ND				
2-Hexanone	250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60539

FIELD CODE: 29-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	93	7	100	93
Ethylbenzene	50	92	90			90
m & p-Xylene	50	343				
Bromoform	50	ND	105			105
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	108			108
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

Tentatively Identified Compounds

	RT	CONC (ug/kg)
Methyl-cyclohexane	13.18	915
cis-1,3-dimethyl-cyclohexane	14.61	1,410
trans-1,2-dimethyl-cyclohexane	15.20	739
Unidentified hydrocarbon	16.09	1,290
Unidentified hydrocarbon	16.17	828
Unidentified hydrocarbon	16.34	968
Unidentified hydrocarbon	16.54	1,370
Unidentified hydrocarbon	18.24	644
Unidentified hydrocarbon	18.50	1,230
Unidentified hydrocarbon	19.53	1,020

SURROGATES

% RECOVERY

Dibromofluoromethane	96
Toluene-d8	99
4-Bromofluorobenzene	102

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98
METHODS: EPA SW 846-3051, 7471.		
CHEMIST: CB		
TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.		
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.		

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60539	29-25-1	<0.25
QC	Quality Control	0.495

Reporting Limit

0.25

RPD

4

% Extraction Accuracy

100

% Instrument Accuracy

99

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 18
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	018	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60539 29-25-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 87	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.9	
ACENAPHTHYLENE	UG/KG	44	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.90	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.94	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.1	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.93	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	51	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin

Assessment

TA#: T60674

FIELD CODE: 29-25-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	250	ND				
Chloromethane	250	ND	114			114
Vinyl chloride	250	ND	117			117
Bromomethane	1,250	ND				
Chloroethane	250	ND				
Trichlorofluoromethane	250	ND				
1,1-Dichloroethene	250	ND	104	1	99	104
Iodomethane	1,250	ND				
Carbon disulfide	250	ND				
Methylene chloride	1,250	ND				
trans-1,2-Dichloroethene	250	ND				
1,1-Dichloroethane	250	ND	104			104
Vinyl acetate	250	ND				
2-Butanone	12,500	ND				
Chloroform	250	ND	98			98
1,1,1-Trichloroethane	250	ND				
1,2-Dichloroethane	250	ND				
Benzene	250	ND		2	110	
Carbon Tetrachloride	250	ND				
1,2-Dichloropropane	250	ND	106			106
Trichloroethene	250	ND		3	108	
Bromodichloromethane	250	ND				
cis-1,3-Dichloropropene	250	ND				
4-Methyl-2-pentanone	12,500	ND				
trans-1,3-Dichloropropene	250	ND				
Toluene	250	ND	102	3	109	102
1,1,2-Trichloroethane	250	ND				
2-Hexanone	12,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY
Project No: 44999
Project: Indian Basin Assessment

PAGE 2 of 2

TA #: T60674
FIELD CODE: 29-25-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	250	ND				
Tetrachloroethene	250	ND				
Chlorobenzene	250	ND	100	1	109	100
Ethylbenzene	250	1,140	98			98
m & p-Xylene	250	12,700				
Bromoform	250	ND	105			105
Styrene	250	ND				
o-Xylene	250	1,480				
1,1,2,2-Tetrachloroethane	250	ND	107			107
trans 1,4-Dichloro-2-butene	1,250	ND				
cis 1,4-Dichloro-2-butene	1,250	ND				
1,4-Dichlorobenzene	500	ND				
1,3-Dichlorobenzene	500	ND				
1,2-Dichlorobenzene	500	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
methyl-cyclohexane	13.24	13,300
2-methyl-heptane	13.95	13,400
Octane	14.82	21,900
4-methyl-octane	16.40	18,700
Unidentified hydrocarbon	16.60	16,500
Unidentified hydrocarbon	18.61	12,900
Decane	19.41	25,700
1,2,3-trimethyl-benzene	20.34	10,700
Unidentified hydrocarbon	20.76	13,900
Undecane	21.65	10,700

SURROGATES	% RECOVERY
Dibromofluoromethane	96
Toluene-d8	98
4-Bromofluorobenzene	103

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Division of Advanced Environmental Research and Analysis

[0] Page 6
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	006	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60674 29-25-15	Received Date:	22-OCT-96
Batch: PAS049		Extraction Date:	24-OCT-96
Blank: C	Dry Weight %: 94	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a)ANTHRACENE	UG/KG	ND	1	
BENZO(a)PYRENE	UG/KG	ND	2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.83	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.1	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	53	2.7	
FLUORENE	UG/KG	130	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	400	10	
PHENANTHRENE	UG/KG	470	0.86	
PYRENE	UG/KG	60	1.9	
1-METHYLNAPHTHALENE	UG/KG	2700	11	
2-METHYLNAPHTHALENE	UG/KG	1100	11	
2-CHLOROANTHRACENE	%REC/SURR	228*	17-160	
ANALYST	INITIALS	PL		

Comments:

*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
 DUE TO MATRIX INTERFERENCE.

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60670

FIELD CODE: 30-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60670

FIELD CODE: 30-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			122
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

Tentatively Identified Compounds	RT	CONC (ug/kg)
cis-1-ethyl-3-methyl-cyclohexane	17.41	50
Unidentified hydrocarbon	17.81	52
3,6-dimethyl-octane	18.03	163
Unidentified hydrocarbon	18.31	47
Unidentified hydrocarbon	18.43	47
1-methyl-2-propyl-cyclohexane	19.57	64
4-methyl-decane	19.95	127
Unidentified hydrocarbon	20.23	51
Unidentified hydrocarbon	20.75	49

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

97
97
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0
% Extraction Accuracy 88
% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 2
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
Client: TRACE ANALYSIS, INC.
Project Number: 44999
Project Name: INDIAN BASIN ASSESSMENT
Project Location: INDIAN BASIN
Test: POLYNUCLEAR AROMATICS BY 8310
Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
Matrix: SOIL
QC Level: IIMS

Lab Id: 002 Sample Date/Time: 17-OCT-96 N/S
Client Sample Id: 60670 30-15-1 Received Date: 22-OCT-96
Batch: PAS049 Extraction Date: 24-OCT-96
Blank: C Dry Weight %: 89 Analysis Date: 15-NOV-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.1	
BENZO(b) FLUORANTHENE	UG/KG	1.3	0.88	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.3	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	15	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	50	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60677

FIELD CODE: 30-15-8

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	115			115
Vinyl chloride	25	ND	116			116
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	118	1	99	118
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	117			117
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	108			108
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		2	110	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	112			112
Trichloroethene	25	ND		3	108	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	112	3	109	112
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60677

FIELD CODE: 30-15-8

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	106	1	109	106
Ethylbenzene	25	ND	108			108
m & p-Xylene	25	ND				
Bromoform	25	ND	112			112
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	111			111
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

94
93
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10 20 96

Analysis Date: 10 21 96

Sampling Date: 10 17 96

Sample Condition: F & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

Environmental Research and Analysis

[0] Page 9
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	009	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60677 30-15-8	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 97	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.9	
ACENAPHTHYLENE	UG/KG	ND	8.8	
ANTHRACENE	UG/KG	ND	0.45	
BENZO (a) ANTHRACENE	UG/KG	ND	0.98	
BENZO (a) PYRENE	UG/KG	ND	2.0	
BENZO (b) FLUORANTHENE	UG/KG	1.2	0.80	
BENZO (g,h,i) PERYLENE	UG/KG	ND	3.0	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.85	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO (a,h) ANTHRACENE	UG/KG	ND	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.2	
INDENO (1,2,3-cd) PYRENE	UG/KG	5.5	1.4	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.84	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	73	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60583

FIELD CODE: 31-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	115			115
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	103	6	103	103
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	109			109
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	104			104
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	103	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	110			110
Trichloroethene	25	ND		4	101	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	108	5	100	108
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60583

FIELD CODE: 31-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	107	5	101	107
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	113			113
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	115			115
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	102
Toluene-d8	97
4-Bromofluorobenzene	101

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

A Lab. For Advanced Environmental Research and Analysis

[0] Page 8
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	008	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60583 31-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 87	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.9	
ACENAPHTHYLENE	UG/KG	ND	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a) ANTHRACENE	UG/KG	20	1.1	
BENZO(a) PYRENE	UG/KG	33	2.2	
BENZO(b) FLUORANTHENE	UG/KG	21	0.90	
BENZO(g,h,i) PERYLENE	UG/KG	5	3.3	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.94	
CHRYSENE	UG/KG	22	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	12	6.1	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.93	
PYRENE	UG/KG	46	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	96	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60481

FIELD CODE: 32-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	106			106
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	5	79	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	102			102
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	96			96
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	102			102
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	104	7	92	104
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60481

FIELD CODE: 32-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	101	6	92	101
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	101			101
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	102			102
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

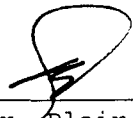
Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

97
97
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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AX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96

Analysis Date: 10/16/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

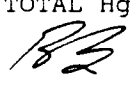
TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		2
% Extraction Accuracy		91
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

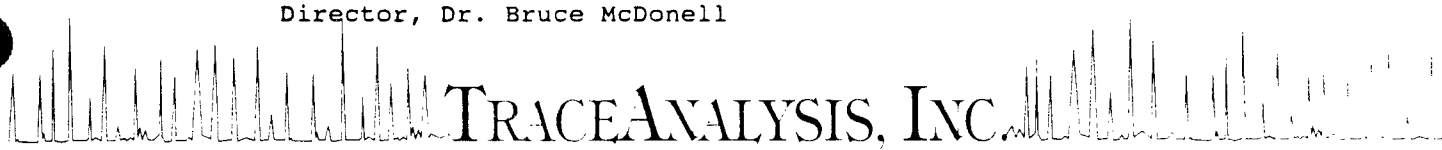
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 13
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	013	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60481 32-1-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 94	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.2	
ACENAPHTHYLENE	UG/KG	ND	9	
ANTHRACENE	UG/KG	ND	0.47	
BENZO(a)ANTHRACENE	UG/KG	ND	1	
BENZO(a)PYRENE	UG/KG	18	2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.83	
BENZO(g,h,i)PERYLENE	UG/KG	58	3.1	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.87	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	3.6	2.7	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	79	0.86	
PYRENE	UG/KG	30	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	75	17-160	
ANALYST	INITIALS	SW		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60527

FIELD CODE: 33-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60527

FIELD CODE: 33-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
97
101

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 6
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	006	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60527 33-15-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 85	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.92	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.4	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.96	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	68	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60528

FIELD CODE: 33-15-7

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60528

FIELD CODE: 33-15-7

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	98
Toluene-d8	99
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 7
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	007	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60528 33-15-7	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 95	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.1	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO(a) ANTHRACENE	UG/KG	ND	1	
BENZO(a) PYRENE	UG/KG	ND	2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.82	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.1	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.86	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.6	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.85	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	83	17-160	
ANALYST	INITIALS	PL		

Comments:

[0] Page 8
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	008	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60529 33-15-15	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 96	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO(a) ANTHRACENE	UG/KG	2.7	0.99	
BENZO(a) PYRENE	UG/KG	ND	2.0	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.81	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.85	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	1.7	1.3	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	11	0.84	
PYRENE	UG/KG	5.5	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	73	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G. P. Assessment

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60529

FIELD CODE: 33-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	250	ND				
Chloromethane	250	ND	103			103
Vinyl chloride	250	ND	104			104
Bromomethane	1,250	ND				
Chloroethane	250	ND				
Trichlorofluoromethane	250	ND				
1,1-Dichloroethene	250	ND	95	8	102	95
Iodomethane	1,250	ND				
Carbon disulfide	250	ND				
Methylene chloride	1,250	ND				
trans-1,2-Dichloroethene	250	ND				
1,1-Dichloroethane	250	ND	98			98
Vinyl acetate	250	ND				
2-Butanone	12,500	ND				
Chloroform	250	ND	93			93
1,1,1-Trichloroethane	250	ND				
1,2-Dichloroethane	250	ND				
Benzene	250	ND		7	109	
Carbon Tetrachloride	250	ND				
1,2-Dichloropropane	250	ND	98			98
Trichloroethene	250	ND		7	107	
Bromodichloromethane	250	ND				
cis-1,3-Dichloropropene	250	ND				
4-Methyl-2-pentanone	12,500	ND				
trans-1,3-Dichloropropene	250	ND				
Toluene	250	ND	94	7	107	94
1,1,2-Trichloroethane	250	ND				
2-Hexanone	12,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60529

FIELD CODE: 33-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	250	ND				
Tetrachloroethene	250	ND				
Chlorobenzene	250	ND	93	7	100	93
Ethylbenzene	250	ND	90			90
m & p-Xylene	250	ND				
Bromoform	250	ND	105			105
Styrene	250	ND				
o-Xylene	250	ND				
1,1,2,2-Tetrachloroethane	250	ND	108			108
trans 1,4-Dichloro-2-butene	1,250	ND				
cis 1,4-Dichloro-2-butene	1,250	ND				
1,4-Dichlorobenzene	500	ND				
1,3-Dichlorobenzene	500	ND				
1,2-Dichlorobenzene	500	ND				

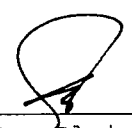
Tentatively Identified Compounds	RT	CONC (ug/kg)
3-methyl-Nonane	17.98	1,770
propyl-Cyclohexane	18.38	719
Unidentified Hydrocarbon	18.49	666
Unidentified Hydrocarbon	19.51	748
Unidentified Hydrocarbon	19.83	681
4-methyl-Decane	19.90	2,960
Unidentified Hydrocarbon	20.69	1,660
Unidentified Hydrocarbon	21.83	1,160
Unidentified Hydrocarbon	22.02	1,720
Unidentified Hydrocarbon	22.32	918

SURROGATES	% RECOVERY
Dibromofluoromethane	99
Toluene-d8	99
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60525	25-25-14	<2.5
T60529	33-15-15	<2.5
QC	Quality Control	0.495

Reporting Limit*

2.5

RPD

4

% Extraction Accuracy

100

% Instrument Accuracy

99

*NOTE: Elevated reporting limits due to sample matrix interference.

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

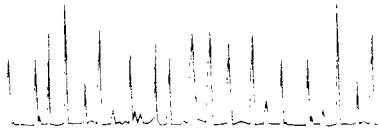
TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Engineering & Consulting, Inc.

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60584

FIELD CODE: 34-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	98	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60584

FIELD CODE: 34-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	99
Toluene-d8	98
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/86
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
-----	------------	---------------------

T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25

T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25

QC	Quality Control	0.0049
----	-----------------	--------

Reporting Limit	0.25
-----------------	------

RPD	0
-----	---

% Extraction Accuracy	94
-----------------------	----

% Instrument Accuracy	98
-----------------------	----

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 9
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	009	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60584 34-15-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO (a) ANTHRACENE	UG/KG	ND	1.1	
BENZO (a) PYRENE	UG/KG	ND	2.1	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.88	
BENZO (g, h, i) PERYLENE	UG/KG	ND	3.3	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	6.0	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	67	17-160	
ANALYST	INITIALS	PL		

Comments:

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60585

FIELD CODE: 34-15-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	115			115
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	103	6	103	103
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	109			109
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	104			104
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	103	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	110			110
Trichloroethene	25	ND		4	101	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	108	5	100	108
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60585

FIELD CODE: 34-15-11

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	107	5	101	107
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	113			113
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	115			115
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

97
96
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 22, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin G. P. Assessment

Extraction Date: 10/21/96

Analysis Date: 10/21/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60579	11-15-12	<0.25
T60585	34-15-11	<0.25
T60588	37-15-15	<0.25
QC	Quality Control	0.48

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

103

% Instrument Accuracy

96

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-22-96

DATE


TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 10
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	010	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60585 34-15-11	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 99	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.8	
ACENAPHTHYLENE	UG/KG	ND	8.6	
ANTHRACENE	UG/KG	ND	0.44	
BENZO (a) ANTHRACENE	UG/KG	ND	0.96	
BENZO (a) PYRENE	UG/KG	ND	1.9	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.79	
BENZO (g, h, i) PERYLENE	UG/KG	ND	2.9	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.83	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	5.4	
FLUORANTHENE	UG/KG	ND	2.5	
FLUORENE	UG/KG	ND	1.2	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.8	
PHENANTHRENE	UG/KG	ND	0.82	
PYRENE	UG/KG	ND	1.8	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	87	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60540

FIELD CODE: 35-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	95	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60540

FIELD CODE: 35-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

94
98
97

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/86
Date

5701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25

QC Quality Control 0.0049

Reporting Limit 0.25

RPD 8

% Extraction Accuracy 93

% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

DATE

10-21-96

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 19
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	019	Sample Date/Time:	15-OCT-96 N/S
Client Sample Id:	60540 35-15-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 89	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.1	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.88	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.0	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	60	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60675

FIELD CODE: 35-15-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	114			114
Vinyl chloride	50	ND	117			117
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	104	1	99	104
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	104			104
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	98			98
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		2	110	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	106			106
Trichloroethene	50	ND		3	108	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	102	3	109	102
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60675

FIELD CODE: 35-15-13

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	100	1	109	100
Ethylbenzene	50	496	98			98
m & p-Xylene	50	4,060				
Bromoform	50	ND	105			105
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	107			107
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

Tentatively Identified Compounds

	RT	CONC (ug/kg)
3-methyl-heptane	14.19	2,390
cis-1,3-dimethyl-cyclohexane	14.67	2,680
Ethyl-cyclohexane	16.16	3,200
Unidentified hydrocarbon	16.40	5,000
Unidentified hydrocarbon	16.60	3,780
2,6-Dimethyl-octane	18.03	2,250
Unidentified hydrocarbon	18.57	2,820
1,3,5-trimethyl-benzene	20.34	3,610
Unidentified hydrocarbon	20.77	2,930
6-methyl-dodecane	24.53	2,540

SURROGATES

% RECOVERY

Dibromofluoromethane	80
Toluene-d8	98
4-Bromofluorobenzene	104

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/94
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 88

% Instrument Accuracy 96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg/L Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 7
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	007	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60675 35-15-13	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 100	Analysis Date:	30-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	7.7	
ACENAPHTHYLENE	UG/KG	ND	8.5	
ANTHRACENE	UG/KG	ND	0.44	
BENZO(a)ANTHRACENE	UG/KG	ND	0.95	
BENZO(a)PYRENE	UG/KG	ND	1.9	
BENZO(b)FLUORANTHENE	UG/KG	11	0.78	
BENZO(g,h,i)PERYLENE	UG/KG	29	2.9	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.82	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.3	
FLUORANTHENE	UG/KG	6.8	2.5	
FLUORENE	UG/KG	ND	1.2	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.4	
NAPHTHALENE	UG/KG	ND	9.7	
PHENANTHRENE	UG/KG	130	0.81	
PYRENE	UG/KG	92	1.8	
1-METHYLNAPHTHALENE	UG/KG	620	10	
2-METHYLNAPHTHALENE	UG/KG	560	10	
2-CHLOROANTHRACENE	%REC/SURR	136	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Prep Date: 10/20/96

Analysis Date: 10/20/96

Sampling Date: 10/17/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#: T60676

FIELD CODE: 35-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	250	ND				
Chloromethane	250	ND	114			114
Vinyl chloride	250	ND	117			117
Bromomethane	1,250	ND				
Chloroethane	250	ND				
Trichlorofluoromethane	250	ND				
1,1-Dichloroethene	250	ND	104	1	99	104
Iodomethane	1,250	ND				
Carbon disulfide	250	ND				
Methylene chloride	1,250	ND				
trans-1,2-Dichloroethene	250	ND				
1,1-Dichloroethane	250	ND	104			104
Vinyl acetate	250	ND				
2-Butanone	12,500	ND				
Chloroform	250	ND	98			98
1,1,1-Trichloroethane	250	ND				
1,2-Dichloroethane	250	ND				
Benzene	250	ND		2	110	
Carbon Tetrachloride	250	ND				
1,2-Dichloropropane	250	ND	106			106
Trichloroethene	250	ND		3	108	
Bromodichloromethane	250	ND				
cis-1,3-Dichloropropene	250	ND				
4-Methyl-2-pentanone	12,500	ND				
trans-1,3-Dichloropropene	250	ND				
Toluene	250	ND	102	3	109	102
1,1,2-Trichloroethane	250	ND				
2-Hexanone	12,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Indian Basin Assessment

TA #: T60676

FIELD CODE: 35-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	250	ND				
Tetrachloroethene	250	ND				
Chlorobenzene	250	ND	100	1	109	100
Ethylbenzene	250	5,000	98			98
m & p-Xylene	250	34,600				
Bromoform	250	ND	105			105
Styrene	250	ND				
o-Xylene	250	ND				
1,1,2,2-Tetrachloroethane	250	ND	107			107
trans 1,4-Dichloro-2-butene	1,250	ND				
cis 1,4-Dichloro-2-butene	1,250	ND				
1,4-Dichlorobenzene	500	ND				
1,3-Dichlorobenzene	500	ND				
1,2-Dichlorobenzene	500	ND				

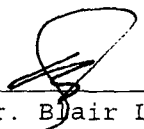
Tentatively Identified Compounds	RT	CONC (ug/kg)
2-methyl-heptane	13.95	17,600
3-methyl-heptane	14.19	20,800
cis-1,3-dimethyl-cyclohexane	14.67	25,900
ethyl-cyclohexane	16.15	23,900
4-methyl-octane	16.40	38,900
Unidentified hydrocarbon	16.60	27,500
Unidentified hydrocarbon	18.56	19,400
Unidentified hydrocarbon	18.61	19,200
1,2,4-trimethyl-benzene	20.34	22,900
Unidentified hydrocarbon	20.76	20,600

SURROGATES	% RECOVERY
Dibromofluoromethane	94
Toluene-d8	95
4-Bromofluorobenzene	103

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/94

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

TELEPHONE 794-1296

FAX 794-1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/18/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin

Extraction Date: 10/20/96

Analysis Date: 10/21/96

Sampling Date: 10/17/96

Sample Condition: I & C

Sample Received by: ML

Project Name: Indian Basin
Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60669	9-25-1	<0.25
T60670	30-15-1	<0.25
T60671	17-15-1	<0.25
T60672	24-15-1	<0.25
T60673	21-15-1	<0.25
T60674	29-25-15	<0.25
T60675	35-15-13	<0.25
T60676	35-15-15	<0.25
T60677	30-15-8	<0.25
T60679	24-15-16	<0.25
T60680	9-25-15	<0.25
T60681	9-25-17	<0.25
T60682	2-25-12	<0.25
T60683	2-25-17	<0.25
T60684	24-15-15	<0.25
T60685	14-15-1	<0.25
QC	Quality Control	0.0048

Reporting Limit

0.25

RPD

0

% Extraction Accuracy

88

% Instrument Accuracy

96

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg Hg.

TOTAL Hg QC: 0.005 mg I Hg.

Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10/21/96
DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 8
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610508
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	008	Sample Date/Time:	17-OCT-96 N/S
Client Sample Id:	60676 35-15-15	Received Date:	22-OCT-96
Batch: PAS050		Extraction Date:	24-OCT-96
Blank: A	Dry Weight %: 88	Analysis Date:	31-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	'ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	4.4	0.94	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	22	2.1	
BENZO(b)FLUORANTHENE	UG/KG	1.1	0.88	
BENZO(g,h,i)PERYLENE	UG/KG	28	3.3	
BENZO(k)FLUORANTHENE	UG/KG	8.4	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6	
FLUORANTHENE	UG/KG	10	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	250	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	1300	11	
2-METHYLNAPHTHALENE	UG/KG	1400	11	
2-CHLOROANTHRACENE	%REC/SURR	52	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60586

FIELD CODE: 36-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	98	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60586

FIELD CODE: 36-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES	% RECOVERY
Dibromofluoromethane	100
Toluene-d8	100
4-Bromofluorobenzene	98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory With Advanced Environmental Research and Analysis

[0] Page 11
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	011	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60586 36-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 84	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.2	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	31	2.3	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.93	
BENZO(g,h,i)PERYLENE	UG/KG	32	3.5	
BENZO(k)FLUORANTHENE	UG/KG	10	0.98	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.3	
FLUORANTHENE	UG/KG	ND	3.0	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.7	
NAPHTHALENE	UG/KG	ND	12	
PHENANTHRENE	UG/KG	ND	0.96	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	83	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60587

FIELD CODE: 37-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	115			115
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	103	6	103	103
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	109			109
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	104			104
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	103	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	110			110
Trichloroethene	25	ND		4	101	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	108	5	100	108
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60587

FIELD CODE: 37-15-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	107	5	101	107
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	113			113
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	115			115
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

102
94
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96

Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

806-784-1296

806-784-1297

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 12
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	012	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60587 37-15-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 86	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.0	
ACENAPHTHYLENE	UG/KG	ND	9.9	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.2	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.91	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3.4	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.95	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.94	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	81	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60588

FIELD CODE: 37-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	115			115
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	103	6	103	103
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	109			109
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	104			104
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	103	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	110			110
Trichloroethene	25	ND		4	101	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	108	5	100	108
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60588

FIELD CODE: 37-15-15

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	107	5	101	107
Ethylbenzene	25	ND	105			105
m & p-Xylene	25	ND				
Bromoform	25	ND	113			113
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	115			115
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

99
97
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96

Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
-----	------------	---------------------

T60576	2-25-1	<0.25
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T60577	6-25-1	<0.25
--------	--------	-------

T60578	11-15-1	<0.25
--------	---------	-------

T60579	11-15-12	<0.25
--------	----------	-------

T60580	12-25-1	<0.25
--------	---------	-------

T60581	20-25-1	<0.25
--------	---------	-------

T60582	20-25-12	<0.25
--------	----------	-------

T60583	31-25-1	<0.25
--------	---------	-------

T60584	34-15-1	<0.25
--------	---------	-------

T60585	34-15-11	<0.25
--------	----------	-------

T60586	36-25-1	<0.25
--------	---------	-------

T60587	37-15-1	<0.25
--------	---------	-------

T60588	37-15-15	<0.25
--------	----------	-------

T60589	40-25-1	<0.25
--------	---------	-------

T60590	41-1-1	<0.25
--------	--------	-------

T60591	42-1-1	<0.25
--------	--------	-------

T60592	43-1-1	<0.25
--------	--------	-------

QC	Quality Control	0.0049
----	-----------------	--------

Reporting Limit		0.25
-----------------	--	------

RPD		0
-----	--	---

% Extraction Accuracy		94
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% Instrument Accuracy		98
-----------------------	--	----

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 22, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Indian Basin G. P. Assessement

Extraction Date: 10/21/96

Analysis Date: 10/21/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL PCB (mg/kg)
T60579	11-15-12	<0.25
T60585	34-15-11	<0.25
T60588	37-15-15	<0.25
QC	Quality Control	0.48

Reporting Limit

0.25

RPD

2

% Extraction Accuracy

103

% Instrument Accuracy

96

METHODS: EPA SW 846-3550, 8080.

CHEMIST: MB

TOTAL PCB SPIKE: 1.0 mg/kg TOTAL PCB.

TOTAL PCB QC: 0.5 mg/L TOTAL PCB.



Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-22-96

DATE


TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 13
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	013	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60588 37-15-15	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 96	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8	
ACENAPHTHYLENE	UG/KG	ND	8.9	
ANTHRACENE	UG/KG	ND	0.46	
BENZO(a)ANTHRACENE	UG/KG	ND	0.99	
BENZO(a)PYRENE	UG/KG	ND	2.0	
BENZO(b)FLUORANTHENE	UG/KG	ND	0.81	
BENZO(g,h,i)PERYLENE	UG/KG	ND	3	
BENZO(k)FLUORANTHENE	UG/KG	ND	0.85	
CHRYSENE	UG/KG	ND	1.1	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	5.5	
FLUORANTHENE	UG/KG	ND	2.6	
FLUORENE	UG/KG	ND	1.3	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.5	
NAPHTHALENE	UG/KG	ND	10	
PHENANTHRENE	UG/KG	ND	0.84	
PYRENE	UG/KG	ND	1.9	
1-METHYLNAPHTHALENE	UG/KG	ND	10	
2-METHYLNAPHTHALENE	UG/KG	ND	10	
2-CHLOROANTHRACENE	%REC/SURR	80	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1298

ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 17, 1996

Receiving Date: 10/15/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Prep Date: 10/15/96

Analysis Date: 10/15/96

Sampling Date: 10/14/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60482

FIELD CODE: 38-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	106			106
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	104	5	79	104
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	102			102
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	96			96
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		4	87	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	102			102
Trichloroethene	25	ND		4	100	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	104	7	92	104
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60482

FIELD CODE: 38-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	101	6	92	101
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	101			101
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	102			102
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

103
99
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/17/96

Date

5701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 17, 1996
Receiving Date: 10/15/96
Sample Type: Soil
Project No: 44999
Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/16/96
Analysis Date: 10/16/96
Sampling Date: 10/14/96
Sample Condition: Intact & Cool
Sample Received by: ML
Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60469	1-15-1	<0.25
T60470	1-15-11	<0.25
T60471	3-15-1	<0.25
T60472	3-15-7	<0.25
T60473	4-1-1	<0.25
T60474	5-1-1	<0.25
T60475	10-15-11	<0.25
T60476	10-15-1	<0.25
T60477	18-1-1	<0.25
T60478	19-25-1	<0.25
T60479	19-25-11	<0.25
T60480	26-1-1	<0.25
T60481	32-1-1	<0.25
T60482	38-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		2
% Extraction Accuracy		91
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.
CHEMIST: CB
TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-17-96

DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 14
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610407
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	014	Sample Date/Time:	14-OCT-96 N/S
Client Sample Id:	60482 38-1-1	Received Date:	16-OCT-96
Batch: PAS046		Extraction Date:	19-OCT-96
Blank: B	Dry Weight %: 89	Analysis Date:	28-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.7	
ACENAPHTHYLENE	UG/KG	ND	9.6	
ANTHRACENE	UG/KG	ND	0.49	
BENZO (a) ANTHRACENE	UG/KG	ND	1.1	
BENZO (a) PYRENE	UG/KG	16	2.1	
BENZO (b) FLUORANTHENE	UG/KG	ND	0.88	
BENZO (g,h,i) PERYLENE	UG/KG	ND	3.3	
BENZO (k) FLUORANTHENE	UG/KG	ND	0.92	
CHRYSENE	UG/KG	ND	1.2	
DIBENZO (a,h) ANTHRACENE	UG/KG	34	6.0	
FLUORANTHENE	UG/KG	ND	2.8	
FLUORENE	UG/KG	ND	1.3	
INDENO (1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.91	
PYRENE	UG/KG	ND	2	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	47	17-160	
ANALYST	INITIALS	SW		

Comments:

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 18, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin
Assessment

TA#: T60530

FIELD CODE: 39-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	111			111
Vinyl chloride	25	ND	113			113
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	110	0	90	110
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	111			111
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	103			103
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		3	100	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	109			109
Trichloroethene	25	ND		3	99	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	106	2	98	106
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60530

FIELD CODE: 39-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	103	4	99	103
Ethylbenzene	25	ND	104			104
m & p-Xylene	25	ND				
Bromoform	25	ND	108			108
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

98
99
98

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-18-96

Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/16/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Extraction Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/15/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60521	18-1-13	<0.25
T60522	18-1-13.5W	<0.25
T60523	18-1-13.5D	<0.25
T60524	25-25-1	<0.25
T60525	25-25-14	<0.25
T60527	33-15-1	<0.25
T60528	33-15-7	<0.25
T60529	33-15-15	<0.25
T60530	39-25-1	<0.25
T60531	25-25-15 (Cap)	<0.25
T60532	8-1-1	<0.25
T60533	13-1-1	<0.25
T60534	16-1-1	<0.25
T60535	22-1-1	<0.25
T60536	23-25-1	<0.25
T60537	27-1-1	<0.25
T60538	28-1-1	<0.25
T60539	29-25-1	<0.25
T60540	35-15-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		8
% Extraction Accuracy		93
% Instrument Accuracy		98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.

BS

10-21-96

Director, Dr. Blair Leftwich

DATE

Director, Dr. Bruce McDonnell

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 9
Date 11-Dec-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610444
 Client: TRACE ANALYSIS, INC.
 Project Number: N/S
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	009	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60530 39-25-1	Received Date:	17-OCT-96
Batch: PAS047		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 86	Analysis Date:	29-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	120	9.0	
ACENAPHTHYLENE	UG/KG	ND	9.9	
ANTHRACENE	UG/KG	7.1	0.51	
BENZO (a) ANTHRACENE	UG/KG	25	1.1	
BENZO (a) PYRENE	UG/KG	38	2.2	
BENZO (b) FLUORANTHENE	UG/KG	28	0.91	
BENZO (g, h, i) PERYLENE	UG/KG	60	3.4	
BENZO (k) FLUORANTHENE	UG/KG	14	0.95	
CHRYSENE	UG/KG	30	1.3	
DIBENZO (a, h) ANTHRACENE	UG/KG	19	6.2	
FLUORANTHENE	UG/KG	110	2.9	
FLUORENE	UG/KG	3	1.4	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	31	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	42	0.94	
PYRENE	UG/KG	100	2.1	
1-METHYLNAPHTHALENE	UG/KG	49	12	
2-METHYLNAPHTHALENE	UG/KG	21	12	
2-CHLOROANTHRACENE	%REC/SURR	95	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60589

FIELD CODE: 40-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	111			111
Vinyl chloride	50	ND	115			115
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	103	6	103	103
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	109			109
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	104			104
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		4	103	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	110			110
Trichloroethene	50	ND		4	101	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	108	5	100	108
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60589

FIELD CODE: 40-25-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	107	5	101	107
Ethylbenzene	50	ND	105			105
m & p-Xylene	50	ND				
Bromoform	50	ND	113			113
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	115			115
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	104
Toluene-d8	95
4-Bromofluorobenzene	100

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/86
Date

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

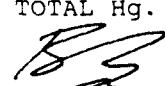
Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98
METHODS:	EPA SW 846-3051, 7471.	
CHEMIST:	CB	
TOTAL Hg SPIKE:	2.50 mg/kg TOTAL Hg.	
TOTAL Hg QC:	0.005 mg/L TOTAL Hg.	


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 14
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	014	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60589 40-25-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 87	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	10	8.9	
ACENAPHTHYLENE	UG/KG	ND	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a)ANTHRACENE	UG/KG	ND	1.1	
BENZO(a)PYRENE	UG/KG	ND	2.2	
BENZO(b)FLUORANTHENE	UG/KG	3	0.90	
BENZO(g,h,i)PERYLENE	UG/KG	4	3.3	
BENZO(k)FLUORANTHENE	UG/KG	2	0.94	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h)ANTHRACENE	UG/KG	ND	6.1	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd)PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.93	
PYRENE	UG/KG	3	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	70	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 18, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/17/96

Analysis Date: 10/17/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#: T60590

FIELD CODE: 41-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	25	ND				
Chloromethane	25	ND	103			103
Vinyl chloride	25	ND	104			104
Bromomethane	125	ND				
Chloroethane	25	ND				
Trichlorofluoromethane	25	ND				
1,1-Dichloroethene	25	ND	98	8	102	95
Iodomethane	125	ND				
Carbon disulfide	25	ND				
Methylene chloride	125	ND				
trans-1,2-Dichloroethene	25	ND				
1,1-Dichloroethane	25	ND	98			98
Vinyl acetate	25	ND				
2-Butanone	1,250	ND				
Chloroform	25	ND	93			93
1,1,1-Trichloroethane	25	ND				
1,2-Dichloroethane	25	ND				
Benzene	25	ND		7	109	
Carbon Tetrachloride	25	ND				
1,2-Dichloropropane	25	ND	98			98
Trichloroethene	25	ND		7	107	
Bromodichloromethane	25	ND				
cis-1,3-Dichloropropene	25	ND				
4-Methyl-2-pentanone	1,250	ND				
trans-1,3-Dichloropropene	25	ND				
Toluene	25	ND	94	7	107	94
1,1,2-Trichloroethane	25	ND				
2-Hexanone	1,250	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60590

FIELD CODE: 41-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	25	ND				
Tetrachloroethene	25	ND				
Chlorobenzene	25	ND	93	7	100	93
Ethylbenzene	25	ND	90			90
m & p-Xylene	25	ND				
Bromoform	25	ND	105			105
Styrene	25	ND				
o-Xylene	25	ND				
1,1,2,2-Tetrachloroethane	25	ND	108			108
trans 1,4-Dichloro-2-butene	125	ND				
cis 1,4-Dichloro-2-butene	125	ND				
1,4-Dichlorobenzene	50	ND				
1,3-Dichlorobenzene	50	ND				
1,2-Dichlorobenzene	50	ND				

SURROGATES

% RECOVERY

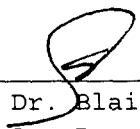
Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

96
99
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/18/66
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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FAX 806•794•1296

ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98
METHODS: EPA SW 846-3051, 7471.		
CHEMIST: CB		
TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.		
TOTAL Hg QC: 0.005 mg/L TOTAL Hg.		


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 15
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	015	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60590 41-1-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 85	Analysis Date:	03-NOV-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.2	
BENZO(b) FLUORANTHENE	UG/KG	ND	0.92	
BENZO(g,h,i) PERYLENE	UG/KG	ND	3.4	
BENZO(k) FLUORANTHENE	UG/KG	ND	0.96	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	ND	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	71	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60591

FIELD CODE: 42-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	111			111
Vinyl chloride	50	ND	115			115
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	103	6	103	103
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	109			109
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	104			104
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		4	103	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	110			110
Trichloroethene	50	ND		4	101	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	108	5	100	108
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60591

FIELD CODE: 42-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	107	5	101	107
Ethylbenzene	50	ND	105			105
m & p-Xylene	50	ND				
Bromoform	50	ND	113			113
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	115			115
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

SURROGATES

% RECOVERY

Dibromofluoromethane	102
Toluene-d8	97
4-Bromofluorobenzene	99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/86
Date

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25
QC	Quality Control	0.0049
Reporting Limit		0.25
RPD		0
% Extraction Accuracy		94
% Instrument Accuracy		98
METHODS:	EPA SW 846-3051, 7471.	
CHEMIST:	CB	
TOTAL Hg SPIKE:	2.50 mg/kg TOTAL Hg.	
TOTAL Hg QC:	0.005 mg/L TOTAL Hg.	



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10-21-96

DATE

TRACE ANALYSIS, INC.

Advanced Environmental Research and Analysis

[0] Page 16
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	016	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60591 42-1-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 87	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	8.9	
ACENAPHTHYLENE	UG/KG	ND	9.8	
ANTHRACENE	UG/KG	ND	0.51	
BENZO(a) ANTHRACENE	UG/KG	ND	1.1	
BENZO(a) PYRENE	UG/KG	ND	2.2	
BENZO(b) FLUORANTHENE	UG/KG	1	0.90	
BENZO(g,h,i) PERYLENE	UG/KG	4	3.3	
BENZO(k) FLUORANTHENE	UG/KG	2	0.94	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO(a,h) ANTHRACENE	UG/KG	ND	6.1	
FLUORANTHENE	UG/KG	ND	2.9	
FLUORENE	UG/KG	2	1.4	
INDENO(1,2,3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.93	
PYRENE	UG/KG	7	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	11	
2-METHYLNAPHTHALENE	UG/KG	ND	11	
2-CHLOROANTHRACENE	%REC/SURR	77	17-160	
ANALYST	INITIALS	PL		

Comments:

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR

MARATHON OIL COMPANY

Attention: Bob Menzie

P. O. Box 552

Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin

Prep Date: 10/19/96

Analysis Date: 10/19/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

Assessment

TA#: T60592

FIELD CODE: 43-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dichlorodifluoromethane	50	ND				
Chloromethane	50	ND	111			111
Vinyl chloride	50	ND	115			115
Bromomethane	250	ND				
Chloroethane	50	ND				
Trichlorofluoromethane	50	ND				
1,1-Dichloroethene	50	ND	103	6	103	103
Iodomethane	250	ND				
Carbon disulfide	50	ND				
Methylene chloride	250	ND				
trans-1,2-Dichloroethene	50	ND				
1,1-Dichloroethane	50	ND	109			109
Vinyl acetate	50	ND				
2-Butanone	2,500	ND				
Chloroform	50	ND	104			104
1,1,1-Trichloroethane	50	ND				
1,2-Dichloroethane	50	ND				
Benzene	50	ND		4	103	
Carbon Tetrachloride	50	ND				
1,2-Dichloropropane	50	ND	110			110
Trichloroethene	50	ND		4	101	
Bromodichloromethane	50	ND				
cis-1,3-Dichloropropene	50	ND				
4-Methyl-2-pentanone	2,500	ND				
trans-1,3-Dichloropropene	50	ND				
Toluene	50	ND	108	5	100	108
1,1,2-Trichloroethane	50	ND				
2-Hexanone	2,500	ND				

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

MARATHON OIL COMPANY

PAGE 2 of 2

Project No: 44999

Project: Ind. Basin G.P. Assessment

TA #: T60592

FIELD CODE: 43-1-1

8240 Compounds	Reporting Limit	Concentration (ug/kg)	QC	RPD	%EA	%IA
Dibromochloromethane	50	ND				
Tetrachloroethene	50	ND				
Chlorobenzene	50	ND	107	5	101	107
Ethylbenzene	50	ND	105			105
m & p-Xylene	50	ND				
Bromoform	50	ND	113			113
Styrene	50	ND				
o-Xylene	50	ND				
1,1,2,2-Tetrachloroethane	50	ND	115			115
trans 1,4-Dichloro-2-butene	250	ND				
cis 1,4-Dichloro-2-butene	250	ND				
1,4-Dichlorobenzene	100	ND				
1,3-Dichlorobenzene	100	ND				
1,2-Dichlorobenzene	100	ND				

SURROGATES

% RECOVERY

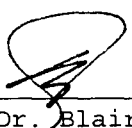
Dibromofluoromethane
Toluene-d8
4-Bromofluorobenzene

105
94
99

ND = Not Detected

METHODS: EPA SW 846-5030; EPA 8260.

CHEMIST: RP



Director, Dr. Blair Leftwich
Director, Dr. Bruce McDonell

10/21/96
Date

6701 Aberdeen Avenue

Lubbock, Texas 79424

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ANALYTICAL RESULTS FOR
MARATHON OIL COMPANY
Attention: Bob Menzie
P. O. Box 552
Midland, TX 79702

October 21, 1996

Receiving Date: 10/17/96

Sample Type: Soil

Project No: 44999

Project Location: Ind. Basin G.P. Assessment

Extraction Date: 10/18/96

Analysis Date: 10/18/96

Sampling Date: 10/16/96

Sample Condition: Intact & Cool

Sample Received by: ML

Project Name: Ind. Basin

TA#	FIELD CODE	TOTAL Hg (mg/kg)
T60576	2-25-1	<0.25
T60577	6-25-1	<0.25
T60578	11-15-1	<0.25
T60579	11-15-12	<0.25
T60580	12-25-1	<0.25
T60581	20-25-1	<0.25
T60582	20-25-12	<0.25
T60583	31-25-1	<0.25
T60584	34-15-1	<0.25
T60585	34-15-11	<0.25
T60586	36-25-1	<0.25
T60587	37-15-1	<0.25
T60588	37-15-15	<0.25
T60589	40-25-1	<0.25
T60590	41-1-1	<0.25
T60591	42-1-1	<0.25
T60592	43-1-1	<0.25

QC Quality Control 0.0049

Reporting Limit 0.25

RPD 0

% Extraction Accuracy 94

% Instrument Accuracy 98

METHODS: EPA SW 846-3051, 7471.

CHEMIST: CB

TOTAL Hg SPIKE: 2.50 mg/kg TOTAL Hg.

TOTAL Hg QC: 0.005 mg/L TOTAL Hg.


Director, Dr. Blair Leftwich

Director, Dr. Bruce McDonell

10-21-96
DATE

TRACE ANALYSIS, INC.

A Laboratory for Advanced Environmental Research and Analysis

[0] Page 17
Date 15-Nov-96

"FINAL REPORT FORMAT - SINGLE"

Accession: 610460
 Client: TRACE ANALYSIS, INC.
 Project Number: 44999
 Project Name: INDIAN BASIN ASSESSMENT
 Project Location: INDIAN BASIN
 Test: POLYNUCLEAR AROMATICS BY 8310
 Analysis Method: 8310/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Extraction Method: 3550/Test Methods for Evaluating Solid and Haz Waste, SW-846, 3rd Ed.
 Matrix: SOIL
 QC Level: IIMS

Lab Id:	017	Sample Date/Time:	16-OCT-96 N/S
Client Sample Id:	60592 43-1-1	Received Date:	18-OCT-96
Batch: PAS048		Extraction Date:	21-OCT-96
Blank: A	Dry Weight %: 85	Analysis Date:	26-OCT-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
ACENAPHTHENE	UG/KG	ND	9.1	
ACENAPHTHYLENE	UG/KG	ND	10	
ANTHRACENE	UG/KG	ND	0.52	
BENZO (a) ANTHRACENE	UG/KG	2	1.1	
BENZO (a) PYRENE	UG/KG	ND	2.2	
BENZO (b) FLUORANTHENE	UG/KG	11	0.92	
BENZO (g, h, i) PERYLENE	UG/KG	5	3.4	
BENZO (k) FLUORANTHENE	UG/KG	4	0.96	
CHRYSENE	UG/KG	ND	1.3	
DIBENZO (a, h) ANTHRACENE	UG/KG	ND	6.2	
FLUORANTHENE	UG/KG	4	2.9	
FLUORENE	UG/KG	ND	1.4	
INDENO (1, 2, 3-cd) PYRENE	UG/KG	ND	1.6	
NAPHTHALENE	UG/KG	ND	11	
PHENANTHRENE	UG/KG	ND	0.95	
PYRENE	UG/KG	17	2.1	
1-METHYLNAPHTHALENE	UG/KG	ND	12	
2-METHYLNAPHTHALENE	UG/KG	ND	12	
2-CHLOROANTHRACENE	%REC/SURR	61	17-160	
ANALYST	INITIALS	PL		

Comments:

