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Winston-Salem
Regional Office

UST Closure and Site Investigation Report

Red Horse Truck Stop
1342 Trollingwood-Hawfield Road
Mebane, North Carolina
Unocal Station #9787-214

Prepared for
Unocal Corporation

August 10, 1992

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Senior Hydrogeologist

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High Point, North Carolina 27260
(919) 883-7505

Table of Contents

1. Introduction 1

2. Preparation for UST Removal 1

3. UST Removal and Disposal 3

4. Additional Soil Removal 5

5. Field Observations and Screening 5
   5.1 Excavation Areas 1 and 2 6
   5.2 Excavation Areas 6 and 7 7

6. Soil Sampling 7
   6.1 Soil Sample Collection Procedure 7
   6.2 Soil Sample Analytical Methods and Results 9

7. Summary 12

Appendix A: Site Investigation Report for UST Closure
Appendix B: Transportation and Disposal Certifications
Appendix C: Chain of Custody and Laboratory Analysis of Samples

1. Introduction

ENSCI Corporation was contracted by Unocal Corporation to provide oversight for the removal of underground storage tanks (USTs). The tanks were located at the former Unocal station, 1342 Trollingwood-Hawfield Road in Mebane, North Carolina (currently the Red Horse Truck Stop, see **Figure 1**). James Contracting Company, Inc. of Marietta, Georgia performed all excavation and UST removal activities.

ENSCI was originally contracted to oversee removal of seven USTs, but after mobilizing to the site, more tanks were found. A total of 11 USTs were removed from the site. Site work was performed June 10 through June 23, 1992.

This closure/site assessment report will satisfy State and federal requirements under 40 CFR 280.72 and 15A NCAC 2N .0803. In connection with these requirements, a Site Investigation Report for UST Closure (form GW/UST-2) is included as **Appendix A.**

2. Preparation for UST Removal

Prior to removal of the USTs, all necessary notifications were filed with state and local authorities.

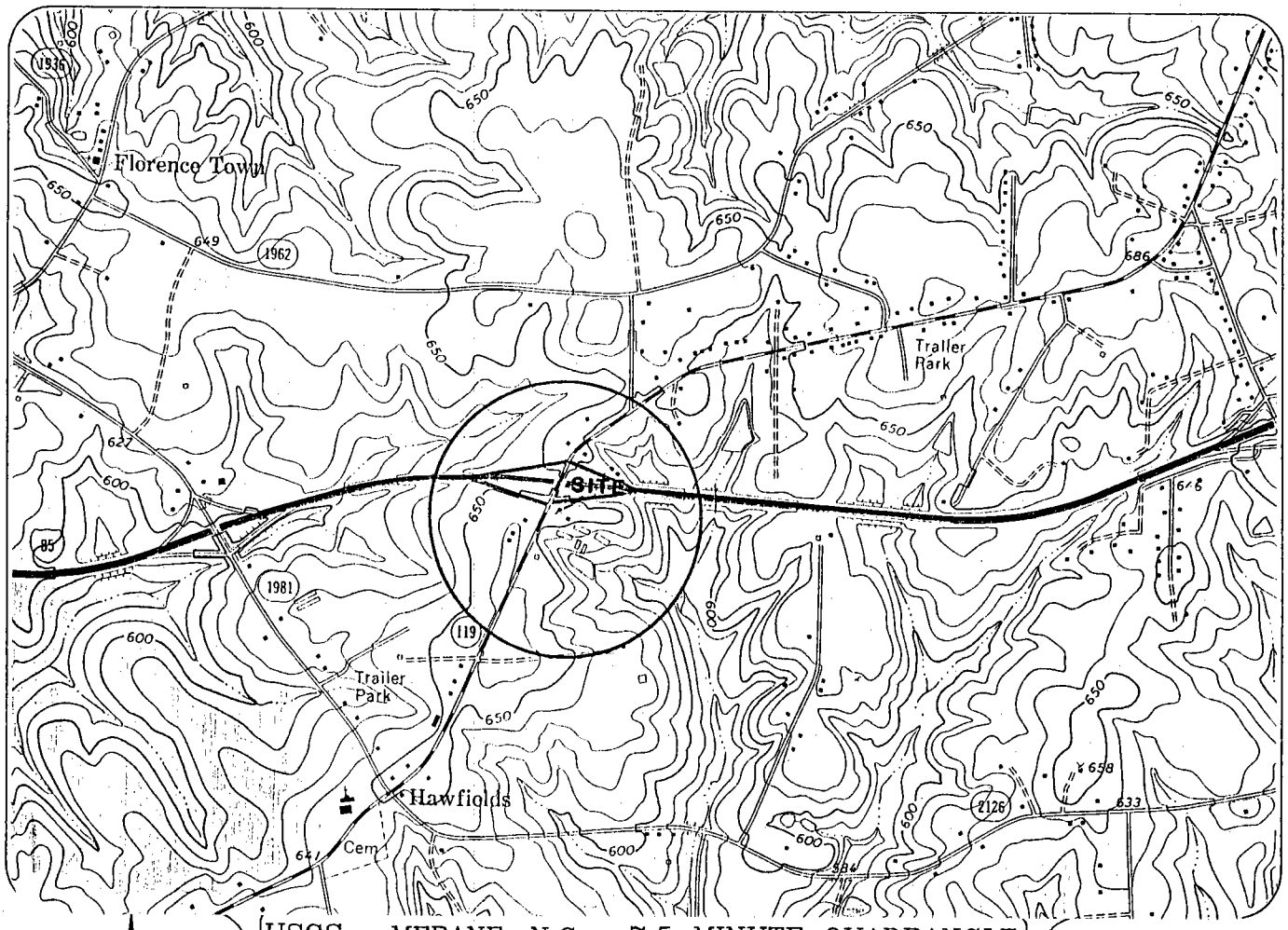
Soil above each UST was removed with a trackhoe until the point at which the top of the tank was exposed. At this point, all lines leading to each tank except the vent line were disconnected and removed.

Residual liquids which remained in the tanks were pumped out using a vacuum truck. A total of 750 gallons of residual liquid (a non-regulated petroleum and water mixture) were transported to an approved disposal facility. No residuals were pumped from UST #10, a used oil tank. Transporter's manifests for this material are included as **Appendix B.**

For safety, the internal atmosphere of each UST was tested with a lower explosive level (LEL) meter before additional excavation. With the exception of four gasoline tanks, the vapors inside each UST were measured to be below 10 percent of the lower explosive limit. The gasoline tanks were purged using dry ice in accordance with the procedures outlined in American Petroleum Institute (API) publication 1604 until they met this criterion. Following these activities, it was considered safe to continue with tank removal.

TOPOGRAPHICAL MAP

UNOCAL
MEBANE, NORTH CAROLINA



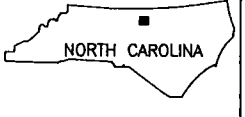
USGS MEBANE, N.C. 7.5 MINUTE QUADRANGLE

DATE OF MAP: 1969 PHOTOREVISION DATE: N/A

PHOTOREVISION DENOTED IN PURPLE (COLOR MAPS ONLY)

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

SCALE 1:24000



QUADRANGLE LOCATION

ROAD CLASSIFICATION

HEAVY-DUTY
MEDIUM-DUTY
LIGHT-DUTY
FOOT TRAIL
WGN & JEEP TRACK
UNIMPROVED ROAD

U.S. ROUTE
STATE ROUTE
INTERSTATE ROUTE

ENSCI® CORPORATION
HIGH POINT, NORTH CAROLINA

FOR: UNOCAL	CITY: MEBANE
	STATE: NORTH CAROLINA
TITLE: TOPOGRAPHIC MAP	
SCALE: 1"=2000'	DWN BY: DJ
	DWG NAME: USGS-1
FIGURE: 1	
DATE: 8/11/92	CK BY: HH
JOB #: S92052	

3. UST Removal and Disposal

The 11 USTs and four pump islands which were removed from the former Unocal site were located in seven separate excavations (see **Figure 2**). Excavation of each tank proceeded to the depth of the bottom of the tank. At that point, each UST was removed with the trackhoe and cleaned of debris. Each tank was inspected by ENSCI personnel for any indications of a release (see Table 1).

Table 1: UST Information

UST Designation	Volume (gallons)	Present/Former Contents	Tank Condition
1	4,000	gasoline	minor corrosion; no visible holes
2	4,000	gasoline	minor corrosion; no visible holes
3	4,000	gasoline	minor corrosion; one 1-inch hole
4	4,000	gasoline	minor corrosion; no visible holes
5	10,000	diesel	minor corrosion; no visible holes
6	10,000	diesel	minor corrosion; no visible holes
7	10,000	diesel	minor corrosion; no visible holes
8	10,000	diesel	minor corrosion; no visible holes
9	560	kerosene	major corrosion; holes up to 2 inches
10	270	used oil	minor corrosion; no visible holes
11	270	#2 fuel oil	minor corrosion; no visible holes

Following inspection, the tanks were labelled in preparation for transporting them to the disposal site. The Certificate of Disposal is included as Appendix B.

Lines leading to and from the USTs as well as the four pump islands illustrated in Figure 2 were also removed.

AnalytiKEM

I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

Cherry Hill, NJ		Rock Hill, SC		Houston Analytical, Tx	
State	Cert #	State	Cert #	State	Cert #
Arkansas	*	S. Carolina	46067	N. Dakota	R-006
Connecticut	PH-0715	N. Carolina	316	Oklahoma	8403
Florida	880985G	New Jersey	79795	Texas Water Commission *	
Massachusetts	NJ117			Louisiana *	
New Jersey	04012				
New York	10815				
N. Carolina	258				
N. Dakota	R-038				
Pennsylvania	68366				
S. Carolina	94004				
Tennessee	02908				
Vermont	*				

* No certification numbers are issued for these states.

AnalytiKEM

II. Definition of Terms

Term	Definition
D	Detected; result must be greater than zero.
DI	Deionized Water
J	Compound was detected at levels below the practical quantitation limit. The level reported is approximate.
MS/MSD	Matrix Spike/Matrix Spike Duplicate.
NA	Analysis not applicable to the sample matrix.
ND	Not Detected
NR	Not Requested
NTU	Nephelometric Turbidity Units
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
U	Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound.
ppb	Parts-per-billion; may be converted to ppm by dividing by 1,000.
ppm	Parts-per-million; may be converted to ppb by multiplying by 1,000.
ug/l	Micrograms of constituent per liter of sample; equivalent to parts-per-billion.
ug/kg	Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion.
ug/kg dw	Micrograms of constituent per kilogram of sample reported on a dry weight basis.
CCC	Calibration Check Compound; used to verify the precision of a GC/MS calibration curve.
SPCC	System Performance Check Compound; used to verify the correct operation of a GC/MS instrument.
PQL	Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated.
B	Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination.

Site Investigation Report For Permanent Closure or Change-In-Service of U.S.T.

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DEM Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (BLUE) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number _____
Date Received _____

INSTRUCTIONS

Please complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)

Street Address

County

City State Zip Code

Area Code Telephone Number

II. Location of Tank(s)

Facility Name or Company

Facility ID # (if available)

Street Address or State Road

County City Zip Code

Area Code Telephone Number

III. Contact Person

Name Job Title Telephone Number ( )

Closure Contractor _____ (Name) (Address)

Lab _____ (Name) (Address)

IV. U.S.T. Information / V. Excavation Condition / VI. Additional Information Required

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water In Excavation		Free Product		Notable Odor or Visible Soil Contamination	
				Yes	No	Yes	No	Yes	No
7	10,000	27' X 8'	Diesel		X		X		X
8	10,000	"	"		X		X		X
9	560	92" X 42"	Kerosene		X		X	X	
10	270	36" X 60"	Used Oil		X		X		X
11	270	"	#2 Fuel Oil		X		X		X

See reverse side of blue copy (owner's copy) for additional information required by N.C. - DEM in the written report and sketch.

VII. Check List

Check the activities completed.

- ☐ Contact local fire marshall
- ☐ Notify DEM Regional Office before abandonment.
- ☐ Drain & flush piping into tank.
- ☐ Remove all product and residuals from tank
- ☐ Excavate down to tank.
- ☐ Clean and inspect tank.
- ☐ Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- ☐ Cap or plug all lines except the vent and fill lines.
- ☐ Purge tank of all product & flammable vapors.
- ☐ Cut one or more large holes in the tanks.
- ☐ Backfill the area.

Date Tank(s) Permanently closed: _____
Date of Change-In-Service: _____

ABANDONMENT IN PLACE
- ☐ Fill tank until material overflows tank opening;
- ☐ Plug or cap all openings;.
- ☐ Disconnect and cap or remove vent line
- ☐ Solid inert material used - please specify: _____

REMOVAL
- ☐ Create vent hole
- ☐ Label tank
- ☐ Dispose of tank in approved manner

Final tank destination: _____

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative	Signature	Date Signed
Chris Boggs, Staff Geologist/ENSCI	Chris Boggs	8/10/92

Appendix B

Transportation and Disposal Certifications

Please print or type.
Form designed for use on elite (12-pitch) typewriter.

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of

3. Generator's Name and Mailing Address
Red Horse Ent., Inc. (DBA Red Horse 76)
1342 Trollingwood-Hawfields Rd-
Mebane, N.C. 27302

4. Generator's Phone (919) 563-4781

5. Transporter 1 Company Name
ENSCI Corp

6. US EPA ID Number
N.C.D.9.8.6.1.7.1.0.3.1

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
ENSCI CORP
1108 OLD THOMASVILLE RD.
HIGH POINT, NC 27260

10. US EPA ID Number
N.C.D.9.8.6.1.7.1.0.3.1

A. Transporter's Phone 919-883-7505
B. Transporter's Phone
C. Facility's Phone 919-883-7505

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Petroleum Contaminated Water None None	001	DM	0050.0	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above
S02

15. Special Handling Instructions and Additional Information
Job# 592052

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: R.A. Jernigan
Signature: R.A. Jernigan
Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Michael M. Cook
Signature: Michael M. Cook
Month 06 Day 09 Year 92

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Russell Ridlon
Signature: [signature]
Month 6 Day 9 Year 92

GENERATOR

TRANSPORTER

FACILITY

12 BLS C6 Rev 11/89

TRANSPORTER #1

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of

3. Generator's Name and Mailing Address
Unical.
1342 Trollingwood - Hawfield Rd.
Mebane N.C.

4. Generator's Phone ( )

5. Transporter 1 Company Name
ENSCI Corp

6. US EPA ID Number
NCD.9.8.6.1.7.1.0.3.1

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
~~Environmental Compliance Corp~~
~~617 Waughtown St Bldg 400~~
~~Winston - Salem 27107~~

10. US EPA ID Number
ENSCI Corp
110 Bold Thomasville Rd
High Point NC.
NCD.9.8.6.1.7.1.0.3.1

A. Transporter's Phone 919-883-7505

B. Transporter's Phone

C. Facility's Phone 919-750-0156

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Petrolium Contaminated Water None None	001	DM	0025.0	G
b.				
c.				
d.				

D. Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above
S02

15. Special Handling Instructions and Additional Information
Job # S92052
PO#
Emergency contact # Russ Ridlon 919-883-7505

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name | Signature | Month | Day | Year

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Michael M. Cook | Signature: Michael M Cook | Month 06 | Day 23 | Year 92

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: Chris Boggs | Signature: [signature] | Month | Day | Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Russell Ridlon | Signature: [signature] | Month 06 | Day 23 | Year 92

GENERATOR

TRANSPORTER

FACILITY

12-BLS-C5 Rev. 11/89

TRANSPORTER #1

Safeway Tank Disposal, Inc.

CERTIFICATE OF TANK DISPOSAL

Customer

James Contracting
P.O. Box 6212
Marietta, Ga. 30065

Date June 26, 1992

Transported by: E.R. Ellis + Sanders Ent.

Tank Disposal Number	Size	Weight	Product	Residue Amount	Origin
5885	10,000gal	8335#	D. fuel	275gal	Red Horse Truck Stop
5886	10,000	8335	D. fuel	225	Swallingford Rd. Mebane, N.C.
5889	10,000	8335	D. fuel	205	
5893	10,000	8335	D. fuel	195	
5894	4,000	3640	Gas	45	
5895	4,000	3640	Gas	65	
5897	4,000	3640	Gas	50	
5898	4,000	3640	Gas	40	
5938	550	450	Gas	5	
5948	550	450	Fuel Oil	35	
5949	550	450	Waste Oil	43	
			Total Residue	1183gal	

Tanks were disposed in accordance with APR 1604, 1987 Removal and Disposal of Used Underground Petroleum Storage Tanks. Residue was disposed in accordance with U.S. EPA Regulations by licensed subcontractor. Lead free scrap steel was recycled by United Metal Recyclers **on** 6/16, 19, 25/92.

Sharon Young
SAFEWAY TANK DISPOSAL, INC.

Cherokee Sanford Group, Inc.

INVOICE NUMBER S036723

Remit To: Cherokee Sanford Group, Inc. P.O. Box 75819 Charlotte, NC 28275

BILLING INQUIRIES: (919) 774-5314 800-277-2710

SOLD TO
UNOCAL REFINING & MARKETING
UNOCAL CORPORATION
P. O. BOX 4147
ATLANTA GA 30302

SHIP TO
Unocal Refining
Mebane, NC

Lot:

INVOICE DATE	CUSTOMER ORDER NO.	ACCOUNT NUMBER	SALES AREA	OUR ORDER NUMBER	SHIPPED VIA
6/22/92		355200	10000	000000	

Delivery Ticket No.	DATE SHIPPED	PRODUCT CODE	QUANTITY	DESCRIPTION	UNIT PRICE	EXTENSION
000000	0/00/00	00997	3000.00	RECYCLED SOIL	[redacted]	[redacted]
000000	0/00/00	00997	314.17	RECYCLED SOIL		
	** DEBIT MEMO ** 22		** DEBIT MEMO ** RECYCLED SOIL (NC)	** DEBIT MEMO **	** DEBIT MEMO **	

LATE PAYMENT CHARGE OF 1½% PER MONTH (18% PER ANNUM) APPLICABLE ON PAST DUE ACCOUNTS.

TERMS: TAKE DISCOUNT OF $ IF PAID ON OR BEFORE 7/22/92 NET 45 30

SALESREP:

SUB TOTAL	[redacted]
COUNTY TAX	
STATE TAX	
TOTAL DUE	[redacted]

PLEASE RETURN THIS PORTION WITH YOUR PAYMENT

ACCNT #	CUSTOMER NAME	DATE	INVOICE	AMOUNT DUE
355200	UNOCAL REFINING & MARKETING	6/22/92	S036723	[redacted]

Remit To: Cherokee Sanford Group, Inc. P.O. Box 75819 Charlotte, NC 28275

TERMS: TAKE DISCOUNT OF $ IF PAID ON OR BEFORE 7/22/92 NET 45 30

TRIPLICATE

Appendix C

Chain of Custody Laboratory Analysis of Samples

AnalytiKEM *An American NuKEM Company*

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82354

June 30, 1992

Prepared for:
ENSCI
1108 Thomasville Road
High Point, NCJ 27260

Attention: Chris Boggs

Project: Unocal Mebrane

Reviewed &
Approved by: _____

Name: Carmine M. Fioriglio

Title: QA/QC Manager

AnalytiKEM

TABLE OF CONTENTS

		Page
I.	Certification	1
II.	Definition of Terms	2
III.	Sample Designations	3
IV.	Methodology	4
V.	Analytical Results	5 - 6
VI.	Quality Control Data	7 - 9

5.2 Excavation Areas 6 and 7

No field screening was performed in Excavation Areas 6 and 7. Because of their proximity to the building foundation and other structures, it was clear that any excavation in addition to that necessary to remove the tanks would not be possible. Therefore, field screening was considered unnecessary.

According to facility personnel, the water supply well which is illustrated in Figures 2 and 3 is not used for drinking water. Water from the well is primarily used for washing vehicles.

6. Soil Sampling

6.1 Soil Sample Collection Procedure

As part of the limited site assessment required under 40 CFR 280.72 and 15A NCAC .0803, samples were collected beneath the area occupied by each tank. Additional samples were collected beneath the corners of some of the excavations, as discussed below. **Figure 3** illustrates all sample locations.

A stainless steel hand auger was used to collect all samples. When sampling equipment was reused, ENSCI personnel used the following procedure in order to prevent cross-contamination:

1) Wash with nonphosphate detergent and tap water; brush to remove particulate matter.
2) Rinse with tap water.
3) Rinse with 10% nitric acid solution.
4) Rinse with deionized water.
5) Rinse with pesticide-grade isopropyl alcohol.
6) Rinse with deionized water.
7) Air dry as long as possible.

As an additional measure in preventing cross-contamination, latex gloves were worn by the sampling technician during these activities. Gloves were changed between samples.

All samples were packed in ice for cooling to 4°C and shipped to AnalytiKEM, Inc. in Rock Hill, South Carolina for analysis. Chain of custody forms and analytical reports are included in **Appendix C**. Results are discussed in the sections that follow.

6.2 Soil Sample Analytical Methods and Results

Soil samples collected from the vicinity of gasoline tanks or pumps were analyzed for total petroleum hydrocarbons using EPA Method 5030 in accordance with NCDEHNR guidelines. Table 3 illustrates analytical results for samples analyzed using EPA Method 5030. The samples with a UST prefix were collected beneath the USTs, as required by NCDEHNR guidelines. Samples with an EX prefix were collected in areas where petroleum hydrocarbon staining or OVA levels indicated potential petroleum hydrocarbons. Copies of the original laboratory reports are included as Appendix C.

Table 3, Results of Soil Analysis via EPA Method 5030
(Total Petroleum Hydrocarbons in parts per million)

UST/Location	Sample	EPA Method 5030
UST #1 Excavation 1	UST 1-A	<10 ppm
	UST 1-B	<10 ppm
	UST 1-C	14 ppm
UST #2 Excavation 1	UST 2-A	<10 ppm
	UST 2-B	<10 ppm
	UST 2-C	7,100 ppm
UST #3 Excavation 1	UST 3-A	<10 ppm
	UST 3-B	<10 ppm
	UST 3-C	<10 ppm
UST #4 Excavation 1	UST 4-A	<10 ppm
	UST 4-B	<10 ppm
	UST 4-C	<10 ppm
Northeast Excavation 1	EX 1-A	330 ppm
Northwest Excavation 1	EX 1-B	<10 ppm
Southeast Excavation 1	EX 1-C	<10 ppm
Southwest Excavation 1	EX 1-D	<10 ppm
Northwest Excavation 3	EX 3-A	<10 ppm

17

UST/Location	Sample	EPA Method 5030
Southeast Excavation 3	EX 3-B	<10 ppm
Southwest Excavation 3	EX 3-C	<10 ppm
Northwest Excavation 3	EX 3-D	<10 ppm

3

As illustrated in Table 3, laboratory results indicate that three of the samples collected from Excavation 1 contain total petroleum hydrocarbons in excess of the NCDEHNR action limit of 10 parts per million. None of the samples collected from Excavation 3 exceeded this limit.

Samples which were collected from the vicinity of tanks or pumps containing diesel, #2 fuel oil, or kerosene (see Figure 3) were analyzed using EPA Methods 3550 and 5030 in accordance with NCDEHNR guidelines. Results of samples analyzed under these methods are illustrated in Table 4 (see also Appendix C). The detection limit for both of these methods is 10 parts per million.

Table 4, Results of Soil Analysis EPA Methods 3550 and 5030
(Total Petroleum Hydrocarbons in parts per million)

UST/Location	Sample	EPA Method 3550	EPA Method 5030
UST #5 Excavation 2	UST 5-A	<10 ppm	360 ppm
	UST 5-B	<10 ppm	1,600 ppm
	UST 5-C	<10 ppm	1,900 ppm
UST #6 Excavation 2	UST 6-A	<10 ppm	<10 ppm
	UST 6-B	<10 ppm	110 ppm
	UST 6-C	190 ppm	3,100 ppm
East Excavation 2	EX 2-A	<10 ppm	57 ppm
West Excavation 2	EX 2-B	<10 ppm	530 ppm
Southeast Excavation 4	EX 4-A	<10 ppm	<10 ppm
East Excavation 4	EX 4-B	<10 ppm	<10 ppm
Northeast Excavation 4	EX 4-C	350 ppm	10,000 ppm

11 11

UST/Location	Sample	EPA Method 3550	EPA Method 5030
Northwest Excavation 4	EX 4-D	<10 ppm	450 ppm
West Excavation 4	EX 4-E	<10 ppm	13 ppm
Southwest Excavation 4	EX 4-F	<10 ppm	22 ppm
UST #7 Excavation 5	UST 7-A	<10 ppm	<10 ppm
	UST 7-B	<10 ppm	<10 ppm
	UST 7-C	<10 ppm	<10 ppm
UST #8 Excavation 5	UST 8-A	<10 ppm	<10 ppm
	UST 8-B	<10 ppm	<10 ppm
	UST 8-C	<10 ppm	<10 ppm
UST #11 Excavation 6	UST-11	<50 ppm*	2,300 ppm
UST #9 Excavation 7	K1-A	<100 ppm*	<100 ppm*
	K1-B	<10 ppm	<10 ppm

12 12

* Results reported at an elevated detection limit due to high concentrations of non-targeted compounds.

Table 4 illustrates laboratory results which indicate that several samples from Excavation Areas 2, 4, and 6 contained petroleum hydrocarbons in excess of the NCDEHNR action limit (10 parts per million). Samples from Excavation Areas 5 and 7 did not contain petroleum hydrocarbons in excess of this level.

The sample collected from the vicinity of the used oil tank (UST #10, see Figure 3) was analyzed using EPA Methods 624, 625, and 9071 for purgeable organics, semivolatile organics, and total petroleum hydrocarbons in the form of oil & grease, respectively. This sample was also analyzed for TCLP metals. Table 5 illustrates the results for all compounds which were indicated in quantities exceeding the detection limit of the analysis. See Appendix C for complete laboratory results.

Table 5: Results of Soil Analysis, Sample UST-10, Excavation Area 6
(EPA Methods 624, 625, 9071, and TCLP Metals)

Compound	Result
EPA Method 624 (parts per billion)	
Toluene	3,800 ppb
Ethylbenzene	4,000 ppb
Total Xylenes	17,700 ppb
EPA Method 625 (parts per billion)	
Naphthalene	8,000 ppb
2-Methylnaphthylene	28,000 ppb
Phenanthrene	7,200 ppb
EPA Method 9071 (in parts per million)	
Oil & Grease	2,100 ppm

Results of the analysis of sample UST-10 indicate a detectable presence of several compounds. The level of oil & grease is subject to the NCDEHNR petroleum hydrocarbon action limit of 10 parts per million. No metals (analyzed using the TCLP extraction method) were indicated in quantities exceeding detection limits.

7. Summary

Excavation limits were dictated by observations and OVA analyses, a soil investigation conducted by Ecological Services, Inc., and the presence of nearby obstacles such as the building foundation.

Field screening and observations indicated widespread petroleum hydrocarbon staining and detectable organic vapor levels which remain in several areas of the site. These results were generally confirmed by laboratory results, which revealed that only Excavation Areas 2, 5, and 7 are completely free of petroleum hydrocarbons in excess of the NCDEHNR action limit.

All soil which was excavated from the site was transported offsite for disposal, and all excavations were backfilled with clean fill.

Appendix A

Site Investigation Report for UST Closure

Site Investigation Report For Permanent Closure or Change-In-Service of U.S.T.

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DEM Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (BLUE) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number _____
Date Received _____

INSTRUCTIONS

Please complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)

Unocal Corporation
Owner Name (Corporation, Individual, Public Agency, or Other Entity)
P.O. Box 4147
Street Address
County
Atlanta Georgia 30302
City State Zip Code
(404) 320-2207
Area Code Telephone Number

II. Location of Tank(s)

Red Horse Truck Stop
Facility Name or Company
Facility ID # (if available)
1342 Trolling Wood - Hawfield Rd.
Street Address or State Road
Alamance Mebane 27302
County City Zip Code
Area Code Telephone Number

III. Contact Person

Name	Job Title	Telephone Number
Chris Boggs	Staff Geologist	(919) 883-7505

Closure Contractor: Ensci Corporation (Name) — 1108 Old Thomasville Rd. (Address) — High Point, NC 27260
Lab _____ (Name) _____ (Address)

IV. U.S.T. Information / V. Excavation Condition

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water In Excavation Yes	Water In Excavation No	Free Product Yes	Free Product No	Notable Odor or Visible Soil Contamination Yes	Notable Odor or Visible Soil Contamination No
1	4,000	26'7"X64"	Gasoline		X		X	X	
2	4,000	"	"		X		X	X	
3	4,000	"	"		X		X	X	
4	4,000	"	"		X		X	X	
5	10,000	27' X 8'	Diesel		X		X	X	
6	"	"	"		X		X	X	

VI. Additional Information Required

See reverse side of blue copy (owner's copy) for additional information required by N.C. - DEM in the written report and sketch.

VII. Check List

Check the activities completed.

- [X] Contact local fire marshall
- [X] Notify DEM Regional Office before abandonment
- [X] Drain & flush piping into tank.
- [X] Remove all product and residuals from tank
- [X] Excavate down to tank
- [X] Clean and inspect tank
- [X] Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- [X] Cap or plug all lines except the vent and fill lines.
- [X] Purge tank of all product & flammable vapors.
- [X] Cut one or more large holes in the tanks.
- [X] Backfill the area.

Date Tank(s) Permanently closed: _____
Date of Change-In-Service: _____

ABANDONMENT IN PLACE
- [ ] Fill tank until material overflows tank opening;
- [ ] Plug or cap all openings;.
- [ ] Disconnect and cap or remove vent line
- [ ] Solid inert material used - please specify: _____

REMOVAL
- [X] Create vent hole
- [X] Label tank
- [X] Dispose of tank in approved manner

Final tank destination: Safeway Tank Disposal Colfax, NC

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative	Signature	Date Signed

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Method 8020, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

General Gas Chromatography

Petroleum Hydrocarbons

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Petroleum Hydrocarbons were analyzed by Gas Chromatography using flame ionization detection on a 6ft. x 2mm ID glass column packed with 10% SP2100 on 100/120 mesh Supelcoport programmed from 65°C to 225°C.

V. Analytical Results

AnalytiKEM

Volatile Organics

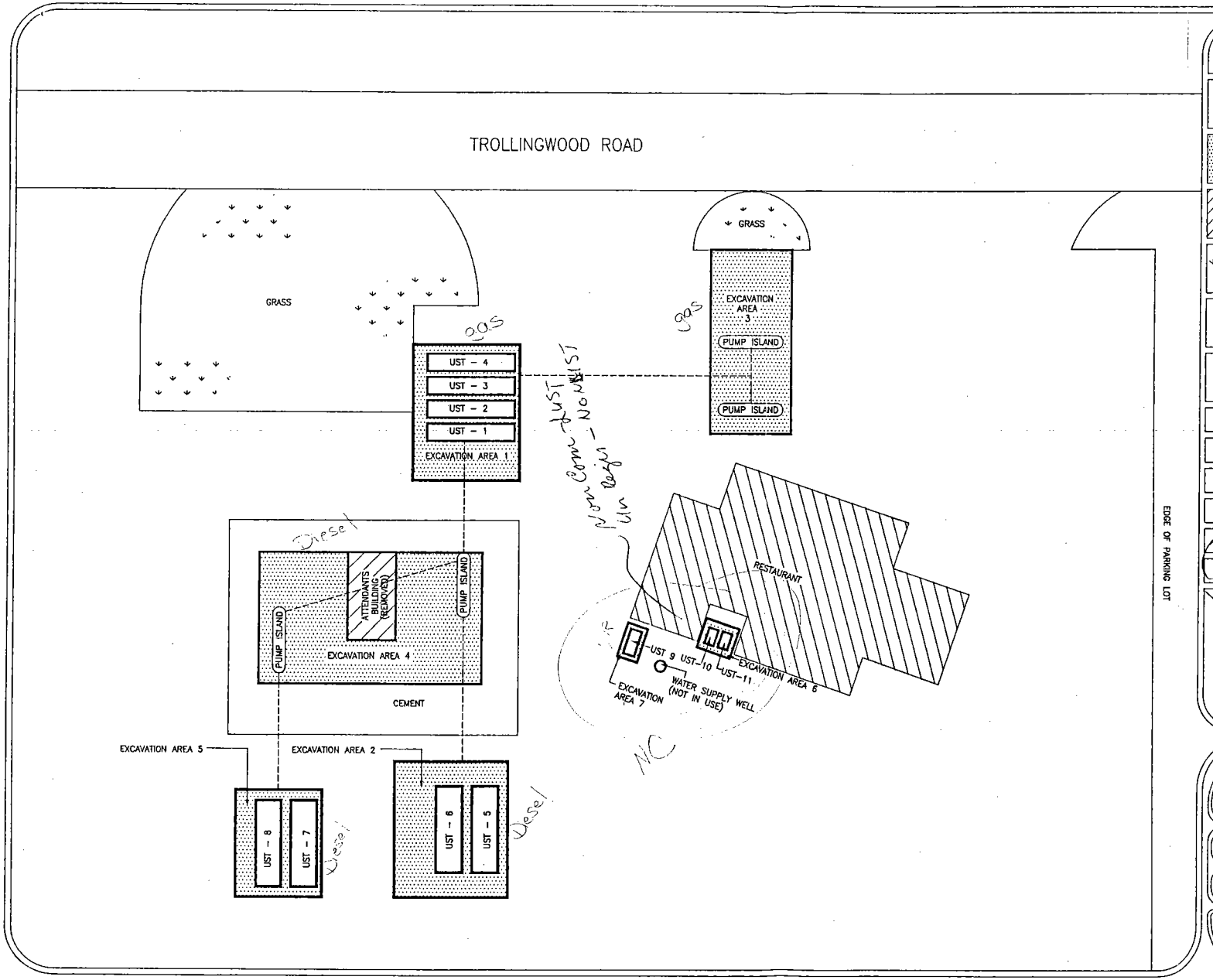
Parameter	Sample Designation: Method Blank	A82354-13 UST2
Benzene	300 U	1,300
Toluene	300 U	1,800
Chlorobenzene	300 U	300 U
Ethylbenzene	300 U	600
1,3-Xylene	300 U	770
1,2-Xylene-1,4-Xylene	300 U	1,400
1,3-Dichlorobenzene	600 U	600 U
1,2-Dichlorobenzene	600 U	600 U
1,4-Dichlorobenzene	600 U	600 U
Units	(ug/kg)	(ug/kg)

III. Sample Designations

AnalytiKEM

AnalytiKEM Designation	Client Designation	Matrix	Date Sampled
A82354-1	UST1-A	Nonaqueous	6/10/92
A82354-2	UST1-B	Nonaqueous	6/10/92
A82354-3	UST1-C	Nonaqueous	6/10/92
A82354-4	UST2-A	Nonaqueous	6/10/92
A82354-5	UST2-B	Nonaqueous	6/10/92
A82354-6	UST2-C	Nonaqueous	6/10/92
A82354-7	UST3-A	Nonaqueous	6/10/92
A82354-8	UST3-B	Nonaqueous	6/10/92
A82354-9	UST3-C	Nonaqueous	6/10/92
A82354-10	UST4-A	Nonaqueous	6/10/92
A82354-11	UST4-B	Nonaqueous	6/10/92
A82354-12	UST4-C	Nonaqueous	6/10/92
A82354-13	UST2	Nonaqueous	6/10/92

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.



LEGEND

•	SOIL BORING LOCATION
	EXCAVATION EXTENT
	BUILDING
	GRASS AREA

UNDERGROUND STORAGE TANK DATA

UST NUMBER(S)	CAPACITY / DIMENSIONS	CONTENTS
UST 1 THRU 4	4000 GALLONS / 26'7" L X 8' DIA.	GASOLINE
UST 5 THRU 8	10000 GALLONS / 27' L X 64" DIA.	DIESEL
UST 9	560 GALLONS / 92"L X 42" DIA.	KEROSENE
UST 10	270 GALLONS / 60"L X 36" DIA.	USED OIL
UST 11	270 GALLONS / 60"L X 36" DIA.	FUEL OIL

N

0 5 10 15 20 25 30 45 60

GRAPHIC SCALE IN FEET
1"=30'

ENSCI® CORPORATION
HIGH POINT, NORTH CAROLINA

FOR: UNOCAL
CITY: MEBANE
STATE: NORTH CAROLINA

TITLE: UST/EXCAVATION LOCATION MAP

SCALE: 1"=30'
DWN BY: DJ
DWG NAME: UNO-11
FIGURE: 2
DATE: 8/5/92
CK BY: CB
JOB #: S92052

4. Additional Soil Removal

When petroleum hydrocarbon stained soil or soil which indicated measurable levels of organic vapors was excavated, it was temporarily staged on poly sheeting or loaded directly into trucks for transportation to the disposal site. The soil had been profiled in advance to the Cherokee Sanford Group disposal facility in Sanford, North Carolina. A total of 3,314 tons of soil were disposed of at the site. A receipt for this material is included in Appendix B.

In each excavation area, the amount of excavation which was performed was determined based partially on soil exploration performed by Ecological Services, Inc. (ESI). This exploration included the collection of samples and screening using a portable gas chromatograph.

After digging was discontinued, each excavation was backfilled with clean fill to grade.

5. Field Observations and Screening

Throughout excavation, soil was screened visually and with an organic vapor analyzer (OVA, a flame ionization detector) to determine the presence or absence of organic vapors. No phase-separated hydrocarbons were observed in any of the excavations.

Table 2 summarizes ENSCI's field observations. Unless otherwise indicated, these observations indicate the condition of the excavation following the removal of the USTs or pumps and (where applicable) the excavation of additional soil. The excavation areas are numbered chronologically in the order in which they were dug. Field screening (OVA) levels referenced in the table are in parts per million (ppm). The OVA measures organic vapors on a scale from 0 parts per million to a maximum reading of 1,000 parts per million.

Table 2: Field Observations by Excavation

Excavation Area (Size in feet, lwd)	USTs/Pumps Removed	Observations
Excavation Area 1 (36 x 14 x 20)	UST #1 - UST #4 (gasoline)	Petroleum hydrocarbon stained soil throughout; OVA levels 200 ppm to 1,000 ppm, highest on west side
Excavation Area 2 (42 x 35 x 16)	UST #5 & UST #6 (diesel)	Some stained soil; OVA levels 0 ppm to 400 ppm
Excavation Area 3 (57 x 25 x 10)	2 pump islands (gasoline)	Most stained soil removed; OVA levels continue to indicate 150 to 600 ppm
Excavation Area 4 (57 x 35 x 14)	2 pump islands (diesel)	Most stained soil removed; OVA levels 0 ppm to 700 ppm; highest in northeast corner
Excavation Area 5 (33 x 27 x 14)	UST #7 & UST #8 (diesel)	No stained soil; OVA levels less than 3 ppm
Excavation Area 6 (12 x 7 x 5)	UST #10 & #11 (used oil & #2 fuel oil)	Moderately stained soil could not be removed due to proximity to building foundation; no OVA levels recorded
Excavation Area 7 (11 x 5 x 5)	UST #9 (kerosene)	Moderately stained soil could not be removed due to proximity to building foundation and utility pole; no OVA levels recorded

The following sections discuss additional elements of ENSCI's site observations.

5.1 Excavation Areas 1 and 2

At a depth of approximately 16 feet in Excavation Areas 1 and 2, a small amount of groundwater was encountered. A sheen indicating a small amount of liquid petroleum hydrocarbons was visible on the water. Because the water in the excavation did not recharge, however, it was not possible to collect a representative sample.

V. Analytical Results (Cont'd)

AnalytiKEM

General Chromtography

	Parameter
Sample Designation	Gasoline
Method Blank 1	10,000 U
A82354-1 UST1-A	3,700 J
A82354-2 UST1-B	1,200 J
A82354-3 UST2-C	10,000 U
A82354-5 UST2-B	3,700 J
A82354-6 UST2-C	10,000 U
A82354-7 UST3-A	7,100,000
A82354-8 UST3-B	4,500 J
A82354-9 UST3-C	2,000 J
A82354-10 UST4-A	1,600 J
Method Blank 2	10,000 U
A82354-11 UST4-B	5,000 J
A82354-12 UST4-C	1,500 J
Method Blank 3	10,000 U
A82354-4 UST2-A	14,000
Units	(ug/kg)

VI. Quality Control Data

AnalytiKEM

Volatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A27560-3

Parameter	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
Benzene	20	85	80	6	70-130	30
Toluene	20	85	80	6	70-130	30
Chlorobenzene	20	90	90	0	70-130	30
Ethylbenzene	20	90	85	6	70-130	30
1,3-Xylene	20	115	116	1	70-130	30
1,2-Xylene	20	105	90	15	70-130	30
1,4-Xylene	20	105	90	15	70-130	30
1,3-Dichlorobenzene	20	90	75	18	70-130	30
1,2-Dichlorobenzene	20	90	75	18	70-130	30
1,4-Dichlorobenzene	20	90	70	25	70-130	30
Units	(ppb)	(%)	(%)	(%)	(%)	(%)

Recovery: 0 out of 20 outside control limits

RPD: 0 out of 10 outside control limits

X. Quality Control Data (Cont'd)

AnalytiKEM

Volatile Organics

Nonaqueous Surrogate Recovery Data

	Surrogate Recovery	
Sample Designation	α,α,α-Trifluorotoluene (30 ppb Added)	4-Bromofluorobenzene (30 ppb Added)
Method Blank	87	83
A27560-3 Spike	160	90
A27560-3 Spike Dup.	93	90
A82354-13	80	77
Units	(%)	(%)
Control Limits	70-130	70-130

0 out of 8 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

Gas Chromatograpghy

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82349-1

Parameter	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
Gasoline	1,000	94	99	4	75-130	30
Gasoline ϕ	1,000	94	100	6	75-130	30
Units	(ppb)	(%)	(%)	(%)	(%)	(%)

ϕ Spike performed on sample A82354-3

Recovery: 0 out of 2 outside control limits

RPD: 0 out of 1 outside control limits

AnalytiKEM An American NuKEM Company

03077

Chain-of-Custody Record

PO# 31264

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI **Sample Collector:** Boggs

Project: Unocal Mebane **AnalytiKEM Contact:** Greg

Laboratory	Sales Office
2324 Vernsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378	454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689

ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCl	250 ml Unpres		PARAMETERS
1	UST 1-A	6/10	1315	Soil								1			5030
2	UST 1-B		1315												
3	UST 1-C		1315												
4	UST 2-A		1345												
5	UST 2-B		1345												
6	UST 2-C		1345												
7	UST 3-A		1400												
8	UST 3-B		1400												
9	UST 3-C		1400												
10															

#1 - 9

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME	REMARKS
1	1-9	Chris Boggs	Daniel Boge	6/14	9:40	
2						
3						
4						SAMPLER'S SIGNATURE: Chris Boggs

Reorder: PJ Associates 803-329-2300 White Laboratory Copy Yellow Client Copy AKEM #1 12/89

AnalytiKEM An American NuKEM Company 03078

Chain-of-Custody Record

PO# 31264

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI **Sample Collector:** Boggs

Project: Unocal Mebane **AnalytiKEM Contact:** Greg

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

#	ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	250 ml Unpres			PARAMETERS
~~10~~	1	~~UST~~ CB	6/10		Soil									1			5030
10	2	UST 4-A		1415													
11	3	UST 4-B		1415													
12	4	UST4-C		1415													
13	5	UST2		1345													8020
	6																
	7																
	8																
	9																
	10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	2-5	Chris Boggs	Daniel Pope	6/14	9:40
2					
3					
4					

REMARKS

Chris Boggs

SAMPLER'S SIGNATURE

AnalytiKEM An American NuKEM Company

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82363

July 1, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Chris Boggs

Project: Unocal Mebane

Reviewed &
Approved by: _____

Name: Carmine M. Fioriglio

Title: QA/QC Manager

AnalytiKEM

TABLE OF CONTENTS

		Page
I.	Certification	1
II.	Definition of Terms	2
III.	Sample Designations	3
IV.	Methodology	4
V.	Analytical Results	5 - 6
VI.	Quality Control Data	7

AnalytiKEM

I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

Cherry Hill, NJ		Rock Hill, SC		Houston Analytical, Tx	
State	Cert #	State	Cert #	State	Cert #
Arkansas	*	S. Carolina	46067	N. Dakota	R-006
Connecticut	PH-0715	N. Carolina	316	Oklahoma	8403
Florida	880985G	New Jersey	79795	Texas Water Commission *	
Massachusetts	NJ117			Louisiana *	
New Jersey	04012				
New York	10815				
N. Carolina	258				
N. Dakota	R-038				
Pennsylvania	68366				
S. Carolina	94004				
Tennessee	02908				
Vermont	*				

* No certification numbers are issued for these states.

AnalytiKEM

II. Definition of Terms

Term	Definition
D	Detected; result must be greater than zero.
DI	Deionized Water
J	Compound was detected at levels below the practical quantitation limit. The level reported is approximate.
MS/MSD	Matrix Spike/Matrix Spike Duplicate.
NA	Analysis not applicable to the sample matrix.
ND	Not Detected
NR	Not Requested
NTU	Nephelometric Turbidity Units
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
U	Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound.
ppb	Parts-per-billion; may be converted to ppm by dividing by 1,000.
ppm	Parts-per-million; may be converted to ppb by multiplying by 1,000.
ug/l	Micrograms of constituent per liter of sample; equivalent to parts-per-billion.
ug/kg	Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion.
ug/kg dw	Micrograms of constituent per kilogram of sample reported on a dry weight basis.
CCC	Calibration Check Compound; used to verify the precision of a GC/MS calibration curve.
SPCC	System Performance Check Compound; used to verify the correct operation of a GC/MS instrument.
PQL	Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated.
B	Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination.

III. Sample Designations

AnalytiKEM

AnalytiKEM Designation	Client Designation	Matrix	Date Sampled
A82363-1	UST 5-A	Nonaqueous	6/11/92
A82363-2	UST 5-B	Nonaqueous	6/11/92
A82363-3	UST 5-C	Nonaqueous	6/11/92
A82363-4	UST 6-A	Nonaqueous	6/11/92
A82363-5	UST 6-B	Nonaqueous	6/11/92
A82363-6	UST 6-C	Nonaqueous	6/11/92
A82363-7	UST 7-A	Nonaqueous	6/11/92
A82363-8	UST 7-B	Nonaqueous	6/11/92
A82363-9	UST 7-C	Nonaqueous	6/11/92
A82363-10	UST 8-A	Nonaqueous	6/11/92
A82363-11	UST 8-B	Nonaqueous	6/11/92
A82363-12	UST 8-C	Nonaqueous	6/11/92
A82363-13	EX 1-A	Nonaqueous	6/15/92
A82363-14	EX 1-B	Nonaqueous	6/15/92
A82363-15	EX 1-C	Nonaqueous	6/15/92
A82363-16	EX 1-D	Nonaqueous	6/15/92
A82363-17	EX 2-A	Nonaqueous	6/15/92

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

AnalytiKEM

IV. Methodology

General Chromatography

Petroleum Hydrocarbons

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Petroleum Hydrocarbons were analyzed by Gas Chromatography using flame ionization detection on a 6ft. x 2mm ID glass column packed with 10% SP2100 on 100/120 mesh Supelcoport programmed from 65°C to 225°C.

V. Analytical Results

AnalytiKEM

General Chromatography

Parameter	Method Blank	A82363-1 UST 5-A	A82363-2 UST 5-B	A82363-3 UST 5-C
		Sample Designation		
Jet Fuel	10,000 U	10,000 U	20,000 U	30,000 U
#2 Fuel Oil/Diesel	10,000 U	360,000	1,600,000	1,900,000
Kerosene	10,000 U	10,000 U	20,000 U	30,000 U
Gasoline	10,000 U	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	A82363-4 UST 6-A	A82363-5 UST 6-B	A82363-6 UST 6-C	A82363-7 UST 7-A
		Sample Designation		
Jet Fuel	10,000 U	10,000 U	50,000 U	10,000 U
#2 Fuel Oil/Diesel	10,000 U	110,000	3,100,000	10,000 U
Kerosene	10,000 U	10,000 U	50,000 U	10,000 U
Gasoline	10,000 U	10,000 U	190,000	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	A82363-8 UST 7-B	A82363-9 UST 7-C	A82363-10 UST 8-A	A82363-11 UST 8-B
		Sample Designation		
Jet Fuel	10,000 U	10,000 U	10,000 U	10,000 U
#2 Fuel Oil/Diesel	10,000 U	10,000 U	10,000 U	10,000 U
Kerosene	10,000 U	10,000 U	10,000 U	10,000 U
Gasoline	10,000 U	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)

V. Analytical Results (Cont'd)

AnalytiKEM

General Chromatography

Parameter	Method Blank	Sample Designation A82363-12 UST 8-C	A82363-17 EX 2-A
Jet Fuel	10,000 U	10,000 U	10,000 U
#2 Fuel Oil/Diesel	10,000 U	10,000 U	57,000
Kerosene	10,000 U	10,000 U	10,000 U
Gasoline	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	Method Blank	Sample Designation A82363-15 EX 1-C	A82363-16 EX 1-D
Gasoline	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	Method Blank	Sample Designation A82363-13 EX 1-A	A82363-14 EX 1-B
Gasoline	10,000 U	330,000	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)

VI. Quality Control Data

AnalytiKEM

General Chromatography

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Parameter	Sample Spiked	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
Jet Fuel	A82367-1	4,000	115	125	10	75-130	30
#2 Fuel Oil	A82372-2	4,000	116	113	3	75-130	30
Gasoline	A82363-12	1,000	92	96	4	75-130	30
Gasoline	A82363-4	1,000	95	94	1	75-130	30
Units		(ppb)	(%)	(%)	(%)	(%)	(%)

Recovery: 0 out of 8 outside control limits

RPD: 0 out of 4 outside control limits

AnalytiKEM An American NuKEM Company

10773

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: Ensci

Sample Collector: Boggs

Project: Unocal Mebane

AnalytiKEM Contact: Grey

Laboratory	Sales Office
2324 Vernsdale Road Rock Hill, South Carolina 29731 (803) 324-5310 Fax: (803) 324-8378	454 South Anderson Road BTC 532 Rock Hill, South Carolina 29730 (803) 329-9690 Fax: (803) 329-9689

ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	250 ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	500 ml Unpres			PARAMETERS
1	UST 5-A	6/11		soil				1					1			5030 + 3550
2	UST 5-B															
3	UST 5-C															
4	UST 6-A															
5	UST 6-B															
6	UST 6-C															
7	UST 7-A															
8	UST 7-B															
9	UST 7-C															
10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-9	Alvin Boggs	Fed Ex ~~Daniel Pope~~	~~6/18/92~~	~~8:25am~~
2	1-9	Fed Ex	Jennifer Howard & Daniel Pope	6/18	8:25
3					
4					

REMARKS Tank Trust Fund

Alvin Boggs

SAMPLER'S SIGNATURE

Reorder: PJ Associates 803-329-2300 White Laboratory Copy Yellow Client Copy AKEM #1 12/89

AnalytiKEM An American NuKEM Company

10638

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: Ensci **Sample Collector:** Boggs

Project: Unocal Mcbane **AnalytiKEM Contact:** Greg

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

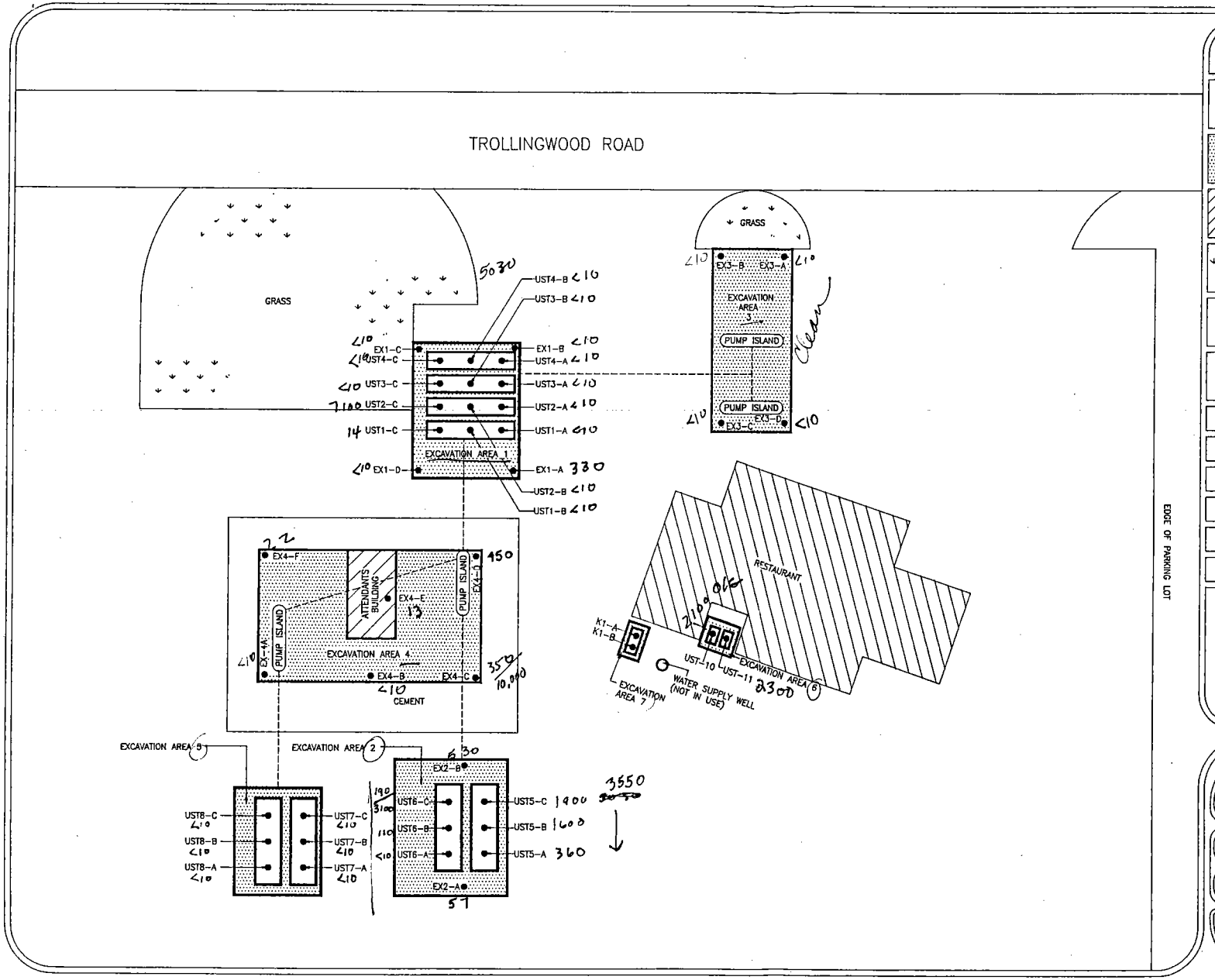
ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	250 ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	500 ml Unpres		PARAMETERS
10 1	~~UST~~ UST8-A	6/11		soil				1					1			3550 + 5030
11 2	UST8-B	↓		↓				↓					↓			↓
12 3	UST8-C	↓		↓				↓					↓			↓
4																
5																
6																
7																
8																
9																
10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-3	Chris Boggs	Fed Ex		
2	1-3	Fed Ex	Daniel Rose Jennifer Howard	6/18	8:25
3					
4					

REMARKS Tank Trust Fund

Chris Boggs
SAMPLER'S SIGNATURE

Reorder: PJ Associates 803-329-2300 White Laboratory Copy Yellow Client Copy AKEM #1 12/89



LEGEND

- SOIL BORING LOCATION
- EXCAVATION EXTENT
- BUILDING
- GRASS AREA

UNDERGROUND STORAGE TANK DATA

UST NUMBER(S)	CAPACITY / DIMENSIONS	CONTENTS
UST 1 THRU 4	4000 GALLONS / 26'7" L X 8' DIA.	GASOLINE
UST 5 THRU 8	10000 GALLONS / 27' L X 64" DIA.	DIESEL
UST 9	560 GALLONS / 92" L X 42" DIA.	KEROSENE
UST 10	270 GALLONS / 60" L X 36" DIA.	USED OIL
UST 11	270 GALLONS / 60" L X 36" DIA.	FUEL OIL

0 5 10 15 20 25 30 45 60

GRAPHIC SCALE IN FEET
1"=30'

ENSCI® CORPORATION
HIGH POINT, NORTH CAROLINA

FOR: UNOCAL
CITY: MEBANE
STATE: NORTH CAROLINA

TITLE: SOIL BORING LOCATIONS

SCALE: 1"=30'
DWN BY: DJ
DWG NAME: UNO-11
FIGURE: 3
DATE: 8/5/92
CK BY: CB
JOB #: 592052

AnalytiKEM An American NuKEM Company

10640

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI **Sample Collector:** Boggs

Project: Unocal Mebane **AnalytiKEM Contact:** Grey

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	250 ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	500 ml amber			PARAMETERS
13 1	Ex 1-A	6/15	1500	Soil				1								5030
14 2	Ex 1-B	↓	↓	↓				↓								5030
15 3	Ex 1-C															5030
16 4	Ex 1-D	↓	↓													5030
17 5	Ex 2-A	6/15	1645	↓				↓				1				5030 + 3550
6																
7																
8																
9																
10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-5	Allen Boggs			
2					
3					
4					

REMARKS Tank ~~Bo~~ Trust Fund

SAMPLER'S SIGNATURE Allen Boggs

AnalytiKEM An American NuKEM Company

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82385

July 8, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Chris Boggs

Project: Unocal Mebane

Reviewed &
Approved by: _____

Name: Carmine M. Fioriglio

Title: QA/QC Manager

AnalytiKEM

TABLE OF CONTENTS

		Page
I.	Certification	1
II.	Definition of Terms	2
III.	Sample Designations	3
IV.	Methodology	4
V.	Analytical Results	5 - 8
VI.	Quality Control Data	9 - 14

AnalytiKEM

I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

Cherry Hill, NJ		Rock Hill, SC		Houston Analytical, Tx	
State	Cert #	State	Cert #	State	Cert #
Arkansas	*	S. Carolina	46067	N. Dakota	R-006
Connecticut	PH-0715	N. Carolina	316	Oklahoma	8403
Florida	880985G	New Jersey	79795	Texas Water Commission	*
Massachusetts	NJ117			Louisiana	*
New Jersey	04012				
New York	10815				
N. Carolina	258				
N. Dakota	R-038				
Pennsylvania	68366				
S. Carolina	94004				
Tennessee	02908				
Vermont	*				

* No certification numbers are issued for these states.

AnalytiKEM

II. Definition of Terms

Term	Definition
D	Detected; result must be greater than zero.
DI	Deionized Water
J	Compound was detected at levels below the practical quantitation limit. The level reported is approximate.
MS/MSD	Matrix Spike/Matrix Spike Duplicate.
NA	Analysis not applicable to the sample matrix.
ND	Not Detected
NR	Not Requested
NTU	Nephelometric Turbidity Units
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
U	Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound.
ppb	Parts-per-billion; may be converted to ppm by dividing by 1,000.
ppm	Parts-per-million; may be converted to ppb by multiplying by 1,000.
ug/l	Micrograms of constituent per liter of sample; equivalent to parts-per-billion.
ug/kg	Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion.
ug/kg dw	Micrograms of constituent per kilogram of sample reported on a dry weight basis.
CCC	Calibration Check Compound; used to verify the precision of a GC/MS calibration curve.
SPCC	System Performance Check Compound; used to verify the correct operation of a GC/MS instrument.
PQL	Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated.
B	Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination.

III. Sample Designations

AnalytiKEM

AnalytiKEM Designation	Client Designation	Matrix	Date Sampled
A82385-1	UST-10	Nonaqueous	6/23/92
A82385-2	UST-11	Nonaqueous	6/23/92

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

IV. Methodology

AnalytiKEM

Volatiles

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Method 8240, Gas Chromatography/Mass Spectrometry for Volatile Organics, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Semivolatiles

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Method 8270, Gas Chromatography/Mass Spectrometry for Semivolatile Organics: Capillary Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

General Chromatography

Petroleum Hydrocarbons

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

Petroleum Hydrocarbons were analyzed by Gas Chromatography using flame ionization detection on a 6ft. x 2mm ID glass column packed with 10% SP2100 on 100/120 mesh Supelcoport programmed from 65°C to 225°C.

General Chemistry

Method 9071, Oil and Grease Extraction Method for Sludge Samples, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Second Edition, USEPA.

AnalytiKEM

V. Analytical Results

Volatile Organics

Parameter	Sample Designation: Method Blank	A82385-1 UST-10
Chloromethane	500 U	1,000 U
Bromomethane	500 U	1,000 U
Vinyl Chloride	500 U	1,000 U
Chloroethane	500 U	1,000 U
Methylene Chloride	250 U	500 U
2-Propanone (Acetone)	5,000 U	10,000 U
Carbon Disulfide	250 U	500 U
1,1-Dichloroethene	250 U	500 U
1,1-Dichloroethane	250 U	500 U
trans-1,2-Dichloroethene	250 U	500 U
Chloroform	250 U	500 U
1,2-Dichloroethane	250 U	500 U
2-Butanone (MEK)	5,000 U	10,000 U
1,1,1-Trichloroethane	250 U	500 U
Carbon Tetrachloride	250 U	500 U
Vinyl Acetate	2,500 U	5,000 U
Bromodichloromethane	250 U	500 U
1,2-Dichloropropane	250 U	500 U
trans-1,3-Dichloropropene	250 U	500 U
Trichloroethene	250 U	500 U
Dibromochloromethane	250 U	500 U
1,1,2-Trichloroethane	250 U	500 U
Benzene	250 U	270 J
cis-1,3-Dichloropropene	250 U	500 U
2-Chloroethyl Vinyl Ether	500 U	1,000 U
Bromoform	250 U	500 U
4-Methyl-2-Pentanone (MIBK)	2,500 U	5,000 U
2-Hexanone	2,500 U	5,000 U
Tetrachloroethene	250 U	500 U
1,1,2,2-Tetrachloroethane	250 U	500 U
Toluene	250 U	3,800
Chlorobenzene	250 U	500 U
Ethylbenzene	250 U	4,000
Styrene	250 U	500 U
m,p-Xylene	250 U	12,000
o-Xylene	250 U	5,700
Units	(ug/kg)	(ug/kg)

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 1 of 2)

Parameter	Sample Designation: Method Blank	A82385-1 UST-10
N-Nitrosodimethylamine	500 U	5,000 U
Phenol	500 U	5,000 U
Bis(2-chloroethyl) Ether	500 U	5,000 U
2-Chlorophenol	500 U	5,000 U
1,3-Dichlorobenzene	500 U	5,000 U
1,4-Dichlorobenzene	500 U	5,000 U
Benzyl Alcohol	500 U	5,000 U
1,2-Dichlorobenzene	500 U	5,000 U
2-Methylphenol	500 U	5,000 U
Bis(2-chloroisopropyl) Ether	500 U	5,000 U
3+4-Methylphenol	500 U	5,000 U
N-Nitrosodipropylamine	500 U	5,000 U
Hexachloroethane	500 U	5,000 U
Nitrobenzene	500 U	5,000 U
Isophorone	500 U	5,000 U
2-Nitrophenol	500 U	5,000 U
2,4-Dimethylphenol	500 U	5,000 U
Benzoic Acid	2,500 U	25,000 U
Bis(2-chloroethoxy)methane	500 U	5,000 U
2,4-Dichlorophenol	500 U	5,000 U
1,2,4-Trichlorobenzene	500 U	5,000 U
Naphthalene	500 U	8,000
4-Chloroaniline	500 U	5,000 U
Hexachlorobutadiene	500 U	5,000 U
4-Chloro-3-methylphenol	500 U	5,000 U
2-Methylnaphthalene	500 U	28,000
Hexachlorocyclopentadiene	500 U	5,000 U
2,4,6-Trichlorophenol	500 U	5,000 U
2,4,5-Trichlorophenol	2,500 U	25,000 U
2-Chloronaphthalene	500 U	5,000 U
2-Nitroaniline	2,500 U	25,000 U
Dimethyl Phthalate	500 U	5,000 U
Acenaphthylene	500 U	5,000 U
3-Nitroaniline	2,500 U	25,000 U
Acenaphthene	500 U	1,400 J
2,4-Dinitrophenol	2,500 U	25,000 U
Units	(ug/kg)	(ug/kg)

V. Analytical Results (Cont'd)

AnalytiKEM

Semivolatile Organics (Page 2 of 2)

Parameter	Sample Designation: Method Blank	A82385-1 UST-10
4-Nitrophenol	2,500 U	25,000 U
Dibenzofuran	500 U	1,200 J
2,4-Dinitrotoluene	500 U	5,000 U
2,6-Dinitrotoluene	500 U	5,000 U
Diethyl Phthalate	500 U	5,000 U
4-Chlorophenyl Phenyl Ether	500 U	5,000 U
Fluorene	500 U	3,100 J
4-Nitroaniline	2,500 U	25,000 U
4,6-Dinitro-2-methylphenol	2,500 U	25,000 U
N-Nitrosodiphenylamine	500 U	3,400 J
4-Bromophenyl Phenyl Ether	500 U	5,000 U
Hexachlorobenzene	500 U	5,000 U
Pentachlorophenol	500 U	5,000 U
Phenanthrene	500 U	7,200
Anthracene	500 U	5,000 U
Dibutyl Phthalate	75 J	5,000 U
Fluoranthene	500 U	5,000 U
Benzidine	2,500 U	25,000 U
Pyrene	500 U	1,000 J
Butylbenzyl Phthalate	500 U	5,000 U
3,3'-Dichlorobenzidine	1,000 U	10,000 U
Benzo(a)anthracene	500 U	5,000 U
Bis(2-ethylhexyl) Phthalate	730	940 J
Chrysene	500 U	5,000 U
Dioctyl Phthalate	500 U	5,000 U
Benzo(b)fluoranthene	500 U	5,000 U
Benzo(k)fluoranthene	500 U	5,000 U
Benzo(a)pyrene	500 U	5,000 U
Indeno(1,2,3-cd)pyrene	500 U	5,000 U
Dibenzo(a,h)anthracene	500 U	5,000 U
Benzo(g,h,i)perylene	500 U	5,000 U
Units	(ug/kg)	(ug/kg)

V. Analytical Results (Cont'd)

AnalytiKEM

General Chromatography

Parameter	Method Blank	Sample Designation A82385-2 UST-11
Jet Fuel	10,000 U	30,000 U
#2 Fuel Oil/Diesel	10,000 U	2,300,000
Kerosene	10,000 U	30,000 U
Gasoline	10,000 U	50,000 U
Units	(ug/kg)	(ug/kg)

General Chemistry

Parameter	Method Blank	Sample Designation A82385-1 UST-10
Oil and Grease	--	2,100,000
Units	(ug/kg)	(ug/kg)

Note: The Oil and Grease analysis was performed at our Cherry Hill, NJ facility.

VI. Quality Control Data

AnalytiKEM

Volatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82357-12

Parameter	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery
1,1-Dichloroethene	0.25	93	79	16	D-234
Trichloroethene (TCE)	0.25	102	101	1	71-157
Benzene	0.25	104	103	1	37-151
Toluene	0.25	103	102	1	47-150
Chlorobenzene	0.25	103	103	0	37-160
Units	(ug)	(%)	(%)	(%)	(%)

Recovery: 0 out of 10 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Volatile Organics

Nonaqueous Surrogate Recovery Data

Sample Designation	Surrogate Recovery 1,2-Dichloroethane-d_4 (50 ppb Added)	Toluene-d_8 (50 ppb Added)	4-Bromofluorobenzene (50 ppb Added)
Method Blank	86	93	83
A82357-12 Spike	94	96	92
A82357-12 Spike Dup.	92	95	92
A82385-1	78	83	91
Units	(%)	(%)	(%)
Control Limits	62-152	57-159	62-148

0 out of 12 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82369-1

Parameter	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
1,4-Dichlorobenzene	50	81	87	7	18-120	43
N-Nitrosodipropylamine	50	80	92	14	10-156	31
1,2,4-Trichlorobenzene	50	85	92	8	24-161	17
Acenaphthene	50	89	105	16	10-151	16
2,4-Dinitrotoluene	50	77	87	12	10-197	33
Pyrene	50	103	108	5	10-167	31
Phenol	100	50	71	35	10-141	41
2-Chlorophenol	100	38	42	10	33-101	19
4-Chloro-3-methylphenol	100	42	49	15	26-117	25
4-Nitrophenol	100	17	34	55	10-221	36
Pentachlorophenol	100	26	40	42	10-179	16
Units	(ppb)	(%)	(%)	(%)	(%)	(%)

Recovery: 0 out of 22 outside control limits

RPD: 2 out of 11 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

Semivolatile Organics

Nonaqueous Surrogate Recovery Data

	Surrogate Recovery		
Sample Designation	2-Fluorophenol (200 ppb Added)	Phenol-d_5 (200 ppb Added)	2,4,6-Tribromophenol (200 ppb Added)
Method Blank	58	66	64
A82369-1 Spike	82	83	82
A82369-1 Spike Dup.	92	91	87
A82385-1	44	45	46
Units	(%)	(%)	(%)
Control Limits	27-106	30-88	42-89

	Surrogate Recovery		
Sample Designation	Nitrobenzene-d_5 (100 ppb Added)	2-Fluorobiphenyl (100 ppb Added)	Terphenyl-d_{14} (100 ppb Added)
Method Blank	78	74	80
A82369-1 Spike	81	86	97
A82369-1 Spike Dup.	92	90	97
A82385-1	77	107	103
Units	(%)	(%)	(%)
Control Limits	34-107	10-157	10-175

1 out of 24 surrogate recoveries are outside control limits.

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chromatography

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Parameter	Sample Spiked	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
Gasoline	A82408-1	1,000	83	86	4	75-130	30
#2 Fuel Oil	A82372-2	4,000	116	113	3	75-130	30
Units		(ppb)	(%)	(%)	(%)	(%)	(%)

Recovery: 0 out of 4 outside control limits

RPD: 0 out of 2 outside control limits

VI. Quality Control Data (Cont'd)

AnalytiKEM

General Chemistry

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Sample Spiked A82352-17

Parameter	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
Oil and Grease	50,000	106	109	3	10-175	50
Units	(ug)	(%)	(%)	(%)	(%)	(%)

Recovery: 0 out of 2 outside control limits

RPD: 0 out of 1 outside control limits

AnalytiKEM *An American NuKEM Company*

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82385

July 9, 1992

Prepared for:

ENSCI
1108 Thomasville Road
High Point, NC 27260

Attention: Chris Boggs

Project: Unocal Mebane

Reviewed &
Approved by: _____

Name: Carmine M. Fioriglio

Title: QA/QC Manager

AnalytiKEM

TABLE OF CONTENTS

		Page
I.	List of Certifications	1
II.	Definition of Terms	2
III.	Sample Designations	3
IV.	Methodology	4
V.	Laboratory Chronicle	5
VI.	Extraction Log	6
VII.	Outlier Summary	7
VIII.	Analytical Results	8
IX.	Quality Control Data	9

AnalytiKEM

I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

Cherry Hill, NJ		Rock Hill, SC		Houston Analytical, Tx	
State	Cert #	State	Cert #	State	Cert #
Arkansas	*	S. Carolina	46067	N. Dakota	R-006
Connecticut	PH-0715	N. Carolina	316	Oklahoma	8403
Florida	880985G	New Jersey	79795	Texas Water Commission	*
Massachusetts	NJ117			Louisiana	*
New Jersey	04012				
New York	10815				
N. Carolina	258				
N. Dakota	R-038				
Pennsylvania	68366				
S. Carolina	94004				
Tennessee	02908				
Vermont	*				

* No certification numbers are issued for these states.

AnalytiKEM

II. Definition of Terms

Term	Definition
DI	Deionized Water
J	Compound was detected at levels below the practical quantitation limit. The level reported is approximate.
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	Analysis not applicable to the sample matrix.
ND	Not Detected
NR	Not Requested
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
U	Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound.
mg/L	Milligrams of constituent per liter of TCLP Leachate; equivalent to parts-per-million (ppm).
CCC	Calibration Check Compound; used to verify the precision of a GC/MS calibration curve.
SPCC	System Performance Check Compound; used to verify the correct operation of a GC/MS instrument.
PQL	Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated.
TCLP	Toxic Characteristic Leachate Procedure
ZHE	Zero Headspace Extraction
TC	Toxic Characteristic
ug	Micrograms

III. Sample Designations

AnalytiKEM

AnalytiKEM Designation	Client Designation	Matrix	Date Sampled
A82385-1	UST-10	Nonaqueous	6/23/92

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

AnalytiKEM

IV. Methodology

All analysis are performed in accordance with methodologies found in the following publications:

- Federal Register, Vol. 55, No. 126, June 29, 1990.
- 40 CFR, Part 216, Appendix 2, Method 1311.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Second Edition, 1982.
- Test Methods for Evaluating Solid Waste, USEPA, SW-846, Third Edition, 1982.
- Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, March 1983.

V. Laboratory Chronicle

AnalytiKEM

	DATE I	DATE II
Date Sampled	6/23/92	
Receipt/Refrigeration	6/24/92	
TCLP Extractions		
TC Extraction	6/25/92	
Sample Preparations		
Metals:		
General	6/26/92	
Mercury	6/26/92	
Analyses		
Metals		
General	6/26 & 27/92	
Mercury	6/26/92	

Laboratory Manager Review & Approval
(Signature)
(Printed Name) Gregory A. Pruna
(Date) 7/13/92

NOTE: If fractions are reextracted and reanalyzed because the initial endeavors failed to meet the required quality control criteria, the dates of reextraction and/or reanalysis will be entered in column II additionally.

AnalytiKEM

VI. Extraction Log

Sample Designation	TCLP Extraction, (g)	Extraction Fluid Type	Extraction Fluid Volume (ml)
A82385-1	100	1	2,000

AnalytiKEM

VII. Outlier Summary: Toxicity Characteristic Leachate Procedure (TCLP)

No Compounds were reported above the Regulatory Limits for the following samples:

A82385-1 UST-10

AnalytiKEM

VIII. Analytical Results

TCLP Metals

AnalytiKEM Designation: A82385-1

Client Designation: UST-10

EPA Number	Parameter	Method Blank	Sample Result	Regulatory Level
D004	Arsenic	0.44 U	0.44 U	5.0
D005	Barium	2.0 U	1.6 J	100
D006	Cadmium	0.098 U	0.098 U	1.0
D007	Chromium	0.49 U	0.49 U	5.0
D008	Lead	0.50 U	0.50 U	5.0
D009	Mercury	0.021 U	0.021 U	0.2
D010	Selenium	0.28 U	0.28 U	1.0
D011	Silver	1.1 U	1.1 U	5.0
Units		(mg/l)	(mg/l)	(mg/l)

Note: All results are corrected for spike recoveries.

AnalytiKEM

IX. Quality Control Data

TCLP Procedure

Metals

Aqueous Matrix Spike Recovery Data

Sample Spiked A82327-1

Parameter	Amount of Spike	Recovery MS
Arsenic	300	113
Barium	300	100
Cadmium	300	102
Chromium	300	102
Lead	300	101
Mercury	20	96
Selenium	300	108
Silver	300	45
Units	(ppb)	(%)

AnalytiKEM An American NuKEM Company 82385 10713

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: ENSCI **Sample Collector:** Boggs

Project: Unocal Mebane **AnalytiKEM Contact:** Greg

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	250 ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	500 ml Unpres.			PARAMETERS
1	UST-10	6/23	1030	soil	G			1					3			8240, 8270, 9071, TCLP Metals
2	UST-11	6/23	1030	soil	G			1					1			3550, 5030
3																
4																
5																
6																
7																
8																
9																
10																

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1+2	Chris Boggs	Fed Ex		
2	1+2	Fed Ex	Daniel Bope	6/24	11:40am
3					
4					

REMARKS Tank Trust Fund

Chris Boggs

SAMPLER'S SIGNATURE

Reorder: PJ Associates 803-329-2300 White Laboratory Copy Yellow Client Copy AKEM #1 12/89

AnalytiKEM *An American NuKEM Company*

AnalytiKEM Inc.
454 S. Anderson Road, BTC 532
Rock Hill, SC 29730
803/329-9690

TEST REPORT NO. A82373

July 10, 1992

Prepared for:

Ensci
1108 Thomasville Road
High Point, NC 27260

Attention: Chris Boggs

Project: Unocal Mebane

Reviewed &
Approved by: _____

Name: Carmine M. Fioriglio

Title: Technical Manager

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TABLE OF CONTENTS

		Page
I.	Certification	1
II.	Definition of Terms	2
III.	Sample Designations	3
IV.	Methodology	4
V.	Analytical Results	5 - 7
VI.	Quality Control Data	8

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I. Certification

AnalytiKEM, Inc.
Current Certifications/Regulatory Approvals

Tabulated below are the current laboratory certifications that are held by each AnalytiKEM Laboratory. Analyses performed at multiple AnalytiKEM locations will be noted in the test report.

Cherry Hill, NJ		Rock Hill, SC		Houston Analytical, Tx	
State	Cert #	State	Cert #	State	Cert #
Arkansas	*	S. Carolina	46067	N. Dakota	R-006
Connecticut	PH-0715	N. Carolina	316	Oklahoma	8403
Florida	880985G	New Jersey	79795	Texas Water Commission	*
Massachusetts	NJ117			Louisiana	*
New Jersey	04012				
New York	10815				
N. Carolina	258				
N. Dakota	R-038				
Pennsylvania	68366				
S. Carolina	94004				
Tennessee	02908				
Vermont	*				

* No certification numbers are issued for these states.

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II. Definition of Terms

Term	Definition
D	Detected; result must be greater than zero.
DI	Deionized Water
J	Compound was detected at levels below the practical quantitation limit. The level reported is approximate.
MS/MSD	Matrix Spike/Matrix Spike Duplicate.
NA	Analysis not applicable to the sample matrix.
ND	Not Detected
NR	Not Requested
NTU	Nephelometric Turbidity Units
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
TON	Threshold Odor Number
U	Compound was analyzed for but not detected. The preceding number is the practical quantitation limit for the compound.
ppb	Parts-per-billion; may be converted to ppm by dividing by 1,000.
ppm	Parts-per-million; may be converted to ppb by multiplying by 1,000.
ug/l	Micrograms of constituent per liter of sample; equivalent to parts-per-billion.
ug/kg	Micrograms of constituent per kilogram of sample; equivalent to parts-per-billion.
ug/kg dw	Micrograms of constituent per kilogram of sample reported on a dry weight basis.
CCC	Calibration Check Compound; used to verify the precision of a GC/MS calibration curve.
SPCC	System Performance Check Compound; used to verify the correct operation of a GC/MS instrument.
PQL	Practical Quantitation Limit; the minimum level at which compounds can be dependably quantitated.
B	Analyte detected in associated blank as well as the sample. It indicates possible/probable blank contamination.

III. Sample Designations

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AnalytiKEM Designation	Client Designation	Matrix	Date Sampled
A82373-1	K1-A	Nonaqueous	6/16/92
A82373-2	K1-B	Nonaqueous	6/16/92
A82373-3	E3-A	Nonaqueous	6/16/92
A82373-4	E3-B	Nonaqueous	6/16/92
A82373-5	E3-C	Nonaqueous	6/16/92
A82373-6	E3-D	Nonaqueous	6/16/92
A82373-7	Ex2-B	Nonaqueous	6/16/92
A82373-8	Ex4-A	Nonaqueous	6/18/92
A82373-9	Ex4-B	Noanqueous	6/18/92
A82373-10	Ex4-C	Nonaqueous	6/18/92
A82373-11	Ex4-D	Nonaqueous	6/18/92
A82373-12	Ex4-E	Nonaqueous	6/18/92
A82373-13	Ex4-F	Nonaqueous	6/18/92

Note: Samples will be held for 30 days beyond the test report date unless otherwise requested.

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IV. Methodology

General Chromatography

Method 3550, Sonication Extraction, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Method 5030, Purge and Trap, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, Third Edition, USEPA, 1986, with all promulgated revisions.

Petroleum Hydrocarbons were analyzed by Gas Chromatography using flame ionization detection on a 6ft. x 2mm ID glass column packed with 10% SP2100 on 100/120 mesh Supelcoport programmed from 65°C to 225°C.

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V. Analytical Results

General Chromatography

Parameter	Method Blank	A82373-1 K1-A	A82373-2 K1-B
	Sample Designation		
Jet Fuel	10,000 U	100,000 U*	10,000 U
Diesel Fuel/#2 Fuel Oil	10,000 U	100,000 U*	10,000 U
Kerosene	10,000 U	100,000 U*	10,000 U
Gasoline	10,000 U	50,000 U*	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	Method Blank	A82373-3 E3-A	A82373-4 E3-B	A82373-5 E3-C
	Sample Designation			
Gasoline	10,000 U	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)

* Detection limit raised due to high concentration of nontargetted compounds.

V. Analytical Results (Cont'd)

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General Chromatography

Parameter	Method Blank	A82373-6 E3-D	A82373-7 Ex2-B
		Sample Designation	
Jet Fuel	10,000 U	10,000 U	100,000 U
Diesel Fuel/#2 Fuel Oil	10,000 U	10,000 U	530,000
Kerosene	10,000 U	10,000 U	100,000 U
Gasoline	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	Method Blank	A82373-8 Ex4-A	A82373-9 Ex4-B
		Sample Designation	
Jet Fuel	10,000 U	10,000 U	10,000 U
Diesel Fuel/#2 Fuel Oil	10,000 U	10,000 U	10,000 U
Kerosene	10,000 U	10,000 U	10,000 U
Gasoline	10,000 U	10,000 U	10,000 U
Units	(ug/kg)	(ug/kg)	(ug/kg)

V. Analytical Results (Cont'd)

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General Chromatography

Parameter	Method Blank	A82373-10 Ex4-C	A82373-11 Ex4-D
		Sample Designation	
Jet Fuel	10,000 U	100,000 U	10,000 U
Diesel Fuel/#2 Fuel Oil	10,000 U	350,000	10,000 U
Kerosene	10,000 U	100,000 U	10,000 U
Gasoline	10,000 U	10,000,000	450,000
Units	(ug/kg)	(ug/kg)	(ug/kg)

Parameter	Method Blank	A82373-12 Ex4-E	A82373-13 Ex4-F
		Sample Designation	
Jet Fuel	10,000 U	10,000 U	10,000 U
Diesel Fuel/#2 Fuel Oil	10,000 U	10,000 U	10,000 U
Kerosene	10,000 U	10,000 U	10,000 U
Gasoline	10,000 U	13,000	22,000
Units	(ug/kg)	(ug/kg)	(ug/kg)

VI. Quality Control Data

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General Chromatography

Nonaqueous Matrix Spike/Matrix Spike Duplicate Recovery Data

Parameter	Sample Spiked	Amount of Spike	Recovery MS	Recovery MSD	RPD	Control Limits Recovery	Control Limits Max. RPD
Diesel Fuel	A82373-1	5,000	*	*	--	14-185	33
Diesel Fuel	DI Water	5,000	124	--	--	14-185	33
Gasoline	A82373-4	50	11	15	31	70-130	30
Gasoline	DI Water	50	126	--	--	70-130	30
Units		(ug)	(%)	(%)	(%)	(%)	(%)

* Not recovered due to high concentration of nontargetted compound detected in sample.

Recovery: 2 out of 4 outside control limits

RPD: 1 out of 1 outside control limits

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AK # 82373 10711

Chain-of-Custody Record

Program Area: Drinking Water Wastewater Groundwater Solid and Hazardous Waste

Client: DSCI **Sample Collector:** Boggs

Project: Unocal Melrose **AnalytiKEM Contact:** Greg

Laboratory
2324 Vernsdale Road
Rock Hill, South Carolina 29731
(803) 324-5310
Fax: (803) 324-8378

Sales Office
454 South Anderson Road BTC 532
Rock Hill, South Carolina 29730
(803) 329-9690
Fax: (803) 329-9689

ITEM NUMBER	SAMPLE DESIGNATION	DATE	TIME	MATRIX	Grab or Composite	40 ml vials	950 ml Org. Pres.	ml Unpres.	ml HNO_3	ml H_2SO_4	ml NaOH	ml HCL	Soil Jars		PARAMETERS
1	K1-A	6/16	1400	Soil	G			1					1		3550 + 5030
2	K1-B		1430					1					1		3550 + 5030
3	E3-A		1530												5030
4	E3-B		1530												5030
5	E3-C		1510												5030
6	E3-D		1580										1		3550 + 5030
7	E12-B	↓	1530	↓	↓			↓					1		3550 + 5030
8															
9															DID NOT RECEIVE A
10															500 mL FOR E3-D pw Pope 6/18/92 845 AM

TRANSFER NUMBER	ITEM NUMBER	TRANSFERS RELINQUISHED BY	TRANSFERS ACCEPTED BY	DATE	TIME
1	1-7	Ellin Boggs	Dawn Wilkins	6-18-92	4:05 pm
2		Dawn Wilkins	Patsy Pope	6-18-92	6:40 pm
3		Patsy Pope to FedEx		6/19	6:45 PM
4					

REMARKS
Tank Trust Fund

SAMPLER'S SIGNATURE Ellin Boggs

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