

# **CLOSURE REPORT**



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ENVIRONMENTAL BUREAU  
OIL CONSERVATION DIVISION

## **CLOSURE REPORT**

**TEXAS - NEW MEXICO PIPE LINE COMPANY  
MONUMENT SITE NO. 7  
UNIT P, SECTION 24, TOWNSHIP 19 SOUTH, RANGE 36 EAST  
LEA COUNTY, NEW MEXICO**



5309 Wurzbach, Suite 100  
San Antonio, Texas 78238  
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## CLOSURE REPORT

**TEXAS - NEW MEXICO PIPE LINE COMPANY  
MONUMENT SITE NO. 7  
UNIT P, SECTION 24, TOWNSHIP 19 SOUTH, RANGE 36 EAST  
LEA COUNTY, NEW MEXICO**

PREPARED FOR:

***EQUIVA SERVICES, LLC***  
1670 Broadway, Suite 2600  
Denver, Colorado 80202-4899

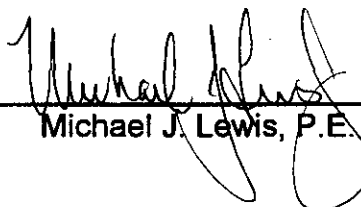
Mr. Marc Oler

PREPARED BY:

***KEI***

  
\_\_\_\_\_  
Summer Ford  
Project Manager

  
\_\_\_\_\_  
Theresa Nix  
Project Manager

  
\_\_\_\_\_  
Michael J. Lewis, P.E.

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## **PURPOSE AND SCOPE**

The objective of the site closure activities was to obtain closure for Monument Site No. 7 based on New Mexico Oil Conservation Division (OCD) regulations. The following activities were performed to achieve this objective:

- determination of closure standards
- removal of impacted soil
- characterization of removed impacted soil
- confirmation sampling in excavation
- off-site landfarming of impacted soil

## **SITE LOCATION AND BACKGROUND**

The Texas - New Mexico Pipe Line Company (TNMPL) alleged release site is located approximately 2.5 miles northwest of Monument, Lea County, New Mexico in Unit P, Section 24, Township 19 South, Range 36 East. A site location map is presented as FIG. 1. Site details and sampling locations are presented on FIG. 2.

Monument Site No. 7 is owned by Mr. Jimmy Cooper. Site No. 7 includes 3 adjacent surface stains numbered 7A, 7B, and 7C along the pipeline. Features observed at the site included the following:

- Site 7A: surface stain approximately 10 feet by 15 feet
- Site 7B: irregular surface stain approximately 12 feet by 30 feet and 40 feet by 150 feet
- Site 7C: surface stain approximately 10 feet in diameter

Ten soil borings were advanced on March 13 and 25, 1997 and April 4 and 5, 1997, to approximate depths varying from 12 to 55 feet below the ground surface. Ground water was encountered at an approximate depth of 50 feet below the ground surface. Soil samples were collected for field screening and selected samples submitted for laboratory analysis. The results of this investigation were presented in the KEI report dated August 15, 1997.

## **SOIL INVESTIGATION**

On November 3, 1998, an additional soil boring (designated B7B-7) was installed utilizing air rotary drilling. The boring was advanced to an approximate depth of 23 feet below ground surface. This depth placed the bottom of the boring below the depth of apparent impacted soils as determined by head-space analysis of samples in the field using a photo-ionization detector (PID). Soil samples were collected at selected intervals from the ground surface to the boring termination. The soils were classified in the field, soil samples were field screened, and selected samples were prepared and shipped to the laboratory for analysis. Upon completion of sampling activities, the soil boring was backfilled to the surface with a cement/bentonite grout.

Ground water was not encountered in the soil boring, however, ground water is estimated to be approximately 50 feet below the ground surface, based on the investigation conducted in 1997. The location of the soil boring is presented on FIG. 2.

## SOIL DESCRIPTION

The subsurface soil profile was classified in general accordance with the Unified Soil Classification System by visually observing the soil samples obtained during the assessment. In general, 2 soil types were encountered in the soil boring. A general description of the soil, approximate thickness, and head-space sample results for each soil type are as follows:

### Soil Type I

This soil type consisted of dark brown gravel encountered at the surface. The gravel was clayey to very clayey with limestone fragments and some organics and moist. The observed thickness of this soil type was approximately 1 foot. The head-space reading from the sample of this soil type was 183 ppm.

### Soil Type II

This soil type consisted of light grey to reddish brown limestone and was encountered below Soil Type I and extended to the boring termination. The limestone was well cemented and interbedded with sandstone, hard to very hard, and moist. The observed thickness of this soil type was approximately 22 feet. Head-space readings from samples of this soil type varied from below the instrument detection limit (ND) to 214 ppm.

A soil boring log indicating the subsurface soil profile, depths at which soil samples were obtained, head-space results, laboratory results, and generalized geologic profile is presented on FIG. 3.

## SOIL SAMPLING

Soil samples were collected every 2 feet for the first 10 feet and every 5 feet thereafter to the boring termination. Soil samples selected for analytical testing consisted of the following:

- Three soil samples from the soil boring were tested for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons diesel range organics (TPH-DRO).
- One sample exhibiting the highest concentration of TPH was tested for SPLP volatile organic compounds (VOC), SPLP semi-volatile organic compounds (SVOC), and SPLP TPH.

CONSTITUENT	CONCENTRATIONS (mg/kg)
Benzene	ND to 0.231
BTEX	ND to 2.562
TPH	11.8 to 1,140

All SPLP VOC, SPLP SVOC, and SPLP TPH constituents were ND.

Soil laboratory results are summarized in TABLE I. Analytical laboratory reports and chain-of-custody documentation are presented in APPENDIX A. QA/QC Procedures are presented in APPENDIX B.

## CLOSURE ACTIVITIES

### WATER WELL SURVEY

A search of State of New Mexico water well registrations indicated 9 registered water wells potentially within a 1/2-mile radius of the site. Approximate locations of the wells are presented on FIG. 1. A copy of the well registration information is presented in APPENDIX C.

### CLOSURE STANDARDS

The New Mexico OCD Guidelines for Remediation of Leaks, Spills, and Releases contains the standard criteria for remediation activities. A ranking analysis for the site was performed to determine appropriate soil remediation levels. The ranking analysis is as follows:

Depth to Ground Water	Less than 50 Feet	20 Points
Well Head Protection	Less Than 1000 Feet to Water Source	20 Points
	Greater Than 200 Feet to Private Water Source	0 Points
Surface Water Body	Greater Than 1000 Feet	0 Points
<b>Total Ranking Score</b>		<b>40 Points</b>

Based on the total ranking score, the closure objectives for this site for concentrations of BTEX and TPH are summarized below.

CONSTITUENT	CLOSURE CONCENTRATIONS (mg/kg)
BENZENE	10
BTEX	50
TPH	100 + Background

### SOIL EXCAVATION, CHARACTERIZATION, LANDFARMING, AND CONFIRMATION

Hydrocarbon impacted soil was excavated in the vicinity of the pipeline repair and in the areas of observed staining. The excavated soils were stockpiled on plastic at the site. The measurements of the excavation and soils and gravel removed are summarized below:

MEASUREMENT	APPROXIMATE VALUE
Length	200 feet
Width	50 to 75 feet
Area	12,500 square feet
Depth	6 to 12 feet
Volume Landfarmed	2,310 cubic yards
Volume to Gravel Pit	3,836 cubic yards
Approximate Depth to Water (based on well records within a 1 mile radius of the site)	50 feet

Excavated gravel (caliche) was hauled to Jimmy Cooper's gravel pit. Excavated soils were hauled to C&C Landfarm beginning on January 13, 1999, and finishing on February 5, 1999. Disposal documentation is included in APPENDIX D. Analytical results from composite samples of the stockpile obtained on January 7, 1999, indicated the following concentration ranges:

CONSTITUENT	CONCENTRATION RANGE (mg/kg)
BENZENE	ND
BTEX	0.111 and 1.026
TPH	1,777 and 2,651

During investigations performed by KEI, composite soil samples from the sides and bottom of the excavated area were submitted for determination of BTEX and TPH concentrations. The excavated area was divided into 4 sections: Section A, Section B, Section C, and Section D. Excavation activities began at the site on December 11, 1998. Excavation samples collected on January 7, 1999 and January 15, 1999, revealed TPH concentrations below closure limits. Final concentration ranges are summarized below:

CONSTITUENT	SECTION A (mg/kg)	SECTION B (mg/kg)	SECTION C (mg/kg)	SECTION D (mg/kg)
BENZENE	ND	ND	ND	ND
BTEX	ND	ND	ND to 0.718	ND
TPH	ND	ND	ND	ND to 15

Soil analytical results are summarized in TABLE I. The laboratory reports and chain-of-custody documentation are provided in APPENDIX A. Sampling locations and final results are shown on FIG. 2.

## CLOSURE SUMMARY

The following can be summarized from field and laboratory data:

- previously impacted soil was excavated, stockpiled, and landfarmed off-site
- samples obtained from the excavated area of the site indicated BTEX and TPH concentrations below closure standards

Based on activities completed at the site and analytical results from selected soil samples, we request the site be closed under OCD regulations.



# MONUMENT NORTH QUADRANGLE

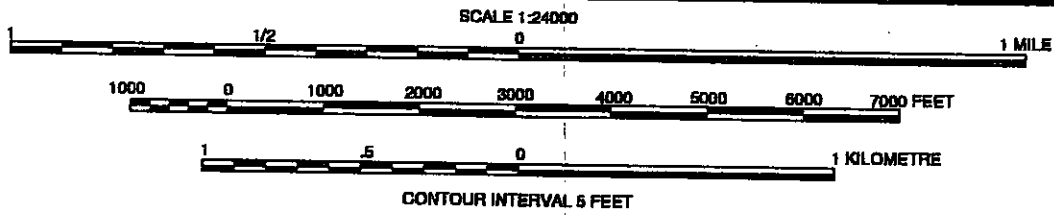
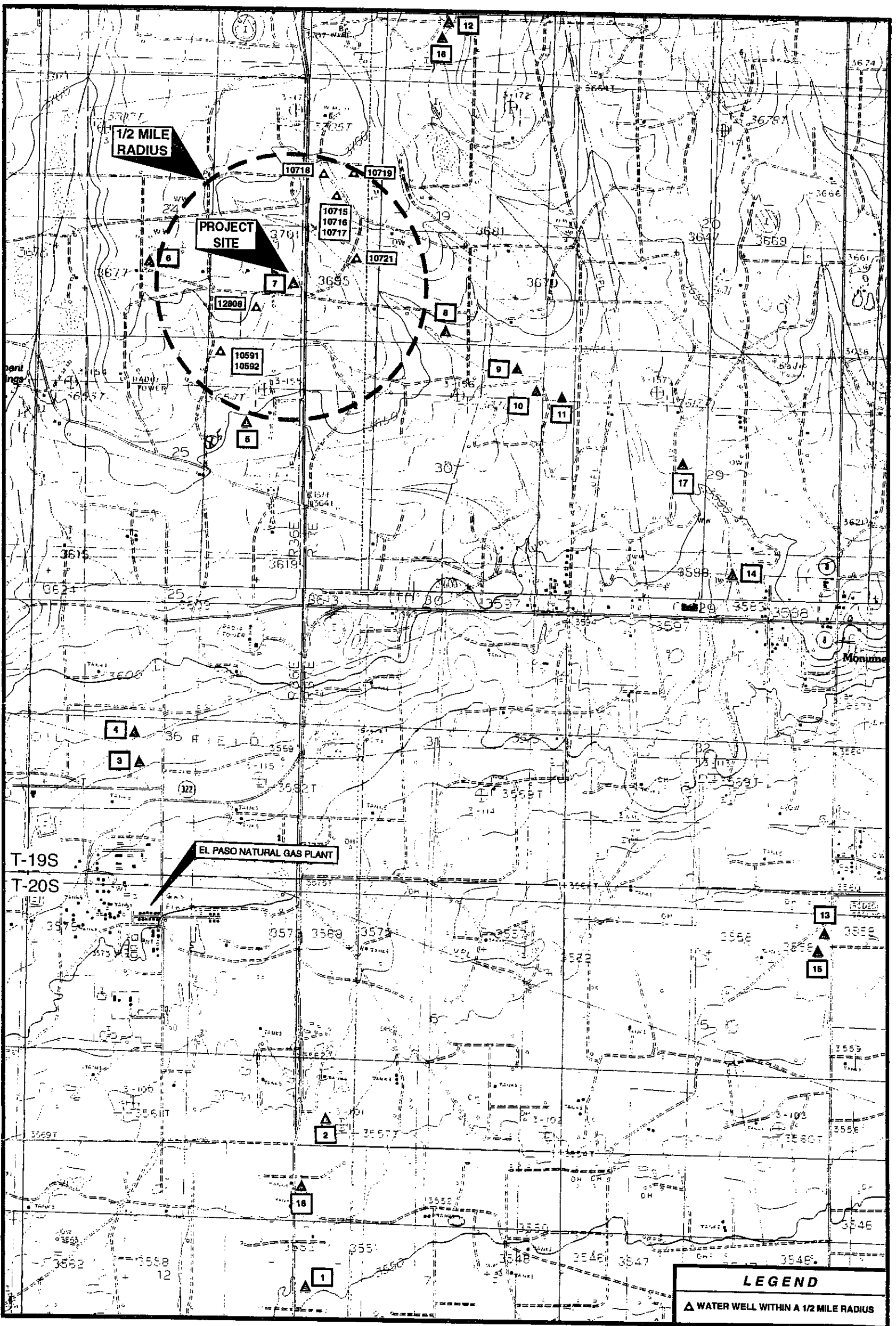
NEW MEXICO - LEA COUNTY

PRINTED 1985

# MONUMENT SOUTH QUADRANGLE

NEW MEXICO - LEA COUNTY

PRINTED 1985



## LEGEND

Δ WATER WELL WITHIN A 1/2 MILE RADIUS

## SITE LOCATION MAP

TEXAS - NEW MEXICO PIPE LINE CO.

MONUMENT SITE NO. 7

LEA COUNTY, NEW MEXICO

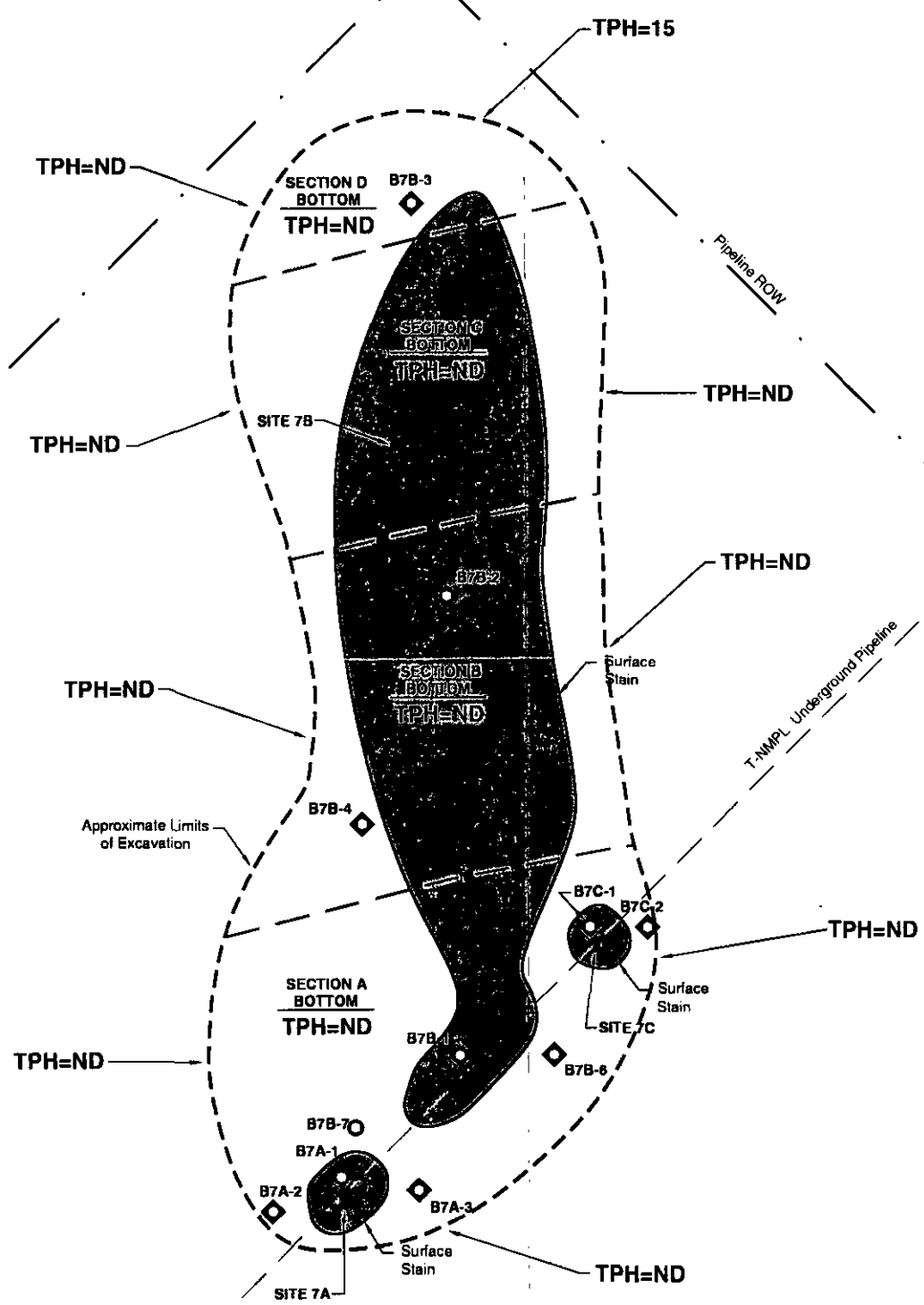
610057

FIG 1

kei



**CLOSURE LEVEL**  
TPH= 100 mg/kg



**LEGEND**

Soil Boring Location advanced by KEI on November 3, 1998.

Soil Boring Location advanced by KEI during March and April 1997.

Surface Stain

Approximate Limits of Excavation

TPH=

Total Petroleum Hydrocarbons Concentration (mg/kg)

ND=

Not Detected above detection / reporting limit.

NOTES:

Bottom and sidewall samples were composite samples.

**SITE DETAILS**

TEXAS - NEW MEXICO PIPE LINE CO.      MONUMENT SITE NO. 7      LEA COUNTY, NEW MEXICO

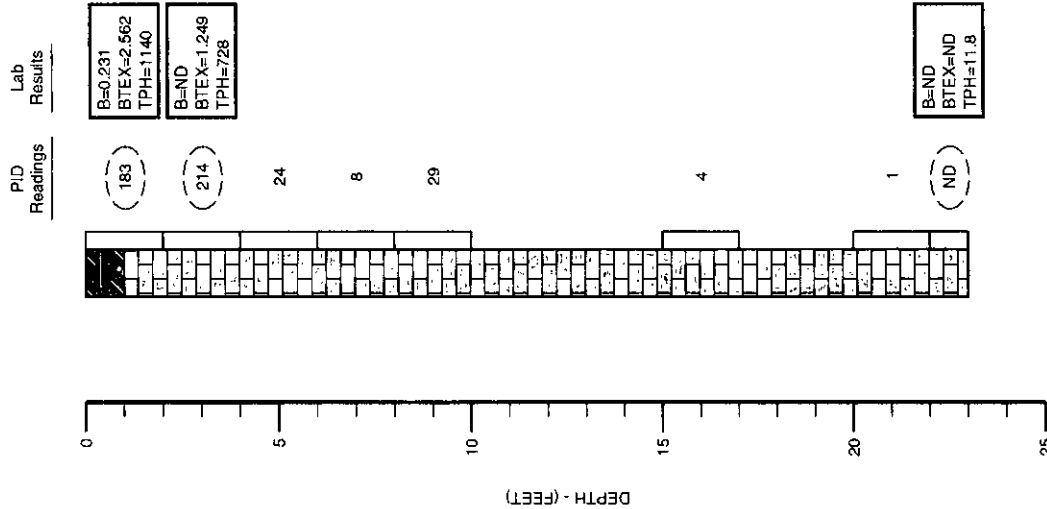
610057-2-7

FIG 2



6026598-RM-G-01577PH

# **B7B-7**



## **LEGEND**



Gravel (GC), clayey to very clayey with limestone fragments and some organics, moist, dark brown.



Limestone, well cemented and interbedded with sandstone, hard to very hard, moist, light grey to reddish brown.



Indicates the depth interval from which a soil sample was selected and prepared for field head-space and/or laboratory analysis.



Indicates sample selected for laboratory analysis.

B =

Benzene Concentration (mg/kg)

BTEX =

Total BTEX Concentration (mg/kg)

TPH =

Total Petroleum Hydrocarbon Concentration (mg/kg)

PID =

Head-space readings in ppm obtained with a photo-ionization detector.

ND =

Indicates the concentration was below instrument detection limits.

## **NOTES:**

1. The soil boring was advanced utilizing an air rotary rig on November 3, 1998.
2. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
3. The depths indicated are referenced from the ground surface.
4. The soil boring was grouted to the ground surface with a cement and bentonite grout.

## GENERAL NOTES

- ND - Indicates constituent was not detected above the method detection or reporting limit.  
--- - Indicates depth not applicable (TABLE I).

### Method detection or reporting limits:

BTEX	- 0.050 to 0.100 mg/kg
TPH	- 10.0 to 50.0 mg/kg
SPLP VOC	- 0.025 to 0.050 mg/l
SPLP SVOC	- 0.005 to 0.013 mg/l
SPLP TPH	- 0.8 ppm

### Laboratory test methods:

BTEX	- EPA Method SW846-8021B, 5030
TPH	- EPA Modified Method 8015-DRO
SPLP VOC	- EPA Method 1312/8260
SPLP SVOC	- EPA Method 1312/8270
SPLP TPH	- EPA Method 1312/418.1

**TABLE I**

**SUMMARY OF SOIL RESULTS - BTEX AND TPH  
TEXAS - NEW MEXICO PIPE LINE COMPANY  
MONUMENT SITE NO. 7  
LEA COUNTY, NEW MEXICO**

SAMPLE LOCATION	SAMPLE DATE	DEPTH (feet)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	XYLENES (mg/kg)	TOTAL BTEX (mg/kg)	TPH (mg/kg)
B7B7	11/3/98	0 - 2'	0.231	0.231	0.430	1.670	2.562	1,140
B7B7	11/3/98	2 - 4'	ND	ND	0.267	0.982	1.249	728
B7B7	11/3/98	22 - 23'	ND	ND	ND	ND	ND	11.8
Section A North Wall	1/7/99	---	ND	ND	ND	ND	ND	ND
Section A South Wall	1/7/99	---	ND	ND	ND	ND	ND	ND
Section A West Wall	1/7/99	---	ND	ND	ND	ND	ND	ND
Section A Bottom	1/7/99	---	ND	ND	ND	ND	ND	550
Section B North Wall	1/7/99	---	ND	ND	ND	ND	ND	ND
Section B South Wall	1/7/99	---	ND	ND	ND	ND	ND	ND
Section B Bottom	1/7/99	---	ND	ND	ND	ND	ND	182
Section C North Wall	1/7/99	---	ND	ND	ND	ND	ND	ND
Section C South Wall	1/7/99	---	ND	ND	ND	ND	ND	469
Section C Bottom	1/7/99	---	ND	0.143	0.153	0.422	0.718	ND
Section D North Wall	1/7/99	---	ND	0.212	0.331	0.881	1.424	329
Section D South Wall	1/7/99	---	ND	ND	ND	0.156	0.156	237
Section D Bottom Ramp	1/7/99	---	ND	ND	ND	ND	ND	ND
Stockpile Southeast	1/7/99	---	ND	ND	0.124	0.902	1.026	2,651
Stockpile Southwest	1/7/99	---	ND	ND	ND	0.111	0.111	1,777
Section A Bottom	1/15/99	---	ND	ND	ND	ND	ND	ND

**TABLE I**

**SUMMARY OF SOIL RESULTS - BTEX AND TPH  
TEXAS - NEW MEXICO PIPE LINE COMPANY  
MONUMENT SITE NO. 7  
LEA COUNTY, NEW MEXICO**

<b>SAMPLE LOCATION</b>	<b>SAMPLE DATE</b>	<b>DEPTH (feet)</b>	<b>BENZENE (mg/kg)</b>	<b>TOLUENE (mg/kg)</b>	<b>ETHYL- BENZENE (mg/kg)</b>	<b>XYLENES (mg/kg)</b>	<b>TOTAL BTEX (mg/kg)</b>	<b>TPH (mg/kg)</b>
Section B Bottom	1/15/99	---	ND	ND	ND	ND	ND	ND
Section C South Wall	1/15/99	---	ND	ND	ND	ND	ND	ND
Section D North Wall	1/15/99	---	ND	ND	ND	ND	ND	ND
Section D South Wall	1/15/99	---	ND	ND	ND	ND	ND	15

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

KEI  
ATTN: THERESA NIX  
5309 WURZBACH, STE. 100  
SAN ANTONIO, TEXAS 78238  
FAX: 512-364-3556  
FAX: 505-397-5125 (Randy Offield)  
FAX: 505-738-9006 (Stas Grover)

Receiving Date: 01/08/99  
Sample Type: Soil  
Project #: 610057-2-7-0  
Project Name: Site 7  
Project Location: Monument, N.M.

Analysis Date: 01/09 & 01/10/99  
Sampling Date: 01/07/99  
Sample Condition: Intact/Iced

ELT#	FIELD CODE	BENZENE	TOLUENE	ETHYLBENZENE	m,p-XYLENE	o-XYLENE	TPH(DRO) C10-C28
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
16678	Sec. A North Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16679	Sec. A South Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16680	Sec. A West Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16681	Sec. A Bottom	<0.100	<0.100	<0.100	<0.100	<0.100	550
16682	Sec. B North Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16683	Sec. B South Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16684	Sec. B Bottom	<0.100	<0.100	<0.100	<0.100	<0.100	182
16685	Sec. C North Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16686	Sec. C South Wall	<0.100	<0.100	<0.100	<0.100	<0.100	469
16687	Sec. C Bottom	<0.100	0.143	0.153	0.277	0.145	<10
16688	Sec. D North Wall	<0.100	0.212	0.331	0.537	0.344	329
16689	Sec. D South Wall	<0.100	<0.100	<0.100	0.156	<0.100	237
16690	Sec. D Bottom Ramp	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16691	SPSE	<0.100	<0.100	0.124	0.486	0.416	2651
16692	SPSW	<0.100	<0.100	<0.100	0.111	<0.100	1777

% IA	92	93	94	94	94	107
% EA	92	92	93	93	92	114
BLANK	<0.100	<0.100	<0.100	<0.100	<0.100	<10

METHODS: SW 846-8021B, 5030, 8015M DRO

  
Raland K. Tuttle

1-11-99  
Date

# Environmental Lab of Texas, Inc. 12600 West 1-20 East Odessa, Texas 79763

(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Theresa Nix Phone #: 512-364-3440

FAX #: 512-364-3556

ANALYSIS REQUEST

Company Name & Address:

K&E Consultants 5309 Wurzbach, Ste 100 San Antonio, TX 78238

Project #:

610057-2-7-0

Project Name:

Site 7

Project Location:

Monument, NM

Sampler Signature:

*Shirley Green*

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX						PRESERVATIVE METHOD					SAMPLING	
				WATER	SOIL	AIR	SLUDGE	OTHER	HCL	HNO3	ICE	NONE	OTHER	DATE	TIME	
16678	Sec - A North Well	1	4oz	✓								✓			12/6/99	11:55
16679	Sec - A South Well															11:50
16680	Sec - A West Well															11:46
16681	Sec - A Bottom															11:35
16682	Sec - B North Well															12:00
16683	Sec - B South Well															12:05
16684	Sec - B Bottom															12:10
16685	Sec - C North Well															12:15
16686	Sec - C South Well															12:20
16687	Sec - C Bottom	2	1	✓									✓		✓	12:10

BTEX 8020/5000  
TPH 4001/8015 MDR0  
TCLP Metals Ag As Ba Cd Cr Pb Hg Se  
TCLP Metals Ag As Ba Cd Cr Pb Hg Se  
TCLP Volatiles  
TCLP Semi Volatiles  
TDB  
RCI

Relinquished by:	<i>Shirley Green</i>	Date:	1/8/99	Time:	9:15	Received by:	<i>Shirley Green</i>	REMARKS
Relinquished by:	<i>Shirley Green</i>	Date:	1-8-99	Time:	15:00	Received by:	<i>Shirley Green</i>	Please see Results To: Randy O'Hall. Theresa Nix - 512-364-3556 SAMS Grower 505-738-9006
Relinquished by:	<i>Shirley Green</i>	Date:		Time:		Received by:		If you have any questions please call sites @ 505-631-1278



### CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Phone #: 512-364-3440  
FAX #: 512-364-3556

Kie-i Consultants 5305 Wurzbach, Ste 100 San Antonio, TX 78238

Size 7

## Summary Statement

Stanley

DATE	TIME	PRESERVATIVE METHOD	MATRIX	SAMPLING
			WATER	
			SOIL	
			AIR	
			SLUDGE	
			OTHER	
		HCL		
		HNO <sub>3</sub>		
		NONE		
		OTHER		

Time	Location	Notes
12:30	Y277	✓
12:32		✓
12:34		✓
12:36		✓
12:38		✓
12:40		✓
12:42		✓
12:44		✓
12:46		✓
12:48		✓
12:50		✓
12:52		✓
12:54		✓
12:56		✓
12:58		✓
13:00		✓

[illegible]

REMA	Place	Place
Received by:	Received by:	Received by Laboratory:
9:15	Party Office	Reinhardt Jacob
8:00		

Phone Fax Results to: Randy of field

Therese Nix - 512-364-3556  
SAS Grover - 505-738-9206

Please call SMS for any questions ②

86-1-127-505

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

KEI  
ATTN: THERESA NIX  
5309 WURZBACH SUITE 100  
SAN ANTONIO, TEXAS 78238  
FAX: 512-364-3556  
FAX: 915-682-4182


Receiving Date: 01/16/99  
Sample Type: Soil  
Project #: 610057-2-7-0  
Project Name: Site 7  
Project Location: Monument, N.M.

Analysis Date: 01/16/99  
Sampling Date: 01/15/99  
Sample Condition: Intact/Iced

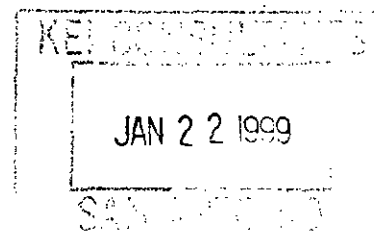
ELT#	FIELD CODE	TPH (DRO)					
		BENZENE mg/kg	TOLUENE mg/kg	ETHYLBENZENE mg/kg	m,p-XYLENE mg/kg	o-XYLENE mg/kg	C10-C28 mg/kg
16760	Sec. A Bottom	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16761	Sec. B Bottom	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16762	Sec. C South Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16763	Sec. D North Wall	<0.100	<0.100	<0.100	<0.100	<0.100	<10
16764	Sec. D South Wall	<0.100	<0.100	<0.100	<0.100	<0.100	15

% IA	112	105	103	102	104	90
% EA	114	109	107	108	108	98
BLANK	<0.100	<0.100	<0.100	<0.100	<0.100	<10

METHODS: SW 846-8021B, 5030, 8015m DRO

  
Raland K. Tuttle

1-18-99  
Date





# **ANALYTICAL REPORT 1-84271**

**for**

**K.E.I. Consultants, Inc.**

**Project Manager: Theresa Nix**

**Project Name: TNMPL Monument #7**

**Project Id: 610057**

**December 9, 1998**



**HOUSTON - DALLAS - SAN ANTONIO**

**11381 Meadowglen Lane Suite L \* Houston, Texas 77082-2647**  
**Phone (281) 589-0692 Fax (281) 589-0695**



11381 Meadowglen Suite L  
Houston, Texas 77082-2647  
(281) 589-0692 Fax: (281) 589-0695  
Houston - Dallas - San Antonio - Latin America

December 9, 1998

Project Manager: Theresa Nix  
K.E.I. Consultants, Inc.  
5309 Wurzbach Rd. Suite 100  
San Antonio, TX 78238

Reference: **XENCO Report No.: 1-84271**  
**Project Name: TNMPL Monument #7**  
**Project ID: 610057**  
**Project Address: Lea County, NM.**

Dear Theresa Nix:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with XENCO Chain of Custody Number 1-84271. All results being reported to you apply only to the samples analyzed, properly identified with a Laboratory ID number. This letter documents the official transmission of the contents of the report and validates the information contained within.

All the results for the quality control samples passed thorough examination. Also, all parameters for data reduction and validation checked satisfactorily. In view of this, we are able to release the analytical data for this report within acceptance criteria for accuracy, precision, completeness or properly flagged.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 3 years in our archives and after that time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in COC No. 1-84271 will be filed for 60 days, and after that time they will be properly disposed of without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

XENCO operates under the A2LA guidelines. Our Quality System meets ISO/IEC Guide 25 requirements which is strictly implemented and enforced through our standard QA/QC procedures.

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Sincerely,

  
Eddie L. Clemons, Jr.  
QA/QC Manager

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY!*

# ANALYTICAL CHAIN OF CUSTODY REPORT CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

XENCO COC#: 1-84271

Project Name: TNMPL Monument #7

Project ID: 610057

Date Received in Lab: Nov 5, 1998 10:10 by JO

Project Manager: Theresa Nix

Project Location: Lea County, NM.

XENCO contact : Carlos Castro/Karen Olson

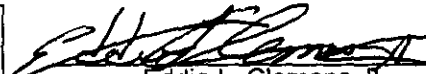
Date and Time									
Field ID	Lab. ID	Method Name	Method ID	Units	Turn Around	Sample Collected	Addition Requested	Extraction	Analysis
1 B7 (0-2')	184271-001	BTEX	SW-846	ppm	10 days	Nov 3, 1998 12:30		Nov 10, 1998 by HL	Nov 10, 1998 15:46 by HL
2		TPH8015M-D	SW-846 8015 M	mg/kg	10 days	Nov 3, 1998 12:30		Nov 9, 1998 by JM	Nov 14, 1998 15:52 by AM
3		VOA (8260)	EPA1312/8260	mg/kg	7 days	Nov 3, 1998 12:30	Nov17,1998 11:30	Nov 23, 1998 by CCE	Nov 23, 1998 17:00 by CCE
4		SPLP TPH	EPA	ppm	7 days	Nov 3, 1998 12:30	Nov17,1998 11:30	Nov 19, 1998 by EZ	Nov 19, 1998 17:25 by EZ
5		SPLP-SV(TCL)	SW846-1312/82	ug/L	7 days	Nov 3, 1998 12:30	Nov17,1998 11:30	Nov 19, 1998 by SS	Nov 20, 1998 13:07 by MM
6 B7(2-4')	184271-002	BTEX	SW-846	ppm	10 days	Nov 3, 1998 12:35		Nov 10, 1998 by HL	Nov 10, 1998 16:04 by HL
7		TPH8015M-D	SW-846 8015 M	mg/kg	10 days	Nov 3, 1998 12:35		Nov 9, 1998 by JM	Nov 14, 1998 16:57 by AM
8 B7(22-23')	184271-003	BTEX	SW-846	ppm	10 days	Nov 3, 1998 13:00		Nov 10, 1998 by HL	Nov 10, 1998 16:23 by HL
9		TPH8015M-D	SW-846 8015 M	mg/kg	10 days	Nov 3, 1998 13:00		Nov 9, 1998 by JM	Nov 14, 1998 09:19 by AM

**CERTIFICATE OF ANALYSIS SUMMARY 1-84271**
**K.E.I. Consultants, Inc.**
**Project Name: TNMPL Monument #7**
**Project ID: 610057**
**Project Manager: Theresa Nix**
**Project Location: Lea County, NM.**
**Date Received in Lab : Nov 5, 1998 10:10**
**Date Report Faxed: Dec 9, 1998**
**XENCO contact : Carlos Castro/Karen Olson**

Analysis Requested	Lab ID:	184271 001	184271 002	184271 003	
	Field ID:	B7B7	B7B7	B7B7	
	Depth:	0-2'	2-4'	22-23'	
	Matrix:	Solid	Solid	Solid	
	Sampled:	11/03/98 12:30	11/03/98 12:35	11/03/98 13:00	
TPH-DRO (Diesel) EPA 8015 M	Analyzed:	11/14/98 R.L.	11/14/98 R.L.	11/14/98 R.L.	
	Units:	mg/kg	mg/kg	mg/kg	
Total Petroleum Hydrocarbons		1140 (50.0)	728 (50.0)	11.8 (10.0)	
BTEX EPA 8021B	Analyzed:	11/10/98 R.L.	11/10/98 R.L.	11/10/98 R.L.	
	Units:	ppm	ppm	ppm	
Benzene		0.231 (0.050)	< 0.050 (0.050)	< 0.050 (0.050)	
Toluene		0.231 (0.050)	< 0.050 (0.050)	< 0.050 (0.050)	
Ethylbenzene		0.430 (0.050)	0.267 (0.050)	< 0.050 (0.050)	
m,p-Xylene		0.775 (0.100)	0.600 (0.100)	< 0.100 (0.100)	
o-Xylene		0.895 (0.050)	0.382 (0.050)	< 0.050 (0.050)	
Total BTEX		2.562	1.249	N.D.	
SPLP-Semivolatiles EPA1312/8270	Analyzed:	11/20/98 R.L.			
	Units:	mg/L			
Acenaphthene		< 0.005 (0.005)			
Acenaphthylene		< 0.005 (0.005)			
Anthracene		< 0.005 (0.005)			
Benz(a)anthracene		< 0.005 (0.005)			
Benzo(a)pyrene		< 0.005 (0.005)			
Benzo(b)fluoranthene		< 0.005 (0.005)			
Benzo(g,h,i)perylene		< 0.005 (0.005)			
Benzo(k)fluoranthene		< 0.005 (0.005)			
4-Bromophenyl-phenylether		< 0.005 (0.005)			
Butyl benzyl phthalate		< 0.005 (0.005)			
Carbazole		< 0.005 (0.005)			
4-Chloro-3-methylphenol		< 0.005 (0.005)			
4-Chloroaniline		< 0.005 (0.005)			
2-Chloronaphthalene		< 0.005 (0.005)			
2-Chlorophenol		< 0.005 (0.005)			
4-Chlorophenyl-phenyl ether		< 0.005 (0.005)			
Chrysene		< 0.005 (0.005)			
Di-n-butyl phthalate		< 0.005 (0.005)			
Di-n-octylphthalate		< 0.005 (0.005)			
Dibenz(a,h)anthracene		< 0.005 (0.005)			
Dibenzofuran		< 0.005 (0.005)			
1,2-Dichlorobenzene		< 0.005 (0.005)			
1,3-Dichlorobenzene		< 0.005 (0.005)			
1,4-Dichlorobenzene		< 0.005 (0.005)			

This report summary, and the entire report it represents, has been made for the exclusive and confidential use of K.E.I. Consultants, Inc..

The interpretations and results expressed through this analytical report represent the best judgment of XENCO Laboratories. Xenco Laboratories, however, assumes no responsibility and makes no warranty to the end use of the data hereby presented.

  
 Eddie L. Clemons, II  
 QA/QC Manager

**K.E.I. Consultants, Inc.**  
**Project Name: TNMPL Monument #7**
**Project ID: 610057**
**Project Manager: Theresa Nix**
**Project Location: Lea County, NM.**
**Date Received in Lab : Nov 5, 1998 10:10**
**Date Report Faxed: Dec 9, 1998**
**XENCO contact : Carlos Castro/Karen Olson**

Analysis Requested	Lab ID:	184271 001	184271 002	184271 003	
	Field ID:	B7B7	B7B7	B7B7	
	Depth:	0-2'	2-4'	22-23'	
	Matrix:	Solid	Solid	Solid	
	Sampled:	11/03/98 12:30	11/03/98 12:35	11/03/98 13:00	
<b>SPLP-Semivolatiles</b>	Analyzed:	11/20/98	R.L.		
<b>EPA1312/8270</b>	Units:	mg/L			
3,3'-Dichlorobenzidine		< 0.005 (0.005)			
2,4-Dichlorophenol		< 0.005 (0.005)			
Diethyl phthalate		< 0.005 (0.005)			
2,4-Dimethylphenol		< 0.005 (0.005)			
Dimethyl phthalate		< 0.005 (0.005)			
4,6-Dinitro-2-methylphenol		< 0.013 (0.013)			
2,4-Dinitrophenol		< 0.013 (0.013)			
2,4-Dinitrotoluene		< 0.005 (0.005)			
2,6-Dinitrotoluene		< 0.005 (0.005)			
Fluoranthene		< 0.005 (0.005)			
Fluorene		< 0.005 (0.005)			
Hexachlorobenzene		< 0.005 (0.005)			
Hexachlorobutadiene		< 0.005 (0.005)			
Hexachlorocyclopentadiene		< 0.005 (0.005)			
Hexachloroethane		< 0.005 (0.005)			
Indeno(1,2,3-cd)pyrene		< 0.005 (0.005)			
Isophorone		< 0.005 (0.005)			
2-Methylnaphthalene		< 0.005 (0.005)			
2-Methylphenol		< 0.005 (0.005)			
4-Methylphenol		< 0.005 (0.005)			
N-Nitrosodi-n-propylamine		< 0.005 (0.005)			
N-Nitrosodiphenylamine		< 0.005 (0.005)			
Naphthalene		< 0.005 (0.005)			
2-Nitroaniline		< 0.013 (0.013)			
3-Nitroaniline		< 0.013 (0.013)			
4-Nitroaniline		< 0.013 (0.013)			
Nitrobenzene		< 0.005 (0.005)			
2-Nitrophenol		< 0.005 (0.005)			
4-Nitrophenol		< 0.005 (0.005)			
Pentachlorophenol		< 0.013 (0.013)			
Phenanthrene		< 0.005 (0.005)			
Phenol		< 0.005 (0.005)			
Pyrene		< 0.005 (0.005)			
1,2,4-Trichlorobenzene		< 0.005 (0.005)			
2,4,5-Trichlorophenol		< 0.013 (0.013)			

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 Eddie L. Clemons, II  
 QA/QC Manager



**K.E.I. Consultants, Inc.**  
**Project Name: TNMPL Monument #7**

Project ID: 610057

Project Manager: Theresa Nix

Project Location: Lea County, NM.

Date Received in Lab : Nov 5, 1998 10:10


Date Report Faxed: Dec 9, 1998

**XENCO contact : Carlos Castro/Karen Olson**

Analysis Requested	Lab ID:	184271 001	184271 002	184271 003	
	Field ID:	B7B7	B7B7	B7B7	
	Depth:	0-2'	2-4'	22-23'	
	Matrix:	Solid	Solid	Solid	
	Sampled:	11/03/98 12:30	11/03/98 12:35	11/03/98 13:00	
SPLP-Semivolatiles EPA1312/8270	Analyzed: Units:	11/20/98 mg/L	R.L.		
2,4,6-Trichlorophenol		< 0.005 (0.005)			
bis(2-Chloroethoxy) methane		< 0.005 (0.005)			
bis(2-Chloroethyl) ether		< 0.005 (0.005)			
bis(2-Chloroisopropyl) ether		< 0.005 (0.005)			
bis(2-Ethylhexyl) phthalate		< 0.005 (0.005)			
SPLP Volatiles EPA 8260	Analyzed: Units:	11/23/98 mg/L	R.L.		
Benzene		< 0.025 (0.025)			
Bromobenzene		< 0.025 (0.025)			
Bromochloromethane		< 0.025 (0.025)			
Bromodichloromethane		< 0.025 (0.025)			
Bromoform		< 0.025 (0.025)			
Bromomethane		< 0.025 (0.025)			
Carbon tetrachloride		< 0.025 (0.025)			
Chlorobenzene		< 0.025 (0.025)			
Chlorodibromomethane		< 0.025 (0.025)			
Chloroethane		< 0.050 (0.050)			
Chloroform		< 0.025 (0.025)			
Chloromethane		< 0.050 (0.050)			
2-Chlorotoluene		< 0.025 (0.025)			
4-Chlorotoluene		< 0.025 (0.025)			
1,2-Dibromo-3-chloropropane		< 0.025 (0.025)			
1,2-Dibromoethane		< 0.025 (0.025)			
Dibromomethane		< 0.025 (0.025)			
1,2-Dichlorobenzene		< 0.025 (0.025)			
1,3-Dichlorobenzene		< 0.025 (0.025)			
1,4-Dichlorobenzene		< 0.025 (0.025)			
Dichlorodifluoromethane		< 0.025 (0.025)			
1,1-Dichloroethane		< 0.025 (0.025)			
1,2-Dichloroethane		< 0.025 (0.025)			
1,1-Dichloroethene		< 0.025 (0.025)			
1,2-Dichloropropane		< 0.025 (0.025)			
1,3-Dichloropropane		< 0.025 (0.025)			
2,2-Dichloropropane		< 0.025 (0.025)			

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 Eddie L. Clemons, II  
 QA/QC Manager

**K.E.I. Consultants, Inc.**  
**Project Name: TNMPL Monument #7**
**Project ID: 610057**
**Project Manager: Theresa Nix**
**Project Location: Lea County, NM.**
**Date Received in Lab : Nov 5, 1998 10:10**
**Date Report Faxed: Dec 9, 1998**
**XENCO contact : Carlos Castro/Karen Olson**

<b>Analysis Requested</b>	Lab ID:	184271 001	184271 002	184271 003	
	Field ID:	B7B7	B7B7	B7B7	
	Depth:	0-2'	2-4'	22-23'	
	Matrix:	Solid	Solid	Solid	
	Sampled:	11/03/98 12:30	11/03/98 12:35	11/03/98 13:00	
<b>SPLP Volatiles</b>	Analyzed:	11/23/98	R.L.		
<b>EPA 8260</b>	Units:	mg/L			
1,1-Dichloropropene		< 0.025 (0.025)			
Ethylbenzene		< 0.025 (0.025)			
Hexachlorobutadiene		< 0.025 (0.025)			
Isopropylbenzene (Cumene)		< 0.025 (0.025)			
MTBE		< 0.050 (0.050)			
Methylene chloride		< 0.050 (0.050)			
Naphthalene		< 0.025 (0.025)			
Styrene		< 0.025 (0.025)			
1,1,1,2-Tetrachloroethane		< 0.025 (0.025)			
1,1,2,2-Tetrachloroethane		< 0.025 (0.025)			
Tetrachloroethene		< 0.025 (0.025)			
Toluene		< 0.025 (0.025)			
1,2,3-Trichlorobenzene		< 0.025 (0.025)			
1,2,4-Trichlorobenzene		< 0.025 (0.025)			
1,1,1-Trichloroethane		< 0.025 (0.025)			
1,1,2-Trichloroethane		< 0.025 (0.025)			
Trichloroethene		< 0.025 (0.025)			
Trichlorofluoromethane		< 0.025 (0.025)			
1,2,3-Trichloropropane		< 0.025 (0.025)			
1,2,4-Trimethylbenzene		< 0.025 (0.025)			
1,3,5-Trimethylbenzene		< 0.025 (0.025)			
Vinyl chloride		< 0.025 (0.025)			
cis-1,2-Dichloroethene		< 0.025 (0.025)			
cis-1,3-Dichloropropene		< 0.025 (0.025)			
m,p-Xylene		< 0.025 (0.025)			
n-Butylbenzene		< 0.025 (0.025)			
n-Propylbenzene		< 0.025 (0.025)			
o-Xylene		< 0.025 (0.025)			
p-Isopropyltoluene (p-Cymene)		< 0.025 (0.025)			
sec-Butylbenzene		< 0.025 (0.025)			
tert-Butylbenzene		< 0.025 (0.025)			
trans-1,2-Dichloroethene		< 0.025 (0.025)			
trans-1,3-Dichloropropene		< 0.025 (0.025)			

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 Eddie L. Clemons, II  
 QA/QC Manager

**CERTIFICATE OF ANALYSIS SUMMARY 1-84271**

**K.E.I. Consultants, Inc.**  
**Project Name: TNMPL Monument #7**

**Project ID: 610057**  
**Project Manager: Theresa Nix**  
**Project Location: Lea County, NM.**

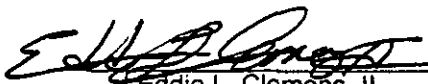
**Date Received in Lab : Nov 5, 1998 10:10**

**Date Report Faxed: Dec 9, 1998**

**XENCO contact : Carlos Castro/Karen Olson**

<b>Analysis Requested</b>	Lab ID:	184271 001	184271 002	184271 003	
	Field ID:	B7B7	B7B7	B7B7	
	Depth:	0-2'	2-4'	22-23'	
	Matrix:	Solid	Solid	Solid	
	Sampled:	11/03/98 12:30	11/03/98 12:35	11/03/98 13:00	
SPLP TPH 1312/418.1	Analyzed:	11/19/98	R.L.		
	Units:	ppm			
Total Petroleum Hydrocarbons		< 0.8 (0.8)			

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Eddie L. Clemons, II  
QA/QC Manager



Certificate Of Quality Control for Batch: 18A25D97

**SW- 846 5030/3021B BTEX**

Date Validated: Nov 11, 1998 09:30

Analyst: HL

Date Analyzed: Nov 10, 1998 10:05

Matrix: Solid

**BLANK SPIKE ANALYSIS**

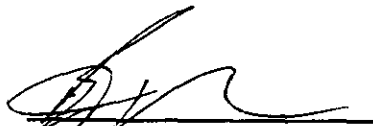
Parameter	[A]	[B]	[C]	[D]	[E]	[F]	[G] Qualifier
	Blank Result	Blank Spike Result	Blank Spike Amount	Detection Limit	QC	LIMITS	
	ppm	ppm	ppm	ppm	Blank Spike Recovery %	Recovery Range %	
Benzene	< 0.0010	0.1030	0.1000	0.0010	103.0	65-135	
Toluene	< 0.0010	0.1020	0.1000	0.0010	102.0	65-135	
Ethylbenzene	< 0.0010	0.1030	0.1000	0.0010	103.0	65-135	
m,p-Xylene	< 0.0020	0.2060	0.2000	0.0020	103.0	65-135	
o-Xylene	< 0.0010	0.1020	0.1000	0.0010	102.0	65-135	

Blank Spike Recovery [E] =  $100 \times (B-A)/(C)$

N.C. = Not calculated, data below detection limit

N.D. = Below detection limit

All results are based on MDL and validated for QC purposes only

  
Eddie L. Clemons, II  
QA/QC Manager

**Certificate Of Quality Control for Batch : 18A25D97**


**SW- 846 5030/8021B RTEX**

Date Validated: Nov 11, 1998 09:30  
Date Analyzed: Nov 10, 1998 10:42

Analyst: HL  
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY												
Q.C. Sample ID 184272- 001	Parameter	[A]	[B]	[C]	[D]	[E]	Matrix	[F]	[G]	[H]	[I]	[J]
		Sample Result ppm	Matrix Spike Result ppm	Matrix Spike Duplicate Result ppm	Matrix Spike Amount ppm	Detection Limit ppm	Limit Relative Difference %	QC Spike Relative Difference %	QC Matrix Spike Recovery %	QC M.S.D. Recovery %	Matrix Spike Recovery Range %	Qualifier
	Benzene	< 0.020	1.872	1.984	2.000	0.020	25.0	5.8	93.6	99.2	65-135	
	Toluene	< 0.020	1.862	1.980	2.000	0.020	25.0	6.1	93.1	99.0	65-135	
	Ethylbenzene	< 0.020	1.882	2.000	2.000	0.020	25.0	6.1	94.1	100.0	65-135	
	m,p-Xylene	< 0.040	3.800	4.020	4.000	0.040	25.0	5.6	95.0	100.5	65-135	
	o-Xylene	< 0.020	1.906	1.980	2.000	0.020	25.0	3.8	95.3	99.0	65-135	

Spike Relative Difference [F] =  $200 \cdot (B-C)/(B+C)$   
Matrix Spike Recovery [G] =  $100 \cdot (B-A)/D$   
M.S.D. = Matrix Spike Duplicate  
M.S.D. Recovery [H] =  $100 \cdot (C-A)/D$   
N.D. = Below detection limit or not detected  
All results are based on MDL and validated for QC purposes

  
Eddie L. Clemmons, II  
QA/QC Manager



## Certificate Of Quality Control for Batch : 18A40H67

### SW- 846 8015 M TPH- DRO (Diesel)

Date Validated: Nov 16, 1998 11:50

Analyst: AM

Date Analyzed: Nov 14, 1998 06:06

Matrix: Solid

#### BLANK SPIKE ANALYSIS

Parameter	[A]	[B]	[C]	[D]	[E]	[F]	[G]
	Blank	Blank Spike	Blank	Detection	QC	LIMITS	Qualifier
	Result	Result	Spike		Blank Spike	Recovery	
	mg/kg	mg/kg	Amount		Recovery	Range	
			mg/kg	Limit	%	%	
Total Petroleum Hydrocarbons	< 10.00	162	200	10.00	81.0	65-135	

Blank Spike Recovery [E] =  $100 \times (B-A) / (C)$

N.C. = Not calculated, data below detection limit

N.D. = below detection limit

All results are based on MDL and validated for QC purposes only

Eddie L. Clemons, II

QA/QC Manager



Certificate Of Quality Control for Batch : 18A40H67

SW- 846 3015 M TPH- DR0 (Diesel)

Date Validated: Nov 16, 1998 11:50  
Date Analyzed: Nov 14, 1998 07:10

Analyst: AM  
Matrix: Solid

MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY													
Q.C. Sample ID 181219-001	[A] Sample Result  mg/kg	[B] Matrix Spike Result  mg/kg	[C] Matrix Spike Duplicate Result  mg/kg	[D] Matrix Spike Amount  mg/kg	[E] Detection Limit  mg/kg	Matrix Limit Relative Difference  %	[F]		[G] QC	[H]		[I] Matrix Spike Recovery Range  %	[J] Qualifier
							QC	Spike Relative Difference		QC	M.S.D. Recovery		
Parameter													
Total Petroleum Hydrocarbons	< 10.00	241	168	200	10.00	30.0	35.7		120.5		84.0	65-135	

Spike Relative Difference [F] =  $200 \times (B-C) / (B+C)$   
Matrix Spike Recovery [G] =  $100 \times (B-A) / [D]$   
M.S.D. = Matrix Spike Duplicate  
M.S.D. Recovery [H] =  $100 \times (C-A) / [D]$   
N.D. = Below detection limit or not detected  
All results are based on MDL and validated for QC purposes

Eddie L. Clemons, II  
QA/QC Manager

**Certificate Of Quality Control for Batch : 18A23E61**

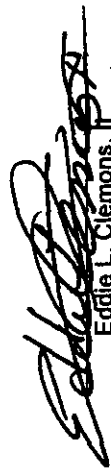
**EPA1312/3260 SPLP Volatiles**

Date Validated: Nov 25, 1998 10:00  
Date Analyzed: Nov 23, 1998 17:32

Analyst: CCE  
Matrix: Solid

BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY											
Parameter	[A] Blank Result mg/kg	[B] Blank Spike Result mg/kg	[C] Blank Spike Duplicate Result mg/kg	[D] Blank Spike Amount mg/kg	[E] Detection Limit mg/kg	Blank Limit Relative Difference %	[F] QC		[G] QC		[J] Qualifier
							Spike Relative Difference %		Blank Spike Recovery Range %		
Benzene	< 0.0010	0.0447	0.0418	0.0500	0.0010	20.0	6.7		89.4	83.6	66-142
Chlorobenzene	< 0.0010	0.0452	0.0428	0.0500	0.0010	20.0	5.5		90.4	85.6	60-133
1,1-Dichloroethene	< 0.0040	0.0426	0.0379	0.0500	0.0040	25.0	11.7		85.2	75.8	59-172
Toluene	< 0.0010	0.0444	0.0415	0.0500	0.0010	20.0	6.8		88.8	83.0	59-139
Trichloroethene	< 0.0030	0.0416	0.0381	0.0500	0.0030	20.0	8.8		83.2	76.2	62-137

Spike Relative Difference [F] =  $200 \times (B-C)/(B+C)$   
Blank Spike Recovery [G] =  $100 \times (B-A)/D$   
B.S.D. = Blank Spike Duplicate  
B.S.D. Recovery [H] =  $100 \times (C-A)/D$   
N.D. = Below detection limit or not detected  
All results are based on MDL and validated for QC purposes

  
Eddie L. Clemons, II  
QA/QC Manager



**Certificate Of Quality Control for Batch : 18A34F05**

**SW846-8270 Semivolatiles (SVOCs TCL)**

Date Validated: Nov 25, 1998 17:00

Date Analyzed: Nov 20, 1998 10:04

Analyst: MM

Matrix: Liquid

BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY											
Parameter	[A] Blank Result mg/L	[B] Blank Spike Result mg/L	[C] Blank Spike Duplicate Result mg/L	[D] Blank Spike Amount mg/L	[E] Detection Limit mg/L	Blank Limit Relative Difference %	[F] QC		[G] QC		[J] Qualifier
							Spike Relative Difference %		Blank Spike Recovery Range %		
Acenaphthene	< 0.0025	0.0442	0.0471	0.0500	0.0025	31.0	6.4	88.4	94.2	46-118	
4-Chloro-3-methylphenol	< 0.0038	0.0368	0.0404	0.0500	0.0038	42.0	9.3	73.6	80.8	23-97	
2-Chlorophenol	< 0.0050	0.0357	0.0385	0.0500	0.0050	40.0	7.5	71.4	77.0	27-123	
1,4-Dichlorobenzene	< 0.0042	0.0388	0.0414	0.0500	0.0042	28.0	6.5	77.6	82.8	36-97	
2,4-Dinitrotoluene	< 0.0050	0.0397	0.0425	0.0500	0.0050	38.0	6.8	79.4	85.0	24-96	
N-Nitrosodi-n-propylamine	< 0.0040	0.0390	0.0426	0.0500	0.0040	38.0	8.8	78.0	85.2	41-116	
4-Nitrophenol	< 0.0040	0.0163	0.0181	0.0500	0.0040	50.0	10.5	32.6	36.2	10-80	
Pentachlorophenol	< 0.0086	0.0255	0.0285	0.0500	0.0086	50.0	11.1	51.0	57.0	9-103	
Phenol	< 0.0037	0.0113	0.0129	0.0500	0.0037	42.0	13.2	22.6	25.8	12-89	
Pyrene	< 0.0020	0.0499	0.0527	0.0500	0.0020	31.0	5.5	99.8	105.4	26-127	
1,2,4-Trichlorobenzene	< 0.0054	0.0380	0.0405	0.0500	0.0054	28.0	6.4	76.0	81.0	39-98	

Spike Relative Difference [F] = 200\*(B-C)/(B+C)  
Blank Spike Recovery [G] = 100\*(B-A)/[D]  
B.S.D. = Blank Spike Duplicate  
B.S.D. Recovery [H] = 100\*(C-A)/[D]  
N.D. = Below detection limit or not detected  
All results are based on MDL and validated for QC purposes

*Eddie L. Clemons, II*  
Eddie L. Clemons, II  
QA/QC Manager

**Certificate Of Quality Control for Batch : 18A07E25**

**EPA 1312/418.1 SPLP TPH**

Date Validated: Nov 20, 1998 10:05  
Date Analyzed: Nov 19, 1998 17:05

Analyst: EZ  
Matrix: Solid

BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY												
Parameter	[A]	[B]	[C]	[D]	[E]	Blank Limit		[F]	[G]	[H]	[I]	[J]
	Blank Result  ppm	Blank Spike Result  ppm	Blank Spike Duplicate Result  ppm	Blank Spike Amount  ppm	Detection Limit  ppm	Relative Difference  %	Blank	QC	Blank Spike Recovery  %	B.S.D. Recovery  %	Blank Spike Recovery Range  %	Qualifier
							Limit					
							Spike Relative Difference	Blank Spike Recovery				
Total Petroleum Hydrocarbons	< 0.50	4.65	4.54	4.18	0.50	20.0		2.4	111.2	108.6	65-135	

Spike Relative Difference [F] =  $200 \cdot (B-C)/(B+C)$   
Blank Spike Recovery [G] =  $100 \cdot (B-A)/[D]$   
B.S.D. = Blank Spike Duplicate  
B.S.D. Recovery [H] =  $100 \cdot (C-A)/[D]$   
N.D. = Below detection limit or not detected  
All results are based on MDL and validated for QC purposes

  
Eddie L. Clemons, II  
QA/QC Manager



11381 Meadowglen, Suite L, Houston TX 77082 281-589-0692  
5309 Wurzbach Road, Suite 104, San Antonio, TX 78238 210-509-3334  
11078 Morrison Road, Suite D, Dallas, TX 75229 972-481-9999

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD  
On-LINE Help & Technical Services at [XENCO.com](http://XENCO.com)

10505

Page 1 of 1

Company COC No: 190 Work Order No:

Company <b>KEI</b>		Phone <b>900-243-0507</b>		Lab Only <b>184271-SA</b>		Lab Only Additions	
Project Name <b>THMPL Monument #7</b>		Project ID <b>610057</b>		TAT: 5h 12h 20h 24h 48h 3d 5d 7d 14d 21d Standard TAT is 10 Working Days unless otherwise agreed in writing. But often reported in 5-7 Working Days		Date From: Rcv By:	
Location <b>Lea County N.M.</b>		Project Director (PD) <b>MIKE Hawthorne</b>		Remarks		Date From: Rcv By:	
Project Manager (PM) <b>Theresa Nix</b>		Fax <b>512-364-3556</b>		Hold Analysis		Date From: Rcv By:	
Fax Results to <b>PM and/or</b>		Invoice to <input type="checkbox"/> Accounting <input type="checkbox"/> Include Invoice with Final Report Attn PM <input type="checkbox"/> Invoice must have a P.O. Bill to: <b>610057/27</b>		Addn: PAH above mg/L W. mg/Kg's Highest Hit		Date From: Rcv By:	
Quote No.		P.O. No		TAT 5h 12h 20h 24h 48h 3d 5d 7d 14d 21d		Date From: Rcv By:	
Special DLs (RR I RR II DW GAPP See Lab PM Call Proj. PM)		Call for a P.O.		SPLP SVOC's		Date From: Rcv By:	
Specifications				HIGHEST TPH run SPLTPH, SPLVOC's &		Date From: Rcv By:	
Sampler Name <b>Steve Freundt</b> Signature <b>Steve Freundt</b>		Time		SVOAs by 8270 625 PAHs BN&A TCL PPs See List Call PM		Date From: Rcv By:	
Sample ID		Sampling Date		VOAs by 8260 624 BTEX MTBE PPs TCL See List Call PM		Date From: Rcv By:	
1 <b>B7B7</b>		11/3/98 1230		METALS by 6010 8RCRA Tot Pb TCLP8 13PP 23TAL See List		Date From: Rcv By:	
2 <b>B7B7</b>		11/3/98 1235		PAHs by 8270 8100 8310		Date From: Rcv By:	
3 <b>B7B7</b>		11/3/98 1300		TPH by TX1005 418.1 8015GRD 8015JEIF		Date From: Rcv By:	
4				BTEX by 8020 8260 602 624 Other		Date From: Rcv By:	
5						Date From: Rcv By:	
6						Date From: Rcv By:	
7						Date From: Rcv By:	
8						Date From: Rcv By:	
9						Date From: Rcv By:	
10						Date From: Rcv By:	
Relinquished by (Initials and Signature)		Time		Total Containers per COC:		Date & Time	
1 <b>Steve Freundt</b>		11/3/98 1235		11/3/98 1235		11/3/98 1235	
2				Rush TATs Fax Due:		Final Fax Due:	
3				Final Report Data Package Due Date:		Final Report Data Package Due Date:	
Lab: <b>Theresa Nix</b>		Lab: <b>Theresa Nix</b>		Rush Charges are Pre-Approved upon Requesting them. All Terms Apply		Rush Charges are Pre-Approved upon Requesting them. All Terms Apply	
Preservatives - Various (V), HCl pH<2 (H), H2SO4 pH<2 (S), HNO3 pH<2 (N), NaOH+Asbic Acid (NAA), ZnAc+NaOH (ZA), (Cool,<4C) (C4), None (N), See Label (SL), Other (O)		SIZE: 4oz (4), 8oz (8), 32oz (32), 40ml VOA (V), 1L (1), 500ml (5), Tedlar Bag (B), Wipe (W), Other		TYPE Glass Amb (GA), Glass Clear (GC), Plastic (P), Other (O)			

## **QA/QC PROCEDURES**

### **EXCAVATION SOIL SAMPLING**

Representative soil samples selected for analysis were placed in sterile glass containers equipped with a Teflon-lined lid furnished by the analytical laboratory. The container was filled to capacity with soil to limit the amount of head-space present. The container was labeled and placed on ice in an insulated cooler. The cooler was sealed for shipment to Environmental Lab of Texas, Inc. in Odessa, Texas for determination of the following constituents:

- BTEX concentrations by EPA Method SW846-8021B, 5030
- TPH concentrations by EPA Modified Method 8015-DRO

Proper chain-of-custody documentation was maintained throughout the sampling process.

### **DECONTAMINATION OF EQUIPMENT**

Cleaning of drilling equipment was the responsibility of the drilling company. In general, the cleaning procedures consisted of using high pressure steam to wash the drilling and sampling equipment prior to drilling and prior to starting each hole. Prior to use, the sampling equipment was cleaned with Liqui-Nox detergent and rinsed with distilled water.

### **SOIL BORING SAMPLING**

Samples of the subsurface soils were obtained utilizing an air rotary drilling rig with split spoon samples at discrete intervals. Representative soil samples were divided into 2 separate portions using clean, disposable gloves and clean sampling tools. One portion of the soil sample was placed in a disposable sample bag. The bag was labeled and sealed for head-space analysis using a photo-ionization detector (PID) calibrated to a 100 ppm isobutylene standard. Each sample was allowed to volatilize for approximately 30 minutes at ambient temperature prior to conducting the analysis.

The other portion of the soil sample was placed in a sterile glass container equipped with a Teflon-lined lid furnished by the analytical laboratory. The container was filled to capacity to limit the amount of head-space present. Each container was labeled and placed on ice in an insulated cooler. Upon selection of samples for analysis, the cooler was sealed for shipment to the laboratory. Proper chain-of-custody documentation was maintained throughout the sampling process.

Soil samples were express mailed to Xenco Laboratories of San Antonio, Texas for BTEX, TPH-DRO, SPLP SVOC, SPLP VOC, and SPLP TPH analyses using the methods described below. Soil samples were analyzed for BTEX, TPH, and SPLP concentrations within 14 days following the collection date.

The soil samples were analyzed in accordance with the methods as follows:

- BTEX concentrations in accordance with EPA Method SW846-8021B, 5030
- TPH concentrations in accordance with EPA Modified Method 8015-DRO
- SPLP TPH concentrations in accordance with EPA Method 1312/418.1
- SPLP VOC concentrations in accordance with EPA Method SW846-1312/8260
- SPLP SVOC concentrations in accordance with EPA Method SW846-1312/8270

## **LABORATORY PROTOCOL**

The laboratory was responsible for proper QA/QC procedures. These procedures are either transmitted with the laboratory reports or are on file at the laboratory.



Section 20  
Site 6-7

Section  
25  
Site 5

10531	L	10200	12	07	1992	PRI	SIX SHA	195	34E	22	31224	195	34E	22	09973	63	COOPER BETTY P	0.00	3.00	0
10537	L	04746	10	19	1961	PRI	ETP	195	34E	23	000	195	34E	23	0776	63	CLIMAX CHEMICAL CO	0.00	0.00	0
10520	L	04719	08	15	1961	PRI	MFG	195	34E	23	110	195	34E	23	0664	63	CLIMAX CHEMICAL CO	0.00	0.00	0
10531	L	03568	31	31	1954	PRI	QUM	195	34E	23	120	195	34E	23	0864	63	THE TEARS CO	0.00	0.00	0
10562	L	04748	10	25	1961	CAN	NOT	195	34E	23	120	195	34E	23	0265	63	FRISTIE CHARLES B	0.00	0.00	0
10583	L	04772	12	14	1961	PRI	ETP	195	34E	24	000	195	34E	24	1044	63	CLIMAX CHEMICAL CO	0.00	0.00	0
10534	L	01279	10	18	1951	PRI	NOT	195	34E	24	214	195	34E	24	0584	63	GULF OIL CORP	0.00	0.00	0
10550	L	02131	00	00	1935	PRI	COR SHA	195	34E	24	22	195	34E	24	1093	63	COOPER JIMMIE T JR & MRS	0.00	30.00	25 WELL L-2131 ABANDONED
NOT BEING USED: LOCATED IN SE74 SE74																				
10585	L	02612	06	04	1957	LIC	PPP	195	34E	24	3220	195	34E	24	0766	63	WARREN PETRO CORP	0.00	0.00	0
10586	L	02614	06	28	1957	LIC	PPP	195	34E	24	3221	195	34E	24	0765	63	WARREN PETRO CORP	0.00	36.25	36
10597	L	02612	08	09	1953	LIC	PPP	195	34E	24	3222	205	34E	01	0266	63	WARREN PETRO CORP	0.00	41.75	42
10558	L	02613	04	05	1946	LIC	PPP	195	34E	24	3240	205	34E	01	0266	63	WARREN PETRO CORP	0.00	15.00	24.15
10547	L	01272	10	18	1951	PRI	QUM	195	34E	24	311	195	34E	24	0524	63	GULF OIL CORP	0.00	1.00	0
10555	L	02131	06	03	1952	PRI	COR SHA	195	34E	24	44	195	34E	24	1093	63	COOPER JIMMIE T JR & MRS	0.00	0.00	0
10591	L	01262	10	18	1951	PRI	NOT	195	34E	25	212	195	34E	25	0564	63	GULF OIL CORP	0.00	0.00	0
10592	L	01260	10	18	1951	PRI	NOT	195	34E	25	212	195	34E	25	0564	63	GULF OIL CORP	0.00	0.00	0
10593	L	00074	05	04	1935	LIC	NOT	195	34E	25	310	195	34E	25	0564	63	LEA COUNTY WATER	0.00	0.00	0
10594	L	00025	05	04	1935	LIC	NOT	195	34E	25	3104	195	34E	25	0365	63	LEA COUNTY WATER	0.00	0.00	0
10595	L	00026	05	04	1935	LIC	NOT	195	34E	25	3104	195	34E	25	0365	63	LEA COUNTY WATER	0.00	0.00	0
10596	L	00027	05	04	1935	LIC	NOT	195	34E	25	3104	195	34E	25	0365	63	LEA COUNTY WATER	0.00	0.00	0
10597	L	00028	05	04	1935	LIC	NOT	195	34E	25	3104	195	34E	25	0365	63	LEA COUNTY WATER	0.00	0.00	0
10598	L	00029	05	04	1935	LIC	NOT	195	34E	25	3104	195	34E	25	0365	63	LEA COUNTY WATER	0.00	0.00	0
10599	L	01261	10	18	1951	PRI	NOT	195	34E	25	412	195	34E	25	0564	63	GULF OIL CORP	0.00	0.00	0
10600	L	04121	03	29	1967	PRI	QUM	195	34E	26	200	195	34E	26	1068	63	BAIRD Y B	0.00	1.00	0
10601	L	04672	05	04	1970	PRI	QUM	195	34E	26	224	195	34E	26	0771	63	COOPER JIMMIE T	0.00	3.00	0
10602	L	01273	10	19	1951	PRI	NOT	195	34E	26	412	195	34E	26	0564	63	GULF OIL CORP	0.00	0.00	0
10603	L	02423	12	01	1953	PRI	QUM	195	34E	27	130	195	34E	27	0764	63	CARPER DRILLING CO	0.00	0.00	0
10604	L	02425	07	29	1953	PRI	QUM	195	34E	27	130	195	34E	27	0664	63	PERM DRILLING CO	0.00	0.00	0
10605	L	02429	07	25	1953	PRI	QUM	195	34E	28	322	195	34E	28	0664	63	MONUMENT CHURCH	0.00	1.00	0
10606	L	01277	01	07	1952	LIC	QUM	195	34E	30	1211	195	34E	30	0815	63	MUSKEE LARRY BENNETT	20.00	40.00	50

A  
C

**C & C LANDFARM, INC.**

**BOX 55**

**MONUMENT, NEW MEXICO 88265**

**PHONE: (505) 397-2045**

**(505) 397-2860**

**(505) 392-2236**

**001747**

COMPANY NAME Koi

COMPANY REPRESENTATIVE NAME Tom Green

LEASE NAME Site 7

SEC.

TOWNSHIP

RANGE

TRUCKING COMPANY NAME Plata

DRIVERS SIGNATURE W. J. Donnell

TYPE OF MATERIAL BEING HAULED AND QUANTITY 725 gal

ant soil

COPY OF ANALYSIS ATTACHED, IF REQUIRED None

TPHC

BENZENE

TOLUENE

ETHYL BENZENE

PARA XYLENE

ATTENDANT ON DUTY Tom Green



C & C LANDFARM, INC.

BOX 55

MONUMENT, NEW MEXICO 88265

PHONE: (505) 397-2045

(505) 397-2860

(505) 392-2236

001740

1400

COMPANY NAME

KEI

COMPANY REPRESENTATIVE NAME

Steve Grover

LEASE NAME

Site # 7

SEC.

TOWNSHIP

RANGE

TRUCKING COMPANY NAME

Alstate

DRIVERS SIGNATURE

CA McDonald

TYPE OF MATERIAL BEING HAULED AND QUANTITY

1582 yds

Cont Soil

COPY OF ANALYSIS ATTACHED, IF REQUIRED

Non Resp

TPHC

BENZENE

TOLUENE

ETHYL BENZENE

PARA XYLENE

ATTENDANT ON DUTY

Jeri Barber

DATE

2-1-99