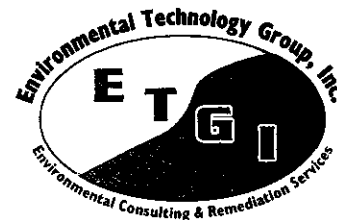


# RELEASE REPORT



## REMEDIATION WORK PLAN SUPPLEMENT

**EOTT ENERGY CORP.  
TNM 98-02  
LEA COUNTY, NEW MEXICO**

Prepared For:  
EOTT Energy Corp.  
5805 East Highway 80  
Midland, Texas 79701

Environmental Technology Group, Inc. Project No. EOT2068C

Prepared By:  
Environmental Technology Group, Inc. (ETGI)  
2540 West Marland Blvd.  
Hobbs, New Mexico 88240

May 2001

  
Ken Dutton  
Sr. Project Manager

  
Jerry D. Nickell  
Managing Principal

**REMEDICATION  
WORK PLAN SUPPLEMENT  
FOR SITE CLOSURE  
TNM 98-02  
Lea County, New Mexico  
May 3, 2001  
Prepared By: ETGI**

## **INTRODUCTION**

Environmental Technology Group, Inc. (ETGI) hereby submits a Remediation Work Plan Supplement (RWPS) to the New Mexico Oil Conservation Division on behalf of EOTT Energy Corp. (EOTT) for the installation of an additional temporary groundwater monitoring well at the TNM 98-02 leak site. This plan will serve as a "Work Plan Supplement" as referenced in the "General Work Plan for Remediation of EOTT Pipeline Spills, Leaks, and Releases in New Mexico" approved by New Mexico Oil Conservation Division (NMOCD) on August 1, 2000. The regulatory basis for both the General Work Plan and this Work Plan Supplement is the August 1993 NMOCD Guidelines for Remediation of Leaks, Spills, and Releases.

## **BACKGROUND**

The leak site is located northwest of the town of Monument, in NW ¼, SE ¼ of Section 31, Township 19 South, Range 37 East, in Lea County, New Mexico as depicted in Figure 1, Site Location Map. Prior activities at the site included installation of five monitoring wells, subsequent excavation of impacted soils and quarterly sampling and analysis of the groundwater. Four of the monitoring wells, MW-1, MW-2, MW-4 and MW-5, were sampled for constituents of concern (COC). The groundwater-sampling events, prior to this RWPS, indicated no analytical results above the New Mexico Water Quality Control Commission (NMWQCC) standards. These results are shown in Table 1 and Table 2. The corresponding laboratory analytical and quality assurance/quality control data are found in Appendix A.

As per NMOCD requirements and after the completion of four consecutive groundwater-sampling events with successful results, a letter was submitted for closure of this site.

The NMOCD response, dated October 30, 2000, required the installation of a temporary monitoring well to further investigate the groundwater at the TNM 98-02 site.

## **PURPOSE OF INVESTIGATION**

The additional temporary monitoring well is needed to support previously submitted data and allow the closure of this site. If the soil samples taken during the installation of this well and the one-time water sample are found to be below the standards set forth in NMOCD Rule 19.B, the NMOCD will then issue closure approval of the TNM 98-02 leak site.

## **METHODOLOGY**

ETGI plans to supervise and coordinate the drilling of the temporary groundwater monitoring well at the above-described location. The monitoring well will be installed adjacent to and down gradient of the release point. The proposed location is depicted on Figure 2, Site Map. During the monitoring well installation, soil samples will be collected

every five feet with a split spoon sampler except in those locations containing indurated materials. Each five-foot sample will be field screened with a photoionization detector (PID) and a continuous lithologic log of the penetrated section will be maintained and recorded. All of the soil samples, including a surface sample, will be transported under Chain of Custody to Environmental Laboratory of Texas (ELOT) for analysis.

The monitoring well will be completed and developed in accordance with NMOCD Guideline Parts V.C.1 and V.C.3, respectively. The fluid levels will be measured within 1/100th of a foot then purged and sampled in accordance with the NMOCD Guideline Part V.C.4. As required by NMOCD Rule 19.B, the groundwater sample will be submitted for analyses identified below.

## **ANALYSES**

All soil samples submitted for analysis will be analyzed for TPH using EPA Method 8015 Modified GRO/DRO Extended Range. Samples with a field PID reading in excess of 100ppm may be submitted for Benzene, Toluene, Ethyl benzene and Xylenes (BTEX) analysis using EPA Method 8021B.I

The groundwater sample will be submitted for the following analysis:

- BTEX (EPA Method 8021B and 5030)
- TPH – EPA Method 8015 Modified GRO/DRO Extended Range
- Major Cations and Anions – EPA Methods 375.4, 325I.3 and 310
- Total Dissolved Solids (TDS) – EPA Method 160.1
- Polynuclear Aromatic Hydrocarbons (PAH) – EPA Method 8270C, 3510
- Metals – EPA Method 6010B, 7470

## **FOLLOW-UP ACTIVITIES**

Installation of the temporary monitoring well can be initiated within two weeks of the work plan approval. Once installed, purging and sampling of the groundwater will be conducted. The groundwater sample will be transported under Chain of Custody to ELOT for analysis. On notification of the results of the analysis, the site will be resubmitted for closure if the analysis indicates no COC above the NMWQCC standards. If the analyses do not support closure of this site, further investigation will be addressed as required by NMOCD.

## DISTRIBUTION

Copy 1 to : Mr. Bill Olson  
New Mexico Oil Conservation Division  
Environmental Bureau  
2040 South Pacheco  
Santa Fe, New Mexico

Copy 2 to : Mr. Chris Williams  
New Mexico Oil Conservation Division  
District I  
1625 French Drive  
Hobbs, New Mexico 88240

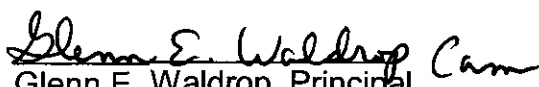
Copy 3 to : Mr. Wayne Brunette  
EOTT Energy Corporation  
P. O. Box 1660  
Midland, Texas 79702

Copy 4 to : Mr. Mike Kelly  
EOTT Energy Corporation  
P. O. Box 4666  
Houston, Texas 77210-4666

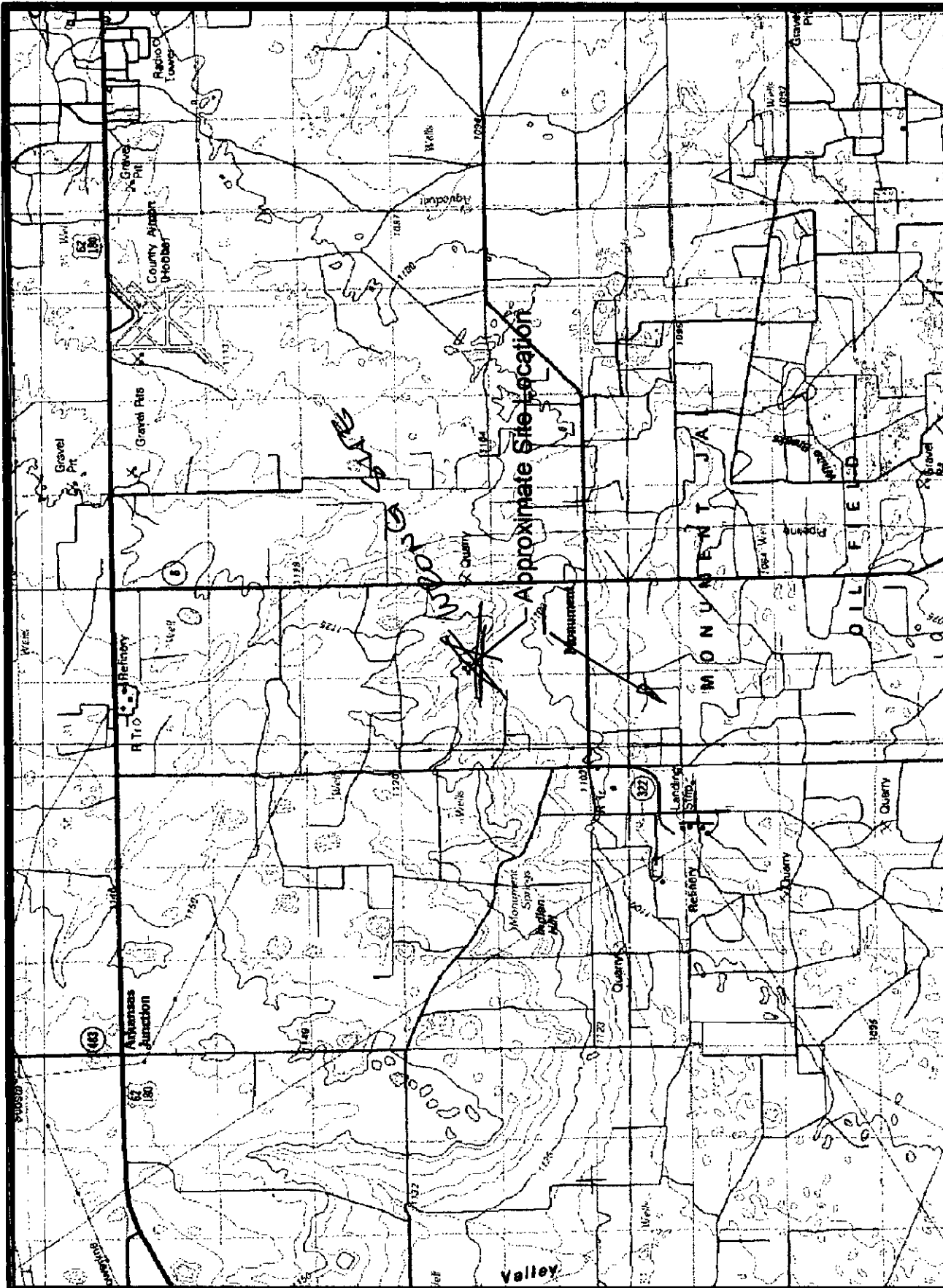
Copy 5 to : Environmental Technology Group, Inc.  
2540 W. Marland  
Hobbs, New Mexico 88240

Copy 6 to : Environmental Technology Group, Inc.  
P. O. Box 4845  
Midland, Texas 79704

COPY NO.: 1

  
Glenn E. Waldrop, Principal  
Quality Control Reviewer

**FIGURES**



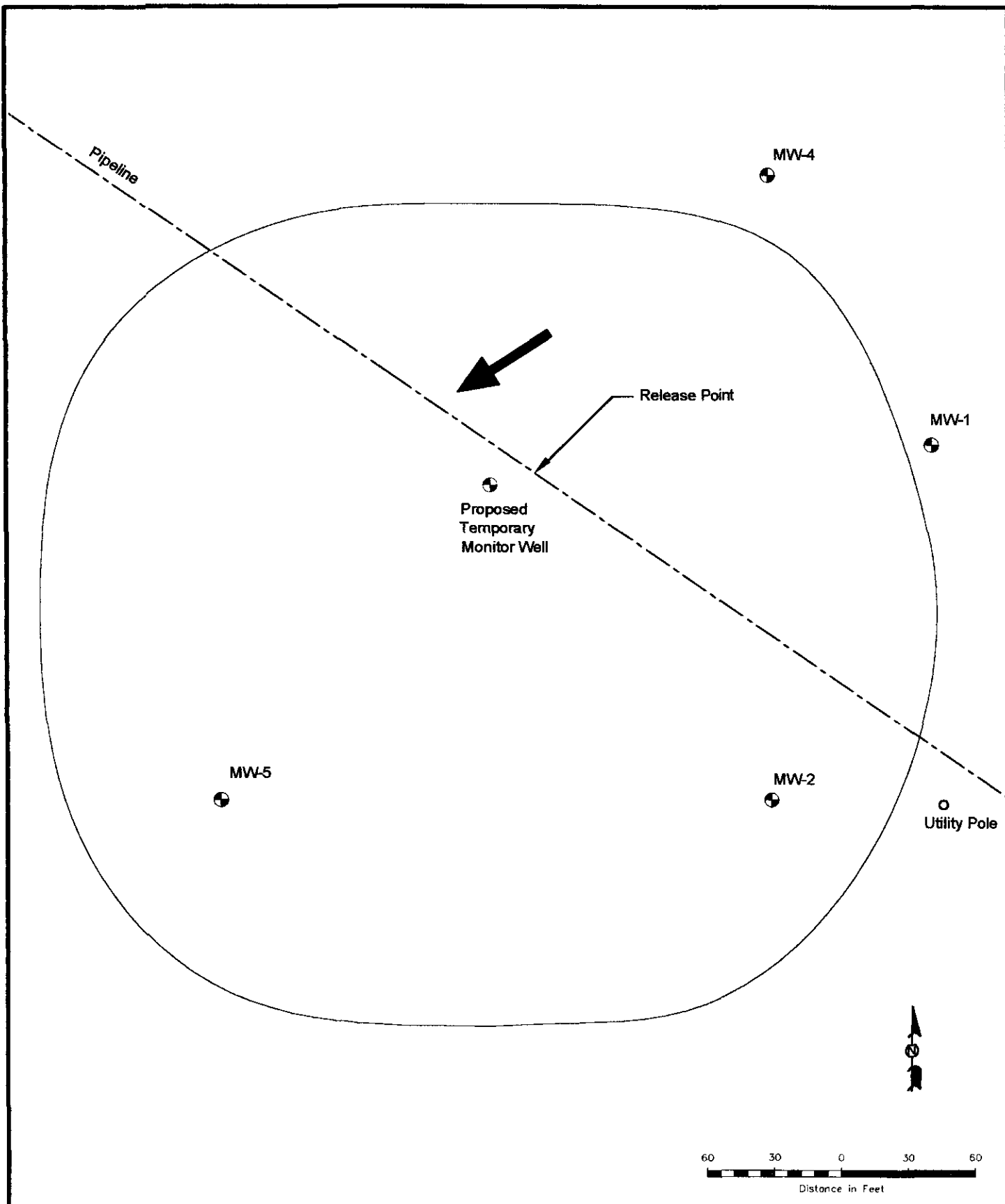
Environmental Technology  
Group, Inc.

Figure 1  
Site Location Map



EOTT Energy Corp.  
TNM 88-02  
Lea County, NM

|                  |              |                         |
|------------------|--------------|-------------------------|
| Scale: NTS       | Prep By: JDL | Checked By: KD          |
| January 23, 2001 |              | ETGI Project # E072086C |



**LEGEND:**

⊕ Monitor Well Location

**Figure 2**  
**Site Map**  
**Proposed Temp. MW**  
**EOTT Energy Corp.**  
**TNM 98-02**  
**Lea County, NM**



**Environmental Technology**  
**Group, Inc.**

Scale: 1" = 60' Prep By: JDJ Checked By: KD  
 January 26, 2001 ETGI Project # EOT2068C

**TABLES**

TABLE 1

## GROUND WATER CHEMISTRY

EOTT ENERGY CORPORATION

TNM 98-02

LEA COUNTY, NEW MEXICO

ETGI PROJECT # EOT 2068C

*All concentrations are in mg/L*

| SAMPLE LOCATION | SAMPLE DATE | SW 846-8021B, 5030 |         |               |             |           |
|-----------------|-------------|--------------------|---------|---------------|-------------|-----------|
|                 |             | BENZENE            | TOLUENE | ETHYL-BENZENE | M,P-XYLENES | O-XYLENES |
| MW - 1          | 11/30/99    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 03/09/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 05/19/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 08/30/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
| MW - 2          | 11/30/99    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 03/09/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 05/19/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 08/30/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
| MW - 4          | 11/30/99    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 03/09/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 05/19/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 08/30/00    | <0.001             | <0.001  | <0.001        | <0.001      | <0.001    |
| MW - 5          | 11/30/99    | 0.003              | 0.002   | <0.001        | 0.001       | <0.001    |
|                 | 03/09/00    | 0.006              | <0.001  | 0.001         | 0.002       | <0.001    |
|                 | 05/19/00    | 0.006              | <0.001  | <0.001        | <0.001      | <0.001    |
|                 | 08/30/00    | 0.002              | <0.001  | <0.001        | <0.001      | <0.001    |
|                 |             |                    |         |               |             |           |

Table 2

## GROUNDWATER ELEVATION TABLE

EOTT ENERGY CORPORATION

TNM 98-02

LEA COUNTY, NEW MEXICO

PROJECT # EOT2068C

11/30/99 - 8/30/00

| Well Number | Date     | Casing Well Elevation | Depth to Product | Depth to Water | PSH Thickness | Corrected Groundwater Elevation |
|-------------|----------|-----------------------|------------------|----------------|---------------|---------------------------------|
| MW - 1      | 11/30/99 | 3,575.77              | -                | 29.34          | 0.00          | 3,546.43                        |
| MW - 1      | 03/09/00 | 3,575.77              | -                | 29.30          | 0.00          | 3,546.47                        |
| MW - 1      | 05/19/00 | 3,575.77              | -                | 29.49          | 0.00          | 3,546.28                        |
| MW - 1      | 08/30/00 | 3,575.77              | -                | 29.20          | 0.00          | 3,546.57                        |
| MW - 2      | 11/30/99 | 3,575.48              | -                | 30.17          | 0.00          | 3,545.31                        |
| MW - 2      | 03/09/00 | 3,575.48              | -                | 30.28          | 0.00          | 3,545.20                        |
| MW - 2      | 05/19/00 | 3,575.48              | -                | 30.39          | 0.00          | 3,545.09                        |
| MW - 2      | 08/30/00 | 3,575.48              | -                | 29.95          | 0.00          | 3,545.53                        |
| MW - 4      | 11/30/99 | 3,576.88              | -                | 31.02          | 0.00          | 3,545.86                        |
| MW - 4      | 03/09/00 | 3,576.88              | -                | 31.03          | 0.00          | 3,545.85                        |
| MW - 4      | 05/19/00 | 3,576.88              | -                | 31.11          | 0.00          | 3,545.77                        |
| MW - 4      | 08/30/00 | 3,576.88              | -                | 30.55          | 0.00          | 3,546.33                        |
| MW - 5      | 11/30/99 | 3,574.77              | -                | 31.14          | 0.00          | 3,543.63                        |
| MW - 5      | 03/09/00 | 3,574.77              | -                | 31.25          | 0.00          | 3,543.52                        |
| MW - 5      | 05/19/00 | 3,574.77              | -                | 31.37          | 0.00          | 3,543.40                        |
| MW - 5      | 08/30/00 | 3,574.77              | -                | 30.89          | 0.00          | 3,543.88                        |
|             |          |                       |                  |                |               |                                 |

**APPENDIX A**

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.  
ATTN: BETH ALDRICH  
P.O. BOX 4845  
MIDLAND, TEXAS 79704  
FAX: 915-520-4310

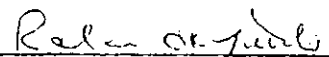
Sample Type: Water  
Sample Condition: Intact/ Iced/ HCl/ 30 deg F  
Project #: EOT 2068C  
Project Name: TNM 98-02  
Project Location: Monument, N.M.

Sampling Date: 08/30/00  
Receiving Date: 09/01/00  
Analysis Date: 09/05/00

| ELT#  | FIELD CODE | BENZENE<br>mg/L | TOLUENE<br>mg/L | ETHYLBENZENE<br>mg/L | m,p-XYLENE<br>mg/L | o-XYLENE<br>mg/L | TOTAL<br>BTEX<br>mg/L |
|-------|------------|-----------------|-----------------|----------------------|--------------------|------------------|-----------------------|
| 30311 | MW 1       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           | <0.001                |

|       |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|
| % IA  | 103    | 100    | 103    | 106    | 99     |
| % EA  | 104    | 104    | 106    | 110    | 102    |
| BLANK | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

METHODS: SW 846-8021B.5030

  
Ralanda K. Tuttle

9-12-00  
Date

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.  
ATTN: BETH ALDRICH  
P.O. BOX 4845  
MIDLAND, TEXAS 79704  
FAX: 915-520-4310

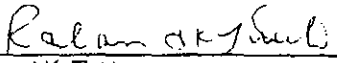
SampleType: Water  
Sample Condition: Intact/ Iced/ HCl/ 30 deg. F  
Project #: EOT 2068C  
Project Name: TNM 98-02  
Project Location: Monument, N.M.

Sampling Date: 08/30/00  
Receiving Date: 09/01/00  
Analysis Date: 09/06/00

| ELT#  | FIELD CODE | BENZENE<br>mg/L | TOLUENE<br>mg/L | ETHYLBENZENE<br>mg/L | m,p-XYLENE<br>mg/L | o-XYLENE<br>mg/L | TOTAL<br>BTEX<br>mg/L |
|-------|------------|-----------------|-----------------|----------------------|--------------------|------------------|-----------------------|
| 30312 | MW 2       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           | <0.001                |
| 30313 | MW 4       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           | <0.001                |
| 30314 | MW 5       | 0.002           | <0.001          | <0.001               | <0.001             | <0.001           | 0.002                 |
| 30315 | EB 1       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           | <0.001                |

|       |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|
| % IA  | 96     | 94     | 96     | 98     | 92     |
| % EA  | 95     | 94     | 95     | 95     | 91     |
| BLANK | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

METHODS: SW 846-8021B, 5030

  
Raland K. Tuttle

9-12-00  
Date

[illegible]

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.  
ATTN: MR. JESSE TAYLOR  
P.O. BOX 4845  
MIDLAND TEXAS 79704  
FAX: 915-520-4310  
FAX: 505-392-3760

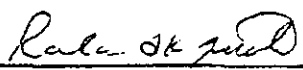
SampleType: Water  
Sample Condition: Intact/ Iced/HCl/ 5G deg. F  
Project #: EOT 2015C  
Project Name: TNM 98-02  
Project Location: Monument, N.M.

Sampling Date: 05/19/00  
Receiving Date: 05/22/00  
Analysis Date: 05/27 & 05/28/00

| ELT#  | FIELD CODE | BENZENE<br>mg/L | TOLUENE<br>mg/L | ETHYLBENZENE<br>mg/L | m,p-XYLENE<br>mg/L | o-XYLENE<br>mg/L |
|-------|------------|-----------------|-----------------|----------------------|--------------------|------------------|
| 25947 | MW 1       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           |
| 25948 | MW 2       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           |
| 25949 | MW 4       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           |
| 25950 | MW 5       | 0.006           | <0.001          | <0.001               | <0.001             | <0.001           |

|       |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|
| % IA  | 97     | 94     | 95     | 102    | 94     |
| % EA  | 94     | 91     | 93     | 98     | 91     |
| BLANK | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

METHODS: SW 846-8021B.5030

  
Raland K. Tuttle

5-30-00  
Date

**Environmental Lab of Texas, Inc.** 12600 West I-20 East Odessa, Texas 79763  
(915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC # 141

Project Manager: **JESSE TAYLOR**  
Phone #: (505) 392-8731  
FAX #: (505) 392-3760

ANALYSIS REQUEST

Company Name & Address: **ET&L**  
**P.O. BOX 4845 MIDLAND TX 79704**

Project #: **LOT 205C**  
Project Name: **TAMU 98-02**

Project Location: **Monument, NM**  
Sampler Signature: *[Signature]*

| LAB #<br>(LAB USE ONLY) | FIELD CODE | # CONTAINERS | Volume/Amount | MATRIX |      |     |        | PRESERVATIVE METHOD |     |      |     | SAMPLING |       | TPH 418.1 | TCLP Metals Ag As | Total Metals Ag As | TCLP Volatiles | TCLP Semi Volatile | TDS | RCI |      |
|-------------------------|------------|--------------|---------------|--------|------|-----|--------|---------------------|-----|------|-----|----------|-------|-----------|-------------------|--------------------|----------------|--------------------|-----|-----|------|
|                         |            |              |               | WATER  | SOIL | AIR | SLUDGE | OTHER               | HCL | HNO3 | ICE | NONE     | OTHER |           |                   |                    |                |                    |     |     | DATE |
| 25947                   | MW 1       | 2            | ✓             | ✓      |      |     |        |                     |     |      | ✓   |          |       | 5-19-98   | 0945              |                    |                |                    |     |     |      |
| 25948                   | MW 2       | 1            | ✓             | ✓      |      |     |        |                     |     |      | ✓   |          |       | 5-19-98   | 1005              |                    |                |                    |     |     |      |
| 25949                   | MW 4       | 1            | ✓             | ✓      |      |     |        |                     |     |      | ✓   |          |       | 5-19-98   | 1005              |                    |                |                    |     |     |      |
| 25950                   | MW 5       | 1            | ✓             | ✓      |      |     |        |                     |     |      | ✓   |          |       | 5-19-98   | 1015              |                    |                |                    |     |     |      |

|                                     |                 |            |                                 |            |                                         |
|-------------------------------------|-----------------|------------|---------------------------------|------------|-----------------------------------------|
| Relinquished by: <i>[Signature]</i> | Date: 5-19-98   | Time: 1400 | Received by: <i>[Signature]</i> | Time: 1400 | Remarks: <b>MALE RECOVER: K. DUTTON</b> |
| Relinquished by: <i>[Signature]</i> | Date: 22 May 98 | Time: 1114 | Received by: <i>[Signature]</i> | Time: 1114 | <b>Rec 56°F</b>                         |
| Relinquished by: <i>[Signature]</i> | Date:           | Time:      | Received by: <i>[Signature]</i> | Time:      | <b>INVOICE: EOT 1015 M</b>              |

TPH 418.1  
TCLP Metals Ag As Ba Cd Cr Pb Hg Se  
Total Metals Ag As Ba Cd Cr Pb Hg Se  
TCLP Semi Volatiles  
TOS  
RCI

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.  
ATTN: MR. JESSE TAYLOR  
P.O. BOX 4845  
MIDLAND, TEXAS 79704  
FAX: 915-520-4310  
FAX: 505-392-3760

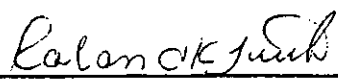
SampleType: Water  
Sample Condition: Intact/ Iced/HCl  
Project #: EOT 1015C  
Project Name: TNM 98-02  
Project Location: Monument , N.M.

Sampling Date: 03/09/00  
Receiving Date: 03/10/00  
Analysis Date: 3/14-3/15/00

| ELT#  | FIELD CODE | BENZENE<br>mg/L | TOLUENE<br>mg/L | ETHYLBENZENE<br>mg/L | m,p-XYLENE<br>mg/L | o-XYLENE<br>mg/L |
|-------|------------|-----------------|-----------------|----------------------|--------------------|------------------|
| 24120 | MW-1       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           |
| 24121 | MW-2       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           |
| 24122 | MW-4       | <0.001          | <0.001          | <0.001               | <0.001             | <0.001           |
| 24123 | MW-5       | 0.006           | <0.001          | 0.001                | 0.002              | <0.001           |

|       |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|
| % IA  | 103    | 94     | 94     | 102    | 90     |
| % EA  | 95     | 85     | 83     | 92     | 82     |
| BLANK | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

METHODS: SW 846-8021B,5030

  
Roland K. Tuttle

3-16-00  
Date

## CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

COC 103

Phone #: (925) 664-9166  
FAX #: (925) 392-8260

P.O. BOX 2845 MIDLAND TX 79704

**Project Name :**

7NM 98-02

**Sampler Signature:**

Simon Carr

| LAB #<br>(LAB USE ONLY) | FIELD CODE | # CONTAINERS | Volume/Amount | MATRIX |      |     |        |       |     |      | PRESERVATIVE METHOD |      |       |      | SAMPLING |      | TPH 418.1 | TCLP Metals Ag As | Total Metals Ag As | TCLP Volatiles | TCLP Semi Volatiles | TDS | RCI |
|-------------------------|------------|--------------|---------------|--------|------|-----|--------|-------|-----|------|---------------------|------|-------|------|----------|------|-----------|-------------------|--------------------|----------------|---------------------|-----|-----|
|                         |            |              |               | WATER  | SOIL | AIR | SLUDGE | OTHER | HCL | HNO3 | ICE                 | NONE | OTHER | DATE | TIME     |      |           |                   |                    |                |                     |     |     |
|                         |            |              |               |        |      |     |        |       |     |      |                     |      |       |      |          |      |           |                   |                    |                |                     |     |     |
| 24/20                   | MW1        | 2            | V             | X      |      |     |        | X     |     | X    |                     |      |       |      | 3-9      | 1337 | X         |                   |                    |                |                     |     |     |
| 24/21                   | MW2        | 1            | V             |        |      |     |        |       |     |      |                     |      |       |      |          | 1405 |           |                   |                    |                |                     |     |     |
| 24/22                   | MW4        | 1            | V             |        |      |     |        |       |     |      |                     |      |       |      |          | 1349 |           |                   |                    |                |                     |     |     |
| 24/23                   | MW5        | 1            | V             |        |      |     |        |       |     |      |                     |      |       |      |          | 1315 |           |                   |                    |                |                     |     |     |

Received by:

Received by:

REMARKS

MARKS

MAIL RESULTS: K. DUTTON

Received by

Received by

Received by

Received by Laboratory

Time: 10:55 AM

# ENVIRONMENTAL LAB OF , INC.

"Don't Treat Your Soil Like Dirt!"

ENVIRONMENTAL TECHNOLOGY GROUP, INC.  
ATTN: MR. JESSE TAYLOR  
P.O. BOX 4845  
MIDLAND, TEXAS 79704  
FAX: 505-392-3760

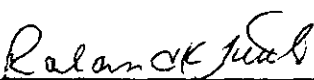
Sample Type: Water  
Sample Condition: Intact/ Iced/HCl  
Project #: TNM 98-02  
Project Name: EOT 1015C  
Project Location: Monument, N.M.

Sampling Date: 11/30/99  
Receiving Date: 12/02/99  
Analysis Date: 12/2 & 12/3/99

| ELT#  | FIELD CODE | BENZENE<br>(mg/L) | TOLUENE<br>(mg/L) | ETHYLBENZENE<br>(mg/L) | m,p-XYLENE<br>(mg/L) | o-XYLENE<br>(mg/L) |
|-------|------------|-------------------|-------------------|------------------------|----------------------|--------------------|
| 21940 | MW-1       | <0.001            | <0.001            | <0.001                 | <0.001               | <0.001             |
| 21941 | MW-2       | <0.001            | <0.001            | <0.001                 | <0.001               | <0.001             |
| 21942 | MW-4       | <0.001            | <0.001            | <0.001                 | <0.001               | <0.001             |
| 21943 | MW-5       | 0.003             | 0.002             | <0.001                 | 0.001                | <0.001             |

|       |        |        |        |        |        |
|-------|--------|--------|--------|--------|--------|
| % IA  | 101    | 96     | 97     | 97     | 95     |
| % EA  | 96     | 95     | 96     | 97     | 96     |
| BLANK | <0.001 | <0.001 | <0.001 | <0.001 | <0.001 |

METHODS: EPA SW 846-8021B,5030

  
Raland K. Tuttle

12-6-99  
Date

# Environmental Lab of Texas, Inc. 12600 West I-20 East Odessa, Texas 79763 (915) 563-1800 FAX (915) 563-1713

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

046

| Project Manager:<br><u>Jesse Taylor</u>                                        |            | Phone #: (915) 664-9166<br>FAX #: (505) 392-3760 |               | ANALYSIS REQUEST                                                                                                                  |      |     |        |                     |     |      |     |          |       |      |
|--------------------------------------------------------------------------------|------------|--------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------|------|-----|--------|---------------------|-----|------|-----|----------|-------|------|
| Company Name & Address:<br><u>ETA</u><br><u>P.O. Box 4845 Midland TX 79704</u> |            | Project #:<br><u>ETA 1015C</u>                   |               | TCLP Metals Ag As Ba Cd Cr Pb Hg Se<br>TCLP Metals Ag As Ba Cd Cr Pb Hg Se<br>TCLP Volatiles<br>TCLP Semi Volatiles<br>TDS<br>RCI |      |     |        |                     |     |      |     |          |       |      |
| Project Location:<br><u>Montgomery, Ala</u>                                    |            | Sampler Signature:<br><u>[Signature]</u>         |               | TPH 418.1<br>BTEX 8020/BA                                                                                                         |      |     |        |                     |     |      |     |          |       |      |
| LAB #<br>(LAB USE ONLY)                                                        | FIELD CODE | # CONTAINERS                                     | Volume/Amount | MATRIX                                                                                                                            |      |     |        | PRESERVATIVE METHOD |     |      |     | SAMPLING |       |      |
|                                                                                |            |                                                  |               | WATER                                                                                                                             | SOIL | AIR | SLUDGE | OTHER               | HCL | HNO3 | ICE | NONE     | OTHER | DATE |
| 21940                                                                          | MW 1       | 2                                                | ✓             | ✓                                                                                                                                 |      |     |        | ✓                   |     |      |     |          | 11-30 | 1315 |
| 21941                                                                          | MW 2       | 2                                                | ✓             | ✓                                                                                                                                 |      |     |        | ✓                   |     |      |     |          | 1322  |      |
| 21942                                                                          | MW 4       | 2                                                | ✓             | ✓                                                                                                                                 |      |     |        | ✓                   |     |      |     |          | 1301  |      |
| 21943                                                                          | MW 5       | 2                                                | ✓             | ✓                                                                                                                                 |      |     |        | ✓                   |     |      |     |          | 1330  |      |

|                                        |                  |                |                                               |                                     |
|----------------------------------------|------------------|----------------|-----------------------------------------------|-------------------------------------|
| Relinquished by:<br><u>[Signature]</u> | Date:<br>12-2-99 | Times:<br>0900 | Received by:<br><u>[Signature]</u>            | REMARKS:<br>Mail Results New Detrow |
| Relinquished by:<br><u>[Signature]</u> | Date:            | Times:         | Received by:                                  |                                     |
| Relinquished by:<br><u>[Signature]</u> | Date:<br>12-2-99 | Times:<br>1320 | Received by Laboratory:<br><u>[Signature]</u> | Invoice LEMMA FIRST 1015 PM         |



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OIL CONSERVATION DIVISION

**SUBSURFACE INVESTIGATION REPORT**  
**MONITORING WELLS MW-1 THROUGH MW-5**  
**SOIL BORINGS SB-1 THROUGH SB-10**

**TEXAS - NEW MEXICO PIPE LINE COMPANY**  
**TNM-98-02**  
**UNIT J, SECTION 31, TOWNSHIP 19 SOUTH,**  
**RANGE 37 EAST**  
**LEA COUNTY, NEW MEXICO**



5309 Wurzbach, Suite 100  
San Antonio, Texas 78238  
(210) 680-3767  
(210) 680-3763 FAX

# **SUBSURFACE INVESTIGATION REPORT**

## **MONITORING WELLS MW-1 THROUGH MW-5**

## **SOIL BORINGS SB-1 THROUGH SB-10**

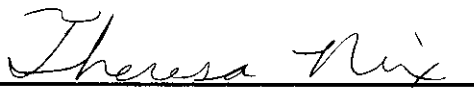
**TEXAS - NEW MEXICO PIPE LINE COMPANY**  
**TNM-98-02**  
**UNIT J, SECTION 31, TOWNSHIP 19 SOUTH, RANGE 37 EAST**  
**LEA COUNTY, NEW MEXICO**

**PREPARED FOR:**

**TEXAS - NEW MEXICO PIPE LINE COMPANY**  
P. O. Box 1030  
Jal, New Mexico 88252

**Mr. Tony Savoie**

**PREPARED BY:**  
**KEI**

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

  
\_\_\_\_\_  
Pat Bullinger, P.E.

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## PURPOSE AND SCOPE

The purpose of the subsurface investigation was to delineate the horizontal and vertical extent of hydrocarbon impact by installing 5 monitoring wells and 10 soil borings. A site location map is presented as FIG 1. Locations of soil borings and monitoring wells are shown on FIG 2.

## CURRENT SITE CONDITIONS

Site conditions during the subsurface investigation consisted of an excavation. Impacted soils were excavated and stockpiled on site. The measurements of the excavation at the time of the investigation are summarized below:

| MEASUREMENT                 | VALUE                   |
|-----------------------------|-------------------------|
| Length                      | 180 to 200 feet         |
| Width                       | 35 feet                 |
| Depth                       | 0 to 28 feet            |
| Volume Excavated (in place) | 3,400 cubic yards       |
| Ground Water Depth          | 25.44 to 26.98 feet bgs |

The excavation location is shown on FIG. 2. Based on results of the investigation, soils are not impacted above 25 feet, where there is a 4 to 6 inch impacted zone at approximately 25 to 29 feet below ground surface (bgs). Additional soils are currently being remediated via excavation and will be hauled off-site. A closure report will be submitted when site activities have been completed.

## SOIL INVESTIGATION

The subsurface investigation was conducted on August 1, 2, 15, and 16, 1998, and consisted of drilling 10 soil borings designated SB-1 through SB-10 and 5 monitoring wells designated MW-1 through MW-5. The soil borings were drilled to an approximate depth of 27 to 30 feet bgs and monitoring wells were drilled to an approximate depth of 35 to 37 feet bgs. Soil samples were collected at selected intervals from the ground surface to the bottom of each boring. 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 advancement to total depth and collection of soil samples, a permanent well consisting of 4 inch perforated PVC and blank riser was placed in the open hole of the boring designated as monitoring well MW-1. A permanent well consisting of 2 inch perforated PVC and blank riser was placed in the open hole of the borings designated as monitoring wells MW-2 through MW-5. Upon completion of sampling activities, each soil boring not completed as a monitoring well was backfilled to the surface with a cement/bentonite grout.

The monitoring well and soil boring locations were surveyed by a Professional Land Surveyor registered in the State of New Mexico.

## 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, 3 soil types were encountered. A general description, approximate thickness, and head-space sample results for each soil type are as follows:

### Soil Type I

This soil type consisted of brown sand encountered at the surface in each soil boring. The observed thickness of this soil type was approximately 1 to 2 feet. The sand was silty and dry. Head-space readings from samples of this soil type were below instrument detection limits (ND).

### Soil Type II

This soil type consisted of tan to gray caliche and was encountered below Soil Type I in all locations. The caliche was sandy, and dry to moist. The observed thickness of this soil type was approximately 16 to 22 feet. Head-space readings from samples of this soil type ranged from ND to 38 ppm.

### Soil Type III

This soil type consisted of tan to red clay and was encountered as the lower soils at all locations. The clay was sandy, contained calcareous nodules, and was moist to wet. The observed thickness of this soil type ranged from approximately 3 to 15 feet. Head-space readings from samples of this soil type ranged from ND to 361 ppm.

Logs indicating the subsurface soil profile, depths at which soil samples were obtained, head-space results, and laboratory results are presented on FIGs. 3 through 10.

## ANALYTICAL RESULTS

Two to 3 soil samples were selected from each boring based on the following criteria:

- the sample collected at the ground surface or directly below Soil Type I
- the sample with the highest PID reading
- the sample collected at ground water measured during drilling

Soil samples were selected for the following analytical testing:

- Thirty-eight samples from the soil borings were tested for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH).
- One soil sample from soil boring SB-9 (exhibiting the highest concentration of TPH by EPA Method 8015 DRO) was also tested for SPLP TPH, SPLP Volatile Organic Compounds (VOC) and SPLP Semi-Volatile Organic Compounds (SVOC).

- Analytical results for the selected samples indicated the following concentration ranges:

| CONSTITUENT | CONCENTRATION RANGE<br>(mg/kg) |
|-------------|--------------------------------|
| BENZENE     | ND to 4.41                     |
| BTEX        | ND to 15.37                    |
| TPH         | ND to 37,000                   |
| SPLP TPH    | ND                             |
| SPLP VOC    | ND to 0.121                    |
| SPLP SVOC   | ND                             |

Soil analytical results are summarized in TABLES I and II. Soil analytical reports and chain-of-custody documentation are presented in APPENDIX A. Quality Assurance/Quality Control Procedures are presented in APPENDIX C.

## GROUND WATER SAMPLING AND ANALYTICAL RESULTS

Upon completion of drilling, each well was gauged to determine the depth to ground water and checked for the presence of phase-separate hydrocarbons (PSH). The depth to ground water measured in the monitoring wells on August 18, 1998, ranged from 25.44 to 26.98 feet bgs. Ground water elevations indicate an approximate gradient of 0.006 ft/ft towards the southeast. Ground water contours are presented on FIG. 11. Ground water measurements are summarized in TABLE III.

Monitoring wells were sampled on August 20, 1998. Each monitoring well was purged of 3 well volumes of water and ground water samples were collected from the monitoring well. Purged water collected during the event was stored in steel drums pending disposal.

Water samples selected for analytical testing consisted of the following:

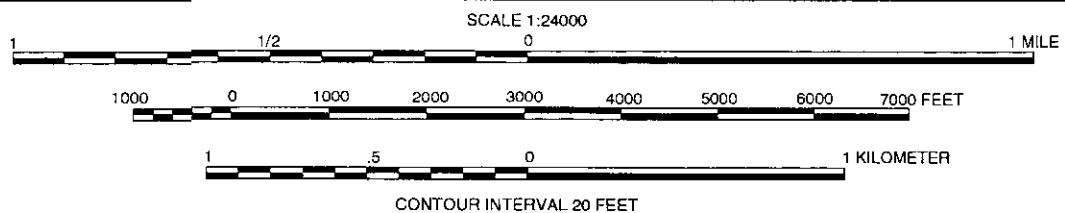
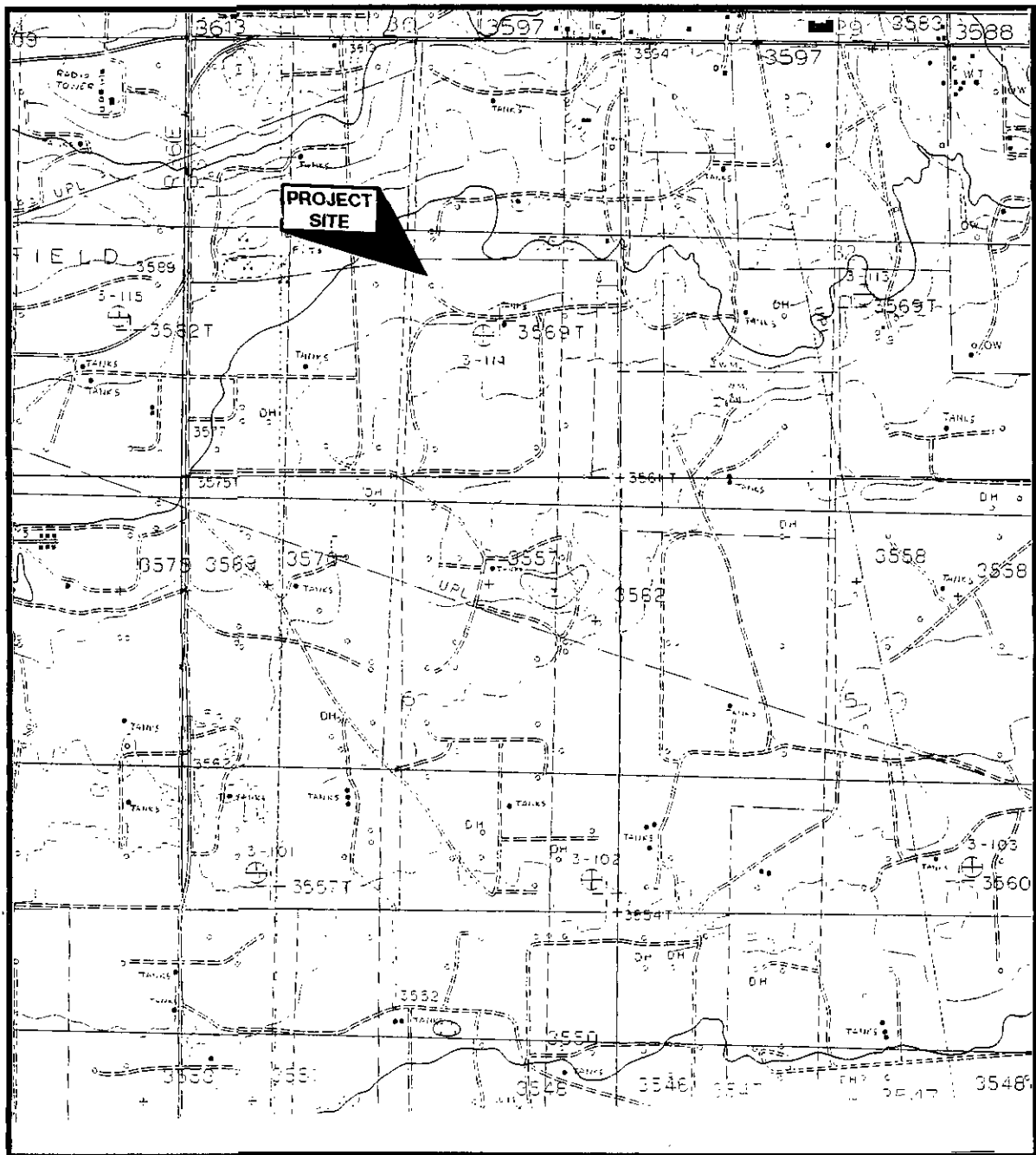
- Ground water samples collected from MW-1 through MW-5 were tested for BTEX.
- Ground water samples collected from monitoring wells MW-1 through MW-5 were also tested for polycyclic aromatic hydrocarbon (PAH), ICP heavy metals, major cations/anions, and total dissolved solids (TDS).
- Laboratory results indicated the following concentration ranges:

| CONSTITUENT | CONCENTRATION RANGE<br>(mg/L) |
|-------------|-------------------------------|
| Benzene     | ND to 0.002                   |
| BTEX        | ND to 0.011                   |
| Aluminum    | ND to 1.41                    |
| Barium      | 0.12 to 0.28                  |
| Boron       | 0.23 to 0.27                  |
| Calcium     | 121 to 388                    |
| Iron        | ND to 0.16                    |

| CONSTITUENT | CONCENTRATION RANGE<br>(mg/L) |
|-------------|-------------------------------|
| Manganese   | ND to 0.67                    |
| Magnesium   | 32.0 to 51.7                  |
| Potassium   | 3.71 to 5.69                  |
| Silicon     | 17.4 to 19.0                  |
| Sodium      | 61.0 to 96.2                  |
| Strontium   | 2.52 to 4.54                  |
| Vanadium    | ND to 0.08                    |
| Zinc        | ND to 0.18                    |
| Bicarbonate | 233 to 328                    |
| TDS         | 867 to 1370                   |
| Sulfate     | 32 to 108                     |
| Chloride    | 237 to 422                    |

Constituents not listed above were ND. Ground water analytical results are summarized in TABLES III, IV and V. Water analytical laboratory reports and chain-of-custody documentation are presented in APPENDIX B. Quality Assurance/Quality Control Procedures are presented in APPENDIX C.

**MONUMENT SOUTH QUADRANGLE**  
**NEW MEXICO-LEA CO.**  
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**SITE LOCATION MAP**

**TEXAS-NEW MEXICO PIPE LINE**

**TNM-98-02**

**LEA COUNTY, NEW MEXICO**

**810044**

**FIG 1**

# LEGEND

- Monitoring Well Location installed by KEI on August 2, 15, and 16, 1998.
- Soil Boring Location drilled by KEI on August 2, 15, and 16, 1998.
- PL — Pipeline
- Excavation
- D = Depth below ground surface (feet)
- B = Benzene Concentration (mg/kg)
- BTEX = Total Benzene, Toluene, Ethylbenzene, and Xylenes Concentration (mg/kg)
- TPH = Total Petroleum Hydrocarbons Concentration (mg/kg)
- ND = Indicates the concentration was below instrument or laboratory detection limits.



Approximate Scale: 1"=60'

0 15 30 60

NOTE: Adjacent properties are not to scale.

Bird Property

Fence

● MW-4

Temp. Fence

○ SB-5

○ SB-3

SB-4○

○ SB-7

SB-6○

● MW-1

SB-2○

Capped

○ SB-9

○ SB-8

Temp. Fence

● MW-2

○ SB-1

SB-10○

Pipeline Junction

● MW-3

Cooper Property

● MW-5

| MW-1       |          |            | MW-2       |            |            | MW-3       |            |           | MW-4       |          |          | MW-5      |          |           |
|------------|----------|------------|------------|------------|------------|------------|------------|-----------|------------|----------|----------|-----------|----------|-----------|
| D=0-2      | D=23-25  | D=28-30    | D=0-2      | D=28-30    | D=35-37    | D=23-25    | D=28-30    | D=0-2     | D=25-27    | D=33-35  | D=0-2    | D=25-27   | D=25-27  | D=25-27   |
| B=ND       | B=ND     | B=ND       | B=ND       | B=ND       | B=ND       | B=ND       | B=ND       | B=ND      | B=ND       | B=ND     | B=ND     | B=ND      | B=ND     | B=ND      |
| BTEX=0.022 | BTEX=ND  | BTEX=ND    | BTEX=ND    | BTEX=ND    | BTEX=ND    | BTEX=0.088 | BTEX=1.39  | BTEX=ND   | BTEX=ND    | BTEX=ND  | BTEX=ND  | BTEX=ND   | BTEX=ND  | BTEX=ND   |
| TPH=7.3    | TPH=9.6  | TPH=8.3    | TPH=9.9    | TPH=ND     | TPH=5.4    | TPH=ND     | TPH=248    | TPH=10.3  | TPH=ND     | TPH=11.0 | TPH=11.9 | TPH=10.3  | TPH=10.3 | TPH=10.3  |
| MW-5       |          |            | SB-1       |            |            | SB-2       |            |           | SB-3       |          |          | SB-4      |          |           |
| D=33-35    | D=0-2    | D=23-25    | D=28-30    | D=0-2      | D=23-25    | D=28-30    | D=2-4      | D=27-29   | D=2-4      | D=25-27  | D=2-4    | D=25-27   | D=2-4    | D=25-27   |
| B=ND       | B=ND     | B=ND       | B=ND       | B=ND       | B=ND       | B=ND       | B=ND       | B=ND      | B=ND       | B=ND     | B=ND     | B=ND      | B=ND     | B=ND      |
| BTEX=ND    | BTEX=ND  | BTEX=0.219 | BTEX=4.872 | BTEX=0.225 | BTEX=0.186 | BTEX=ND    | BTEX=0.020 | BTEX=3.87 | BTEX=ND    | BTEX=ND  | BTEX=ND  | BTEX=4.08 | BTEX=ND  | BTEX=0.96 |
| TPH=11.8   | TPH=17.9 | TPH=12.7   | TPH=480    | TPH=6.5    | TPH=6.1    | TPH=5.4    | TPH=155    | TPH=895   | TPH=106    | TPH=6880 | TPH=13.3 | TPH=6010  | TPH=13.3 | TPH=6010  |
| SB-5       |          |            | SB-6       |            |            | SB-7       |            |           | SB-8       |          |          | SB-9      |          |           |
| D=27-29    | D=2-4    | D=27-29    | D=2-4      | D=27-29    | D=2-4      | D=27-29    | D=2-4      | D=23-25   | D=25-27    | D=0-2    | D=25-27  | D=2-4     | D=25-27  | D=25-27   |
| B=1.08     | B=ND     | B=0.068    | B=ND       | B=ND       | B=ND       | B=ND       | B=ND       | B=ND      | B=ND       | B=ND     | B=ND     | B=ND      | B=ND     | B=ND      |
| BTEX=4.95  | BTEX=ND  | BTEX=0.661 | BTEX=ND    | BTEX=ND    | BTEX=ND    | BTEX=ND    | BTEX=ND    | BTEX=9.19 | BTEX=15.37 | BTEX=ND  | BTEX=ND  | BTEX=ND   | BTEX=ND  | BTEX=ND   |
| TPH=447    | TPH=147  | TPH=151    | TPH=ND     | TPH=10.9   | TPH=10.4   | TPH=ND     | TPH=12.4   | TPH=37000 | TPH=19400  | TPH=35.4 | TPH=11.3 | TPH=11.3  | TPH=11.3 | TPH=11.3  |

10:05:08-RM G:\SAOFT\PROJECT\STNMP\_LB10044\810044(SC)

kei

## SITE PLAN AND SOIL CONCENTRATION MAP

TEXAS-NEW MEXICO PIPE LINE

TNM-98-02

LEA COUNTY, NEW MEXICO

810044

FIG 2

## LEGEND



Sand (SM), silty, brown, dry.



Caliche, contained sand layers, tan to gray, dry to moist.



Clay (CL), sandy, contained calcareous nodules, tan to red, moist to wet.



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



Indicates sample selected for laboratory analysis.



Indicates the ground water level measured on August 18, 1998.

B = Benzene Concentration (mg/kg)

BTEX = Total Benzene, Toluene, Ethylbenzene, and Xylenes Concentration (mg/kg)

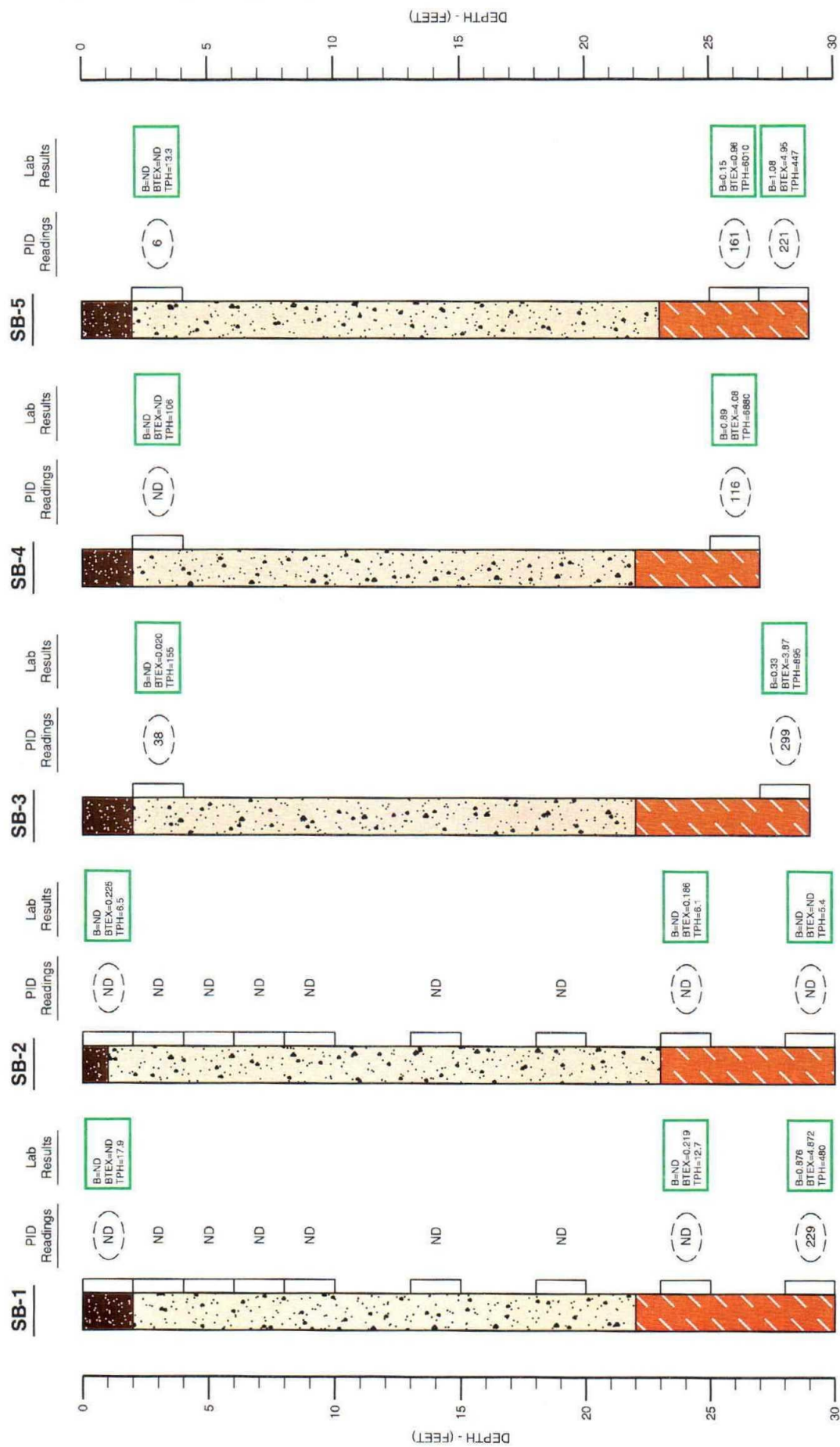
TPH = Total Petroleum Hydrocarbon Concentration (mg/kg)

ND = Indicates the concentration was below instrument or laboratory detection limits.

PID = Head-space readings in ppm obtained with a photoionization detector.

## NOTES:

1. The exploratory holes were drilled on August 2, 15, and 16, 1998. Exploratory holes were drilled using an air rotary drill rig.
2. The holes were located by a representative of TMNPL by measuring from existing features at site.
3. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
4. The depths indicated are referenced from the ground surface.



LOG AND DETAILS OF SOIL BORINGS SB-1 THRU SB-5

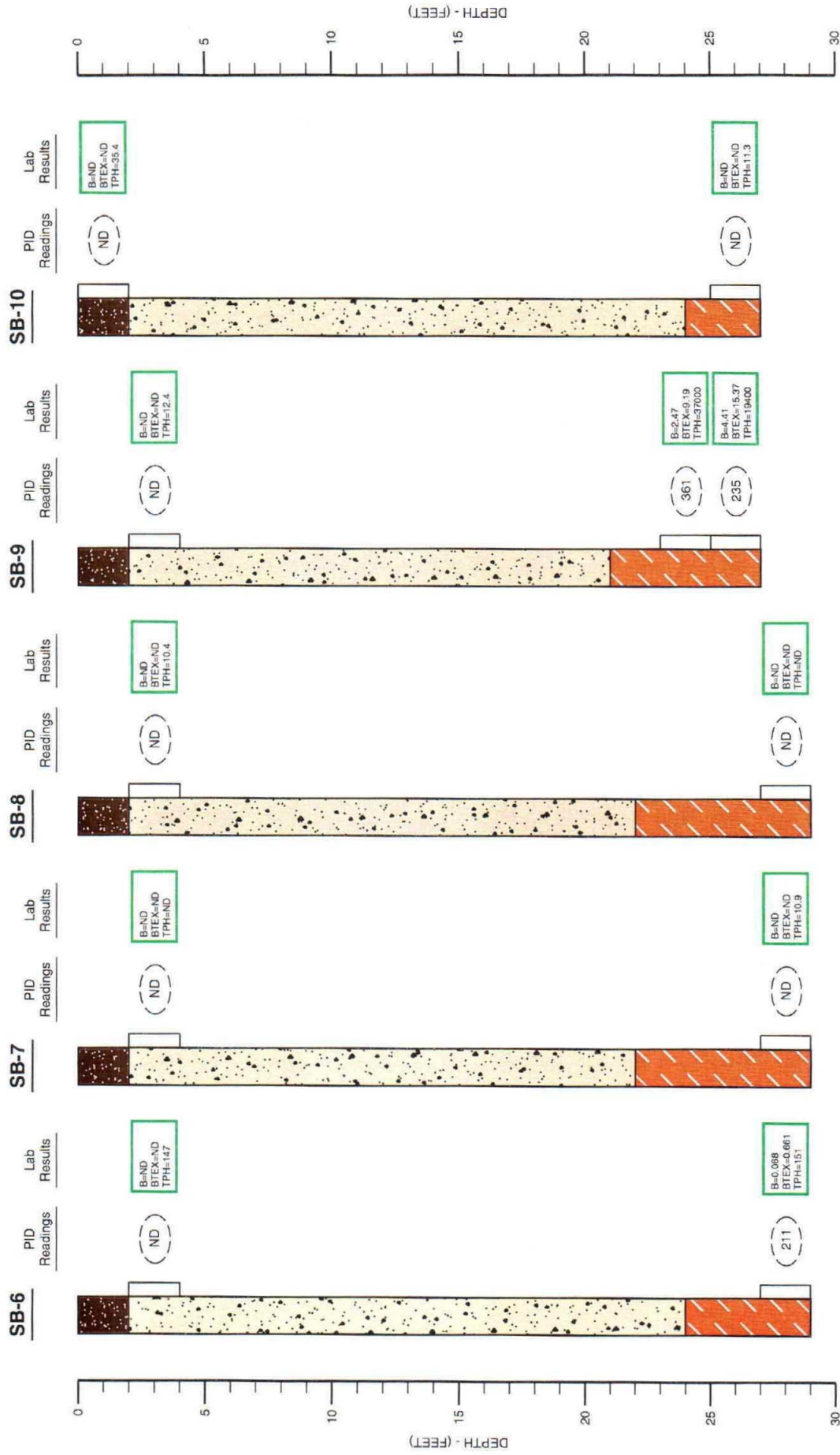
TEXAS-NEW MEXICO PIPE LINE

TNM-98-02

LEA COUNTY, NEW MEXICO

810044

FIG 4



LOG AND DETAILS OF SOIL BORINGS SB-6 THRU SB-10

TEXAS-NEW MEXICO PIPE LINE

TNM-98-02

LEA COUNTY, NEW MEXICO

810044

FIG 5

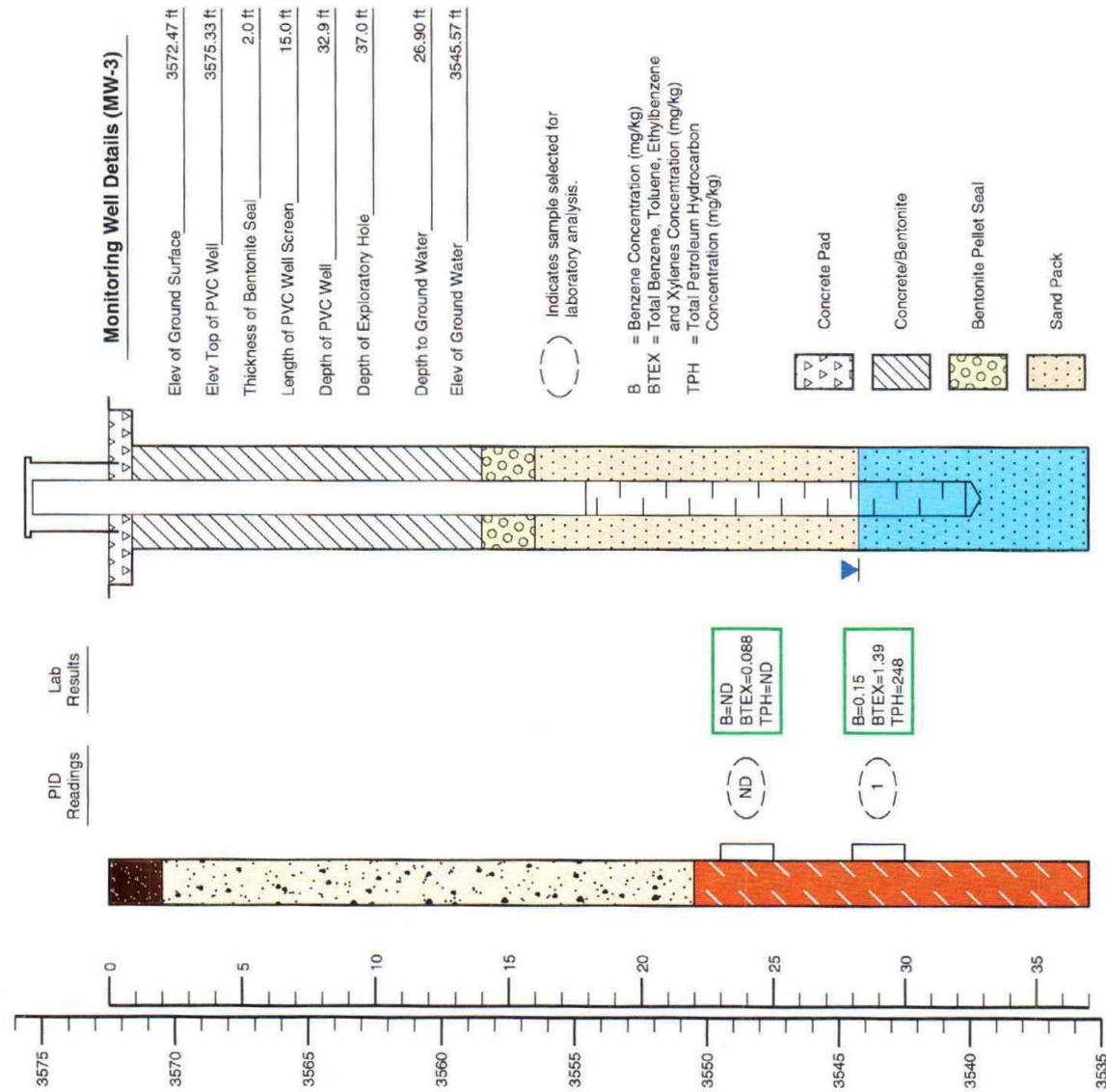


1. The monitoring well was installed on August 1, 1998 using an air rotary rig.
2. The well was constructed with 4 inch ID, 0.010 inch factory scribed, threaded joint, Schedule 40 PVC pipe.
3. The well is protected with a stick-up steel cover and a locked compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.



1. The monitoring well was installed on August 1, 1998 using an air rotary rig.
2. The well was constructed with 2 inch ID, 0.010 inch factory slotted, threaded joint, Schedule 40 PVC pipe.
3. The well is protected with a stick-up steel cover and a locked compression cap.
4. The lines between material types shown on the profile (cg represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

## MONITORING WELL MW-3



## LOG AND DETAILS OF MONITORING WELL MW-3

TEXAS-NEW MEXICO PIPE LINE

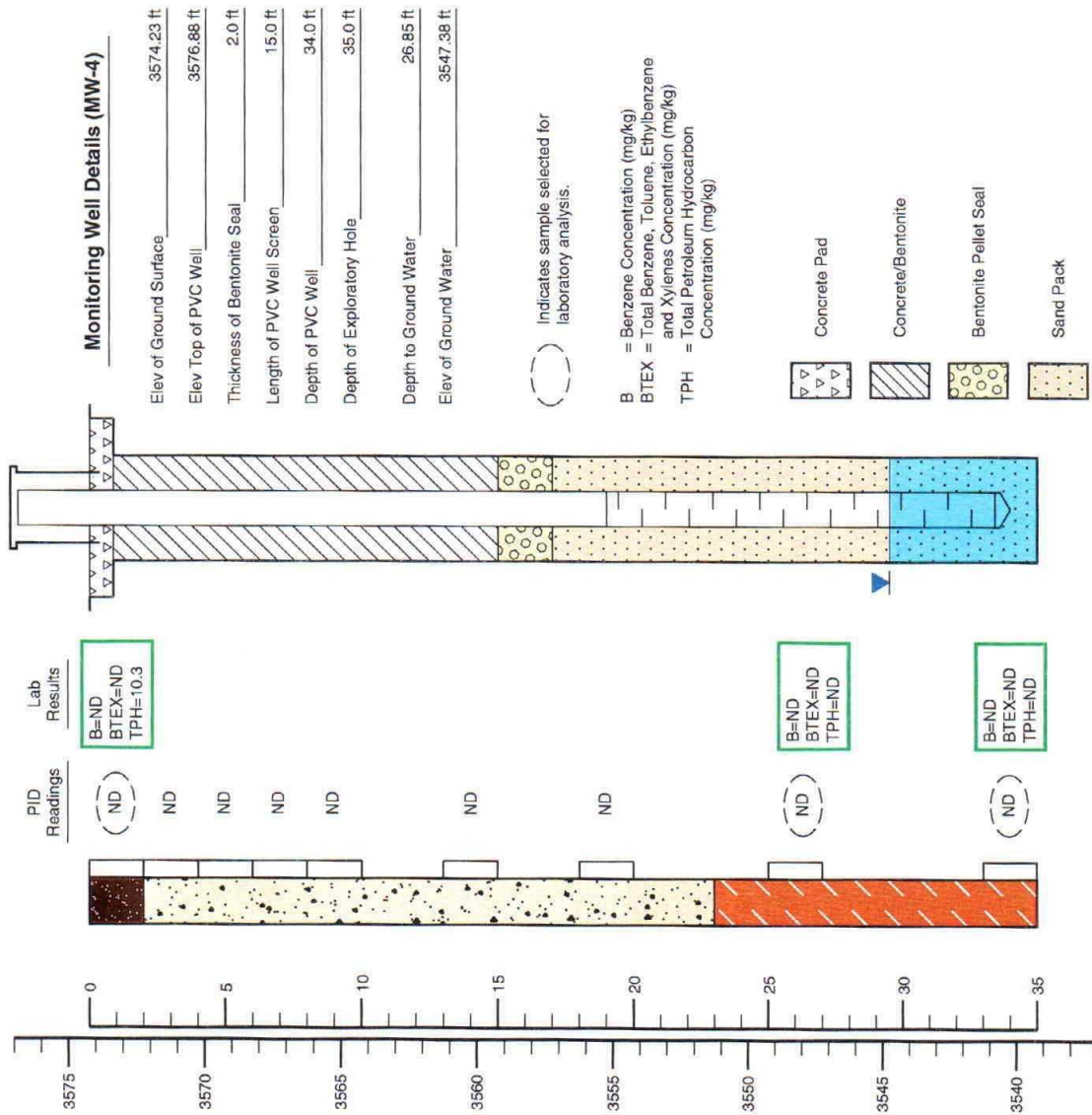
TNM-98-02

LEA COUNTY, TEXAS

810044

FIG 8

## MONITORING WELL MW-4

ELEV/DEPTH  
(FEET)

## LEGEND



Sand (SM), silty, brown, dry.



Caliche, contained sand layers, tan to grey, dry.



Clay (CL), sandy, contained calcareous nodules, tan to red, moist to wet.



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



Indicates the ground water level measured on August 18, 1998.



PID Head-space readings in ppm obtained with a photoionization detector.

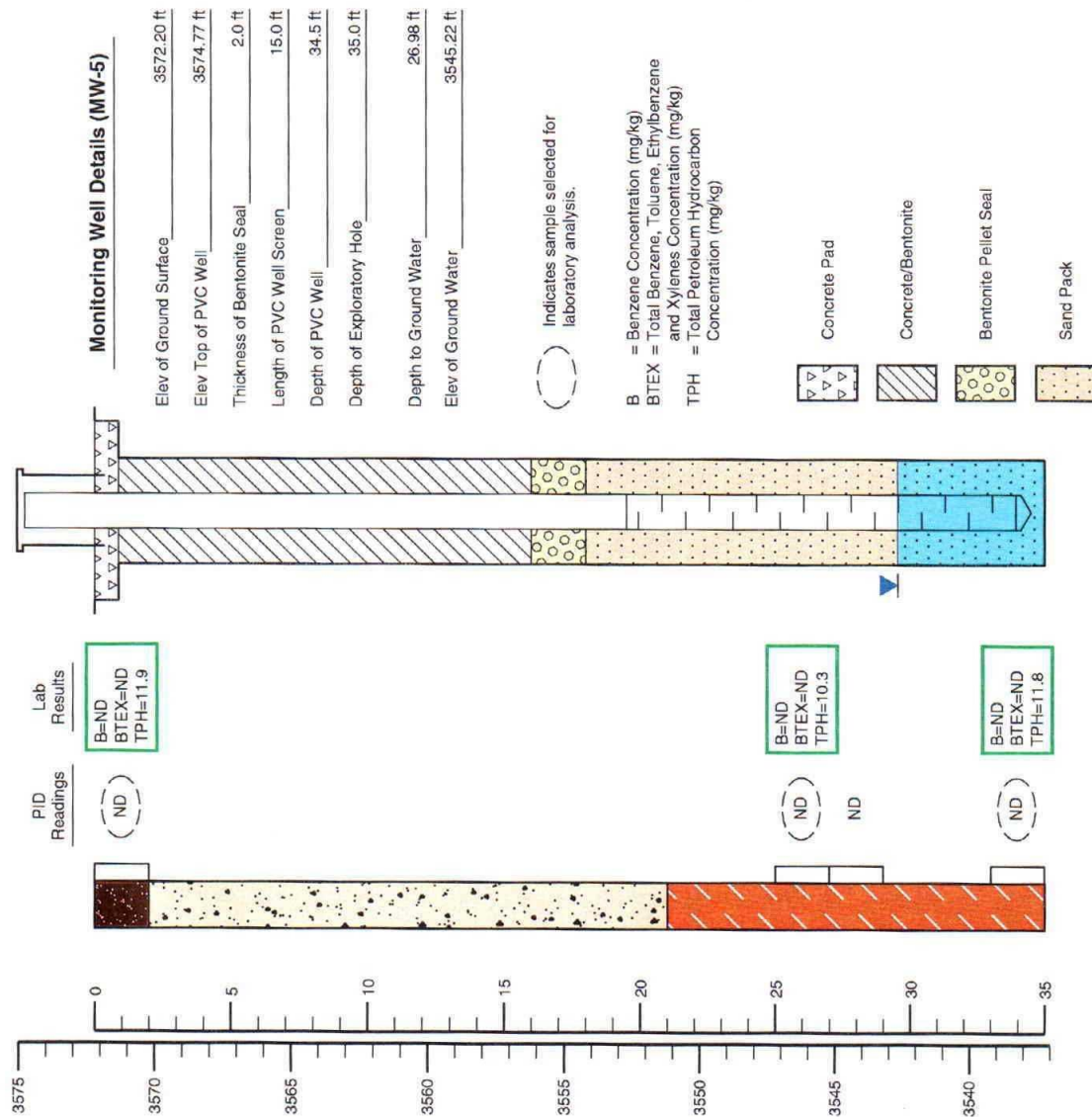


ND Indicates the concentration was below instrument or laboratory detection limits.

## NOTES

1. The monitoring well was installed on August 15, 1998 using an air rotary rig.
2. The well was constructed with 2 inch ID, 0.010 inch factory slotted, threaded joint, Schedule 40 PVC pipe.
3. The well is protected with a stick-up steel cover and a locked compression cap.
4. The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.
5. The depths indicated are referenced from the ground surface.

## MONITORING WELL MW-5



## LOG AND DETAILS OF MONITORING WELL MW-5

TEXAS-NEW MEXICO PIPE LINE

TNM-98-02

LEA COUNTY, TEXAS

810044

FIG 10



## GENERAL NOTES

ND - Indicates constituent was not detected above the method detection limit.

### Method detection or reporting limits:

#### Soil:

|           |                        |
|-----------|------------------------|
| BTEX      | - 0.020 to 0.50 mg/kg  |
| TPH       | - 5.0 to 5000 mg/kg    |
| SPLP TPH  | - 0.8 mg/kg            |
| SPLP VOC  | - 0.025 to 0.050 mg/kg |
| SPLP SVOC | - 0.05 to 0.12 mg/kg   |

#### Water:

|             |                       |
|-------------|-----------------------|
| BTEX        | - 0.001 to 0.008 mg/L |
| Metals      | - 0.0011 to 0.5 mg/L  |
| PAH         | - 0.002 mg/L          |
| Anions      | - 2 to 4 mg/L         |
| Bicarbonate | - 4.0 mg/L            |
| Carbonate   | - 4.0 mg/L            |
| TDS         | - 5.0 mg/L            |

### Laboratory test methods:

#### Soil:

|           |                                         |
|-----------|-----------------------------------------|
| BTEX      | - EPA Method SW846-8021B                |
| TPH       | - EPA Method 8015M Diesel Range Organic |
| SPLP VOC  | - EPA Method 1312/8260                  |
| SPLP SVOC | - EPA Method 1312/8270                  |
| SPLP TPH  | - EPA Method 1312/418.1                 |

#### Water:

|               |                          |
|---------------|--------------------------|
| BTEX          | - EPA Method SW846-8021B |
| Anions        | - EPA Method 300.0       |
| Metals        | - EPA ICP Method 6010    |
| Total Mercury | - EPA Method 7470        |
| Bicarbonate   | - SM4500CO2D             |
| Carbonate     | - SM4500CO2D             |
| TDS           | - EPA Method 160.1       |
| PAH           | - EPA Method 8270        |

**TABLE I**

**SUMMARY OF SOIL RESULTS - BTEX AND TPH  
TEXAS - NEW MEXICO PIPE LINE COMPANY  
TNM-98-02  
LEA COUNTY, NEW MEXICO**

| <b>SAMPLE LOCATION</b> | <b>DATE SAMPLED</b> | <b>SAMPLE 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>BTEX (mg/kg)</b> | <b>TPH (mg/kg)</b> |
|------------------------|---------------------|----------------------------|------------------------|------------------------|------------------------------|------------------------|---------------------|--------------------|
| SB-1                   | 8/2/98              | 0 - 2                      | ND                     | ND                     | ND                           | ND                     | ND                  | 17.9               |
| SB-1                   | 8/2/98              | 23 - 25                    | ND                     | 0.035                  | 0.031                        | 0.153                  | 0.219               | 12.7               |
| SB-1                   | 8/2/98              | 28 - 30                    | 0.876                  | 0.514                  | 0.484                        | 2.998                  | 4.872               | 480                |
| SB-2                   | 8/2/98              | 0 - 2                      | ND                     | 0.057                  | 0.034                        | 0.134                  | 0.225               | 6.5                |
| SB-2                   | 8/2/98              | 23 - 25                    | ND                     | 0.030                  | 0.028                        | 0.128                  | 0.186               | 6.1                |
| SB-2                   | 8/2/98              | 28 - 30                    | ND                     | ND                     | ND                           | ND                     | ND                  | 5.4                |
| SB-3                   | 8/15/98             | 2 - 4                      | ND                     | ND                     | ND                           | 0.020                  | 0.020               | 155                |
| SB-3                   | 8/15/98             | 27 - 29                    | 0.33                   | 0.62                   | 0.39                         | 2.53                   | 3.87                | 895                |
| SB-4                   | 8/15/98             | 2 - 4                      | ND                     | ND                     | ND                           | ND                     | ND                  | 106                |
| SB-4                   | 8/15/98             | 25 - 27                    | 0.89                   | 0.99                   | 0.70                         | 1.50                   | 4.08                | 6,880              |
| SB-5                   | 8/15/98             | 2 - 4                      | ND                     | ND                     | ND                           | ND                     | ND                  | 13.3               |
| SB-5                   | 8/15/98             | 25 - 27                    | 0.15                   | 0.16                   | 0.18                         | 0.47                   | 0.96                | 6,010              |
| SB-5                   | 8/15/98             | 27 - 29                    | 1.08                   | 1.23                   | 0.86                         | 1.78                   | 4.95                | 447                |
| SB-6                   | 8/15/98             | 2 - 4                      | ND                     | ND                     | ND                           | ND                     | ND                  | 147                |
| SB-6                   | 8/15/98             | 27 - 29                    | 0.068                  | 0.215                  | 0.150                        | 0.228                  | 0.661               | 151                |
| SB-7                   | 8/15/98             | 2 - 4                      | ND                     | ND                     | ND                           | ND                     | ND                  | ND                 |
| SB-7                   | 8/15/98             | 27 - 29                    | ND                     | ND                     | ND                           | ND                     | ND                  | 10.9               |
| SB-8                   | 8/15/98             | 2 - 4                      | ND                     | ND                     | ND                           | ND                     | ND                  | 10.4               |
| SB-8                   | 8/15/98             | 27 - 29                    | ND                     | ND                     | ND                           | ND                     | ND                  | ND                 |
| SB-9                   | 8/16/98             | 2 - 4                      | ND                     | ND                     | ND                           | ND                     | ND                  | 12.4               |
| SB-9                   | 8/16/98             | 23 - 25                    | 2.47                   | 0.52                   | 1.62                         | 4.58                   | 9.19                | 37,000             |
| SB-9                   | 8/16/98             | 25 - 27                    | 4.41                   | 1.80                   | 2.36                         | 6.80                   | 15.37               | 19,400             |
| SB-10                  | 8/16/98             | 0 - 2                      | ND                     | ND                     | ND                           | ND                     | ND                  | 35.4               |
| SB-10                  | 8/16/98             | 25 - 27                    | ND                     | ND                     | ND                           | ND                     | ND                  | 11.3               |
| MW-1                   | 8/1/98              | 0 - 2                      | ND                     | 0.022                  | ND                           | ND                     | 0.022               | 7.3                |
| MW-1                   | 8/1/98              | 23 - 25                    | ND                     | ND                     | ND                           | ND                     | ND                  | 9.6                |
| MW-1                   | 8/1/98              | 28 - 30                    | ND                     | ND                     | ND                           | ND                     | ND                  | 8.3                |

**TABLE I**  
(continued)

**SUMMARY OF SOIL RESULTS - BTEX AND TPH**  
**TEXAS - NEW MEXICO PIPE LINE COMPANY**  
**TNM-98-02**  
**LEA COUNTY, NEW MEXICO**

| SAMPLE LOCATION | DATE SAMPLED | SAMPLE DEPTH (feet) | BENZENE (mg/kg) | TOLUENE (mg/kg) | ETHYL-BENZENE (mg/kg) | XYLENES (mg/kg) | BTEX (mg/kg) | TPH (mg/kg) |
|-----------------|--------------|---------------------|-----------------|-----------------|-----------------------|-----------------|--------------|-------------|
| MW-2            | 8/1/98       | 0 - 2               | ND              | ND              | ND                    | ND              | ND           | 9.9         |
| MW-2            | 8/1/98       | 28 - 30             | ND              | ND              | ND                    | ND              | ND           | ND          |
| MW-2            | 8/1/98       | 35 - 37             | ND              | ND              | ND                    | ND              | ND           | 5.4         |
| MW-3            | 8/2/98       | 23 - 25             | ND              | 0.043           | ND                    | 0.045           | 0.088        | ND          |
| MW-3            | 8/2/98       | 28 - 30             | 0.15            | 0.40            | 0.24                  | 0.60            | 1.39         | 248         |
| MW-4            | 8/15/98      | 0 - 2               | ND              | ND              | ND                    | ND              | ND           | 10.3        |
| MW-4            | 8/15/98      | 25 - 27             | ND              | ND              | ND                    | ND              | ND           | ND          |
| MW-4            | 8/15/98      | 33 - 35             | ND              | ND              | ND                    | ND              | ND           | 11.0        |
| MW-5            | 8/16/98      | 0 - 2               | ND              | ND              | ND                    | ND              | ND           | 11.9        |
| MW-5            | 8/16/98      | 25 - 27             | ND              | ND              | ND                    | ND              | ND           | 10.3        |
| MW-5            | 8/16/98      | 33 - 35             | ND              | ND              | ND                    | ND              | ND           | 11.8        |

**TABLE II**

**SUMMARY OF SOIL RESULTS - SPLP  
TEXAS - NEW MEXICO PIPE LINE COMPANY  
TNM-98-02  
LEA COUNTY, NEW MEXICO**

| PARAMETER              | CONCENTRATION<br>(mg/l) |
|------------------------|-------------------------|
| VOC                    |                         |
| Isopropylbenzene       | 0.027                   |
| 1,2,4-Trimethylbenzene | 0.121                   |
| 1,3,5-Trimethylbenzene | 0.043                   |
| m,p-Xylenes            | 0.042                   |
| SVOC                   | ND                      |
| TPH                    | 7.1                     |

**NOTES:**

1. The sample was obtained on 08/16/98 from SB-9 at 23 to 25 feet.
2. Those constituents not listed were ND.

**TABLE III****SUMMARY OF GROUND WATER RESULTS - BTEX  
TEXAS - NEW MEXICO PIPE LINE COMPANY****TNM-98-02****LEA COUNTY, NEW MEXICO**

| MONITORING<br>WELL NO. | DEPTH TO<br>WATER (feet<br>bgs) | GROUND<br>WATER<br>ELEVATION<br>(feet) | BENZENE<br>(mg/l) | TOLUENE<br>(mg/l) | ETHYL-<br>BENZENE<br>(mg/l) | XYLENES<br>(mg/l) | BTEX<br>(mg/l) |
|------------------------|---------------------------------|----------------------------------------|-------------------|-------------------|-----------------------------|-------------------|----------------|
| MW-1                   | 25.44                           | 3547.52                                | ND                | ND                | ND                          | ND                | ND             |
| MW-2                   | 26.09                           | 3546.34                                | ND                | ND                | ND                          | ND                | ND             |
| MW-3                   | 26.9                            | 3545.57                                | 0.002             | ND                | 0.003                       | 0.006             | 0.011          |
| MW-4                   | 26.85                           | 3547.38                                | ND                | ND                | ND                          | ND                | ND             |
| MW-5                   | 26.98                           | 3545.22                                | ND                | ND                | ND                          | ND                | ND             |

**NOTE:**

Ground water samples were collected on August 20, 1998 and depth to ground water was measured August 18, 1998.

**TABLE IV****SUMMARY OF GROUND WATER RESULTS - METALS AND PAH  
TEXAS - NEW MEXICO PIPE LINE COMPANY****TNM-98-02****LEA COUNTY, NEW MEXICO**

| <b>SAMPLE LOCATION</b> | <b>MW-1</b>                 | <b>MW-2</b> | <b>MW-3</b> | <b>MW-4</b> | <b>MW-5</b> |
|------------------------|-----------------------------|-------------|-------------|-------------|-------------|
| <b>DATE SAMPLED</b>    | 08/20/98                    | 08/20/98    | 08/20/98    | 08/20/98    | 08/20/98    |
| <b>PARAMETER:</b>      | <b>CONCENTRATION (mg/l)</b> |             |             |             |             |
|                        |                             |             |             |             |             |
| Aluminum               | ND                          | ND          | 1.41        | 0.2         | ND          |
| Barium                 | 0.13                        | 0.12        | 0.28        | 0.14        | 0.14        |
| Boron                  | 0.24                        | 0.23        | 0.26        | 0.27        | 0.26        |
| Calcium                | 172                         | 147         | 388         | 166         | 121         |
| Iron                   | 0.13                        | ND          | 0.16        | ND          | ND          |
| Magnesium              | 35.7                        | 32.0        | 42.9        | 51.7        | 41.4        |
| Manganese              | ND                          | ND          | 0.67        | ND          | 0.33        |
| Mercury                | ND                          | ND          | ND          | ND          | ND          |
| Potassium              | 3.71                        | 5.15        | 5.20        | 5.69        | 4.14        |
| Silicon                | 19.0                        | 18.5        | 18.9        | 17.4        | 17.9        |
| Sodium                 | 61.0                        | 66.0        | 75.9        | 96.2        | 84.1        |
| Strontium              | 2.95                        | 2.52        | 4.11        | 4.54        | 3.71        |
| Vanadium               | ND                          | ND          | 0.08        | ND          | 0.06        |
| Zinc                   | ND                          | 0.13        | ND          | 0.17        | 0.18        |

**NOTE:**

Those constituents not listed were ND.

**TABLE V**

**SUMMARY OF GROUND WATER RESULTS - MISCELLANEOUS  
TEXAS - NEW MEXICO PIPE LINE COMPANY  
TNM-98-02  
LEA COUNTY, NEW MEXICO**

| <b>MONITORING<br/>WELL NO.</b> | <b>DATE<br/>SAMPLED</b> | <b>BICARBONATE<br/>(mg/l)</b> | <b>CARBONATE<br/>(mg/l)</b> | <b>TDS<br/>(mg/l)</b> | <b>SULFATE<br/>(mg/l)</b> | <b>CHLORIDE<br/>(mg/l)</b> |
|--------------------------------|-------------------------|-------------------------------|-----------------------------|-----------------------|---------------------------|----------------------------|
| MW-1                           | 08/20/98                | 313                           | ND                          | 1,040                 | 91                        | 327                        |
| MW-2                           | 08/20/98                | 310                           | ND                          | 867                   | 58                        | 237                        |
| MW-3                           | 08/20/98                | 328                           | ND                          | 1,100                 | 32                        | 345                        |
| MW-4                           | 08/20/98                | 308                           | ND                          | 1,370                 | 108                       | 422                        |
| MW-5                           | 08/20/98                | 233                           | ND                          | 1,010                 | 54                        | 382                        |

# **ANALYTICAL REPORT 1-82973**

for

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

**Project Manager: Theresa Nix**

**Project Name: TNM 98-02**

**Project Id: 810044-1-0**

**September 2, 1998**



HOUSTON - DALLAS - SAN ANTONIO

11381 Meadowglen Lane Suite L \* Houston, Texas 77082-2647  
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11381 Meadowglen Suite L  
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Houston - Dallas - San Antonio - Latin America

September 2, 1998

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

Reference: **XENCO Report No.: 1-82973**  
**Project Name: TNM 98-02**  
**Project ID: 810044-1-0**  
**Project Address: Monument, 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 1-82973. 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. 1-82973 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,

A handwritten signature in black ink, appearing to read "Eddie L. Clemons, II".

Eddie L. Clemons, II  
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.*



CERTIFICATE OF ANALYSIS SUMMARY 1-82973

|                                |  |                                                       |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |
|--------------------------------|--|-------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| Project ID: 810044-1-0         |  | K.E.I. Consultants, Inc.                              |                                                       | Date Received in Lab : Aug 5, 1998 10:45                |                                                         |                                                       |                                                         |                                                         |
| Project Manager: Theresa Nix   |  | Project Name: TNM 98-02                               |                                                       | Date Report Faxed: Sep 2, 1998                          |                                                         |                                                       |                                                         |                                                         |
| Project Location: Monument, NM |  | XENCO contact : Carlos Castro/Eddie Clemons           |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |
| <b>Analysis Requested</b>      |  | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 182973 001<br>MW-1<br>0-2'<br>Solid<br>08/01/98 09:08 | 182973 002<br>MW-1<br>23-25'<br>Solid<br>08/01/98 10:13 | 182973 003<br>MW-1<br>28-30'<br>Solid<br>08/01/98 10:30 | 182973 004<br>MW-2<br>0-2'<br>Solid<br>08/01/98 13:38 | 182973 005<br>MW-2<br>28-30'<br>Solid<br>08/01/98 15:59 | 182973 006<br>MW-2<br>35-37'<br>Solid<br>08/01/98 16:14 |
| IPII-DRO (Diesel)              |  | Analyzed:<br>Units:                                   | 08/14/98<br>mg/kg<br>R.L.                             | 08/14/98<br>mg/kg<br>R.L.                               | 08/14/98<br>mg/kg<br>R.L.                               | 08/14/98<br>mg/kg<br>R.L.                             | 08/15/98<br>mg/kg<br>R.L.                               | 08/14/98<br>mg/kg<br>R.L.                               |
| EPA 8015 M                     |  |                                                       | 7.3 (5.0)                                             | 9.6 (5.0)                                               | 8.3 (5.0)                                               | 9.9 (5.0)                                             | < 5.0 (5.0)                                             | 5.4 (5.0)                                               |
| Total Petroleum Hydrocarbons   |  |                                                       |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |
| BTX                            |  | Analyzed:<br>Units:                                   | 08/07/98<br>ppm<br>R.L.                               | 08/07/98<br>ppm<br>R.L.                                 | 08/07/98<br>ppm<br>R.L.                                 | 08/07/98<br>ppm<br>R.L.                               | 08/07/98<br>ppm<br>R.L.                                 | 08/07/98<br>ppm<br>R.L.                                 |
| EPA 8021B                      |  |                                                       | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         |
| Benzene                        |  |                                                       | 0.022 (0.020)                                         | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         |
| Toluene                        |  |                                                       | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         |
| Ethylbenzene                   |  |                                                       | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         |
| m,p-Xylenes                    |  |                                                       | < 0.040 (0.040)                                       | < 0.040 (0.040)                                         | < 0.040 (0.040)                                         | < 0.040 (0.040)                                       | < 0.040 (0.040)                                         | < 0.040 (0.040)                                         |
| o-Xylene                       |  |                                                       | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         | < 0.020 (0.020)                                       | < 0.020 (0.020)                                         | < 0.020 (0.020)                                         |
| Total BTX                      |  |                                                       | 0.022                                                 | N.D.                                                    | N.D.                                                    | N.D.                                                  | N.D.                                                    | N.D.                                                    |

Eddie L. Clemons, II  
QA/QC Manager

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.

**CERTIFICATE OF ANALYSIS SUMMARY 1-82973**

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

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Project Name: TMM 98-02

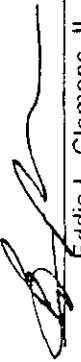
Date Received in Lab: Aug 5, 1998 10:45

Date Report Faxed: Sep 2, 1998

XENCO contact: Carlos Castro/Eddie Clemons

| Analysis Requested           |  |  | Lab ID:   |        | 182973 007 |        | 182973 008 |                | 182973 009 |       | 182973 010 |      | 182973 011 |          | 182973 012 |       |          |      |
|------------------------------|--|--|-----------|--------|------------|--------|------------|----------------|------------|-------|------------|------|------------|----------|------------|-------|----------|------|
|                              |  |  | Field ID: | Depth: | MW-3       | 23-25' | Solid      | 08/02/98 09:38 | R.L.       | mg/kg | 08/15/98   | R.L. | mg/kg      | 08/15/98 | R.L.       | mg/kg | 08/15/98 | R.L. |
| Total Petroleum Hydrocarbons |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| BTEX                         |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| EPA 8021B                    |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Benzene                      |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Toluene                      |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Ethylbenzene                 |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| m,p-Xylenes                  |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| o-Xylene                     |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Total BTEX                   |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| SPLP-Semivolatiles           |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| EPA1312/18270                |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Acenaphthene                 |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Acenaphthylene               |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Anthracene                   |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Benz(a)anthracene            |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Benzo(a)pyrene               |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Benzo(b)fluoranthene         |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Benzo(g,h,i)perylene         |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Benzo(k)fluoranthene         |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| 4-Bromophenyl phenylether    |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Butyl benzyl phthalate       |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| Carbazole                    |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |
| 4-Chloro-3-methylphenol      |  |  | Analyzed: |        | Units:     |        |            |                |            |       |            |      |            |          |            |       |          |      |

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

# CERTIFICATE OF ANALYSIS SUMMARY 1-82973

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

**Project Name: TNM 98-02**

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

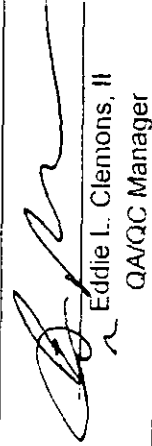
Date Received in Lab : Aug 5, 1998 10:45

Date Report Faxed: Sep 2, 1998

XENCO contact : Carlos Castro/Eddie Clemons

| Analysis Requested          | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 182973 007<br>MW-3<br>23-25'<br>Solid<br>08/02/98 09:38 | 182973 008<br>MW-3<br>28-30'<br>Solid<br>08/02/98 09:58 | 182973 009<br>SB-1<br>0-2'<br>Solid<br>08/02/98 07:59 | 182973 010<br>SB-1<br>23-25'<br>Solid<br>08/02/98 08:18 | 182973 011<br>SB-1<br>28-30'<br>Solid<br>08/02/98 08:30 | 182973 012<br>SB-2<br>0-2'<br>Solid<br>08/02/98 11:45 |
|-----------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|
|                             | Analyzed:<br>Units:                                   |                                                         |                                                         |                                                       |                                                         | 08/27/98<br>mg/L<br>R.L.                                |                                                       |
| SPLP-Semivolatiles          |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |                                                       |
| EPA1312/8270                |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |                                                       |
| 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)                                         |                                                       |
| 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)                                         |                                                       |

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Eddie L. Clemons, II  
QA/QC Manager

# CERTIFICATE OF ANALYSIS SUMMARY 1-82973

| <b>K.E.I. Consultants, Inc.</b><br>Project Name: <i>TNM 98-02</i><br>Date Received in Lab : Aug 5, 1998 10:45<br>Date Report Faxed: Sep 2, 1998<br>XENCO contact : Carlos Castro/Eddie Clemons |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|
| Project ID: 810044-1-0<br>Project Manager: Theresa Nix<br>Project Location: Monument, NM                                                                                                       |                                                       |                                                         |                                                         |                                                       |                                                         |                                                         |                                                       |
| Analysis Requested                                                                                                                                                                             | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 182973 007<br>MW-3<br>23-25'<br>Solid<br>08/02/98 09:38 | 182973 008<br>MW-3<br>28-30'<br>Solid<br>08/02/98 09:58 | 182973 009<br>SB-1<br>0-2'<br>Solid<br>08/02/98 07:59 | 182973 010<br>SB-1<br>23-25'<br>Solid<br>08/02/98 08:18 | 182973 011<br>SB-1<br>28-30'<br>Solid<br>08/02/98 08:30 | 182973 012<br>SB-2<br>0-2'<br>Solid<br>08/02/98 11:45 |
| SPLP-Semivolatiles<br>EPA1312/8270                                                                                                                                                             | Analyzed:<br>Units:                                   |                                                         |                                                         |                                                       |                                                         | R.L.<br>mg/L                                            |                                                       |
| 1 Hexachlorobutadiene                                                                                                                                                                          |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |
| 1 Hexachlorocyclopentadiene                                                                                                                                                                    |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |
| 1 Hexachloroethane                                                                                                                                                                             |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |
| Indeno(1,2,3-cd)pyrene                                                                                                                                                                         |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |
| Isophorone                                                                                                                                                                                     |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |
| 2-Methylnaphthalene                                                                                                                                                                            |                                                       |                                                         |                                                         |                                                       |                                                         | 0.020 (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                                                                                                                                                                          |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |
| 2,4,6-Trichlorophenol                                                                                                                                                                          |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.013 (0.013)                                         |                                                       |
|                                                                                                                                                                                                |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.005 (0.005)                                         |                                                       |

Eddie L. Clemons, II  
 QA/QC Manager

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# CERTIFICATE OF ANALYSIS SUMMARY 1-82973

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

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Project Name: TMM 98-02

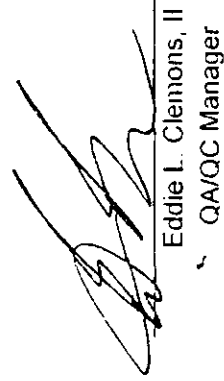
Date Received in Lab: Aug 5, 1998 10:45

Date Report Faxed: Sep 2, 1998

XENCO contact: Carlos Castro/Eddie Clemons

| Analysis Requested                 |                     | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 182973 007<br>MW-3<br>23-25'<br>Solid<br>08/02/98 09:38 | 182973 008<br>MW-3<br>28-30'<br>Solid<br>08/02/98 09:58 | 182973 009<br>SB-1<br>0-2'<br>Solid<br>08/02/98 07:59 | 182973 010<br>SB-1<br>23-25'<br>Solid<br>08/02/98 08:18 | 182973 011<br>SB-1<br>28-30'<br>Solid<br>08/02/98 08:30 | 182973 012<br>SB-2<br>0-2'<br>Solid<br>08/02/98 11:45 |
|------------------------------------|---------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|
| SPLP Semivolatiles<br>EPA1312/8270 | Analyzed:<br>Units: |                                                       |                                                         |                                                         |                                                       |                                                         | 08/27/98<br>mg/L                                        |                                                       |
| 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<br>EPA 8260         | Analyzed:<br>Units: |                                                       |                                                         |                                                         |                                                       |                                                         | 08/28/98<br>mg/L                                        |                                                       |
| Benzene                            |                     |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.025 (0.025)                                         |                                                       |
| Chlorobenzene                      |                     |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.025 (0.025)                                         |                                                       |
| 1,1-Dichloroethene                 |                     |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.025 (0.025)                                         |                                                       |
| Toluene                            |                     |                                                       |                                                         |                                                         |                                                       |                                                         | 0.036 (0.025)                                           |                                                       |
| Trichloroethene                    |                     |                                                       |                                                         |                                                         |                                                       |                                                         | < 0.025 (0.025)                                         |                                                       |
| 1,2,4-Trimethylbenzene             |                     |                                                       |                                                         |                                                         |                                                       |                                                         | 0.072 (0.025)                                           |                                                       |
| 1,3,5-Trimethylbenzene             |                     |                                                       |                                                         |                                                         |                                                       |                                                         | 0.028 (0.025)                                           |                                                       |
| m,p-Xylenes                        |                     |                                                       |                                                         |                                                         |                                                       |                                                         | 0.064 (0.025)                                           |                                                       |
| SPLP TPH<br>1312/418.1             | Analyzed:<br>Units: |                                                       |                                                         |                                                         |                                                       |                                                         | 08/24/98<br>ppm                                         |                                                       |
| Total Petroleum Hydrocarbons       |                     |                                                       |                                                         |                                                         |                                                       |                                                         | 2.7 (0.7)                                               |                                                       |

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Eddie L. Clemons, II  
QA/QC Manager

|                                                                                                               |                                                                                          |                                                                                                                                                |                                                                |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <b>K.E.I. Consultants, Inc.</b><br><b>Project Name: TNM 98-02</b>                                             |                                                                                          | <b>Date Received in Lab : Aug 5, 1998 10:45</b><br><b>Date Report Faxed: Sep 2, 1998</b><br><b>XENCO contact : Carlos Castro/Eddie Clemons</b> |                                                                |
| <b>Project ID: 810044-1-0</b><br><b>Project Manager: Theresa Nix</b><br><b>Project Location: Monument, NM</b> |                                                                                          |                                                                                                                                                |                                                                |
| <b>Analysis Requested</b>                                                                                     | <b>Lab ID:</b><br><b>Field ID:</b><br><b>Depth:</b><br><b>Matrix:</b><br><b>Sampled:</b> | <b>182973 013</b><br>SB-2<br>23-25'<br>Solid<br>08/01/98 12:38                                                                                 | <b>182973 014</b><br>SB-2<br>28-30'<br>Solid<br>08/02/98 13:15 |
| TPH-DRO (Diesel)<br>EPA 8015 M                                                                                | <b>Analyzed:</b><br>Units:                                                               | 08/15/98<br>mg/kg<br>R.L.                                                                                                                      | 08/15/98<br>mg/kg<br>R.L.                                      |
| <b>Total Petroleum Hydrocarbons</b>                                                                           |                                                                                          | 6.1 (5.0)                                                                                                                                      | 5.4 (5.0)                                                      |
| BTEX<br>EPA 8021B                                                                                             | <b>Analyzed:</b><br>Units:                                                               | 08/07/98<br>ppm<br>R.L.                                                                                                                        | 08/07/98<br>ppm<br>R.L.                                        |
| Benzene                                                                                                       | < 0.020 (0.020)                                                                          | < 0.020 (0.020)                                                                                                                                | < 0.020 (0.020)                                                |
| Toluene                                                                                                       | 0.030 (0.020)                                                                            | < 0.020 (0.020)                                                                                                                                | < 0.020 (0.020)                                                |
| Ethylbenzene                                                                                                  | 0.028 (0.020)                                                                            | < 0.020 (0.020)                                                                                                                                | < 0.020 (0.020)                                                |
| m,p-Xylenes                                                                                                   | 0.100 (0.040)                                                                            | < 0.040 (0.040)                                                                                                                                | < 0.040 (0.040)                                                |
| o-Xylene                                                                                                      | 0.028 (0.020)                                                                            | < 0.020 (0.020)                                                                                                                                | < 0.020 (0.020)                                                |
| Total BTEX                                                                                                    | 0.186                                                                                    | N.D.                                                                                                                                           | N.D.                                                           |

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

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**Certificate Of Quality Control for Batch : 18A25C63**

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

Date Validated: Aug 10, 1998 09:00

Analyst: HL

Date Analyzed: Aug 7, 1998 16:47

Matrix: Solid

| MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY |              |                                |                                      |                                                   |                                         |                                  |                                                |     |                         |                  |
|----------------------------------------------------|--------------|--------------------------------|--------------------------------------|---------------------------------------------------|-----------------------------------------|----------------------------------|------------------------------------------------|-----|-------------------------|------------------|
| Q.C. Sample ID<br>182973- 007                      | Parameter    | [A]<br>Sample<br>Result<br>ppm | [B]<br>Matrix Spike<br>Result<br>ppm | [C]<br>Matrix Spike<br>Duplicate<br>Result<br>ppm | [D]<br>Matrix<br>Spike<br>Amount<br>ppm | [E]<br>Detection<br>Limit<br>ppm | Matrix<br>Limit<br>Relative<br>Difference<br>% | [F] |                         | [J]<br>Qualifier |
|                                                    |              |                                |                                      |                                                   |                                         |                                  |                                                | QC  | M.S.D.<br>Recovery<br>% |                  |
|                                                    | Benzene      | < 0.020                        | 2.040                                | 2.180                                             | 2.000                                   | 0.020                            | 25.0                                           | 6.6 | 109.0                   | 65-135           |
|                                                    | Toluene      | 0.042                          | 2.040                                | 1.952                                             | 2.000                                   | 0.020                            | 25.0                                           | 4.4 | 95.5                    | 65-135           |
|                                                    | Ethylbenzene | < 0.020                        | 2.080                                | 2.020                                             | 2.000                                   | 0.020                            | 25.0                                           | 2.9 | 101.0                   | 65-135           |
|                                                    | m,p-Xylenes  | 0.046                          | 4.120                                | 4.040                                             | 4.000                                   | 0.040                            | 25.0                                           | 2.0 | 99.9                    | 65-135           |
|                                                    | o-Xylene     | < 0.020                        | 2.120                                | 2.080                                             | 2.000                                   | 0.020                            | 25.0                                           | 1.9 | 104.0                   | 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] =  $100 \cdot (C-A)/[D]$

[I] = Below detection limit or not detected

All results are based on MDL and validated for QC purposes

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



# Certificate Of Quality Control for Batch : 18A25C63

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

Date Validated: Aug 10, 1998 09:00

Analyst: HL

Date Analyzed: Aug 7, 1998 16:16

Matrix: Solid

## BLANK SPIKE ANALYSIS

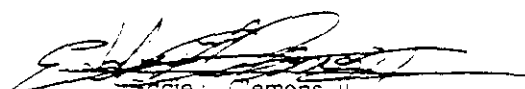
| Parameter    | [A]      | [B]         | [C]    | [D]       | [E]         | [F]      | [G]       |
|--------------|----------|-------------|--------|-----------|-------------|----------|-----------|
|              | Blank    | Blank Spike | Blank  | Detection | QC          | LIMITS   | Qualifier |
|              | Result   | Result      | Spike  | Limit     | Blank Spike | Recovery |           |
|              | ppm      | ppm         | Amount | ppm       | Recovery    | Range    |           |
|              |          |             | ppm    |           | %           | %        |           |
| Benzene      | < 0.0010 | 0.1090      | 0.1000 | 0.0010    | 109.0       | 65-135   |           |
| Toluene      | < 0.0010 | 0.1050      | 0.1000 | 0.0010    | 105.0       | 65-135   |           |
| Ethylbenzene | < 0.0010 | 0.1120      | 0.1000 | 0.0010    | 112.0       | 65-135   |           |
| m,p-Xylenes  | < 0.0020 | 0.2180      | 0.2000 | 0.0020    | 109.0       | 65-135   |           |
| o-Xylene     | < 0.0010 | 0.1130      | 0.1000 | 0.0010    | 113.0       | 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 : 18A40E20

## SW- 346 8015 M TPH- DRO (Diesel)

Date Validated: Aug 14, 1998 17:15

Analyst: AM

Date Analyzed: Aug 14, 1998 13:22

Matrix: Solid

| BLANK SPIKE ANALYSIS         |        |             |        |           |             |          |           |
|------------------------------|--------|-------------|--------|-----------|-------------|----------|-----------|
| Parameter                    | [A]    | [B]         | [C]    | [D]       | [E]         | [F]      | [G]       |
|                              | Blank  | Blank Spike | Blank  | Detection | QC          | LIMITS   | Qualifier |
|                              | Result | Result      | Spike  | Limit     | Blank Spike | Recovery |           |
|                              | mg/kg  | mg/kg       | Amount | mg/kg     | Recovery    | Range    |           |
|                              |        |             | mg/kg  |           | %           | %        |           |
| Total Petroleum Hydrocarbons | < 5.00 | 176         | 200    | 5.00      | 88.0        | 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 : 18A40E20

SW- 846 3015 M TPH- DRO (Diesel)

Date Validated: Aug 14, 1998 17:15

Analyst: AM

Date Analyzed: Aug 14, 1998 02:59

Matrix: Solid

## MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY

| Q.C. Sample ID<br>182973- 006 | [A]<br>Sample<br>Result<br><br>mg/kg | [B]<br>Matrix Spike<br>Result<br><br>mg/kg | [C]<br>Matrix Spike<br>Duplicate<br>Result<br><br>mg/kg | [D]<br>Matrix<br>Spike<br>Amount<br><br>mg/kg | [E]<br>Detection<br>Limit<br><br>mg/kg | Matrix<br>Limit<br><br>Relative<br>Difference<br><br>% | [F]                                   |      | [G]  |        | [H]                         |  | [I]<br>Matrix Spike<br>Recovery<br>Range<br><br>% | [J]<br>Qualifier |
|-------------------------------|--------------------------------------|--------------------------------------------|---------------------------------------------------------|-----------------------------------------------|----------------------------------------|--------------------------------------------------------|---------------------------------------|------|------|--------|-----------------------------|--|---------------------------------------------------|------------------|
|                               |                                      |                                            |                                                         |                                               |                                        |                                                        | Spike Relative<br>Difference<br><br>% | QC   | QC   | QC     | M.S.D.<br>Recovery<br><br>% |  |                                                   |                  |
|                               |                                      |                                            |                                                         |                                               |                                        |                                                        |                                       |      |      |        |                             |  |                                                   |                  |
|                               |                                      |                                            |                                                         |                                               |                                        |                                                        |                                       |      |      |        |                             |  |                                                   |                  |
| Parameter                     |                                      |                                            |                                                         |                                               |                                        |                                                        |                                       |      |      |        |                             |  |                                                   |                  |
| Total Petroleum Hydrocarbons  | 5.37                                 | 158                                        | 183                                                     | 200                                           | 5.00                                   | 30.0                                                   | 14.7                                  | 76.3 | 88.8 | 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] =  $100 \cdot (C-A)/D$

IID = 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 : 18A23D12**

**EPA 812/8260 SPLP Volatiles**

Date Validated: Aug 31, 1998 09:45  
Date Analyzed: Aug 28, 1998 20:22

Analyst: CE  
Matrix: Solid

**MATRIX SPIKE / MATRIX SPIKE DUPLICATE AND RECOVERY**

| Q.C. Sample ID<br>182973-011 | Parameter          | [A]<br>Sample<br>Result<br>mg/L | [B]<br>Matrix Spike<br>Result<br>mg/L | [C]<br>Matrix Spike<br>Duplicate<br>Result<br>mg/L | [D]<br>Matrix<br>Spike<br>Amount<br>mg/L | [E]<br>Detection<br>Limit<br>mg/L | Matrix<br>Limit<br>Relative<br>Difference<br>% | [F] |                                   | [G] |                               | [H]                     |      | [I]<br>Matrix Spike<br>Recovery<br>Range<br>% | [J]<br>Qualifier |
|------------------------------|--------------------|---------------------------------|---------------------------------------|----------------------------------------------------|------------------------------------------|-----------------------------------|------------------------------------------------|-----|-----------------------------------|-----|-------------------------------|-------------------------|------|-----------------------------------------------|------------------|
|                              |                    |                                 |                                       |                                                    |                                          |                                   |                                                | QC  | Spike Relative<br>Difference<br>% | QC  | Matrix Spike<br>Recovery<br>% | M.S.D.<br>Recovery<br>% | QC   |                                               |                  |
|                              | Benzene            | < 0.0050                        | 0.2590                                | 0.2380                                             | 0.2500                                   | 0.0050                            | 20.0                                           |     | 8.5                               |     | 103.6                         |                         | 95.2 | 66-142                                        |                  |
|                              | Chlorobenzene      | < 0.0050                        | 0.2580                                | 0.2455                                             | 0.2500                                   | 0.0050                            | 20.0                                           |     | 5.0                               |     | 103.2                         |                         | 98.2 | 60-133                                        |                  |
|                              | 1,1-Dichloroethene | < 0.0200                        | 0.1375                                | 0.2260                                             | 0.2500                                   | 0.0200                            | 25.0                                           |     | 48.7                              |     | 55.0                          |                         | 90.4 | 59-172                                        | A                |
|                              | Toluene            | 0.0355                          | 0.2885                                | 0.2790                                             | 0.2500                                   | 0.0050                            | 20.0                                           |     | 3.3                               |     | 101.2                         |                         | 97.4 | 59-139                                        |                  |
|                              | Trichloroethene    | < 0.0150                        | 0.2525                                | 0.2365                                             | 0.2500                                   | 0.0150                            | 20.0                                           |     | 6.5                               |     | 101.0                         |                         | 94.6 | 62-137                                        |                  |

(A) MS recovery below acceptance criteria LCS and MSD within acceptance limits.

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

*[Signature]*  
Eddie L. Clentons, II  
QA/QC Manager



# Certificate Of Quality Control for Batch : 18A23D12

## EPA1312/3260 SPLP Volatiles

Date Validated: Aug 31, 1998 09:45

Analyst: CE

Date Analyzed: Aug 28, 1998 19:11

Matrix: Solid

### BLANK SPIKE ANALYSIS

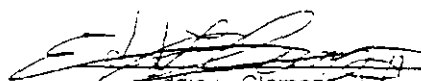
| Parameter          | [A]      | [B]         | [C]    | [D]                | [E]         | [F]      | [G]<br>Qualifier |
|--------------------|----------|-------------|--------|--------------------|-------------|----------|------------------|
|                    | Blank    | Blank Spike | Blank  | Detection<br>Limit | QC          | LIMITS   |                  |
|                    | Result   | Result      | Spike  |                    | Blank Spike | Recovery |                  |
|                    | mg/L     | mg/L        | Amount |                    | Recovery    | Range    |                  |
|                    |          |             | mg/L   | mg/L               | %           | %        |                  |
| Benzene            | < 0.0010 | 0.0538      | 0.0500 | 0.0010             | 107.6       | 66-142   |                  |
| Chlorobenzene      | < 0.0010 | 0.0538      | 0.0500 | 0.0010             | 107.6       | 60-133   |                  |
| 1,1-Dichloroethene | < 0.0040 | 0.0551      | 0.0500 | 0.0040             | 110.2       | 59-172   |                  |
| Toluene            | < 0.0010 | 0.0544      | 0.0500 | 0.0010             | 108.8       | 59-139   |                  |
| Trichloroethene    | < 0.0030 | 0.0538      | 0.0500 | 0.0030             | 107.6       | 62-137   |                  |

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



TEB 1382/48. SPED. TUBB

Date Validated: Aug 24, 1998 11:20

**Date Analyzed:** Aug 24, 1998 12:40

**Analyst: EZ**

**Matrix:** Solid

## BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY

| BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY |                            |                                  |                                               |                                     |                               |                                            |     |                                       |      |                             |                                           |           |
|--------------------------------------------------|----------------------------|----------------------------------|-----------------------------------------------|-------------------------------------|-------------------------------|--------------------------------------------|-----|---------------------------------------|------|-----------------------------|-------------------------------------------|-----------|
| Parameter                                        | [A]                        | [B]                              | [C]                                           | [D]                                 | [E]                           | Blank Limit<br>Relative<br>Difference<br>% | [F] | [G]                                   | [H]  | [I]                         | [J]                                       |           |
|                                                  | Blank<br>Result<br><br>ppm | Blank Spike<br>Result<br><br>ppm | Blank Spike<br>Duplicate<br>Result<br><br>ppm | Blank<br>Spike<br>Amount<br><br>ppm | Detection<br>Limit<br><br>ppm |                                            | QC  | Spike Relative<br>Difference<br><br>% | QC   | B.S.D.<br>Recovery<br><br>% | Blank Spike<br>Recovery<br>Range<br><br>% | Qualifier |
|                                                  |                            |                                  |                                               |                                     |                               |                                            |     |                                       |      |                             |                                           |           |
|                                                  |                            |                                  |                                               |                                     |                               |                                            |     |                                       |      |                             |                                           |           |
| Total Petroleum Hydrocarbons                     | < 0.50                     | 3.51                             | 3.59                                          | 4.06                                | 0.50                          | 20.0                                       | 2.3 | 86.5                                  | 88.4 | 65-135                      |                                           |           |

Spike Relative Difference [F] =  $200 \cdot (B-C)/(B+C)$

Blank Spike Recovery (%) =  $100 \cdot (B-A)/D$ 

BS10 = Blank Spike Duplicate

$$\text{HSR Recovery} [\text{H}] = 100 \cdot (\text{C-A})/[\text{D}]$$

ND = Below detection limit or not detected

All results are based on MDH and validated for QC purposes.

**Index**

Eddie L. Clemons, II

DATE: \_\_\_\_\_

**Certificate Of Quality Control for Batch : 18A34D84**

**SW846- 8270 PAHs by GC- MS (G10 List)**

Date Validated: Aug 27, 1998 20:15

Date Analyzed: Aug 27, 1998 04:37

Analyst: LC

Matrix: Liquid

| BLANK SPIKE / BLANK SPIKE DUPLICATE AND RECOVERY |                      |                            |                                      |                            |                         |                     |                                |                      |                 |                                 |           |  |  |  |
|--------------------------------------------------|----------------------|----------------------------|--------------------------------------|----------------------------|-------------------------|---------------------|--------------------------------|----------------------|-----------------|---------------------------------|-----------|--|--|--|
| Parameter                                        | [A]                  | [B]                        | [C]                                  | [D]                        | [E]                     | Blank Limit         | [F]                            | [G]                  | [H]             | [I]                             | [J]       |  |  |  |
|                                                  | Blank Result<br>mg/L | Blank Spike Result<br>mg/L | Blank Spike Duplicate Result<br>mg/L | Blank Spike Amount<br>mg/L | Detection Limit<br>mg/L | Relative Difference | QC                             | Blank Spike Recovery | QC              | Blank Spike Recovery Range<br>% | Qualifier |  |  |  |
|                                                  |                      |                            |                                      |                            |                         |                     | Spike Relative Difference<br>% | Blank Spike Recovery | B.S.D. Recovery |                                 |           |  |  |  |
| Acenaphthene                                     | < 0.0020             | 0.0448                     | 0.0464                               | 0.0500                     | 0.0020                  | 31.0                | 3.5                            | 89.6                 | 92.8            | 46-118                          |           |  |  |  |
| 4-Chloro-3-methylphenol                          | < 0.0020             | 0.0397                     | 0.0419                               | 0.0500                     | 0.0020                  | 42.0                | 5.4                            | 79.4                 | 83.8            | 23-97                           |           |  |  |  |
| 2-Chlorophenol                                   | < 0.0020             | 0.0357                     | 0.0393                               | 0.0500                     | 0.0020                  | 40.0                | 9.6                            | 71.4                 | 78.6            | 27-123                          |           |  |  |  |
| 1,4-Dichlorobenzene                              | < 0.0020             | 0.0398                     | 0.0434                               | 0.0500                     | 0.0020                  | 28.0                | 8.7                            | 79.6                 | 86.8            | 36-97                           |           |  |  |  |
| 2,4-Dinitrotoluene                               | < 0.0020             | 0.0464                     | 0.0444                               | 0.0500                     | 0.0020                  | 38.0                | 4.4                            | 92.8                 | 88.8            | 24-96                           |           |  |  |  |
| N-Nitrosodi-n-propylamine                        | < 0.0040             | 0.0445                     | 0.0470                               | 0.0500                     | 0.0040                  | 38.0                | 5.5                            | 89.0                 | 94.0            | 41-116                          |           |  |  |  |
| 4-Nitrophenol                                    | < 0.0040             | 0.0171                     | 0.0170                               | 0.0500                     | 0.0040                  | 50.5                | 0.6                            | 34.2                 | 34.0            | 10-80                           |           |  |  |  |
| Pentachlorophenol                                | < 0.0010             | 0.0423                     | 0.0448                               | 0.0500                     | 0.0010                  | 50.0                | 5.7                            | 84.6                 | 89.6            | 9-103                           |           |  |  |  |
| Phenol                                           | < 0.0010             | 0.0146                     | 0.0158                               | 0.0500                     | 0.0010                  | 42.0                | 7.9                            | 29.2                 | 31.6            | 12-89                           |           |  |  |  |
| Pyrene                                           | < 0.0020             | 0.0578                     | 0.0601                               | 0.0500                     | 0.0020                  | 31.0                | 3.9                            | 115.6                | 120.2           | 26-127                          |           |  |  |  |
| 1,2,4-Trichlorobenzene                           | < 0.0010             | 0.0434                     | 0.0457                               | 0.0500                     | 0.0010                  | 28.0                | 5.2                            | 86.8                 | 91.4            | 39-98                           |           |  |  |  |

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] =  $100 \cdot (C-A)/[D]$

LLD = below detection limit or not detected

All results are based on MDL and validated for QC purposes

*Eddie L. Clemmons, II*

Eddie L. Clemmons, II  
QA/QC Manager


  
 A310 185 525 1



# ANALYTICAL CHAIN OF CUSTODY REPORT CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

Project ID: 810044-1-0  
Project Manager: Theresa Nix  
Project Location: Monument, NM

Project Name: TNM 98-02

XENCO COC#: 1-82973

Date Received in Lab: Aug 5, 1998 10:45 by JO

XENCO contact : Carlos Castro/Eddie Clemons

| Date and Time |            |              |               |       |             |                   |                    |                    |                          |
|---------------|------------|--------------|---------------|-------|-------------|-------------------|--------------------|--------------------|--------------------------|
| Field ID      | Lab. ID    | Method Name  | Method ID     | Units | Turn Around | Sample Collected  | Addition Requested | Extraction         | Analysis                 |
| MW-1          | 182973-001 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 09:08 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 17:34 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 09:08 |                    | Aug 12, 1998 by OG | Aug 14, 1998 05:08 by AM |
|               | 182973-002 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 10:13 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 17:50 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 10:13 |                    | Aug 12, 1998 by OG | Aug 14, 1998 05:40 by AM |
|               | 182973-003 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 10:30 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 18:06 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 10:30 |                    | Aug 12, 1998 by OG | Aug 14, 1998 06:12 by AM |
| MW-2          | 182973-004 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 13:38 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 18:21 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 13:38 |                    | Aug 12, 1998 by OG | Aug 14, 1998 06:44 by AM |
|               | 182973-005 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 15:59 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 18:37 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 15:59 |                    | Aug 12, 1998 by OG | Aug 15, 1998 19:28 by AM |
|               | 182973-006 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 16:14 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 18:53 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 16:14 |                    | Aug 12, 1998 by OG | Aug 14, 1998 02:59 by AM |
| MW-3          | 182973-007 | BTEX         | SW-846        | ppm   | 10 days     | Aug 2, 1998 09:38 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 16:47 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 09:38 |                    | Aug 12, 1998 by OG | Aug 15, 1998 20:32 by AM |
|               | 182973-008 | BTEX         | SW-846        | ppm   | 10 days     | Aug 2, 1998 09:58 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 19:40 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 09:58 |                    | Aug 12, 1998 by OG | Aug 15, 1998 21:04 by AM |
|               | 182973-009 | BTEX         | SW-846        | ppm   | 10 days     | Aug 2, 1998 07:59 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 19:08 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 07:59 |                    | Aug 12, 1998 by OG | Aug 15, 1998 21:36 by AM |
|               | 182973-010 | BTEX         | SW-846        | ppm   | 10 days     | Aug 2, 1998 08:18 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 19:24 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 08:18 |                    | Aug 12, 1998 by OG | Aug 15, 1998 22:08 by AM |
|               | 182973-011 | BTEX         | SW-846        | ppm   | 10 days     | Aug 2, 1998 08:30 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 21:14 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 08:30 |                    | Aug 12, 1998 by OG | Aug 14, 1998 07:17 by AM |
|               |            | SPLP TPH     | EPA           | ppm   | 5 days      | Aug 2, 1998 08:30 | Aug 20, 1998 14:40 | Aug 24, 1998 by EZ | Aug 24, 1998 13:00 by EZ |
|               |            | VOA (8260)   | EPA1312/8260  | mg/kg | 5 days      | Aug 2, 1998 08:30 | Aug 20, 1998 14:40 | Aug 28, 1998 by CE | Aug 28, 1998 20:22 by CE |
|               |            | SPLP-SV(TCL) | SW846-1312/82 | ug/L  | 5 days      | Aug 2, 1998 08:30 | Aug 20, 1998 14:40 | Aug 24, 1998 by SS | Aug 27, 1998 13:22 by LC |
|               | 182973-012 | BTEX         | SW-846        | ppm   | 10 days     | Aug 2, 1998 11:45 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 21:29 by HL  |
|               |            | TPH8015M-D   | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 11:45 |                    | Aug 12, 1998 by OG | Aug 15, 1998 22:41 by AM |
|               | 182973-013 | BTEX         | SW-846        | ppm   | 10 days     | Aug 1, 1998 12:38 |                    | Aug 7, 1998 by HL  | Aug 7, 1998 21:45 by HL  |



# ANALYTICAL CHAIN OF CUSTODY REPORT

## CHRONOLOGY OF SAMPLES

K.E.I. Consultants, Inc.

XENCO COC#: 1-82973

Project Name: TNM 98-02

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Date Received in Lab: Aug 5, 1998 10:45 by JO

XENCO contact : Carlos Castro/Eddie Clemons

| Date and Time |            |             |               |       |             |                          |
|---------------|------------|-------------|---------------|-------|-------------|--------------------------|
| Field ID      | Lab. ID    | Method Name | Method ID     | Units | Turn Around | Sample Collected         |
|               |            | TPH8015M-D  | SW-846 8015 M | mg/kg | 10 days     | Aug 1, 1998 12:38        |
|               | 182973-014 | BTEX        | SW-846        | ppm   | 10 days     | Aug 2, 1998 13:15        |
|               |            | TPH8015M-D  | SW-846 8015 M | mg/kg | 10 days     | Aug 2, 1998 13:15        |
|               |            |             |               |       |             | Aug 12, 1998 by OG       |
|               |            |             |               |       |             | Aug 7, 1998 by HL        |
|               |            |             |               |       |             | Aug 15, 1998 23:13 by AM |
|               |            |             |               |       |             | Aug 7, 1998 22:01 by HL  |
|               |            |             |               |       |             | Aug 15, 1998 23:45 by AM |

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# CERTIFICATE OF ANALYSIS SUMMARY 1-83171

Aug 24 98 05:55p

Eduardo Builes

281-589-0695

P. 2

|                                |                 |                          |                |                                             |                 |                |                 |
|--------------------------------|-----------------|--------------------------|----------------|---------------------------------------------|-----------------|----------------|-----------------|
| Project ID: 810044-1-0         |                 | K.E.I. Consultants, Inc. |                | Date Received in Lab : Aug 18, 1998 11:45   |                 |                |                 |
| Project Manager: Theresa Nix   |                 | Project Name: TNM 98-02  |                | Date Report Faxed: Aug 24, 1998             |                 |                |                 |
| Project Location: Monument, NM |                 |                          |                | XENCO contact : Carlos Castro/Eddie Clemons |                 |                |                 |
| Analysis Requested             | Lab ID:         | 183171 001               | 183171 002     | 183171 003                                  | 183171 004      | 183171 005     | 183171 006      |
|                                | Field ID:       | SB-5                     | SB-5           | SB-5                                        | SB-3            | SB-3           | SB-4            |
|                                | Depth:          | 2-4                      | 25-27          | 27-29                                       | 2-4             | 27-29          | 2-4             |
|                                | Matrix:         | Solid                    | Solid          | Solid                                       | Solid           | Solid          | Solid           |
|                                | Sampled:        | 08/15/98 12:46           | 08/15/98 13:06 | 08/15/98 13:21                              | 08/15/98 10:08  | 08/15/98 10:47 | 08/15/98 11:02  |
| TPH-DRO (Diesel)               | Analyzed Units: | mg/kg                    | mg/kg          | mg/kg                                       | mg/kg           | mg/kg          | mg/kg           |
| EPA 8016 M                     |                 | 13.3 (10.0)              | 6010 (100)     | 447 (10.0)                                  | 155 (10.0)      | 895 (10.0)     | 106 (10.0)      |
| Total Petroleum Hydrocarbons   |                 |                          |                |                                             |                 |                |                 |
| BTEX                           | Analyzed Units: | ppm                      | ppm            | ppm                                         | ppm             | ppm            | ppm             |
| EPA 8021B                      |                 | < 0.050 (0.050)          | 0.15 (0.10)    | 1.08 (0.10)                                 | < 0.020 (0.020) | 0.33 (0.10)    | < 0.050 (0.050) |
| Benzene                        |                 | < 0.050 (0.050)          | 0.16 (0.10)    | 1.23 (0.10)                                 | < 0.020 (0.020) | 0.62 (0.10)    | < 0.050 (0.050) |
| Toluene                        |                 | < 0.050 (0.050)          | 0.18 (0.10)    | 0.86 (0.10)                                 | < 0.020 (0.020) | 0.39 (0.10)    | < 0.050 (0.050) |
| Ethylbenzene                   |                 | < 0.100 (0.100)          | 0.35 (0.20)    | 1.60 (0.20)                                 | < 0.040 (0.040) | 0.76 (0.20)    | < 0.100 (0.100) |
| m,p Xylenes                    |                 | < 0.050 (0.050)          | 0.12 (0.10)    | 0.18 (0.10)                                 | 0.020 (0.020)   | 1.77 (0.10)    | < 0.050 (0.050) |
| o-Xylene                       |                 | N.D.                     | 0.96           | 4.95                                        | 0.020           | 3.87           | N.D.            |
| Total BTEX                     |                 |                          |                |                                             |                 |                |                 |

Eddie L. Clemons, II  
QA/QC Manager

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.



CERTIFICATE OF ANALYSIS SUMMARY 1-83171

|                                |           |                                            |                |                |                 |                |                 |
|--------------------------------|-----------|--------------------------------------------|----------------|----------------|-----------------|----------------|-----------------|
| Project ID: 810044-1-0         |           | K.E.I. Consultants, Inc.                   |                |                |                 |                |                 |
| Project Manager: Theresa Nix   |           | Date Received in Lab: Aug 18, 1998 11:45   |                |                |                 |                |                 |
| Project Location: Monument, NM |           | Date Report Faxed: Sep 4, 1998             |                |                |                 |                |                 |
|                                |           | XENCO contact: Carlos Castro/Eddie Clemons |                |                |                 |                |                 |
| Analysis Requested             | Lab ID:   | 183171 007                                 | 183171 008     | 183171 009     | 183171 010      | 183171 011     | 183171 012      |
|                                | Field ID: | SB-4                                       | SB-6           | SB-6           | SB-10           | SB-10          | SB-9            |
|                                | Depth:    | 25-27                                      | 2-4            | 27-29          | 0-2             | 25-27          | 2-4             |
|                                | Matrix:   | Solid                                      | Solid          | Solid          | Solid           | Solid          | Solid           |
|                                | Sampled:  | 08/15/98 11:30                             | 08/15/98 13:42 | 08/15/98 14:07 | 08/16/98 12:45  | 08/16/98 13:10 | 08/16/98 10:50  |
| TPH-DRO (Diesel)               | Analyzed: | 08/23/98                                   | 08/22/98       | 08/22/98       | 08/22/98        | 08/23/98       | 08/23/98        |
| EPA 8016 M                     | Units:    | mg/kg                                      | mg/kg          | mg/kg          | mg/kg           | mg/kg          | mg/kg           |
| Total Petroleum Hydrocarbons   |           | 8880 (100)                                 | 147 (10.0)     | 151 (10.0)     | 35.4 (10.0)     | 11.3 (10.0)    | 12.4 (10.0)     |
| BTEX                           | Analyzed: | 08/18/98                                   | 08/18/98       | 08/18/98       | 08/18/98        | 08/19/98       | 08/19/98        |
| EPA 8021B                      | Units:    | ppm                                        | ppm            | ppm            | ppm             | ppm            | ppm             |
| Benzene                        |           | 0.89 (0.10)                                | < 0.10 (0.10)  | 0.068 (0.050)  | < 0.050 (0.050) | < 0.10 (0.10)  | < 0.050 (0.050) |
| Toluene                        |           | 0.96 (0.10)                                | < 0.10 (0.10)  | 0.215 (0.050)  | < 0.050 (0.050) | < 0.10 (0.10)  | < 0.050 (0.050) |
| Ethylbenzene                   |           | 0.70 (0.10)                                | < 0.10 (0.10)  | 0.150 (0.050)  | < 0.050 (0.050) | < 0.10 (0.10)  | < 0.050 (0.050) |
| m,p-Xylenes                    |           | 1.31 (0.20)                                | < 0.20 (0.20)  | 0.176 (0.100)  | < 0.100 (0.100) | < 0.20 (0.20)  | < 0.100 (0.100) |
| o-Xylene                       |           | 0.19 (0.10)                                | < 0.10 (0.10)  | 0.052 (0.050)  | < 0.050 (0.050) | < 0.10 (0.10)  | < 0.050 (0.050) |
| Total BTEX                     |           | 4.08                                       | N.D.           | 0.661          | N.D.            | N.D.           | N.D.            |

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Eddie L. Clemons, II  
QA/QC Manager



# CERTIFICATE OF ANALYSIS SUMMARY 1-83171

## K.E.I. Consultants, Inc.

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Project Name: TNM 98-02

Date Received in Lab: Aug 18, 1998 11:45

Date Report Faxed: Sep 4, 1998

XENCO contact: Carlos Castro/Eddie Clemons

### Analysis Requested

|                                |                                                       |                                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
|--------------------------------|-------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------|
| TPH DRO (Diesel)<br>EPA 8015 M | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 183171 013<br>SB-9<br>23-25<br>Solid<br>08/16/98 10:59 | 183171 014<br>SB-9<br>25-27<br>Solid<br>08/16/98 11:12 | 183171 015<br>MW-5<br>0-2<br>Solid<br>08/16/98 08:28 | 183171 016<br>MW-5<br>25-27<br>Solid<br>08/16/98 08:52 | 183171 017<br>MW-5<br>33-35<br>Solid<br>08/16/98 09:44 | 183171 018<br>SB-8<br>2-4<br>Solid<br>08/15/98 15:30 |
| Total Petroleum Hydrocarbons   | Analyzed:<br>Units:                                   | 08/23/98<br>mg/kg                                      | 08/24/98<br>mg/kg                                      | 08/23/98<br>mg/kg                                    | 08/23/98<br>mg/kg                                      | 08/23/98<br>mg/kg                                      | 08/23/98<br>mg/kg                                    |
| BTEX                           | Analyzed:<br>Units:                                   | 08/19/98<br>ppm                                        | 08/19/98<br>ppm                                        | 08/19/98<br>ppm                                      | 08/19/98<br>ppm                                        | 08/19/98<br>ppm                                        | 08/19/98<br>ppm                                      |
| EPA 8021B                      |                                                       |                                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| Benzene                        |                                                       | 2.47 (0.25)                                            | 4.41 (0.10)                                            | < 0.050 (0.050)                                      | < 0.020 (0.020)                                        | < 0.10 (0.10)                                          | < 0.050 (0.050)                                      |
| Toluene                        |                                                       | 0.52 (0.25)                                            | 1.80 (0.10)                                            | < 0.050 (0.050)                                      | < 0.020 (0.020)                                        | < 0.10 (0.10)                                          | < 0.050 (0.050)                                      |
| Ethylbenzene                   |                                                       | 1.82 (0.25)                                            | 2.36 (0.10)                                            | < 0.050 (0.050)                                      | < 0.020 (0.020)                                        | < 0.10 (0.10)                                          | < 0.050 (0.050)                                      |
| m,p-Xylenes                    |                                                       | 4.30 (0.50)                                            | 6.51 (0.20)                                            | < 0.100 (0.100)                                      | < 0.040 (0.040)                                        | < 0.20 (0.20)                                          | < 0.100 (0.100)                                      |
| o-Xylene                       |                                                       | 0.28 (0.25)                                            | 0.29 (0.10)                                            | < 0.050 (0.050)                                      | < 0.020 (0.020)                                        | < 0.10 (0.10)                                          | < 0.050 (0.050)                                      |
| Total BTEX                     |                                                       | 9.15                                                   | 15.370                                                 | N.D.                                                 | N.D.                                                   | N.D.                                                   | N.D.                                                 |
| SPLP-Semivolatiles             | Analyzed:<br>Units:                                   | 09/02/98<br>mg/kg                                      |                                                        |                                                      |                                                        |                                                        |                                                      |
| EPA 1312/8270                  |                                                       |                                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| Acenaphthene                   |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Acenaphthylene                 |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Anthracene                     |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Benz(a)anthracene              |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Benzo(a)pyrene                 |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Benzo(b)fluoranthene           |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Benzo(g,h,i)perylene           |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Benzo(k)fluoranthene           |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| 4-Bromophenyl-phenyl ether     |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Butyl benzyl phthalate         |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| Carbazole                      |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| 4-Chloro-3-methylphenol        |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |

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Eddie L. Clemons, II  
QA/QC Manager



# CERTIFICATE OF ANALYSIS SUMMARY 1-83171

|                                |  |                                            |                |                                          |                |
|--------------------------------|--|--------------------------------------------|----------------|------------------------------------------|----------------|
| Project ID: 810044-1-0         |  | K.E.I. Consultants, Inc.                   |                | Date Received In Lab: Aug 18, 1998 11:45 |                |
| Project Manager: Theresa Nix   |  | Project Name: TNM 98-02                    |                | Date Report Faxed: Sep 4, 1998           |                |
| Project Location: Monument, NM |  | XENCO contact: Carlos Castro/Eddie Clemons |                |                                          |                |
| <b>Analysis Requested</b>      |  | Lab ID:                                    | 183171 013     | 183171 014                               | 183171 015     |
|                                |  | Field ID:                                  | SB-9           | SB-9                                     | MW-5           |
|                                |  | Depth:                                     | 23-25          | 25-27                                    | 0-2            |
|                                |  | Matrix:                                    | Solid          | Solid                                    | Solid          |
|                                |  | Sampled:                                   | 08/18/98 10:59 | 08/16/98 11:12                           | 08/16/98 08:52 |
| SPLP-Semi-volatiles            |  | Analyzed:                                  | 09/02/98       |                                          |                |
| EPA1312/8270                   |  | Units:                                     | mg/Kg          |                                          |                |
| 4-Chloroaniline                |  |                                            | < 0.05 (0.05)  |                                          | 183171 018     |
| 2-Chloronaphthalene            |  |                                            | < 0.05 (0.05)  |                                          | SB-8           |
| 2-Chlorophenol                 |  |                                            | < 0.05 (0.05)  |                                          | 2-4            |
| 4-Chlorophenyl-phenyl ether    |  |                                            | < 0.05 (0.05)  |                                          | Solid          |
| Chrysene                       |  |                                            | < 0.05 (0.05)  |                                          | 08/15/98 15:30 |
| Di-n-butyl phthalate           |  |                                            | < 0.05 (0.05)  |                                          |                |
| Di-n-octylphthalate            |  |                                            | < 0.05 (0.05)  |                                          |                |
| Dibenz(a,h)anthracene          |  |                                            | < 0.05 (0.05)  |                                          |                |
| Dibenzofuran                   |  |                                            | < 0.05 (0.05)  |                                          |                |
| 1,2-Dichlorobenzene            |  |                                            | < 0.05 (0.05)  |                                          |                |
| 1,3-Dichlorobenzene            |  |                                            | < 0.05 (0.05)  |                                          |                |
| 1,4-Dichlorobenzene            |  |                                            | < 0.05 (0.05)  |                                          |                |
| 3,3'-Dichlorobenzidine         |  |                                            | < 0.05 (0.05)  |                                          |                |
| 2,4-Dichlorophenol             |  |                                            | < 0.05 (0.05)  |                                          |                |
| Diethyl phthalate              |  |                                            | < 0.05 (0.05)  |                                          |                |
| 2,4-Dimethylphenol             |  |                                            | < 0.05 (0.05)  |                                          |                |
| Dimethyl phthalate             |  |                                            | < 0.05 (0.05)  |                                          |                |
| 4,6-Dinitro-2-methylphenol     |  |                                            | < 0.12 (0.12)  |                                          |                |
| 2,4-Dinitrophenol              |  |                                            | < 0.12 (0.12)  |                                          |                |
| 2,4-Dinitrotoluene             |  |                                            | < 0.05 (0.05)  |                                          |                |
| 2,6-Dinitrotoluene             |  |                                            | < 0.05 (0.05)  |                                          |                |
| Fluoranthene                   |  |                                            | < 0.05 (0.05)  |                                          |                |
| Fluorene                       |  |                                            | < 0.05 (0.05)  |                                          |                |
| Hexachlorobenzene              |  |                                            | < 0.05 (0.05)  |                                          |                |

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Eddie L. Clemons, II  
QA/QC Manager



# CERTIFICATE OF ANALYSIS SUMMARY 1-83171

K.E.I. Consultants, Inc.

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Project Name: TNM 98-02

Date Received in Lab: Aug 18, 1998 11:45

Date Report Faxed: Sep 4, 1998

XENCO contact: Carlos Castro/Eddie Clemons

| Analysis Requested                | Lab ID:                                    | 183171 013                               | 183171 014                               | 183171 015                             | 183171 016                               | 183171 017                               | 183171 018                             |
|-----------------------------------|--------------------------------------------|------------------------------------------|------------------------------------------|----------------------------------------|------------------------------------------|------------------------------------------|----------------------------------------|
|                                   | Field ID:<br>Depth:<br>Matrix:<br>Sampled: | SB-9<br>23-25<br>Solid<br>08/16/98 10:59 | SB-9<br>25-27<br>Solid<br>08/16/98 11:12 | MW-5<br>0-2<br>Solid<br>08/16/98 08:28 | MW-5<br>25-27<br>Solid<br>08/16/98 08:52 | MW-5<br>33-35<br>Solid<br>08/16/98 09:44 | SB-8<br>2-4<br>Solid<br>08/15/98 15:30 |
| SPLP-Sunbvolallas<br>EPA1312/B270 | Analyzed:<br>Units:                        | 09/02/98<br>mg/Kg                        | R.L.                                     |                                        |                                          |                                          |                                        |
| Hexachlorobutadiene               |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Hexachlorocyclopentadiene         |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Hexachloroethane                  |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Indeno(1,2,3-cd)pyrene            |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Isophorone                        |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 2-Methylnaphthalene               |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 2-Methylphenol                    |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 4-Methylphenol                    |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| N-Nitrosodi-n-propylamine         |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| N-nitrosodiphenylamine            |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Naphthalene                       |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 2-Nitroaniline                    |                                            | < 0.12 (0.12)                            |                                          |                                        |                                          |                                          |                                        |
| 3-Nitroaniline                    |                                            | < 0.12 (0.12)                            |                                          |                                        |                                          |                                          |                                        |
| 4-Nitroaniline                    |                                            | < 0.12 (0.12)                            |                                          |                                        |                                          |                                          |                                        |
| Nitrobenzene                      |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 2-Nitrophenol                     |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 4-Nitrophenol                     |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Pentachlorophenol                 |                                            | < 0.12 (0.12)                            |                                          |                                        |                                          |                                          |                                        |
| Phenanthrene                      |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Phenol                            |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| Pyrene                            |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 1,2,4-Trichlorobenzene            |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |
| 2,4,5-Trichlorophenol             |                                            | < 0.12 (0.12)                            |                                          |                                        |                                          |                                          |                                        |
| 2,4,6-Trichlorophenol             |                                            | < 0.05 (0.05)                            |                                          |                                        |                                          |                                          |                                        |

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Eddie L. Clemons, II  
QA/QC Manager



# CERTIFICATE OF ANALYSIS SUMMARY 1-83171

|                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                                                       |                                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------|
| Project ID: 810044-1-0                                                                                                                                                                                                                                                                                                                                                                            |                     | K.E.I. Consultants, Inc.                              |                                                        | Date Received In Lab: Aug 18, 1998 11:45               |                                                      |                                                        |                                                        |                                                      |
| Project Manager: Theresa Nix                                                                                                                                                                                                                                                                                                                                                                      |                     | Project Name: TNM 98-02                               |                                                        | Date Report Faxed: Sep 4, 1998                         |                                                      |                                                        |                                                        |                                                      |
| Project Location: Monument, NM                                                                                                                                                                                                                                                                                                                                                                    |                     | XENCO contact: Carlos Castro/Eddie Clemons            |                                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| <b>Analysis Requested</b>                                                                                                                                                                                                                                                                                                                                                                         |                     | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 183171 013<br>SB-9<br>23-25<br>Solid<br>08/16/98 10:59 | 183171 014<br>SB-9<br>25-27<br>Solid<br>08/16/98 11:12 | 183171 015<br>MW-5<br>0-2<br>Solid<br>08/16/98 08:28 | 183171 016<br>MW-5<br>25-27<br>Solid<br>08/16/98 08:52 | 183171 017<br>MW-5<br>33-35<br>Solid<br>08/16/98 09:44 | 183171 018<br>SB-8<br>2-4<br>Solid<br>08/15/98 15:30 |
| SPLP Semivolatiles<br>EPA 1312/8270                                                                                                                                                                                                                                                                                                                                                               | Analyzed:<br>Units: | D9/02/98<br>mg/Kg                                     | R.L.                                                   |                                                        |                                                      |                                                        |                                                        |                                                      |
| bis(2-Chloroethoxy) methane                                                                                                                                                                                                                                                                                                                                                                       |                     |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| bis(2-Chloroethyl) ether                                                                                                                                                                                                                                                                                                                                                                          |                     |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| bis(2-Chloroisopropyl) ether                                                                                                                                                                                                                                                                                                                                                                      |                     |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| bis(2-Ethylhexyl) phthalate                                                                                                                                                                                                                                                                                                                                                                       |                     |                                                       | < 0.05 (0.05)                                          |                                                        |                                                      |                                                        |                                                        |                                                      |
| SPLP Volatiles<br>EPA 8260                                                                                                                                                                                                                                                                                                                                                                        | Analyzed:<br>Units: | 08/31/98<br>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)                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| 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)                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| Dibromochloromethane                                                                                                                                                                                                                                                                                                                                                                              |                     |                                                       | < 0.025 (0.025)                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| 1,2-Dibromoethane                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                                       | < 0.025 (0.025)                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
| Dibromomethane                                                                                                                                                                                                                                                                                                                                                                                    |                     |                                                       | < 0.025 (0.025)                                        |                                                        |                                                      |                                                        |                                                        |                                                      |
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**Project Name: TNM 98-02**

**Project Location:** Monument, NM

Date Report Faxed: Sep 4, 1998

**XENCO contact : Carlos Castro/Eddie Clemons**

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|                                                                                                                |  |                                                                                                                                                                                                                    |                                                                       |                                                               |                                                             |                                                               |                                                               |                                                             |
|----------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------|
| <b>Project ID:</b> 810044-1-0<br><b>Project Manager:</b> Theresa Nix<br><b>Project Location:</b> Montument, NM |  | <b>K.E.I. Consultants, Inc.</b><br><b>Project Name:</b> TNM 98-02<br><b>Date Received In Lab:</b> Aug 18, 1998 11:45<br><b>Date Report Faxed:</b> Sep 4, 1998<br><b>XENCO contact:</b> Carlos Castro/Eddie Clemons |                                                                       |                                                               |                                                             |                                                               |                                                               |                                                             |
| <b>Analysis Requested</b>                                                                                      |  | <b>Lab ID:</b><br><b>Field ID:</b><br><b>Depth:</b><br><b>Matrix:</b><br><b>Sampled:</b>                                                                                                                           | <b>183171 013</b><br>SB-9<br>23-25<br>Solid<br>08/16/98 10:59<br>R.L. | <b>183171 014</b><br>SB-9<br>25-27<br>Solid<br>08/16/98 11:12 | <b>183171 015</b><br>MW-5<br>0-2<br>Solid<br>08/16/98 08:28 | <b>183171 016</b><br>MW-5<br>25-27<br>Solid<br>08/16/98 08:52 | <b>183171 017</b><br>MW-5<br>33-35<br>Solid<br>08/16/98 09:44 | <b>183171 018</b><br>SB-8<br>2-4<br>Solid<br>08/15/98 15:30 |
| <b>SPLP Volatiles</b><br><b>EPA 8260</b>                                                                       |  | <b>Analyzed:</b><br><b>Units:</b>                                                                                                                                                                                  | <b>mg/L</b><br><b>R.L.</b>                                            |                                                               |                                                             |                                                               |                                                               |                                                             |
| 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                                                                                         |  |                                                                                                                                                                                                                    | 0.121 (0.025)                                                         |                                                               |                                                             |                                                               |                                                               |                                                             |
| 1,3,5-Trimethylbenzene                                                                                         |  |                                                                                                                                                                                                                    | 0.043 (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-Xylenes                                                                                                    |  |                                                                                                                                                                                                                    | 0.042 (0.025)                                                         |                                                               |                                                             |                                                               |                                                               |                                                             |
| n-Butylbenzene                                                                                                 |  |                                                                                                                                                                                                                    | < 0.025 (0.025)                                                       |                                                               |                                                             |                                                               |                                                               |                                                             |
| n-Propylbenzene                                                                                                |  |                                                                                                                                                                                                                    | < 0.025 (0.025)                                                       |                                                               |                                                             |                                                               |                                                               |                                                             |
| o-Xylene                                                                                                       |  |                                                                                                                                                                                                                    | < 0.025 (0.025)                                                       |                                                               |                                                             |                                                               |                                                               |                                                             |
| p-Isopropyltoluene                                                                                             |  |                                                                                                                                                                                                                    | < 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)                                                       |                                                               |                                                             |                                                               |                                                               |                                                             |
| <b>SPLP TPH</b><br><b>1312/418.1</b>                                                                           |  | <b>Analyzed:</b><br><b>Units:</b>                                                                                                                                                                                  | <b>ppm</b><br><b>R.L.</b>                                             |                                                               |                                                             |                                                               |                                                               |                                                             |
| Total Petroleum Hydrocarbons                                                                                   |  |                                                                                                                                                                                                                    | 7.1 (0.8)                                                             |                                                               |                                                             |                                                               |                                                               |                                                             |

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



# CERTIFICATE OF ANALYSIS SUMMARY 1-83171

|                                |           |                                            |                 |                                           |                 |                 |                 |
|--------------------------------|-----------|--------------------------------------------|-----------------|-------------------------------------------|-----------------|-----------------|-----------------|
| Project ID: 810044-1-0         |           | K.E.I. Consultants, Inc.                   |                 | Date Received In Lab : Aug 18, 1998 11:45 |                 |                 |                 |
| Project Manager: Theresa Nix   |           | Project Name: TNM 98-02                    |                 | Date Report Faxed: Sep 4, 1998            |                 |                 |                 |
| Project Location: Monument, NM |           | XENCO contact: Carlos Castro/Eddie Clemons |                 |                                           |                 |                 |                 |
| Analysis Requested             | Lab ID:   | 183171 019                                 | 183171 020      | 183171 021                                | 183171 022      | 183171 023      | 183171 024      |
|                                | Field ID: | SB-8                                       | MW-4            | MW-4                                      | MW-4            | SB-7            | SB-7            |
|                                | Depth:    | 27-29                                      | 0-2             | 25-27                                     | 33-35           | 2-4             | 27-29           |
|                                | Matrix:   | Solid                                      | Solid           | Solid                                     | Solid           | Solid           | Solid           |
|                                | Sampled:  | 08/15/98 15:36                             | 08/15/98 08:05  | 08/15/98 08:45                            | 08/15/98 09:10  | 08/15/98 14:30  | 08/15/98 15:00  |
| TPH-DRO (Diesel)               | Analyzed: | 08/23/98                                   | 08/23/98        | 08/23/98                                  | 08/23/98        | 08/23/98        | 08/23/98        |
| EPA 8016 M                     | Units:    | mg/kg                                      | mg/kg           | mg/kg                                     | mg/kg           | mg/kg           | mg/kg           |
| Total Petroleum Hydrocarbons   |           | < 10.0 (10.0)                              | 10.3 (10.0)     | < 10.0 (10.0)                             | 11.0 (10.0)     | < 10.0 (10.0)   | 10.9 (10.0)     |
| BTEX                           | Analyzed: | 08/19/98                                   | 08/19/98        | 08/19/98                                  | 08/19/98        | 08/19/98        | 08/19/98        |
| EPA 8021B                      | Units:    | ppm                                        | ppm             | ppm                                       | ppm             | ppm             | ppm             |
| Benzene                        |           | < 0.050 (0.050)                            | < 0.050 (0.050) | < 0.050 (0.050)                           | < 0.050 (0.050) | < 0.050 (0.050) | < 0.050 (0.050) |
| Toluene                        |           | < 0.050 (0.050)                            | < 0.050 (0.050) | < 0.050 (0.050)                           | < 0.050 (0.050) | < 0.050 (0.050) | < 0.050 (0.050) |
| Ethylbenzene                   |           | < 0.050 (0.050)                            | < 0.050 (0.050) | < 0.050 (0.050)                           | < 0.050 (0.050) | < 0.050 (0.050) | < 0.050 (0.050) |
| m,p-Xylenes                    |           | < 0.100 (0.100)                            | < 0.100 (0.100) | < 0.100 (0.100)                           | < 0.100 (0.100) | < 0.100 (0.100) | < 0.100 (0.100) |
| o-Xylene                       |           | < 0.050 (0.050)                            | < 0.050 (0.050) | < 0.050 (0.050)                           | < 0.050 (0.050) | < 0.050 (0.050) | < 0.050 (0.050) |
| Total BTEX                     |           | N.D.                                       | N.D.            | N.D.                                      | N.D.            | N.D.            | N.D.            |

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

Houston Dallas San Antonio

# CERTIFICATE OF ANALYSIS SUMMARY 1-83232

## K.E.I. Consultants, Inc.

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Project Name: TMM 98-02 Lea County, NM

Date Received in Lab: Aug 21, 1998 09:35

Date Report Faxed: Sep 4, 1998

XENCO contact: Carlos Castro/Eddie Clemons

| Analysis Requested | Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 183232 001<br>MW-1<br>Liquid<br>08/20/98 12:50 | 183232 002<br>MW-2<br>Liquid<br>08/20/98 13:30 | 183232 003<br>MW-3<br>Liquid<br>08/20/98 13:55 | 183232 004<br>MW-4<br>Liquid<br>08/20/98 14:30 | 183232 005<br>MW-5<br>Liquid<br>08/20/98 14:20 |
|--------------------|-------------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
|                    | Analyzed:<br>Units:                                   | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               |
| Metals by ICP      |                                                       |                                                |                                                |                                                |                                                |                                                |
| EPA 6010           |                                                       |                                                |                                                |                                                |                                                |                                                |
| Aluminum           |                                                       | < 0.20 (0.20)                                  | < 0.20 (0.20)                                  | 1.41 (0.20)                                    | 0.20 (0.20)                                    | < 0.20 (0.20)                                  |
| Arsenic            |                                                       | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  |
| Barium             |                                                       | 0.13 (0.02)                                    | 0.12 (0.02)                                    | 0.28 (0.02)                                    | 0.14 (0.02)                                    | 0.14 (0.02)                                    |
| Beryllium          |                                                       | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  |
| Boron              |                                                       | 0.24 (0.20)                                    | 0.23 (0.20)                                    | 0.26 (0.20)                                    | 0.27 (0.20)                                    | 0.26 (0.20)                                    |
| Cadmium            |                                                       | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  | < 0.01 (0.01)                                  |
| Calcium            |                                                       | 172 (0.5)                                      | 147 (0.5)                                      | 388 (0.50)                                     | 166 (0.5)                                      | 121 (0.5)                                      |
| Chromium           |                                                       | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  |
| Cobalt             |                                                       | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  |
| Copper             |                                                       | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  |
| Iron               |                                                       | 0.13 (0.10)                                    | < 0.10 (0.10)                                  | 0.16 (0.10)                                    | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  |
| Lead               |                                                       | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  |
| Magnesium          |                                                       | 35.7 (0.1)                                     | 32.0 (0.1)                                     | 42.9 (0.1)                                     | 51.7 (0.1)                                     | 41.4 (0.1)                                     |
| Manganese          |                                                       | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | 0.67 (0.10)                                    | < 0.10 (0.10)                                  | 0.33 (0.10)                                    |
| Molybdenum         |                                                       | < 0.20 (0.20)                                  | < 0.20 (0.20)                                  | < 0.20 (0.20)                                  | < 0.20 (0.20)                                  | < 0.20 (0.20)                                  |
| Nickel             |                                                       | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  |
| Potassium          |                                                       | 3.71 (0.25)                                    | 5.15 (0.25)                                    | 5.20 (0.25)                                    | 5.69 (0.25)                                    | 4.14 (0.25)                                    |
| Selenium           |                                                       | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  |
| Silicon            |                                                       | 19.0 (0.5)                                     | 18.5 (0.5)                                     | 18.9 (0.5)                                     | 17.4 (0.5)                                     | 17.9 (0.5)                                     |
| Silver             |                                                       | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  |
| Sodium             |                                                       | 61.0 (0.3)                                     | 66.0 (0.3)                                     | 75.9 (0.3)                                     | 96.2 (0.3)                                     | 84.1 (0.3)                                     |
| Strontium          |                                                       | 2.95 (0.10)                                    | 2.52 (0.10)                                    | 4.11 (0.10)                                    | 4.54 (0.10)                                    | 3.71 (0.10)                                    |
| Tin                |                                                       | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  | < 0.10 (0.10)                                  |
| Vanadium           |                                                       | < 0.05 (0.05)                                  | < 0.05 (0.05)                                  | 0.08 (0.05)                                    | < 0.05 (0.05)                                  | 0.06 (0.05)                                    |

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Eddie L. Clemons, II  
QA/QC Manager

# CERTIFICATE OF ANALYSIS SUMMARY 1-83232

## K.E.I. Consultants, Inc.

Project ID: 810044-1-0

Project Name: TNM 98-02 Lea County, NM

Date Received in Lab : Aug 21, 1998 09:35

Project Manager: Theresa Nix

Date Report Faxed: Sep 4, 1998

Project Location: Monument, NM

XENCO contact : Carlos Castro/Eddie Clemons

### Analysis Requested

| Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 183232 001<br>MW-1<br>Liquid<br>08/20/98 12:50 | 183232 002<br>MW-2<br>Liquid<br>08/20/98 13:30 | 183232 003<br>MW-3<br>Liquid<br>08/20/98 13:55 | 183232 004<br>MW-4<br>Liquid<br>08/20/98 14:30 | 183232 005<br>MW-5<br>Liquid<br>08/20/98 14:20 |
|-------------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
| Metals by ICP<br>EPA 6010                             | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               | 08/24/98<br>mg/L                               |
| Zinc                                                  | < 0.10 (0.10)                                  | 0.13 (0.10)                                    | < 0.10 (0.10)                                  | 0.17 (0.10)                                    | 0.18 (0.10)                                    |
| Total Mercury<br>EPA 7470                             | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               |
| Mercury                                               | < 0.0011 (0.0011)                              | < 0.0011 (0.0011)                              | < 0.0011 (0.0011)                              | < 0.0011 (0.0011)                              | < 0.0011 (0.0011)                              |
| BTEX<br>EPA 8021B                                     | 08/24/98<br>ppm                                | 08/24/98<br>ppm                                | 08/24/98<br>ppm                                | 08/24/98<br>ppm                                | 08/24/98<br>ppm                                |
| Benzene                                               | < 0.001 (0.001)                                | < 0.001 (0.001)                                | 0.002 (0.001)                                  | < 0.001 (0.001)                                | < 0.004 (0.004)                                |
| Toluene                                               | < 0.001 (0.001)                                | < 0.001 (0.001)                                | < 0.001 (0.001)                                | < 0.001 (0.001)                                | < 0.004 (0.004)                                |
| Ethylbenzene                                          | < 0.001 (0.001)                                | < 0.001 (0.001)                                | 0.003 (0.001)                                  | < 0.001 (0.001)                                | < 0.004 (0.004)                                |
| m,p-Xylenes                                           | < 0.002 (0.002)                                | < 0.002 (0.002)                                | 0.006 (0.002)                                  | < 0.002 (0.002)                                | < 0.008 (0.008)                                |
| o-Xylene                                              | < 0.001 (0.001)                                | < 0.001 (0.001)                                | < 0.001 (0.001)                                | < 0.001 (0.001)                                | < 0.004 (0.004)                                |
| Total BTEX                                            | N.D.                                           | N.D.                                           | 0.011                                          | N.D.                                           | N.D.                                           |
| PAHs by GC-MS (610 List)<br>EPA 8270                  | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               | 08/27/98<br>mg/L                               |
| Acenaphthene                                          | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Acenaphthylene                                        | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Anthracene                                            | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Benz(a)anthracene                                     | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Benzo(a)pyrene                                        | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Benzo(b)fluoranthene                                  | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Benzo(g,h,i)perylene                                  | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Benzo(k)fluoranthene                                  | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |

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Eddie L. Clemons, II  
QA/QC Manager

# CERTIFICATE OF ANALYSIS SUMMARY 1-83232

## K.E.I. Consultants, Inc.

Project ID: 810044-1-0

Project Manager: Theresa Nix

Project Location: Monument, NM

Project Name: TMM 98-02 Lea County, NM

Date Received in Lab : Aug 21, 1998 09:35

Date Report Faxed: Sep 4, 1998

XENCO contact : Carlos Castro/Eddie Clemons

### Analysis Requested

| Lab ID:<br>Field ID:<br>Depth:<br>Matrix:<br>Sampled: | 183232 001<br>MW-1<br>Liquid<br>08/20/98 12:50 | 183232 002<br>MW-2<br>Liquid<br>08/20/98 13:30 | 183232 003<br>MW-3<br>Liquid<br>08/20/98 13:55 | 183232 004<br>MW-4<br>Liquid<br>08/20/98 14:30 | 183232 005<br>MW-5<br>Liquid<br>08/20/98 14:20 |
|-------------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|
| PAHs by GC-MS (610 List)                              | R.L.                                           | R.L.                                           | R.L.                                           | R.L.                                           | R.L.                                           |
| EPA 8270                                              | mg/L                                           | mg/L                                           | mg/L                                           | mg/L                                           | mg/L                                           |
| Chrysene                                              | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Dibenz(a,h)anthracene                                 | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Fluoranthene                                          | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Fluorene                                              | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Indeno(1,2,3-cd)pyrene                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Naphthalene                                           | < 0.002 (0.002)                                | < 0.002 (0.002)                                | 0.003 (0.002)                                  | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Phenanthrene                                          | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Pyrene                                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                | < 0.002 (0.002)                                |
| Bicarbonate<br>SM 4500CO2D                            | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               |
| Bicarbonate                                           | 313 (4.0)                                      | 310 (4.0)                                      | 328 (4.0)                                      | 308 (4.0)                                      | 233 (4.0)                                      |
| Carbonate<br>SM 4500CO2D                              | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               |
| Carbonate                                             | < 4.0 (4.0)                                    | < 4.0 (4.0)                                    | < 4.0 (4.0)                                    | < 4.0 (4.0)                                    | < 4.0 (4.0)                                    |
| Total Dissolved Solids<br>EPA 160.1                   | 08/31/98<br>mg/L                               | 08/31/98<br>mg/L                               | 08/31/98<br>mg/L                               | 08/31/98<br>mg/L                               | 08/31/98<br>mg/L                               |
| Total Dissolved Solids                                | 1040 (5.0)                                     | 867 (5.0)                                      | 1100 (5.0)                                     | 1370 (5.0)                                     | 1010 (5.0)                                     |
| Anions by Ion Chromatography<br>EPA 300.0             | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               | 08/25/98<br>mg/L                               |
| Chloride                                              | 327 (4)                                        | 237 (2)                                        | 345 (4)                                        | 422 (4)                                        | 382 (4)                                        |
| Sulfate                                               | 91 (4)                                         | 58 (2)                                         | 32 (4)                                         | 108 (4)                                        | 54 (4)                                         |

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.

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Company COC No: 173  
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## **QA/QC PROCEDURES**

### **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 SAMPLING**

Samples of the subsurface soils were obtained through the collection of auger cuttings every 2 to 3 feet during drilling utilizing an air rotary drilling rig. Where possible, a split spoon sampler was utilized to obtain a sample. 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 photoionization 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 and TPH analysis. Soil samples were analyzed for BTEX and TPH concentrations within 14 days following the collection date. A selected sample was also submitted for SPLP TPH, VOC, and SVOC analysis.

The soil samples were analyzed in accordance with the following methods:

- BTEX concentrations by EPA Method SW846-8021B
- TPH concentrations by EPA Method 8015M Diesel Range Organics
- SPLP TPH concentrations by 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

### **GROUND WATER SAMPLING**

Monitoring wells were developed and purged with a clean PVC bailer. The bailer was cleaned prior to each use with Liqui-Nox detergent and rinsed with distilled water. Monitoring wells with sufficient recharge were purged by removing a minimum of 3 well volumes. Monitoring wells that did not recharge sufficiently were purged until no additional ground water could be obtained.

After purging the wells, ground water samples were collected with a disposable Teflon sampler and polyethylene line by personnel wearing clean, disposable gloves. Ground water samples collected for BTEX analysis were placed in 40 ml glass VOA vials equipped with Teflon-lined caps and pre-preserved with HCl by the analytical laboratory. The vials

were filled to a positive meniscus, sealed, and visually checked to ensure the absence of air bubbles.

Ground water samples collected for PAH, metals, TDS, and cations/anions analysis were placed in 250 ml glass containers pre-preserved with HCl by the analytical laboratory. The filled containers were labeled and placed on ice in an insulated cooler. The cooler was sealed for transportation to the analytical laboratory. Proper chain-of-custody documentation was maintained throughout the sampling process.

Purged water collected during each event is stored in drums on-site pending disposal.

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

- BTEX concentrations in accordance with EPA Method SW846-8021B
- Metals concentrations in accordance with EPA ICP Method 6010
- PAH concentrations in accordance with EPA Method 8270
- TDS concentrations in accordance with EPA Method 160.1
- Anion concentrations in accordance with EPA Method 300.0
- Total mercury concentrations in accordance with EPA Method 7470
- Bicarbonate and carbonate concentrations in accordance with SM4500CO2D

#### **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.