AP - 45

STAGE 1 & 2 WORKPLANS

DATE:

July 12, 2005

R.T. HICKS CONSULTANTS, LTD.
1909 Brunson Avenue ■ Midland, Texas 79701-6924 ■ 432.638.8740 ■ Fax: 413.403.9968

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 2114

July 13, 2005

Mr. Daniel Sanchez
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: Stage 1 and 2 Abatement Plan
EME P-6 LINE LEAK
T20S-R37E-Section 6, Unit Letter P
NMOCD CASE # 1R0422

Dear Mr. Sanchez

In your letter of May 5, 2005, NMOCD required Rice Operating Company (ROC) to submit an abatement plan for the above-referenced site on or before July 15, 2005. Enclosed is the Stage 1 and 2 Abatement Plan for this site.

If you have any questions please call me at 432-638-8740 or Kristin Farris Pope at 505-393-9174.

Sincerely,

Gilbert Van Deventer
R.T. Hicks Consultants, Ltd.

cc:
Kristin Pope, Rice Operating Company
Carolyn Haynes, Rice Operating Company
Randy Hicks, R. T. Hicks Consultants, Ltd.

July 12, 2005

STAGE 1 AND 2 ABATEMENT PLAN

EME P-6 LINE LEAK SITE

T20S, R37E, SECTION 6, UNIT LETTER P
LEA COUNTY, NEW MEXICO

Prepared for:

RICE *Operating Company*
122 West Taylor
Hobbs, New Mexico 88240

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Ave. ▲ Midland, TX 79701-6924 ▲ 432.638.8740 ▲ Fax: 413.403.9968

STAGE 1 AND 2 ABATEMENT PLAN

EME P-6 LINE LEAK SITE

T20S, R37E, SECTION 6, UNIT LETTER P
LEA COUNTY, NEW MEXICO

Prepared for:

RICE *Operating Company*
122 West Taylor
Hobbs, New Mexico 88240

SUBMITTED BY:

Gilbert J. Van Deventer

GILBERT J. VAN DEVENTER
R. T. HICKS CONSULTANTS, LTD.

DATE:

July 12, 2005

TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

PHOTODOCUMENTATION

LABORATORY ANALYSIS AND CHAIN OF CUSTODY DOCUMENTATION

QUALITY CONTROL PROCEDURES

1.0 EXECUTIVE SUMMARY

The P-6 line leak site is located on land owned by ChevronTexaco in township 20 south, range 37 east, section 6, unit letter P approximately 4 miles west-southwest of Monument, NM as shown on the attached site location map (Figure 1). This project has been ongoing since a leak of produced water was discovered on November 29, 2000.

This work plan incorporates the required elements for both Stage 1 and 2 Abatement Plans. Several investigations have been performed as of this date with the results included in this report thus satisfying the required elements of the Stage 1 Abatement Plan. Section 7.0 of this report describes the abatement options that were evaluated and proposed selective remedy to further satisfy the Stage 2 elements. Quality assurance protocols and the proposed schedule of activities are included in sections 8.0 and 9.0, respectively.

Based on the evaluation of soil and groundwater sampling data and communication with the New Mexico Oil Conservation Division (NMOCD), as described herein, the following corrective actions are proposed:

- Excavation, lining, backfilling, and reseeding with native vegetation are proposed as engineering controls for site remediation of the vadose zone.

- Continued monitoring of groundwater quality (major ions and TDS) is recommended at a reduced frequency (semi-annually). The next two years of groundwater monitoring will be compared to the three-year trend already documented in which the chloride and TDS levels have not increased as a result of a line leak at this site. Analysis for BTEX concentrations should be suspended, as there has been no indication of dissolved hydrocarbons since the groundwater monitoring program began in January 2002 (13 consecutive quarters).

When implementing any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

ROC is the service provider (operator) for the EME SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner AFE approval and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan.

2.0 CHRONOLOGY OF EVENTS

November 29, 2000	Initial leak discovered. C-141 form submitted to NMOCD. Twenty feet of 10-inch pipe was replaced with 10-inch PVC.
November 14, 2001	Soil boring sampling conducted. Samples were field-tested for chloride.
November 29, 2001	Additional soil sampling with backhoe. Field-tested for chloride and TPH..
January 9, 2002	Monitoring well P6-1 was installed at line leak.
January 18, 2002	ROC submitted Notification of Groundwater Impact to Roger Anderson, NMOCD office in Santa Fe, NM.
April 29, 2003	Hand augered boring sampling conducted. Samples were field-tested for chloride and TPH. Samples also submitted to lab for BTEX (8021B), GRO/DRO (8015M), and TPH fractions (TX1006).
July 31, 2003	Work plan submitted to NMOCD office in Santa Fe, NM, which included results from all subsurface soil investigations conducted to date and recommendation for additional monitoring wells (P6-2 and M5-1).
August 26, 2003	Work plan approved by Wayne Price, NMOCD office in Santa Fe, NM.
November 16, 2003	Monitoring well M5-1 was installed on adjacent downgradient site.
February 17, 2004	Monitoring well P6-2 installed upgradient to line leak.
September 20, 2004	Corrective Action Plan (CAP) submitted to Wayne Price, NMOCD office in Santa Fe, NM
December 10, 2004	CAP denied by Wayne Price, NMOCD office in Santa Fe, NM
January 21, 2005	Additional soil sampling was conducted with a backhoe for further delineation of vertical and horizontal extent of hydrocarbon- and chloride-impacted soil. Soil samples were field-tested for chloride (QP-01) and organic vapor headspace. Samples were also submitted to the laboratory for BTEX (8260) and GRO/DRO (8015M) analysis.
March 16, 2005	Corrective Action Plan submitted to Wayne Price, NMOCD office in Santa Fe, NM
May 5, 2005	Daniel Sanchez, NMOCD office in Santa Fe, NM, requested an Abatement Plan to be submitted by July 15, 2005.

3.0 BACKGROUND

3.1 SITE LOCATION AND LAND USE

The P-6 line leak site is located on land owned by ChevronTexaco in township 20 south, range 37 east, section 6, unit letter P approximately 4 miles west-southwest of Monument, NM as shown on the attached site location map (Figure 1). Land in the site area is primarily utilized for crude oil and gas production and cattle ranching. Area crude oil and gas production is operated by Amerada Hess Corp., ChevronTexaco Inc., Doyle Hartman, Marathon Oil Co., Chesapeake Operating Inc., XTO Energy Inc., and BP America Production Co.

3.2 NATURE OF RELEASE AND SUMMARY OF PREVIOUS WORK

This project has been ongoing since a leak of produced water was discovered on November 29, 2000. So far work has included replacement of a 20-foot section of the 10-inch broken pipeline, extensive site assessment sampling, installation and sampling of three groundwater monitoring wells (P6-1, P6-2, and M5-1), and notification to the NMOCD of all critical junctures related to the project (work plans, C-141 forms, Notification of Groundwater Impact, Disclosure Reports, etc).

Previous investigation reports are briefly identified in Section 2.0. Results of these investigations are described in more detail in Sections 4.0, 5.0, and 6.0

Produced water gathered by the EME SWD System in the site area is sent to the M-5 SWD well, which is located adjacent to the P-6 line leak site. The M-5 SWD well has been in operation since approximately 1952. During the latter part of 2003 ROC began upgrading the M-5 SWD facility by removing the redwood tanks and installing a new tank system approximately 500 feet west in section 6 unit letter P. The upgrade was completed on February 11, 2004.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 REGIONAL AND LOCAL GEOLOGY

According to published information (Nicholson and Clebsch, 1961 and Barnes, 1976) the site is underlain by Quaternary colluvial deposits composed of sand, silt, and gravel deposited by slopewash, and talus from the Ogallala Formation. The colluvial deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The lithology of the colluvial deposits is very similar to that of the Ogallala since the Ogallala is the source of the re-deposited colluvial sediments. The nearest outcropping of the Ogallala Formation occurs approximately one mile north of Monument along what is known as the Llano Estacado (caprock). The thickness of the colluvium deposits and Ogallala Formation is approximately 75 feet, however it varies locally as a result of significant paleo-topography at the top of the underlying Triassic Dockum Group. Since Cretaceous Age rocks in the region have been removed by pre-Tertiary erosion, the colluvial deposits and Ogallala Formation rest unconformably on the Triassic Dockum Group. The uppermost unit of the Dockum Group is the Chinle Formation, which primarily consists of micaceous red clay and shale but also contains thin interbeds of fine-grained sandstone and siltstone. The red clays and shale of the Chinle Formation act as an aquitard beneath the water bearing colluvial deposits and therefore limit the amount of recharge to the underlying Dockum Group. The thickness of the Dockum Group is estimated at approximately 300 feet in the site area although its thickness in southern Lea County varies from 0 to 1,270 feet thick (Nicholson and Clebsch, 1961).

The first few feet from ground surface is dominated by fine to medium-grained dune sand. Based on the descriptions provided in lithologic logs the subsurface soils are composed of silty fine-grained sand and caliche. Well-indurated sand and calcite/caliche veins were also observed and clay was present in small amounts. The red clay of the Dockum Group was encountered at a depth of 67 feet below ground surface at the P6-2 monitoring well location. At the M5-1 monitoring well location the red clay of the Dockum Group was observed at only 55 feet below ground surface. The lithologic logs are included in the Appendices.

4.2 REGIONAL AND LOCAL HYDROGEOLOGY

Potable groundwater used in southern Lea County is derived primarily from the Ogallala Formation (including the colluvial deposits) and the Quaternary alluvium. Lower yields have also been provided by water bearing zones within the Triassic Dockum Group in a few scattered areas within southern Lea County. No potable water is known to be derived below the Triassic Dockum Group. Water from the Ogallala and alluvium aquifers in southern Lea County is used for irrigation, stock, domestic, industrial, and public supply purposes.

The regional gradient of the Ogallala aquifer in the site area generally flows toward the southeast and the hydraulic gradient varies from approximately 0.001 to 0.01 feet/feet. Recharge to the Ogallala aquifer occurs primarily by infiltration of precipitation at a slow rate (typically one quarter to one half inch of water per year) due to the characteristically arid

climate of southern Lea County (Nicholson and Clebsch, 1961). Hydraulic conductivity values are estimated between 26 and 50 feet per day and specific yields of 0.23 for the Ogallala aquifer near the site area based on limited published information (McAda, 1984). There are no surface water bodies located within a mile of the site.

The water table elevations and direction of groundwater flow for the June 10, 2005 gauging event at the P-6 Line Leak site are shown on the groundwater gradient map (Figure 4.1). Depth to groundwater beneath the site area is approximately 30 feet below ground surface. The direction of groundwater flow is to the south-southeast with a relatively flat hydraulic gradient of approximately 0.0015 feet/foot. Groundwater elevation data for the current and all previous monitoring events is summarized in Table 4.1.

4.3 WATER WELL INVENTORY

The purpose of a water well inventory is two-fold. First and foremost is to identify the location of potential water supply receptors (domestic, irrigation, or livestock wells). Secondly, it can assist in defining the regional groundwater gradient and establishing background water quality conditions. A field survey was conducted on June 10, 2005, to verify the existence of the wells identified from the sources specified in the following sections. Figure 4.3 depicts the approximate location of the wells identified in this section.

4.3.1 USGS MONUMENT SW TOPOGRAPHIC MAP

According to the USGS Monument SW topographic map, there is one windmill located approximately 0.7 miles south-southwest of the site in section 7, unit letter H. Information regarding this windmill was not found in the other databases used for this inventory. This out of service windmill was verified during the field. During the field survey an unmapped active water supply well was located in section 8, unit letter J.

4.3.2 NMOCD OFFICE IN HOBBS

Based on records at the NMOCD office in Hobbs, the five sites listed below are being investigated for groundwater impairment.

Site Name	Site Operator	No. of MWs	Distance from Site
Bertha Barber Site	Marathon Oil Co.	~ Fifteen	~1/3 mi. NE
JR Phillips #2 Tank Battery Site	ChevronTexaco	Nine	~0.9 mi. NW
M-5 SWD Site	Rice Operating Co.	One	~500 ft ESE
N-5 Junction Box Site	Rice Operating Co.	One	~1/3 mi. ESE
K-6 Junction Box Site	Rice Operating Co.	One	~2/3 mi. WNW

4.3.3 USGS NATIONAL WATER INFORMATION SYSTEM (NWISWS) WEBSITE

One water well designated with the site name 20S.37E.05.13440 has been monitored by the USGS since 1968. The well is located approximately 2/5 miles northwest of the site. This well has been used for livestock watering however it was not in use during the field survey.

4.3.4 NMSEO iW.A.T.E.R.S. WEBSITE

According to the iW.A.T.E.R.S. website of the New Mexico Office of the State Engineer, 19 water wells have been identified within a 1-mile radius of the site as listed below.

File	T20S	Well	Permit Date	Original Owner	Distance from
L1145	6.414	PRO	06/22/1951	Gulf Oil Co.	~1/3 mi. NW
L1253	8.231	PRO	08/26/1953	Gulf Oil Co.	~3/4 mi. SE
L1450	5.130	PRO	05/29/1952	Marathon Oil Co.	~1/2 mi. NNE
L1487	6.414	PRO	07/15/1952	Gulf Oil Co.	~1/3 mi. NW
L1572	5.331	PRO	09/15/1952	Exploration Drilling Co.	~500 ft ESE
L2102	5.340	PRO	03/30/1953	E. F. Moran Inc.	~1/3 mi. SE
L2139	8.222	PRO	04/15/1953	Gackle Drilling Co.	~ 1 mi. ESE
L2274	8.130	PRO	07/14/1953	Sinclair Oil Co.	~3/5 mi. SSE
L2278	5.430	DOM	09/28/1987	Laughlin Estate	~3/5 mi. ESE
L2460	7.210	PRO	01/25/1954	Moran Drilling Co.	~1/2 mi. SW
L2463	8.321	PRO	02/01/1954	Amerada Petroleum Co.	~4/5 mi. SSE
L2483	8.144	PRO	03/08/1954	Moran Drilling Co.	~4/5 mi. SE
L2488	5.230	PRO	02/24/1954	The Texas Co.	~3/4 mi. NE
L2497	5.333	PRO	04/01/1954	Amerada Petroleum Co.	~800 ft SSE
L2533	7.230	PRO	05/12/1954	Moran Drilling Co.	~2/3 mi. SW
L2553	6.434	PRO	06/01/1954	Gulf Oil Co.	~1/3 mi. SW
L2801	6.233	PRO	03/22/1955	Amerada Petroleum Co.	~3/5 mi. NE
L3810	6.144	PRO	05/10/1962	Texaco Inc.	~2/3 mi. NW
L4619	6.423	PRO	03/29/1961	Gulf Oil Co.	~1/5 mi. NW

PRO – Prospecting for oil &d gas production. Water supply for oil & gas drilling

Eighteen of the permitted wells above were constructed for temporary water supply for oil well drilling. In accordance with requirements of the NMSEO, these wells permitted for prospecting were to be plugged upon completion of the permitted use; therefore it is presumed that they no longer exist, with the exception of well no. L3810, which was located during the field survey. Well no. L3810 is located approximately 2/3 mile northwest of the site and has been abandoned. Well no. L2278 is located approximately 3/5 mile east-southeast of the site. This well has been used for livestock watering however it was not in use during the field survey.

5.0 SUBSURFACE SOILS

On November 14, 2001, a preliminary evaluation and delineation of the hydrocarbons at the EME P-6 Line Leak site was performed using the "MEGA" TPH method (QP-03) to determine field total hydrocarbon concentrations. In addition, soil samples were field-tested for chloride content using the titration method (QP-01).

While the Mega-TPH assessment was useful for screening purposes in assessing the relative extent of the hydrocarbon-impacted soil, it cannot be used to interpret potential risks to human health and the environment. Therefore, for a more quantitative assessment, additional soil samples were recovered on April 29, 2003, from the location and depth of the greatest subsurface Mega-TPH concentration observed and sent to the laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) using EPA Method 8021B, gas and diesel range organics (GRO/DRO) using EPA Method 8015M, and total petroleum hydrocarbon (TPH) fractions using Texas Method 1006. A summary of the preliminary soil sample results is provided in Table 5.1 and depicted on a site map in Figure 5.1.

On January 21, 2005, a backhoe was mobilized on site to facilitate the collection of soil samples for further delineation of the vertical and horizontal extent of hydrocarbon- and chloride-impacted soil. Soil samples were field-tested for chloride content using the titration method (QP-01). Soil samples submitted to the laboratory were analyzed for GRO and DRO using EPA Method 8015M to determine TPH concentrations. Samples were also collected for headspace analysis using an organic vapor meter (OVM), which was calibrated to assume a benzene response factor. Samples with headspace readings or GRO levels above 100 ppm were also analyzed for BTEX using EPA Method 8260B. The following concentrations of analytes were used to delineate the lateral and vertical extent of impact to the vadose zone:

- 100 mg/kg TPH (GRO/DRO)
- 100 ppm OVM, and/or 10 mg/kg benzene and 50 mg/kg BTEX
- 250 ppm chloride

The results of the soil sampling and analysis are summarized in Table 5.2 and depicted on a site map in Figure 5.2.

Based on all of the sampling results to date the area of impacted soil is no more than 30 feet in diameter near the surface. The impacted soil decreases in magnitude and lateral extent with depth to a maximum depth of approximately 19 feet directly below the line leak. The lab reports, chain of custody, and photographic documentation for the January 21, 2005, soil sampling activities are attached in the appendices.

6.0 GROUNDWATER QUALITY

6.1 MONITORING PROGRAM

Each monitoring well (P6-1, P6-2, and M5-1) has been sampled on a quarterly basis for major ions, TDS, and BTEX. A summary of historical analytical results and groundwater elevations is listed in Table 4.1. Analytical results for the most recent sampling event conducted on May 3, 2005, are also depicted on the groundwater sampling map in Figure 6.1 and in graphical format in Figures 6.2, 6.3, and 6.4.

6.2 HYDROCARBONS IN GROUNDWATER

BTEX concentrations in monitoring wells P6-1, P6-2, and M5-1 have been below the laboratory detection limit of 0.001 mg/L for each constituent and for every sampling event taken place.

6.3 OTHER CONSTITUENTS OF CONCERN

Chloride concentrations in monitoring wells P6-1 (7,090 mg/L), P6-2 (6,050 mg/L), and M5-1 (6,560 mg/L) exceed the WQCC standard of 250 mg/L.

Monitoring wells P6-1 (1,050 mg/L) and P6-2 (885 mg/L) exceed the WQCC standard of 600 mg/L for sulfate. Monitoring well M5-1 (595 mg/L) was below the WQCC standard for sulfate.

TDS concentrations in monitoring wells P6-1 (19,300 mg/L), P6-2 (14,100 mg/L), and M5-1 (16,500 mg/L) exceed the WQCC standard of 1,000 mg/L.

Chloride, sulfate, and TDS concentrations in monitoring wells P6-1, P6-2, and M5-1 have remained relatively stable although some minor fluctuations have occurred. No correlations between chloride/sulfate/TDS concentrations and changes in groundwater levels are evident.

7.0 STAGE 2 ABATEMENT PLAN

The following abatement options were evaluated:

• **Option 1**: Minimize disturbance of surface soil by not excavating. Re-establish native vegetation and continue groundwater monitoring semi-annually

• **Option 2**: Excavate, backfill, and install liner. Re-establish with native vegetation and continue groundwater monitoring semi-annually

A quantitative risk assessment was performed in July 2003, to establish remediation action levels with respect to the receptor pathways of concern. The primary pathway of concern at this site is the protection of the groundwater due to leaching of the remaining regulated constituents (BTEX) in the soil. Fate and transport modeling demonstrated that the remaining hydrocarbons in the soil at the P-6 Line Leak site would not present a human health risk for current or future commercial receptors who may ingest the groundwater. This result supports Option 1.

In the corrective action plan submitted to the NMOCD on September 20, 2004, excavation, backfilling, and lining was not recommended based on a re-evaluation of data at this site, additional groundwater monitoring data provided by newly installed monitoring wells, and the obvious improvement of surface vegetation on the area affected by the original line leak. The CAP also presented several lines of evidence that the minimal release of chlorides and TDS from the P-6 line leak will not contribute to the degradation of groundwater quality that has already taken place as a result of upgradient and off site sources. However, Mr. Wayne Price of the NMOCD office in Santa Fe denied the recommendation to leave soils in place in his email dated December 10, 2004. Therefore, ROC proposes implementation of the NMOCD-preferred abatement Option 2 as described below.

7.1 *EXCAVATION, LINING, BACKFILLING, AND RESEEDING WITH NATIVE VEGETATION*

Appropriate excavation, lining, backfilling, and reseeding with native vegetation, as described herein, are proposed as engineering controls for site remediation. The excavation contractor will be responsible for contacting the New Mexico One Call for all line location requests. During excavation operations, subsurface soil samples will be collected and field screened with an organic vapor analyzer (OVM). Soil samples will also be field-tested for chloride content using the titration method in accordance with procedures explained in QP-01 (attached).

It is proposed that using conventional backhoe equipment, the excavation shall not exceed 16 feet below ground surface (bgs). Soil with GRO or DRO levels above 1,000 mg/kg shall be hauled to an NMOCD-approved facility or remediated on site. Upon completion of

excavation activities, closure samples will be collected in accordance with the procedures explained in QP-06, QP-07, and QP-08 (attached). Closure soil samples submitted to the laboratory shall be analyzed for gas and diesel range organics (GRO and DRO) using EPA Method 8015 to determine TPH concentrations. Samples with headspace readings or GRO levels above 100 ppm will also be analyzed for BTEX using EPA Method 8021B.

A minimum 10-12 inch thick clay liner, compacted to meet or exceed 95 percent of a Proctor Test (ASTM-D-698) with a permeability less than or equal to 10-7 cm/sec or a 40 mil poly liner, will be installed three to five feet below ground surface. The clay liner will be sloped to the southeast and shall extend laterally to insure sufficient deflection of any potential infiltrating water originating from the surface. The backfill (above and below the clay liner) will be composed of blended or remediated soil that will support vegetation. The surface will be contoured and shall be reseeded with native vegetation to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration. Vegetation will be monitored for growth.

7.2 GROUNDWATER MONITORING

Continued monitoring of groundwater quality (major ions and TDS) is recommended at a reduced frequency (semi-annually). The next two years of groundwater monitoring will be compared to the three-year trend already documented in which the chloride and TDS levels have not increased as a result of a line leak at this site. Analysis for BTEX concentrations should be suspended, as there has been no indication of dissolved hydrocarbons since the groundwater monitoring program began in January 2002 (13 consecutive quarters).

8.0 QUALITY ASSURANCE / QUALITY CONTROL

Sampling and analytical procedures shall be performed consistent with the techniques listed in 20 NMAC 6.3107.B and with Section 103 of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20 NMAC 6.1). The quality procedures for collecting and analyzing soil and groundwater samples are included in the appendix.

9.0 PROPOSED SCHEDULE OF ACTIVITIES

Task	Date of Task Completion
Submission of Progress Reports to NMOCD	Quarterly beginning 30 days hence approval of Stage 1 and 2 Abatement Plan by NMOCD
Excavation, lining, backfilling, and reseeding with native vegetation	Within 60 days of Stage 1 and 2 Abatement Plan approval by NMOCD
Groundwater Monitoring	Within 60 days of Stage 1 and 2 Abatement Plan approval by NMOCD
Submission of final site remediation report to NMOCD	Within 30 days after completion of tasks summarized in the Stage 1 and 2 Abatement Plan

It may be necessary to extend the completion dates for the tasks outlined above dependent on contractor availability and whether the NMOCD gives bulk approval of other Stage I and 2 Abatement Plans. For example, if five or more Stage I and 2 Abatement Plans are given the notice to proceed by the NMOCD at the same time it may overly burden the assigned consultant to perform the required tasks therein within the timeframe outlined above.

FIGURES

Figure 6.2
Chloride, Sulfate, TDS, and Groundwater Elevation Values Versus Time Graph (P6-1)

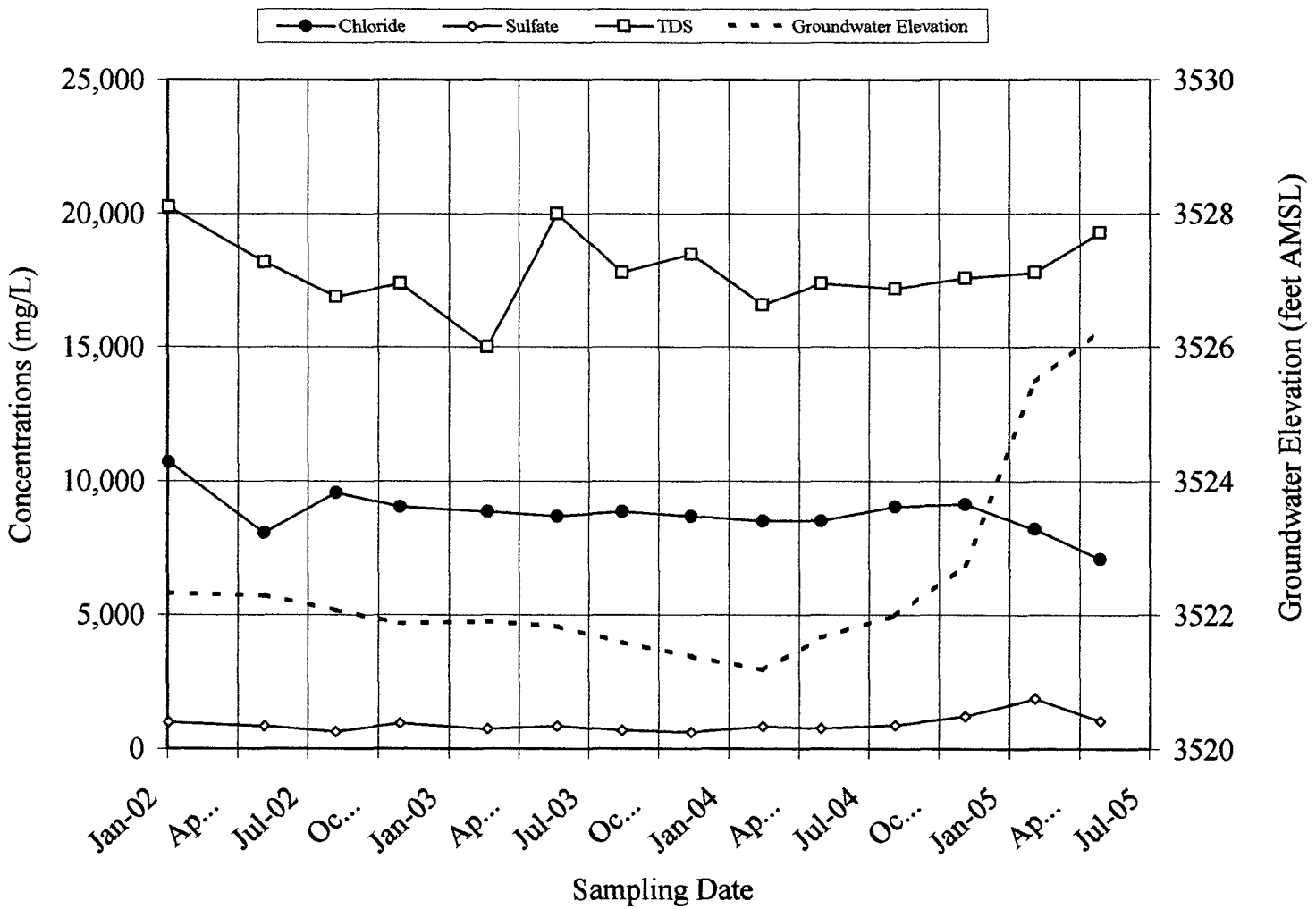


Figure 6.3
Chloride, Sulfate, TDS, and Groundwater Elevation Values Versus Time Graph (P6-2)

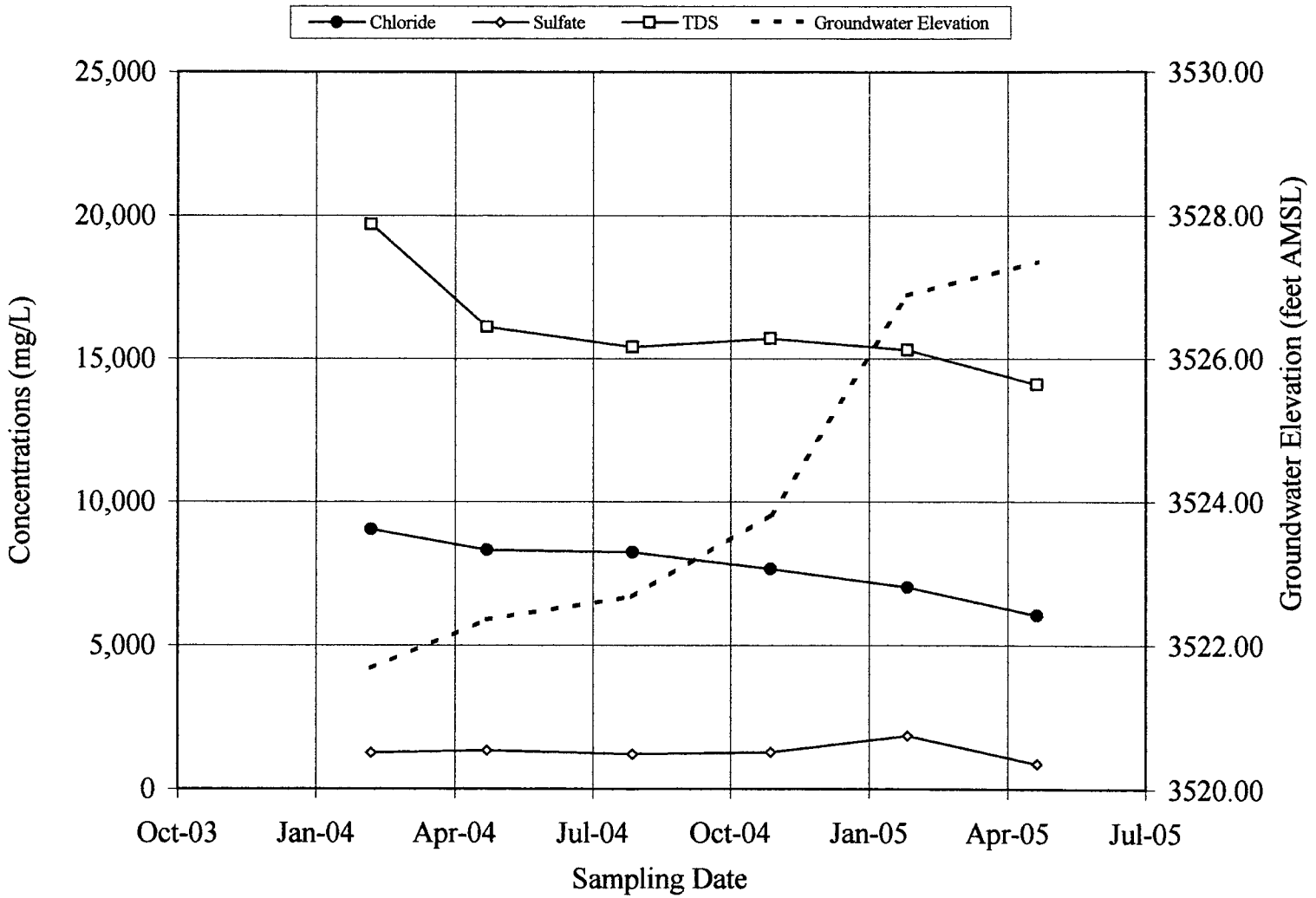
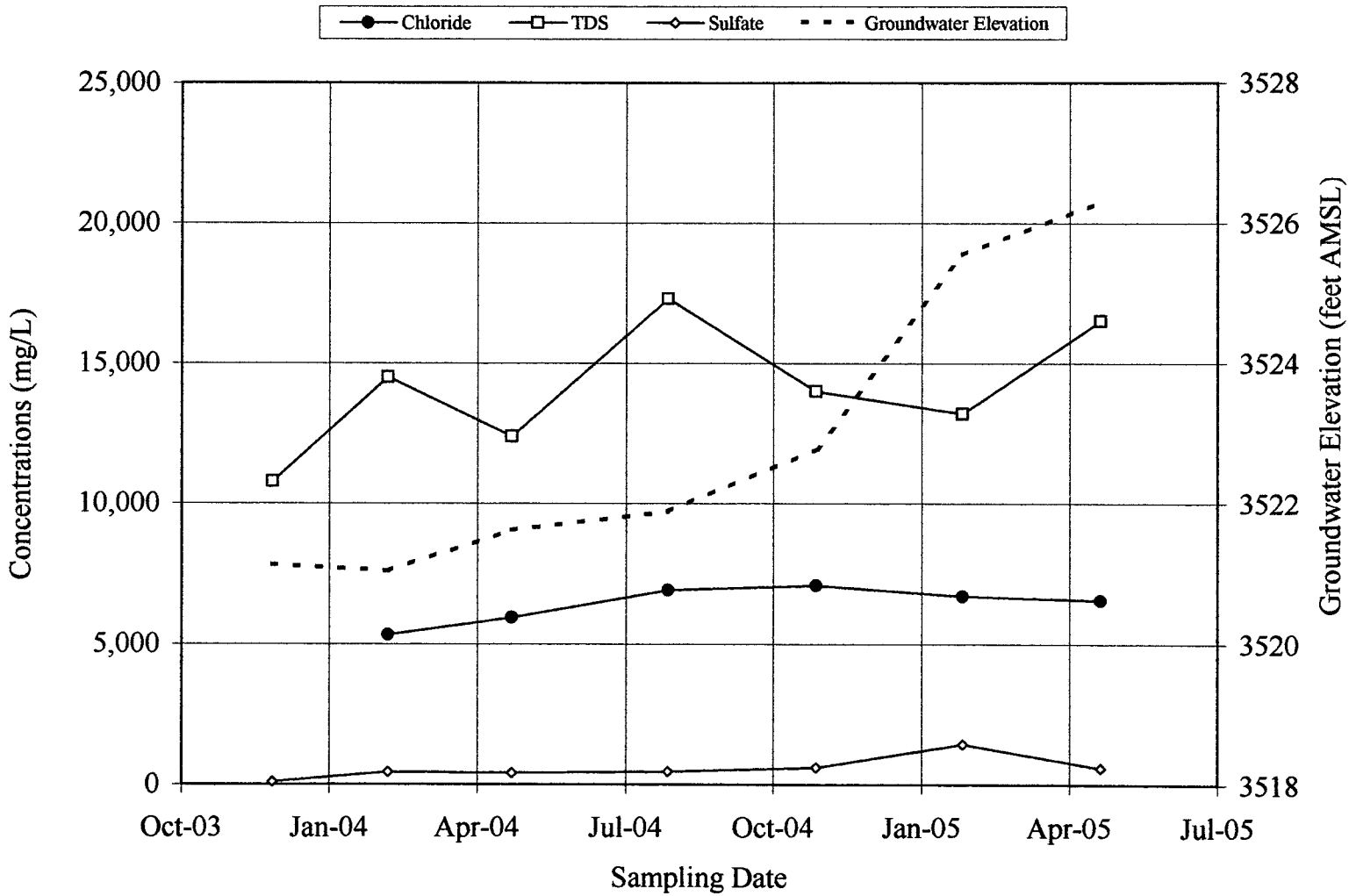


Figure 6.4
Chloride, Sulfate, TDS, and Groundwater Elevation Values Versus Time Graph (M5-1)



TABLES

Table 4.1
Summary of Groundwater Monitoring Results
EME P-6 Line Leak Site

Monitoring Well	Sample Date	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)
P6-1	01/10/02	**10,700**	**999**	**20,248**	< 0.002	< 0.002	< 0.002	< 0.006	36.70	3522.32
	05/14/02	**8,060**	**852**	**18,200**	< 0.001	< 0.001	< 0.001	< 0.001	36.73	3522.29
	08/15/02	**9,570**	**646**	**16,900**	< 0.001	< 0.001	< 0.001	< 0.001	36.95	3522.07
	11/06/02	**9,040**	**952**	**17,400**	< 0.001	< 0.001	< 0.001	< 0.001	37.15	3521.87
	02/27/03	**8,860**	**741**	**15,000**	< 0.001	< 0.001	< 0.001	< 0.001	37.12	3521.90
	05/29/03	**8,680**	**858**	**20,000**	< 0.001	< 0.001	< 0.001	< 0.001	37.19	3521.83
	08/21/03	**8,860**	**683**	**17,800**	< 0.001	< 0.001	< 0.001	< 0.001	37.43	3521.59
	11/19/03	**8,690**	**619**	**18,500**	< 0.001	< 0.001	< 0.001	< 0.001	37.64	3521.38
	02/20/04	**8,510**	**830**	**16,600**	< 0.001	< 0.001	< 0.001	< 0.001	37.84	3521.18
	05/06/04	**8,510**	**756**	**17,400**	< 0.001	< 0.001	< 0.001	< 0.001	37.36	3521.66
	08/10/04	**9,040**	**889**	**17,200**	< 0.001	< 0.001	< 0.001	< 0.001	37.03	3521.99
	11/09/04	**9,130**	**1,220**	**17,600**	< 0.001	< 0.001	< 0.001	< 0.001	36.28	3522.74
	02/07/05	**8,210**	**1,870**	**17,800**	< 0.001	< 0.001	< 0.001	< 0.001	33.54	3525.48
	05/03/05	**7,090**	**1,050**	**19,300**	< 0.001	< 0.001	< 0.001	< 0.001	32.76	3526.26
P6-2	02/20/04	**9,040**	**1,260**	**19,700**	< 0.001	< 0.001	< 0.001	< 0.001	37.97	3521.68
	05/06/04	**8,330**	**1,340**	**16,100**	< 0.001	< 0.001	< 0.001	< 0.001	37.29	3522.36
	08/10/04	**8,240**	**1,220**	**15,400**	< 0.001	< 0.001	< 0.001	< 0.001	36.97	3522.68
	11/09/04	**7,670**	**1,280**	**15,700**	< 0.001	< 0.001	< 0.001	< 0.001	35.83	3523.82
	02/07/05	**7,030**	**1,860**	**15,300**	< 0.001	< 0.001	< 0.001	< 0.001	32.76	3526.89
	05/03/05	**6,050**	**885**	**14,100**	< 0.001	< 0.001	< 0.001	< 0.001	32.29	3527.36
M5-1	12/11/03	**6,198**	100	**10,784**	< 0.002	< 0.002	< 0.002	< 0.006	33.28	3521.13
	02/20/04	**5,320**	454	**14,500**	< 0.002	< 0.002	< 0.002	< 0.006	33.37	3521.04
	05/06/04	**5,940**	420	**12,400**	< 0.002	< 0.002	< 0.002	< 0.006	32.79	3521.62
	08/10/04	**6,910**	470	**17,300**	< 0.001	< 0.001	< 0.001	< 0.001	32.52	3521.89
	11/09/04	**7,090**	**614**	**14,000**	< 0.001	< 0.001	< 0.001	< 0.001	31.63	3522.78
	02/07/05	**6,710**	**1,450**	**13,200**	< 0.001	< 0.001	< 0.001	< 0.001	28.85	3525.56
	05/03/05	**6,560**	595	**16,500**	< 0.001	< 0.001	< 0.001	< 0.001	28.10	3526.31
WQCC Standards		250	600	1,000	0.01	0.75	0.75	/ 0.62		

Total Dissolved Soilds (TDS), chloride, sulfate, and BTEX concentrations listed in milligrams per liter (mg/L)
Analyses performed by Environmental Lab of Texas, Odessa, TX.
Values in boldface type indicate concentrations exceed New Mexico Water Quality Commission (WQCC) standards.
AMSL - Above Mean Sea Level; BTOC - Below Top of Casing
Elevations and state plane coordinates surveyed by Basin Surveys, Hobbs, NM.

Table 5.1

PRELIMINARY SOIL SAMPLE RESULTS

Sample ID	Sample Location	Sampling Date	Sample Depth (Ft bgs)	Chloride (ppm)	MEGA TPH (ppm)	GRO (mg/kg)	DRO (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)
A	2 ft southeast of line leak source	11/14/01	5	525	4,380	NA	NA	NA	NA	NA	NA
			10	275	11,000	NA	NA	NA	NA	NA	NA
			15	600	879	NA	NA	NA	NA	NA	NA
			20	400	122	NA	NA	NA	NA	NA	NA
			25	500	441	NA	NA	NA	NA	NA	NA
			30	275	166	NA	NA	NA	NA	NA	NA
B	4 ft east of line leak source	04/29/03	3	200	23,510	NA	NA	NA	NA	NA	NA
			5	500	11,950	NA	NA	NA	NA	NA	NA
			7	950	9,900	NA	NA	NA	NA	NA	NA
			9	700	18,560	NA	NA	NA	NA	NA	NA
			11	500	20,060	654	1940	0.212	0.633	3.62	4.42
			13	750	7,550	NA	NA	NA	NA	NA	NA
			15	750	6,270	142	579	0.044	0.133	0.578	1.43
C	23 ft west of line leak source	04/29/03	0	50	88	NA	NA	NA	NA	NA	NA
D	38 ft east of line leak source	04/29/03	0	50	67	NA	NA	NA	NA	NA	NA
			2	50	74	NA	NA	NA	NA	NA	NA
E	18.5 ft south of line leak source	04/29/03	0	100	964	NA	NA	NA	NA	NA	NA
			2	100	67	NA	NA	NA	NA	NA	NA
F	18 ft north of line leak source	04/29/03	0	200	3710	NA	NA	NA	NA	NA	NA
			2	200	67	NA	NA	NA	NA	NA	NA
G	25 ft north of line leak source	04/29/03	0	50	88	NA	NA	NA	NA	NA	NA

Chloride analysis performed on site using chloride titration method (QP-03)

Mega TPH readings obtained in the field using a GAC Mega TPH Infrared Spectrophotometer by RE Environmental (Hobbs NM) for screening purposes only.

Gas Range Organics (GRO) and Diesel Range Organics (DRO) analyzed using EPA Method 8015M by Environmental Lab of Texas (Odessa TX).

Benzene, toluene, ethylbenzene, and xylenes (BTEX) analyzed using EPA Method 8021B by Environmental Lab of Texas (Odessa TX)..

Table 5.2

ADDITIONAL SOIL SAMPLE RESULTS

Sample ID	Sample Location	Sampling Date	Sample Depth (Ft bgs)	Chloride (ppm)	OVM (ppm)	GRO (mg/kg)	DRO (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)
H	13 ft east of line leak source	1/21/2005	4	165	0	NA	NA	NA	NA	NA	NA
			8	118	2.5	NA	NA	NA	NA	NA	NA
			12	116	2	< 10	< 10	NA	NA	NA	NA
I	30 ft east of line leak source	1/21/2005	4	144	0	NA	NA	NA	NA	NA	NA
			8	146	0	NA	NA	NA	NA	NA	NA
			12	144	0	< 10	< 10	NA	NA	NA	NA
J	Directly beneath line leak	1/21/2005	4	145	71	1450	6950	<0.025	<0.025	0.375	1.241
			8	551	309	2020	5450	0.651	2.510	9.850	17.170
			12	871	425	472	828	0.669	<0.025	9.790	13.120
			16	813	169	116	404	<0.025	0.030	0.737	0.894
			19	453	9	< 10	< 10	NA	NA	NA	NA
K	4 ft north of line leak source	01/24/05	4	152	2	NA	NA	NA	NA	NA	NA
			8	289	2	< 10	117	NA	NA	NA	NA
			12	306	0	NA	NA	NA	NA	NA	NA
			16	174	0	< 10	126	NA	NA	NA	NA
L	12 ft south of line leak source	01/24/05	4	138	7	NA	NA	NA	NA	NA	NA
			8	153	0	< 10	< 10	NA	NA	NA	NA
			12	594	0	NA	NA	NA	NA	NA	NA
			16	986	0	< 10	< 10	NA	NA	NA	NA
M	20 ft west of line leak source	01/24/05	4	115	0	NA	NA	NA	NA	NA	NA
			8	85	0	< 10	< 10	NA	NA	NA	NA
			12	262	0	NA	NA	NA	NA	NA	NA
			16	259	0	< 10	< 10	NA	NA	NA	NA

Chloride analysis performed on site using chloride titration method (QP-03)

Organic Vapor Analyzer (OVM) readings obtained using Thermal Instruments Model 51B calibrated for benzene.

Gas Range Organics (GRO) and Diesel Range Organics (DRO) analyzed using EPA Method 8015M.

Benzene, toluene, ethylbenzene, and xylenes (BTEX) analyzed using EPA Method 8060B.

PHOTODOCUMENTATION

Photos of EME P-6 Line Leak Site (T20S, R37E, Section 6, Unit Letter P)

Above: View of MW-1 facing north. The former line leak (excavated area in background) was behind MW-1.
Photo to Right: View facing NW showing excavated area.▶

MW-1 facing north (7/14/04)

MW-1 facing east (7/14/04)

View of MW-1 facing north (7/14/04)

Shinnery oak becoming well established south of MW-1 (7/14/04)

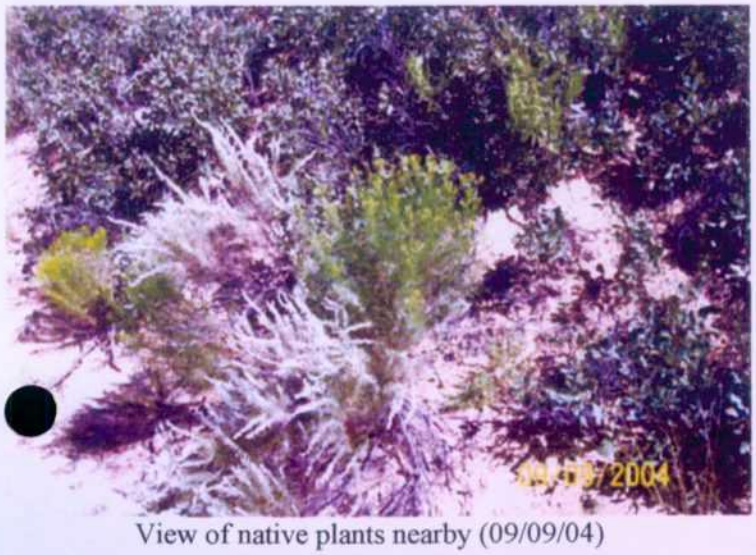
Photos of EME P-6 Line Leak Site (T20S, R37E, Section 6, Unit Letter P)

View of MW-1 facing north (08/10/04)

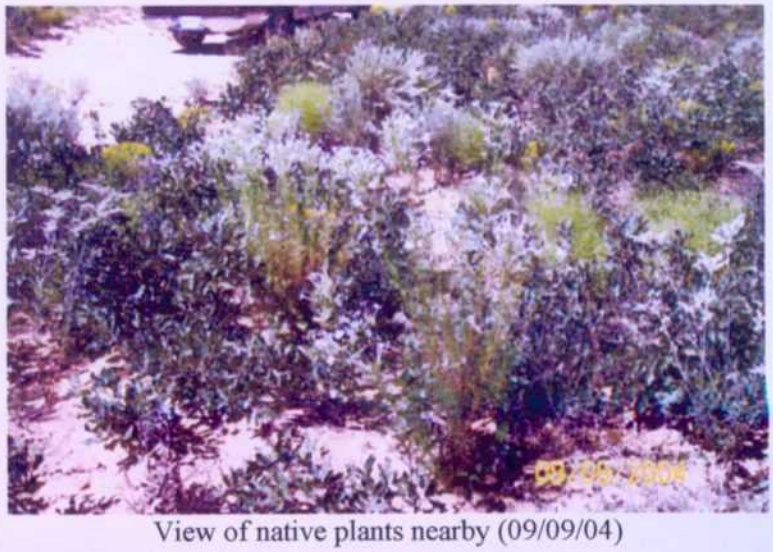
Closer view of MW-1 facing north (08/10/04)

View facing east along ROC pipeline ROW (08/10/04)

View of MW-1 facing north (08/10/04)



View of native plants nearby (09/09/04)



View of native plants nearby (09/09/04)

Photos of EME P-6 Line Leak Site (T20S, R37E, Section 6, Unit Letter P)

Sampling activity at location "H" approximately 12 feet east of former leak point (center of photo).

Sample location "J" at 16 ft depth directly below former leak point.

View of P-6 Line Leak Site facing north after completion of backhoe sampling activities.

LABORATORY ANALYTICAL REPORTS

AND

CHAIN OF CUSTODY DOCUMENTATION

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System P-6 Line Leak Site

Project Number: None Given

Location: T20S, R37E, Sec 6, Unit Letter P

Lab Order Number: 5A25025

Report Date: 02/07/05

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
H (12')	5A25025-01	Soil	01/21/05 09:45	01/25/05 16:20
I (12')	5A25025-02	Soil	01/21/05 10:15	01/25/05 16:20
J (4')	5A25025-03	Soil	01/21/05 11:05	01/25/05 16:20
J (8')	5A25025-04	Soil	01/21/05 11:10	01/25/05 16:20
J (12')	5A25025-05	Soil	01/21/05 11:15	01/25/05 16:20
J (16')	5A25025-06	Soil	01/21/05 11:30	01/25/05 16:20
J (19')	5A25025-07	Soil	01/24/05 09:00	01/25/05 16:20
K (8')	5A25025-08	Soil	01/24/05 10:05	01/25/05 16:20
K (16')	5A25025-09	Soil	01/24/05 10:15	01/25/05 16:20
L (8')	5A25025-10	Soil	01/24/05 10:40	01/25/05 16:20
L (16')	5A25025-11	Soil	01/24/05 10:55	01/25/05 16:20
M (8')	5A25025-12	Soil	01/24/05 11:30	01/25/05 16:20
M (16')	5A25025-13	Soil	01/24/05 12:30	01/25/05 16:20

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
H (12') (5A25025-01) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/30/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*90.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*97.6 %*	*70-130*		"	"	"	"	
I (12') (5A25025-02) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*93.0 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*101 %*	*70-130*		"	"	"	"	
J (4') (5A25025-03) Soil									
Gasoline Range Organics C6-C12	**1450**	50.0	mg/kg dry	5	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	**6950**	50.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**8400**	50.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*21.8 %*	*70-130*		"	"	"	"	*S-06*
Surrogate: 1-Chlorooctadecane		*23.0 %*	*70-130*		"	"	"	"	*S-06*
J (8') (5A25025-04) Soil									
Gasoline Range Organics C6-C12	**2020**	50.0	mg/kg dry	5	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	**5450**	50.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**7470**	50.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*24.6 %*	*70-130*		"	"	"	"	*S-06*
Surrogate: 1-Chlorooctadecane		*25.2 %*	*70-130*		"	"	"	"	*S-06*
J (12') (5A25025-05) Soil									
Gasoline Range Organics C6-C12	**472**	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	**828**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**1300**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*97.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*98.4 %*	*70-130*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J (16') (5A25025-06) Soil									
Gasoline Range Organics C6-C12	**116**	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	**404**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**520**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*87.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*84.6 %*	*70-130*		"	"	"	"	
J (19') (5A25025-07) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*82.0 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*84.6 %*	*70-130*		"	"	"	"	
K (8') (5A25025-08) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	**117**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**117**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*78.2 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*82.0 %*	*70-130*		"	"	"	"	
K (16') (5A25025-09) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	**126**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**126**	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*84.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*89.0 %*	*70-130*		"	"	"	"	
L (8') (5A25025-10) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*85.4 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*89.8 %*	*70-130*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
L (16') (5A25025-11) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*84.6 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*87.8 %*	*70-130*		"	"	"	"	
M (8') (5A25025-12) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*101 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*107 %*	*70-130*		"	"	"	"	
M (16') (5A25025-13) Soil									
Gasoline Range Organics C6-C12	ND	10.0	mg/kg dry	1	EA52802	01/28/05	01/29/05	EPA 8015M	
Diesel Range Organics >C12-C35	ND	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	ND	10.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*78.0 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*80.8 %*	*70-130*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
H (12') (5A25025-01) Soil									
% Moisture	**15.4**		%	1	EA52605	01/26/05	01/27/05	% calculation	
I (12') (5A25025-02) Soil									
% Moisture	**2.5**		%	1	EA52605	01/26/05	01/27/05	% calculation	
J (4') (5A25025-03) Soil									
% Moisture	**14.4**		%	1	EA52605	01/26/05	01/27/05	% calculation	
J (8') (5A25025-04) Soil									
% Moisture	**16.2**		%	1	EA52605	01/26/05	01/27/05	% calculation	
J (12') (5A25025-05) Soil									
% Moisture	**19.3**		%	1	EA52605	01/26/05	01/27/05	% calculation	
J (16') (5A25025-06) Soil									
% Moisture	**14.7**		%	1	EA52605	01/26/05	01/27/05	% calculation	
J (19') (5A25025-07) Soil									
% Moisture	**3.2**		%	1	EA52605	01/26/05	01/27/05	% calculation	
K (8') (5A25025-08) Soil									
% Moisture	**9.9**		%	1	EA52605	01/26/05	01/27/05	% calculation	
K (16') (5A25025-09) Soil									
% Moisture	**7.0**		%	1	EA52605	01/26/05	01/27/05	% calculation	
L (8') (5A25025-10) Soil									
% Moisture	**14.9**		%	1	EA52605	01/26/05	01/27/05	% calculation	
L (16') (5A25025-11) Soil									
% Moisture	**12.7**		%	1	EA52605	01/26/05	01/27/05	% calculation	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
M (8') (5A25025-12) Soil									
% Moisture	**15.4**		%	1	EA52605	01/26/05	01/27/05	% calculation	
M (16') (5A25025-13) Soil									
% Moisture	**9.5**		%	1	EA52605	01/26/05	01/27/05	% calculation	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

SPLP Volatile Organic Compounds by EPA Method 1312/8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Extracted	Prepared	Analyzed	Method	Notes
H (12') (5A25025-01) Soil										
Benzene	ND	1.00	ug/l	1	EB50401	01/31/05 SPLP	02/01/05	02/01/05	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	"	
Ethylbenzene	**J [0.680]**	1.00	"	"	"	"	"	"	"	J
Xylene (p/m)	**1.06**	1.00	"	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	"	
Naphthalene	**1.05**	1.00	"	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*97.6 %*		*70-139*	"	"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*87.0 %*		*52-149*	"	"	"	"	"	
Surrogate: Toluene-d8		*97.2 %*		*76-125*	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*		*66-145*	"	"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J (4') (5A25025-03) Soil									
Benzene	ND	25.0	ug/kg dry	25	EA53105	01/28/05	01/31/05	EPA 8260B	
Toluene	**J [14.8]**	25.0	"	"	"	"	"	"	J
Ethylbenzene	**375**	25.0	"	"	"	"	"	"	
Xylene (p/m)	**131**	25.0	"	"	"	"	"	"	
Xylene (o)	**1110**	25.0	"	"	"	"	"	"	
Naphthalene	**42.3**	25.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*90.4 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*80.4 %*	*52-149*		"	"	"	"	
Surrogate: Toluene-d8		*92.6 %*	*76-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*	*66-145*		"	"	"	"	
J (8') (5A25025-04) Soil									
Benzene	**651**	100	ug/kg dry	100	EA53105	01/28/05	01/28/05	EPA 8260B	
Toluene	**2510**	100	"	"	"	"	"	"	
Ethylbenzene	**9850**	100	"	"	"	"	"	"	
Xylene (p/m)	**12500**	100	"	"	"	"	"	"	
Xylene (o)	**4670**	100	"	"	"	"	"	"	
Naphthalene	**2800**	100	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*100 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*92.8 %*	*52-149*		"	"	"	"	
Surrogate: Toluene-d8		*96.6 %*	*76-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.2 %*	*66-145*		"	"	"	"	
J (12') (5A25025-05) Soil									
Benzene	**669**	100	ug/kg dry	100	EA53105	01/28/05	01/28/05	EPA 8260B	
Toluene	**J [73.6]**	100	"	"	"	"	"	"	J
Ethylbenzene	**9790**	100	"	"	"	"	"	"	
Xylene (p/m)	**11300**	100	"	"	"	"	"	"	
Xylene (o)	**1820**	100	"	"	"	"	"	"	
Naphthalene	**3100**	100	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*100 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*95.2 %*	*52-149*		"	"	"	"	
Surrogate: Toluene-d8		*97.8 %*	*76-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93.8 %*	*66-145*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
J (16') (5A25025-06) Soil									
Benzene	ND	25.0	ug/kg dry	25	EA53105	01/28/05	01/28/05	EPA 8260B	
Toluene	**29.7**	25.0	"	"	"	"	"	"	
Ethylbenzene	**737**	25.0	"	"	"	"	"	"	
Xylene (p/m)	**807**	25.0	"	"	"	"	"	"	
Xylene (o)	**87.1**	25.0	"	"	"	"	"	"	
Naphthalene	**246**	25.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*98.2 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*91.2 %*	*52-149*		"	"	"	"	
Surrogate: Toluene-d8		*96.0 %*	*76-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*66-145*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA52802 - Solvent Extraction (GC)										
Blank (EA52802-BLK1)				Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*39.2*		*mg/kg*	*50.0*		*78.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.4*		*"*	*50.0*		*72.8*	*70-130*			
Blank (EA52802-BLK2)				Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	ND	10.0	mg/kg wet							
Diesel Range Organics >C12-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
Surrogate: 1-Chlorooctane	*35.8*		*mg/kg*	*50.0*		*71.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*39.7*		*"*	*50.0*		*79.4*	*70-130*			
LCS (EA52802-BS1)				Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	433	10.0	mg/kg wet	500		86.6	75-125			
Diesel Range Organics >C12-C35	481	10.0	"	500		96.2	75-125			
Total Hydrocarbon C6-C35	914	10.0	"	1000		91.4	75-125			
Surrogate: 1-Chlorooctane	*37.4*		*mg/kg*	*50.0*		*74.8*	*70-130*			
Surrogate: 1-Chlorooctadecane	*37.1*		*"*	*50.0*		*74.2*	*70-130*			
LCS (EA52802-BS2)				Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	450	10.0	mg/kg wet	500		90.0	75-125			
Diesel Range Organics >C12-C35	458	10.0	"	500		91.6	75-125			
Total Hydrocarbon C6-C35	908	10.0	"	1000		90.8	75-125			
Surrogate: 1-Chlorooctane	*38.2*		*mg/kg*	*50.0*		*76.4*	*70-130*			
Surrogate: 1-Chlorooctadecane	*36.4*		*"*	*50.0*		*72.8*	*70-130*			
Calibration Check (EA52802-CCV1)				Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	445		mg/kg	500		89.0	80-120			
Diesel Range Organics >C12-C35	541		"	500		108	80-120			
Total Hydrocarbon C6-C35	986		"	1000		98.6	80-120			
Surrogate: 1-Chlorooctane	*50.9*		*"*	*50.0*		*102*	*70-130*			
Surrogate: 1-Chlorooctadecane	*46.5*		*"*	*50.0*		*93.0*	*70-130*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA52802 - Solvent Extraction (GC)										
Calibration Check (EA52802-CCV2)				Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	471		mg/kg	500		94.2	80-120			
Diesel Range Organics >C12-C35	520		"	500		104	80-120			
Total Hydrocarbon C6-C35	991		"	1000		99.1	80-120			
Surrogate: 1-Chlorooctane	*43.8*		*"*	*50.0*		*87.6*	*70-130*			
Surrogate: 1-Chlorooctadecane	*47.7*		*"*	*50.0*		*95.4*	*70-130*			
Matrix Spike (EA52802-MS1)	**Source: 5A25025-01**			Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	551	10.0	mg/kg dry	591	ND	93.2	75-125			
Diesel Range Organics >C12-C35	593	10.0	"	591	ND	100	75-125			
Total Hydrocarbon C6-C35	1140	10.0	"	1180	ND	96.6	75-125			
Surrogate: 1-Chlorooctane	*46.6*		*mg/kg*	*50.0*		*93.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*49.5*		*"*	*50.0*		*99.0*	*70-130*			
Matrix Spike (EA52802-MS2)	**Source: 5A26005-02**			Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	497	10.0	mg/kg dry	544	ND	91.4	75-125			
Diesel Range Organics >C12-C35	575	10.0	"	544	ND	106	75-125			
Total Hydrocarbon C6-C35	1070	10.0	"	1090	ND	98.2	75-125			
rrogate: 1-Chlorooctane	*48.5*		*mg/kg*	*50.0*		*97.0*	*70-130*			
Surrogate: 1-Chlorooctadecane	*53.6*		*"*	*50.0*		*107*	*70-130*			
Matrix Spike Dup (EA52802-MSD1)	**Source: 5A25025-01**			Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	533	10.0	mg/kg dry	591	ND	90.2	75-125	3.32	20	
Diesel Range Organics >C12-C35	624	10.0	"	591	ND	106	75-125	5.09	20	
Total Hydrocarbon C6-C35	1160	10.0	"	1180	ND	98.3	75-125	1.74	20	
Surrogate: 1-Chlorooctane	*52.6*		*mg/kg*	*50.0*		*105*	*70-130*			
Surrogate: 1-Chlorooctadecane	*50.2*		*"*	*50.0*		*100*	*70-130*			
Matrix Spike Dup (EA52802-MSD2)	**Source: 5A26005-02**			Prepared: 01/28/05 Analyzed: 01/29/05						
Gasoline Range Organics C6-C12	493	10.0	mg/kg dry	544	ND	90.6	75-125	0.808	20	
Diesel Range Organics >C12-C35	570	10.0	"	544	ND	105	75-125	0.873	20	
Total Hydrocarbon C6-C35	1060	10.0	"	1090	ND	97.2	75-125	0.939	20	
Surrogate: 1-Chlorooctane	*46.1*		*mg/kg*	*50.0*		*92.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*49.4*		*"*	*50.0*		*98.8*	*70-130*			

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/07/05 10:12

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA52605 - General Preparation (Prep)										
Blank (EA52605-BLK1)				Prepared: 01/26/05 Analyzed: 01/27/05						
% Moisture	0.004		%							
Duplicate (EA52605-DUP1)		**Source: 5A25021-01**		Prepared: 01/26/05 Analyzed: 01/27/05						
% Moisture	1.8		%		1.6			11.8	20	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

SPLP Volatile Organic Compounds by EPA Method 1312/8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB50401 - EPA 1312/ZHE										
Blank (EB50401-BLK1)				Prepared & Analyzed: 02/01/05						
Benzene	ND	1.00	ug/l							
Toluene	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
Xylene (p/m)	ND	1.00	"							
Xylene (o)	ND	1.00	"							
Naphthalene	0.740	1.00	"							J
Surrogate: Dibromofluoromethane	*48.8*		"	*50.0*		*97.6*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*41.3*		"	*50.0*		*82.6*	*52-149*			
Surrogate: Toluene-d8	*48.6*		"	*50.0*		*97.2*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*51.8*		"	*50.0*		*104*	*66-145*			
LCS (EB50401-BS1)				Prepared & Analyzed: 02/01/05						
Benzene	56.5		ug/l	50.0		113	70-130			
Toluene	56.4		"	50.0		113	70-130			
Ethylbenzene	51.9		"	50.0		104	70-130			
Xylene (p/m)	90.4		"	100		90.4	70-130			
Xylene (o)	57.2		"	50.0		114	70-130			
Naphthalene	57.0		"	50.0		114	70-130			
Surrogate: Dibromofluoromethane	*48.6*		"	*50.0*		*97.2*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*48.8*		"	*50.0*		*97.6*	*52-149*			
Surrogate: Toluene-d8	*49.8*		"	*50.0*		*99.6*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*51.6*		"	*50.0*		*103*	*66-145*			
Calibration Check (EB50401-CCV1)				Prepared & Analyzed: 02/01/05						
Toluene	55.5		ug/l	50.0		111	70-130			
Ethylbenzene	51.3		"	50.0		103	70-130			
Surrogate: Dibromofluoromethane	*49.3*		"	*50.0*		*98.6*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*45.5*		"	*50.0*		*91.0*	*52-149*			
Surrogate: Toluene-d8	*49.7*		"	*50.0*		*99.4*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*49.2*		"	*50.0*		*98.4*	*66-145*			

SPLP Volatile Organic Compounds by EPA Method 1312/8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB50401 - EPA 1312/ZHE										
Matrix Spike (EB50401-MS1)	**Source: 5A25025-01**			Prepared: 02/01/05 Analyzed: 02/02/05						
Benzene	56.5		ug/l	50.0	ND	113	70-130			
Toluene	57.6		"	50.0	ND	115	70-130			
Ethylbenzene	54.3		"	50.0	0.680	107	70-130			
Xylene (p/m)	98.5		"	100	1.06	97.4	70-130			
Xylene (o)	58.0		"	50.0	ND	116	70-130			
Naphthalene	53.8		"	50.0	1.05	106	70-130			
Surrogate: Dibromofluoromethane	*49.3*		"	*50.0*		*98.6*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*50.5*		"	*50.0*		*101*	*52-149*			
Surrogate: Toluene-d8	*49.3*		"	*50.0*		*98.6*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*50.6*		"	*50.0*		*101*	*66-145*			
Matrix Spike Dup (EB50401-MSD1)	**Source: 5A25025-01**			Prepared: 02/01/05 Analyzed: 02/02/05						
Benzene	55.7		ug/l	50.0	ND	111	70-130	1.79	20	
Toluene	56.3		"	50.0	ND	113	70-130	1.75	20	
Ethylbenzene	54.1		"	50.0	0.680	107	70-130	0.00	20	
Xylene (p/m)	96.8		"	100	1.06	95.7	70-130	1.76	20	
Xylene (o)	57.8		"	50.0	ND	116	70-130	0.00	20	
Naphthalene	56.1		"	50.0	1.05	110	70-130	3.70	20	
Surrogate: Dibromofluoromethane	*47.7*		"	*50.0*		*95.4*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*48.6*		"	*50.0*		*97.2*	*52-149*			
Surrogate: Toluene-d8	*49.7*		"	*50.0*		*99.4*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*51.6*		"	*50.0*		*103*	*66-145*			

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA53105 - EPA 5030C (GCMS)										
Blank (EA53105-BLK1)				Prepared & Analyzed: 01/28/05						
Benzene	ND	25.0	ug/kg wet							
Toluene	ND	25.0	"							
Ethylbenzene	ND	25.0	"							
Xylene (p/m)	ND	25.0	"							
Xylene (o)	ND	25.0	"							
Naphthalene	ND	25.0	"							
Surrogate: Dibromofluoromethane	*45.1*		*ug/l*	*50.0*		*90.2*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*41.2*		*"*	*50.0*		*82.4*	*52-149*			
Surrogate: Toluene-d8	*48.1*		*"*	*50.0*		*96.2*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*47.1*		*"*	*50.0*		*94.2*	*66-145*			
LCS (EA53105-BS1)				Prepared & Analyzed: 01/28/05						
Benzene	52.5		ug/l	50.0		105	70-130			
Toluene	55.2		"	50.0		110	70-130			
Ethylbenzene	54.2		"	50.0		108	70-130			
Xylene (p/m)	99.2		"	100		99.2	70-130			
Xylene (o)	59.4		"	50.0		119	70-130			
Naphthalene	49.6		"	50.0		99.2	70-130			
Surrogate: Dibromofluoromethane	*45.2*		*"*	*50.0*		*90.4*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*46.2*		*"*	*50.0*		*92.4*	*52-149*			
Surrogate: Toluene-d8	*49.5*		*"*	*50.0*		*99.0*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*48.7*		*"*	*50.0*		*97.4*	*66-145*			
Calibration Check (EA53105-CCV1)				Prepared & Analyzed: 01/28/05						
Benzene	54.4		ug/l	50.0		109	70-130			
Toluene	55.4		"	50.0		111	70-130			
Ethylbenzene	53.4		"	50.0		107	70-130			
Xylene (p/m)	98.0		"	100		98.0	70-130			
Xylene (o)	57.3		"	50.0		115	70-130			
Naphthalene	49.5		"	50.0		99.0	70-130			
Surrogate: Dibromofluoromethane	*46.7*		*"*	*50.0*		*93.4*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*48.7*		*"*	*50.0*		*97.4*	*52-149*			
Surrogate: Toluene-d8	*49.2*		*"*	*50.0*		*98.4*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*50.5*		*"*	*50.0*		*101*	*66-145*			

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EA53105 - EPA 5030C (GCMS)										
Matrix Spike (EA53105-MS1)	**Source: 5A27003-03**			Prepared & Analyzed: 01/28/05						
Benzene	1390		ug/l	1250	ND	111	70-130			
Toluene	1430		"	1250	ND	114	70-130			
Ethylbenzene	1390		"	1250	ND	111	70-130			
Xylene (p/m)	2470		"	2500	30.7	97.6	70-130			
Xylene (o)	1480		"	1250	15.3	117	70-130			
Naphthalene	1210		"	1250	47.7	93.0	70-130			
Surrogate: Dibromofluoromethane	*45.4*		"	*50.0*		*90.8*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*46.3*		"	*50.0*		*92.6*	*52-149*			
Surrogate: Toluene-d8	*49.6*		"	*50.0*		*99.2*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*49.8*		"	*50.0*		*99.6*	*66-145*			
Matrix Spike Dup (EA53105-MSD1)	**Source: 5A27003-03**			Prepared & Analyzed: 01/28/05						
Benzene	1370		ug/l	1250	ND	110	70-130	0.905	20	
Toluene	1410		"	1250	ND	113	70-130	0.881	20	
Ethylbenzene	1360		"	1250	ND	109	70-130	1.82	20	
Xylene (p/m)	2460		"	2500	30.7	97.2	70-130	0.411	20	
Xylene (o)	1460		"	1250	15.3	116	70-130	0.858	20	
Naphthalene	1240		"	1250	47.7	95.4	70-130	2.55	20	
Surrogate: Dibromofluoromethane	*47.9*		"	*50.0*		*95.8*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*47.9*		"	*50.0*		*95.8*	*52-149*			
Surrogate: Toluene-d8	*49.2*		"	*50.0*		*98.4*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*50.2*		"	*50.0*		*100*	*66-145*			

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 2/7/2005

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name Rice Operating Company
Company Address: 122 West Taylor
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: 505-393-9174 **Fax No:** 505-397-1471
Sampler Signature: [signature]

Project Name: EME System P-6 Line Leak Site
Project #:
Project Location: T20S, R37E, Sec 6, Unit Letter P
COC #: V117P6-0105-1

Page 1 of 2 (as per Kristin)

5A25025

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For (TCLP: / TOTAL:): TPH: 418.1 8015M 1005 100	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEXN 8021B/5030 or BTEXN 8260	RCI	N.O.R.M.	Total Dissolved Solids	SPLP 1312 BTEX			RUSH TAT (Pre-Schedule)	Standard TAT
-01	H (12')	01-21-05	0945	1	✓									✓		✓															✓
-02	I (12')	01-21-05	1015	1	✓									✓		✓															✓
-03	J (4')	01-21-05	1105	1	✓									✓		✓							✓								✓
-04	J (8')	01-21-05	1110	1	✓									✓		✓							✓								✓
-05	J (12')	01-21-05	1115	1	✓									✓		✓							✓				✓				✓
-06	J (16')	01-21-05	1130	1	✓									✓		✓							✓								✓
-07	J (19')	01-24-05	0900	1	✓									✓		✓															✓
-08	K (8')	01-24-05	1005	1	✓									✓		✓															✓
-09	K (16')	01-24-05	1015	1	✓									✓		✓															✓
-10	L (8')	01-24-05	1040	1	✓									✓		✓															✓

Special Instructions: Please email results to both gil@trident-environmental.com and to enviro@leaco.net
Analyze sample with highest TPH using SPLP 1312 (J (12') most likely based on 810)

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	1/25/05	4:20p			
Relinquished by:	**Date**	**Time**	**Received by ELOT:**	**Date**	**Time**
			[signature]	1-25-05	1620

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 2.0°C
Laboratory Comments: 4oz glass on ice

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name Rice Operating Company
Company Address: 122 West Taylor
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: 505-393-9174 **Fax No:** 505-397-1471
Sampler Signature:

Project Name: EME System P-6 Line Leak Site
Project #:
Project Location: T20S, R37E, Sec 6, Unit Letter P
COC #: V117P6-0105-2

Page 2 of 2

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TPH: 418.1 (8015B) 1005 100	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	TOTAL: Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEXN (8021B/5030 or BTEXN 82	RCI	N.O.R.M.	Total Dissolved Solids	SPLP 1312			RUSH TAT (Pre-Sched)	Standard TAT
5h25025																															
-11	L (16')	01-24-05	1055	1	✓									✓		✓															✓
-12	M (8')	01-24-05	1130	1	✓									✓		✓															✓
-13	M (16')	01-24-05	1230	1	✓									✓		✓															✓

Special Instructions: Please email results to both gil@trident-environmental.com and to enviro@leaco.net

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments: 2.0°C

4oz glass on ice

Relinquished by:	Date	Time	Received by:	Date	Time
	1/25/05	4:20p			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurry	1-25-05	1620

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Rice Operating

Date/Time: 1/25/05 16:58

Order #: 5A25025

Initials: JLH

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	2.0° C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	Yes	(No)	No labels - info written on lid
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	(Yes)	No	
Samples properly preserved?	(Yes)	No	
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	(Yes)	No	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Kristin Date/Time: 1-27-05 1435 Contacted by: AT

Regarding:

8260 BTEX-N are OK to run Rather than 8021B AT

Corrective Action Taken:

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System P-6 Line Leak Site

Project Number: V117P6

Location: T20S, R36E, Sec 6, Unit Letter P

Lab Order Number: 5E09006

Report Date: 05/19/05

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
P6-1	5E09006-01	Water	05/03/05 13:30	05/06/05 16:40
P6-2	5E09006-02	Water	05/03/05 14:30	05/06/05 16:40

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
P6-1 (5E09006-01) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/11/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*104 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*80-120*		"	"	"	"	
P6-2 (5E09006-02) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/11/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*102 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*	*80-120*		"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
P6-1 (5E09006-01) Water									
Total Alkalinity	**220**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**7090**	50.0	"	100	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**19300**	20.0	"	4	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**1050**	50.0	"	100	EE51001	05/09/05	05/09/05	EPA 300.0	
P6-2 (5E09006-02) Water									
Total Alkalinity	**220**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**6050**	50.0	"	100	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**14100**	20.0	"	4	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**885**	50.0	"	100	EE51001	05/09/05	05/09/05	EPA 300.0	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
P6-1 (5E09006-01) Water									
Calcium	**1280**	10.0	mg/L	1000	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**546**	0.100	"	100	"	"	"	"	
Potassium	**59.3**	0.500	"	10	"	"	"	"	
Sodium	**3720**	10.0	"	1000	"	"	"	"	
P6-2 (5E09006-02) Water									
Calcium	**670**	1.00	mg/L	100	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**275**	0.100	"	"	"	"	"	"	
Potassium	**49.9**	0.500	"	10	"	"	"	"	
Sodium	**2470**	10.0	"	1000	"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51006 - EPA 5030C (GC)										
Blank (EE51006-BLK1)				Prepared & Analyzed: 05/10/05						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*23.1*		*ug/l*	*20.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*18.8*		*"*	*20.0*		*94.0*	*80-120*			
LCS (EE51006-BS1)				Prepared & Analyzed: 05/10/05						
Benzene	94.7		ug/l	100		94.7	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	110		"	100		110	80-120			
Xylene (p/m)	226		"	200		113	80-120			
Xylene (o)	109		"	100		109	80-120			
Surrogate: a,a,a-Trifluorotoluene	*20.2*		*"*	*20.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*22.2*		*"*	*20.0*		*111*	*80-120*			
LCS Dup (EE51006-BSD1)				Prepared & Analyzed: 05/10/05						
Benzene	105		ug/l	100		105	80-120	10.3	20	
Toluene	110		"	100		110	80-120	2.76	20	
Ethylbenzene	108		"	100		108	80-120	1.83	20	
Xylene (p/m)	212		"	200		106	80-120	6.39	20	
Xylene (o)	98.7		"	100		98.7	80-120	9.92	20	
Surrogate: a,a,a-Trifluorotoluene	*19.5*		*"*	*20.0*		*97.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*20.2*		*"*	*20.0*		*101*	*80-120*			
Calibration Check (EE51006-CCV1)				Prepared: 05/10/05 Analyzed: 05/11/05						
Benzene	104		ug/l	100		104	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	106		"	100		106	80-120			
Xylene (p/m)	214		"	200		107	80-120			
Xylene (o)	102		"	100		102	80-120			
Surrogate: a,a,a-Trifluorotoluene	*22.1*		*"*	*20.0*		*110*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.3*		*"*	*20.0*		*116*	*80-120*			

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51006 - EPA 5030C (GC)										
Matrix Spike (EE51006-MS1)	**Source: 5E06003-16**			Prepared: 05/10/05 Analyzed: 05/11/05						
Benzene	115		ug/l	100	0.658	114	80-120			
Toluene	120		"	100	1.02	119	80-120			
Ethylbenzene	115		"	100	1.03	114	80-120			
Xylene (p/m)	242		"	200	2.17	120	80-120			
Xylene (o)	113		"	100	1.99	111	80-120			
Surrogate: a,a,a-Trifluorotoluene	*26.6*		"	*20.0*		*133*	*80-120*			*S-04*
Surrogate: 4-Bromofluorobenzene	*26.2*		"	*20.0*		*131*	*80-120*			*S-04*

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51001 - General Preparation (WetChem)										
Blank (EE51001-BLK1)				Prepared & Analyzed: 05/09/05						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EE51001-BS1)				Prepared & Analyzed: 05/09/05						
Chloride	10.5		mg/L	10.0		105	80-120			
Sulfate	10.9		"	10.0		109	80-120			
Calibration Check (EE51001-CCV1)				Prepared & Analyzed: 05/09/05						
Sulfate	11.2		mg/L	10.0		112	80-120			
Chloride	11.0		"	10.0		110	80-120			
Duplicate (EE51001-DUP1)	**Source: 5E09002-01**			Prepared & Analyzed: 05/09/05						
Sulfate	263	10.0	mg/L		264			0.380	20	
Chloride	178	10.0	"		179			0.560	20	
Batch EE51104 - General Preparation (WetChem)										
Blank (EE51104-BLK1)				Prepared & Analyzed: 05/09/05						
Total Alkalinity	ND	2.00	mg/L							
Duplicate (EE51104-DUP1)	**Source: 5E09002-01**			Prepared & Analyzed: 05/09/05						
Total Alkalinity	191	2.00	mg/L		190			0.525	20	
Reference (EE51104-SRM1)				Prepared & Analyzed: 05/09/05						
Bicarbonate Alkalinity	231		mg/L	200		116	80-120			

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51105 - Filtration Preparation										
Blank (EE51105-BLK1)				Prepared: 05/09/05 Analyzed: 05/10/05						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE51105-DUP1)	**Source: 5E09002-01**			Prepared: 05/09/05 Analyzed: 05/10/05						
Total Dissolved Solids	1030	5.00	mg/L		1060			2.87	20	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System P-6 Line Leak Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117P6	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:54

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE50905 - 6010B/No Digestion										
Blank (EE50905-BLK1)				Prepared & Analyzed: 05/09/05						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EE50905-CCV1)				Prepared & Analyzed: 05/09/05						
Calcium	1.87		mg/L	2.00		93.5	85-115			
Magnesium	2.17		"	2.00		108	85-115			
Potassium	1.77		"	2.00		88.5	85-115			
Sodium	1.71		"	2.00		85.5	85-115			
Duplicate (EE50905-DUP1)	**Source: 5E09002-01**			Prepared & Analyzed: 05/09/05						
Calcium	30.2	0.100	mg/L		32.4			7.03	20	
Magnesium	9.97	0.0100	"		9.90			0.705	20	
Potassium	24.4	0.500	"		24.9			2.03	20	
Sodium	262	0.500	"		293			11.2	20	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 5/19/2005

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

1260 [illegible]st I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: RICE Operating Company
Company Address: 122 West Taylor
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: 505-393-9174
Fax No: 505-397-1471
Sampler Signature:

Project Name: EME System P-6 Line Leak Site
Project #: V117 P6
Project Location: T20S, R36E, Sec 6, Unit Letter P
COC #: V117P6-0505

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
58090																TCLP:															
																TOTAL:															
-01	P6-1	5-2-05	1330	3	✓		✓					✓					✓	✓					✓			✓					✓
-02	P6-2	5-2-05	1430	3	✓		✓					✓					✓	✓					✓			✓					✓

Special Instructions: Please email results to both gil@trident-environmental.com and to enviro@leaco.net

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
	05/05/05	4:40p			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Cassie Reed	5/6/05	4:40

4.0c
1 L plastic
2 VOA

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Rice Operating

Date/Time: 5/16/05 5:00

Order #: 5E09006

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	4.0 C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	~~Not present~~
Custody Seals intact on sample bottles?	Yes	No	~~Not present~~
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Date/Time: Contacted by:

Regarding:

Corrective Action Taken:

* Sample date changed as per attached email fax.

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System M-5 SWD Site

Project Number: V117M5

Location: T20S, R36E, Sec 5, Unit Letter M

Lab Order Number: 5E09007

Report Date: 05/19/05

Rice Operating Co.	Project: EME System M-5 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M5	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
M5-1	5E09007-01	Water	05/03/05 16:10	05/06/05 16:40

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System M-5 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M5	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:52

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
M5-1 (5E09007-01) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/11/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*104 %*		*80-120*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*89.5 %*		*80-120*	"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System M-5 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M5	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:52

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
M5-1 (5E09007-01) Water									
Total Alkalinity	**214**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**6560**	50.0	"	100	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**16500**	20.0	"	4	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**595**	50.0	"	100	EE51001	05/09/05	05/09/05	EPA 300.0	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME System M-5 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M5	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:52

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
M5-1 (5E09007-01) Water									
Calcium	**1460**	10.0	mg/L	1000	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**446**	0.100	"	100	"	"	"	"	
Potassium	**46.9**	0.500	"	10	"	"	"	"	
Sodium	**2560**	10.0	"	1000	"	"	"	"	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51006 - EPA 5030C (GC)										
Blank (EE51006-BLK1)				Prepared & Analyzed: 05/10/05						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*23.1*		*ug/l*	*20.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*18.8*		*"*	*20.0*		*94.0*	*80-120*			
LCS (EE51006-BS1)				Prepared & Analyzed: 05/10/05						
Benzene	94.7		ug/l	100		94.7	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	110		"	100		110	80-120			
Xylene (p/m)	226		"	200		113	80-120			
Xylene (o)	109		"	100		109	80-120			
Surrogate: a,a,a-Trifluorotoluene	*20.2*		*"*	*20.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*22.2*		*"*	*20.0*		*111*	*80-120*			
LCS Dup (EE51006-BSD1)				Prepared & Analyzed: 05/10/05						
Benzene	105		ug/l	100		105	80-120	10.3	20	
Toluene	110		"	100		110	80-120	2.76	20	
Ethylbenzene	108		"	100		108	80-120	1.83	20	
Xylene (p/m)	212		"	200		106	80-120	6.39	20	
Xylene (o)	98.7		"	100		98.7	80-120	9.92	20	
Surrogate: a,a,a-Trifluorotoluene	*19.5*		*"*	*20.0*		*97.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*20.2*		*"*	*20.0*		*101*	*80-120*			
Calibration Check (EE51006-CCV1)				Prepared: 05/10/05 Analyzed: 05/11/05						
Benzene	104		ug/l	100		104	80-120			
Toluene	107		"	100		107	80-120			
Ethylbenzene	106		"	100		106	80-120			
Xylene (p/m)	214		"	200		107	80-120			
Xylene (o)	102		"	100		102	80-120			
Surrogate: a,a,a-Trifluorotoluene	*22.1*		*"*	*20.0*		*110*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.3*		*"*	*20.0*		*116*	*80-120*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51006 - EPA 5030C (GC)										
Matrix Spike (EE51006-MS1)	**Source: 5E06003-16**			Prepared: 05/10/05 Analyzed: 05/11/05						
Benzene	115		ug/l	100	0.658	114	80-120			
Toluene	120		"	100	1.02	119	80-120			
Ethylbenzene	115		"	100	1.03	114	80-120			
Xylene (p/m)	242		"	200	2.17	120	80-120			
Xylene (o)	113		"	100	1.99	111	80-120			
Surrogate: a,a,a-Trifluorotoluene	*26.6*		*"*	*20.0*		*133*	*80-120*			*S-04*
Surrogate: 4-Bromofluorobenzene	*26.2*		*"*	*20.0*		*131*	*80-120*			*S-04*

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51001 - General Preparation (WetChem)										
Blank (EE51001-BLK1)				Prepared & Analyzed: 05/09/05						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EE51001-BS1)				Prepared & Analyzed: 05/09/05						
Chloride	10.5		mg/L	10.0		105	80-120			
Sulfate	10.9		"	10.0		109	80-120			
Calibration Check (EE51001-CCV1)				Prepared & Analyzed: 05/09/05						
Sulfate	11.2		mg/L	10.0		112	80-120			
Chloride	11.0		"	10.0		110	80-120			
Duplicate (EE51001-DUP1)	**Source: 5E09002-01**			Prepared & Analyzed: 05/09/05						
Sulfate	263	10.0	mg/L		264			0.380	20	
Chloride	178	10.0	"		179			0.560	20	
Batch EE51104 - General Preparation (WetChem)										
Blank (EE51104-BLK1)				Prepared & Analyzed: 05/09/05						
Total Alkalinity	ND	2.00	mg/L							
Duplicate (EE51104-DUP1)	**Source: 5E09002-01**			Prepared & Analyzed: 05/09/05						
Total Alkalinity	191	2.00	mg/L		190			0.525	20	
Reference (EE51104-SRM1)				Prepared & Analyzed: 05/09/05						
Bicarbonate Alkalinity	231		mg/L	200		116	80-120			

Rice Operating Co.	Project: EME System M-5 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M5	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/19/05 11:52

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51105 - Filtration Preparation										
Blank (EE51105-BLK1)				Prepared: 05/09/05 Analyzed: 05/10/05						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE51105-DUP1)		**Source: 5E09002-01**		Prepared: 05/09/05 Analyzed: 05/10/05						
Total Dissolved Solids	1030	5.00	mg/L		1060			2.87	20	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE50905 - 6010B/No Digestion										
Blank (EE50905-BLK1)				Prepared & Analyzed: 05/09/05						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EE50905-CCV1)				Prepared & Analyzed: 05/09/05						
Calcium	1.87		mg/L	2.00		93.5	85-115			
Magnesium	2.17		"	2.00		108	85-115			
Potassium	1.77		"	2.00		88.5	85-115			
Sodium	1.71		"	2.00		85.5	85-115			
Duplicate (EE50905-DUP1)	**Source: 5E09002-01**			Prepared & Analyzed: 05/09/05						
Calcium	30.2	0.100	mg/L		32.4			7.03	20	
Magnesium	9.97	0.0100	"		9.90			0.705	20	
Potassium	24.4	0.500	"		24.9			2.03	20	
Sodium	262	0.500	"		293			11.2	20	

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 5/19/2005

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

1260[redacted]st I-20 East
Odess[redacted]Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: RICE Operating Company
Company Address: 122 West Taylor
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: 505-393-9174
Fax No: 505-397-1471
Sampler Signature:

Project Name: EME System M-5 SWD Site
Project #: V117M5
Project Location: T20S, R36E, Sec 5, Unit Letter M
COC #: V117M5-0505

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / TOTAL: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Schedule)	Standard TAT
5E09007		as per attached email (5:3:5)																												
-01	MS-1	5-2-05	1610	3	✓		✓					✓					✓	✓					✓			✓				✓

HCl BTEX only

Special Instructions: Please email results to both gil@trident-environmental.com and to enviro@leaco.net

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments:

1L HDPE upr.
2 VOA
w/ seals & cont.

Relinquished by:	Date	Time	Received by:	Date	Time
	05/05/05	4:40p			
Relinquished by:	Date	Time	Received by ELQI:	Date	Time
			Laura Kelly	5/6/05	4.40

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Rice Operating

Date/Time: 5/6/05 5:00

Order #: SE09007

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	4.0 C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	~~Not present~~
Custody Seals intact on sample bottles?	Yes	No	~~Not present~~
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Date/Time: Contacted by:

Regarding:

Corrective Action Taken:

* Sample date changed as per attached e-mail/fax

QUALITY PROCEDURES

Rice Operating Company

Quality Procedure
Soil Samples for Transportation to a Laboratory

1.0 Purpose

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 If collecting TPH, BTEX, RCRA 8 metals, cation /anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container.

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

5.0 Sampling Procedure

5.1.Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination.

5.2. Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil.

5.3. Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.

5.4. Place the sample directly on ice for transport to the laboratory if required.

5.5. Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

a. Project and sample name.
b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
c. Results of the requested analyses
d. Test Methods employed
e. Quality Control methods and results

Rice Operating Company

QUALITY PROCEDURE
Chloride Titration Using
0.282 Normal Silver Nitrate Solution

1.0 Purpose

This procedure is to be used to determine the concentration of chloride in soil.

2.0 Scope

This procedure is to be used as the standard field measurement for soil chloride concentrations.

3.0 Sample Collection and Preparation

3.1 Collect at least 80 grams of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample for soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag. Care should be taken to insure that no cross-contamination occurs between the soil sample and the collection tools or sample processing equipment.

3.3 The sealed sample bag should be massaged to break up any clods.

4.0 Sample Preparation

4.1 Tare a clean glass vial having a minimum 40 ml capacity. Add at least 10 grams of the soil sample and record the weight.

4.2 Add at least 10 grams of reverse osmosis water to the soil sample and shake for 20 seconds.

4.3 Allow the sample to set for a period of 5 minutes or until the separation of soil and water.

4.4 Carefully pour the free liquid extract from the sample through a paper filter into a clean plastic cup if necessary.

5.0 Titration Procedure

5.1 Using a graduated pipette, remove 10 ml extract and dispense into a clean plastic cup.

5.2 Add 2-3 drops potassium chromate (K_2CrO_4) to mixture.

5.3 If the sample contains any sulfides (hydrogen or iron sulfides are common to oilfield soil samples) add 2-3 drops of hydrogen peroxide (H_2O_2) to mixture.

5.4 Using a 1 ml pipette, carefully add .282 normal silver nitrate (one drop at a time) to the sample while constantly agitating it. Stop adding silver nitrate when the solution begins to change from yellow to red. Be consistent with endpoint recognition.

5.5 Record the ml of silver nitrate used.

6.0 Calculation

To obtain the chloride concentration, insert measured data into the following formula:

$$\frac{.282 \times 35{,}450 \times \text{ml } AgNO_3}{\text{ml water extract}} \times \frac{\text{grams of water in mixture}}{\text{grams of soil in mixture}}$$

Using Step 5.0, determine the chloride concentration of the RO water used to mix with the soil sample. Record this concentration and subtract it from the formula results to find the net chloride in the soil sample.

Record all results on the delineation form.

Rice Operating Company

Quality Procedure

Procedure for Developing Cased Water Monitoring Wells

1.0 Purpose

This procedure outlines the methods to be employed to develop cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Sample Collection and Preparation

3.1 Prior to development, the static water level and height of the water column within the well casing will be measured with the use of an electric D.C. probe or a steel engineer's tape and water sensitive paste.

3.2 All measurements will be recorded within a field log notebook.

3.3 All equipment used to measure the static water level will be decontaminated after each use by means of Liquinox, a phosphate free laboratory detergent, and water to reduce the possibility of cross-contamination. The volume of water in each well casing will be calculated.

4.0 Purging

4.1 Wells will be purged by using a 2" decontaminated submersible pump or dedicated one liter Teflon bailer. Wells should be purged until the pH and conductivity are stabilized and the turbidity has been reduced to the greatest extent possible.

4.2 If a submersible is used the pump will be decontaminated prior to use by scrubbing the outside surface of tubing and wiring with a Liquinox water mixture, pumping a Liquinox-water mixture through the pump, and a final flush with fresh water.

5.0 Water Disposal

5.1 All purge and decontamination water will be temporarily stored within a portable tank to be later disposed of in an appropriate manner.

6.0 Records

6.1 Rice Operating Company will record the amount of water removed from the well during development procedures. The purge volume will be reported to the appropriate regulatory authority when filing the closure report.

Rice Operating Company

Quality Procedure
Sampling of Cased Water-Monitoring Well
Using One-Liter Bailer

1.0 Purpose

This procedure outlines the methods to be employed in obtaining water samples from cased monitoring wells.

2.0 Scope

This procedure shall be used for developed, cased water monitoring wells. It is not to be used for standing water samples such as ponds or streams.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the water. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 The following table shall be used to select the appropriate sampling container, preservative method and holding times for the various elements and compounds to be analyzed.

Compound to be Analyzed	Sample Container Size	Sample Container Description	Cap Requirements	Preservative	Maximum Hold Time
BTEX	40 ml	VOA Container	Teflon Lined	HCl	7 days
TPH	1 liter	clear glass	Teflon Lined	HCl	28 days
PAH	1 liter	amber glass	Teflon Lined	Ice	7 days
Cation/Anion	1 liter	clear glass	Teflon Lined	None	48 Hrs
Metals	1 liter	HD polyethylene	Any Plastic	Ice/HNO_3	28 Days
TDS	300 ml	clear glass	Any Plastic	Ice	7 Days

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the well identification and the individual tests to be performed at that location. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label). Affix the labels to the jars.

5.0 Bailing Procedure

5.1 Identify the well from the sites schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the metal lever and then unscrewing the entire assembly.

5.2 Using a dedicated one liter Teflon bailer, purge a minimum of three well volumes. Place the water in storage container for transport to a ROC disposal facility.

5.3 Take care to insure that the bailing device and string do not become cross-contaminated. A clean pair of rubber gloves should be used when handling either the retrieval string or bailer. The retrieval string should not be allowed to come into contact with the ground.

6.0 Sampling Procedure

6.1 Once the well has been bailed in accordance with 5.2 of this procedure, a sample may be decanted into the appropriate sample collection jar directly from the bailer. The collection jar should be filled to the brim. Once the jar is sealed, turn the jar over to detect any bubbles that may be present. Add additional water to remove all bubbles from the sample container.

6.2 Note the time of collection on the sample jar with a fine Sharpie.

6.3 Place the sample directly on ice for transport to the laboratory. The preceding table shows the maximum hold times between collection and testing for the various analyses.

6.4 Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

7.0 Documentation

7.1 The testing laboratory shall provide the following minimum information:

A. Project and sample name.
B. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
C. Results of the requested analyses
D. Test Methods employed
E. Quality Control methods and results

Calculation for Determining the Minimum Bailing Volume for Monitor Wells
Formula $V = (\pi r^2 h)$
2" well [V/231=gal] X 3 = Purge Volume

V=Volume
π=pi
r=inside radius of the well bore
h=maximum height of well bore in water table

Example:

π	r^2	h(in)	V(cu.in)	V(gal)	X 3 Volumes	Actual
3.1416	1	180	565.488	2.448	7.34 gal	>10 gal

Rice Operating Company

Quality Procedure
Composite Sampling of Excavation Sidewalls and Bottoms For TPH and Chloride Analysis

1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for TPH and Chloride analysis.

2.0 Scope

This procedure is to be used in conjunction with ***Quality Procedure – 02: Soil Samples for Transportation to a Laboratory*** and will be inserted at subparagraph 5.2 of Section 5.0: Sampling Procedure.

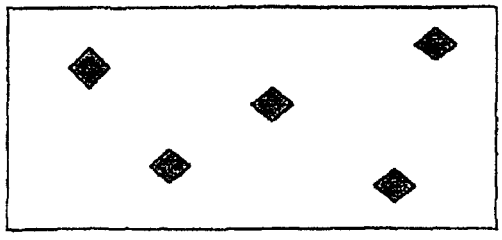
3.0 Sampling Procedure

Follow ***Quality Procedure – 02: Soil Samples for Transportation to a Laboratory*** for all Sections and subparagraphs until subparagraph 5.2 of Section 5.0: Sampling Procedure. Instead of 5.2 instructions, perform the composite sample collection procedure as follows:

3.1 Go to the excavation with a clean large blending bowl or new plastic baggie. If not analyzing for ions or metals, use a trowel to obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point, bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)

3.2 Sidewall samples

3.2.1 On each sidewall, procure a 5oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



3.2.2 Thoroughly blend these five samples in the blending bowl.
3.2.3 Pour blended sample into sifter and sift into labeled baggie.
3.2.4 Repeat steps 3.2.1 through 3.2.4 for each remaining sidewall, using a clean blending bowl for each sidewall.
3.2.5 From each labeled baggie, procure a 5 oz portion and pour into a baggie labeled "Sidewall Composite". Blend this soil mixture completely.
3.2.6 Obtain proper laboratory sample container for "Sidewall Composite" and continue with subparagraph 5.3 of QP – 02.

3.3 Bottom Sample
3.3.1 From bottom of excavation, procure a 5oz sample from each of five distinct points with distinct points resembling the "W" pattern as illustrated above.
3.3.2 Thoroughly blend these five samples in a clean blending bowl.
3.2.3 Pour blended sample into sifter and sift into baggie labeled "Bottom Composite".
3.2.6 Obtain proper laboratory sample container for "Bottom Composite" and continue with subparagraph 5.3 of QP – 02.

Rice Operating Company

QUALITY PROCEDURE
Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77 ^{0}F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with **QP-02 and QP-06. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.**

4.0 Clean-up

After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. **IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.**

Rice Operating Company

Quality Procedure
Composite Sampling of Excavation Sidewalls and Bottoms For BTEX Analysis

1.0 Purpose

This procedure outlines the methods to be employed when obtaining final composite soil samples for BTEX analysis.

2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory for BTEX analysis. This procedure is to be used only when the PID field-test results for OVM exceeds 100 ppm.

3.0 Preliminary

3.1 Obtain sterile, clear, 2 oz. glass containers with Teflon lid from a laboratory supply company or the testing laboratory designated to conduct analyses of the soil.

3.2 The container shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

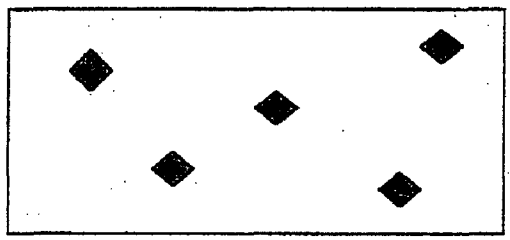
5.0 Sampling Procedure

5.1. Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination.

5.2. If safe and within OSHA regulations, go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil. If the excavation is deeper than 6' BGS, do not enter the pit, but use a backhoe to assist in procurement of the sample. (If a backhoe is used, the backhoe will obtain an amount of soil from each composite point, bring the purchase to the surface staging area where a sample-portion of soil will be extracted from the backhoe purchase. The remainder of the backhoe purchase will be staged on the surface with other staged soils.)

5.3. Sidewall Samples

5.3.1. On each sidewall, procure a 2oz sample from each of five distinct points on the sidewall with distinct points resembling the "W" pattern:



5.4. Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label. Repeat for each sampling point.

5.5. Place the samples directly on ice for transport to the laboratory if required.

5.6. Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

a. Project and sample name.
b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
c. Results of the requested analyses
d. Test Methods employed
e. Quality Control methods and results