1R - 336

WORKPLANS

DATE:

2-27-07

CERTIFIED MAIL
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TRIDENT ENVIRONMENTAL

February 27, 2007

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

RECEIVED
MAR - 1 2007
Environmental Bureau
Oil Conservation Division

RE: **CORRECTIVE ACTION PLAN**
EME I-1 SWD OFFSITE ENCROACHMENT SITE
NMOCD CASE NO.: 1R0~~464~~ 336
T20S-R37E-SECTION 1, UNIT LETTER I
LEA COUNTY, NEW MEXICO

Mr. Hansen:

RICE Operating Company (ROC) retained Trident Environmental to address potential environmental concerns at the above-referenced site. An Investigation and Characterization Plan (ICP), submitted to the OCD Hobbs District office on February 25, 2005, is attached to this Corrective Action Plan (CAP) with the NMOCD approval. This Corrective Action Plan (CAP) incorporates the findings from the Investigation & Characterization Plan (ICP) and proposes recommendations for corrective action.

Site Description

The I-1 SWD Offsite Encroachment site (NMOCD Case No. 1R0464) is operated by ROC and is located on State Land in township 20 south, range 36 east, section 1, unit letter I approximately 1 mile south of the intersection of County Road 322 and County Road 41 in Lea County, NM as shown on the attached topographic map (Figure 1) and aerial photo map (Figure 2). The I-1 SWD facility is used to collect produced water from oil and gas leases within the Eunice-Monument-Eumont (EME) system for injection into a non-oil producing formation. ROC has a Salt Water Disposal Easement (SWD-062) with the New Mexico State Land Office at this location. ROC is the service provider (agent) 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.

The primary structures at the site consist of two 500 barrel sub-grade fiberglass tanks, a junction box, an underground 10-inch polyethylene pipeline, and one saltwater disposal well. Several other oil and gas production facilities are located within and around the I-1 SWD facility including the following:

- A crude oil pipeline operated by Plains Petroleum is located approximately 700 feet north of the SWD well where a groundwater monitoring site (Red Byrd #1) has been undergoing investigation and remediation since February 2000 (NMOCD Case # 1RP-85) with a network of approximately 15 groundwater monitoring wells (Figure 2).
- Two steel gas lines owned by Sid Richardson traverses along the west and north portions of the I-1 SWD site (~260 ft northwest of site).
- A southwest-northeast trending gas pipeline marked as being owned by Texaco is located about 350 feet northwest of the SWD facility.
- The El Paso Natural Gas (EPNG) Monument Booster Station is located approximately ½ mile northwest of the I-1 SWD site (Figure 2).
- The Monument Gas Plant operated by Targa Midstream Services, L.P. (Targa) is located approximately ¾ mile northwest of the I-1 SWD site. According to the Ground Water Discharge Plan (GW-025) this facility has two brine ponds and a network of 18 groundwater monitoring wells associated with it (Figure 2).
- An abandoned hydrochloric acid manufacturing plant (DLD Resources, formerly Climax Chemical Company) is located about one-mile northwest of the I-1 SWD site. There are several groundwater monitoring wells associated with this facility however no active regulatory directives towards further investigation and remediation of this facility are known to be in progress (Figure 2).
- A high concentration of oil & gas wells (active and plugged) and associated structures (tank batteries, pits, pipelines, etc.) are located in this area of Monument. Many of these are obviously visible in Figure 2 (aerial photograph).

Site History

The upgrade of the EME I-1 SWD facility was initiated in February 2002 in accordance with the revised Generic Closure Plan for Emergency Overflow Pits and Below-Grade Redwood Tanks (last revision February 23, 2000). Excavation activities began in October 2002. Because of the existence of an active 10-inch diameter asbestos-concrete saltwater pipeline and an abandoned Conoco 4-inch steel pipeline excavation work did not extend further southwest due to safety concerns and suspected encroachment from an offsite source in that area not associated with the redwood tanks. ROC submitted the EME SWD I-1 Tank and Pit Closure (Partial) Report on November 5, 2004. This report was designated as "partial" because it addressed just the tank and pit closure area and not other suspected offsite encroachment sources. An ICP for assessment of the other suspected offsite encroachment sources was submitted to the NMOCD on February 25, 2005, and approved on January 10, 2006. Field work for the ICP was initiated on February 6, 2006, and resulted in the completion of four soil borings (B-1 through B-4) and three monitoring wells (MW-1 through MW-3). One of the soil borings (B-1) was converted into a 4" diameter passive vapor extraction well.

Regional and Local Geology

According to published information (Nicholson and Clebsch, 1961, Barnes, 1976, and Anderson, Jones, and Green, 1997) the site is underlain by Quaternary eolian and piedmont deposits composed of sand, silt, and gravel deposited by slopewash, and talus from the Ogallala Formation. The eolian and piedmont deposits are often calichified (indurated with cemented calcium carbonate) with caliche layers from 1 to 20 feet thick. The lithology of the eolian and piedmont deposits is very similar to that of the Ogallala since the Ogallala is the source of these re-deposited colluvial sediments. The nearest outcropping of the Ogallala Formation occurs approximately four miles north of the I-1 SWD facility 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). Figure 3 shows the surface geology of the site.

The subsurface soils at the site are dominated by fine to medium-grained dune sand in the upper few feet. This layer is underlain by a silty fine sand, and then caliche with some fine-grained sand in matrix to a depth of 10 to 15 ft bgs. Below this layer the caliche content generally lessens and sand grain size increases with depth. More detailed descriptions of the subsurface lithology are provided in boring and monitoring well logs (Appendix A).

Regional and Local Hydrogeology

Potable ground water 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.

Nicholsen and Clebsch (1961) found that the regional gradient of the Ogallala and interconnected colluvial aquifer in the site area generally flows toward the southeast and the hydraulic gradient varies from approximately 0.001 to 0.01 feet/feet. Recent data from the monitoring wells at the I-1 SWD facility confirm a similar potentiometric surface (south-southeast at 0.003 ft/ft). Depth to ground water beneath the site area is approximately 32 feet bgs. There are no surface water bodies located within a mile of the site.

Concentrations of Constituents of Concern in the Vadose Zone

Between February 6 and 8, 2006, soil samples were collected at 5-foot intervals using an air-rotary drilling rig at 7 locations to depths of approximately 32 feet bgs to determine the horizontal extent of the impacted soils. Three of the borings were converted into monitoring wells. Soil samples were tested for chloride content using field-adapted Method 9253 (QP-03) and headspace readings were recorded using a Thermal Instrument Model 580B photoionization detector (PID) calibrated with 100 isobutylene in accordance with procedures explained in QP-07 (ICP Appendices). Select samples were submitted for laboratory analysis of chlorides (EPA Method 300.0), benzene, toluene, ethylbenzene, and xylenes (BTEX; EPA Method 8021B), and gas and diesel range organics (GRO/DRO; Method TX 1005). Results of all chloride field tests, PID readings, and lab analytical results are summarized in Table 1 and also depicted in Figure 4. Photodocumentation of field activities are included in Appendix B. Laboratory analytical reports and chain of custody documentation are included in Appendix C.

Chloride concentrations in the soil borings ranged from a minimum of 56 ppm at 20 ft bgs in B-1 to a maximum of 609 ppm at 20 ft bgs in B-2. Chloride concentrations in the soil borings generally averaged between 308 ppm to 405 ppm which is representative of background levels.

There was no indication of hydrocarbon impact to the vadose zone in any of the samples, with the exception of boring B-1. PID readings in boring B-1 ranged from 458 ppm to 539 ppm in the upper 17 ft bgs, but quickly diminished to levels at or below 15 ppm to the bottom of the boring at 32 ft bgs. Laboratory analysis of hydrocarbon constituents of concern (benzene, BTEX, and TPH) in boring B-1 indicate impact is limited to the upper 15 to 20 feet of the vadose zone as summarized in Table 1. Boring B-1 was advanced immediately adjacent to the southwestern edge of the excavated area and represents very localized impact. To mitigate potential migration of volatile organic compounds (VOCs) boring B-1 was converted into a passive vapor extraction well which consists of 4-inch diameter PVC, screened across the 5 to 20 ft interval, and fitted with a wind-powered ventilating turbine.

Concentrations of Constituents of Concern in Groundwater

On February 6 and 8, 2006, three monitoring wells were installed on site to assess groundwater conditions. The depth to ground water at the site is approximately 32 feet bgs. Each monitoring well indicates chloride and TDS concentrations above Water Quality Control Commission (WQCC) standards, however after four consecutive quarterly sampling events it is clear that the upgradient monitoring well (MW-2) has higher concentrations of chlorides and total dissolved solids (TDS), which indicates an upgradient (north and/or northwest) source for these constituents. Existence of an upgradient source was further confirmed based on a one-time sampling event from an offsite monitoring well (MW-18) located approximately 600 feet north of the site at the Red Byrd #1 site (NMOCD Case No. 1R085). The chloride and TDS concentrations of the offsite monitoring well MW-18 (4,850 mg/l) taken on September 6, 2006 are considered representative of background

concentrations, based on its upgradient location with respect to the I-1 SWD site. Chloride concentrations of the offsite monitoring well MW-18 was approximately 25% higher than the chloride concentration of MW-2 (3,880 mg/L) taken a week earlier on August 28, 2006. A groundwater gradient map with concentrations of the constituents of concern for the third quarter 2006 sampling event that includes the three on site monitoring wells and the upgradient well (MW-18) at the Red Byrd #1 site is depicted in Figure 5.

BTEX concentrations for the three on site monitoring wells at the I-1 SWD site have been below WQCC standards since February 2006 (four consecutive quarters). Upgradient well MW-2 has indicated detectable levels of BTEX (slightly above laboratory detection limits) which confirms the existence of a known upgradient offsite source Red Byrd #1 site for hydrocarbon constituents.

Depths to groundwater and laboratory analytical results for the three monitoring wells are summarized in Table 2. The 2006 Annual Groundwater Monitoring Report includes the complete historical groundwater data for the I-1 SWD site and has been submitted to the NMOCD as a separate document with this CAP.

Recommendations for Corrective Action to Vadose Zone

Boring B-1 represents a small localized area impacted by hydrocarbons within the upper 15 to 20 feet of the vadose zone. This impact is localized because no evidence of hydrocarbon impact was observed in the surrounding borings (B-4 and MW-1), and the area to the north was excavated during the closure of the former redwood tanks. Previous remedial actions by ROC (excavation, backfilling, and lining of the former redwood tank area) and conversion of the boring B-1 into a passive vapor extraction well has minimized the risk for potential migration of VOCs into groundwater; therefore, no further mitigation is proposed with the exception of leaving the passive vapor extraction well in place.

Chloride concentrations in the vadose zone are statistically close to the range of background concentrations (300-400 mg/kg) in all borings and do not present a threat to groundwater; therefore, no further corrective actions for chlorides within the vadose zone are proposed or recommended.

Recommendations for Corrective Action to Groundwater

It appears that the cause for the chloride and TDS impacted groundwater at the I-1 SWD site is from an upgradient offsite source. Groundwater in this area of Monument, New Mexico, has been reported as regionally impacted with chlorides and unusable as early as 1952 (Nicholson and Clebsch, Groundwater Report 6). A portion of this reference is reproduced in Figure 6. The exact source of groundwater impact at the I-1 SWD site is unknown because of the numerous potential facilities, past and present, located upgradient as partially listed in the previous Site Description section of this CAP. Chloride and TDS concentrations at the on site monitoring wells are above WQCC standards however they are below background concentrations as established by samples from an upgradient offsite monitoring well (MW-18

at the Red Bryd #1 site). The excavation, backfilling, and lining activities performed by ROC, as described in the EME SWD I-1 Tank and Pit Closure report submitted to the NMOCD on November 5, 2004, has mitigated any potential threat of chlorides or TDS from the former redwood tank area.

Evidence from groundwater monitoring and vadose zone characterization support the conclusion that conditions at the site do not meet the criteria that would mandate corrective action under NMOCD Rule 116 or Rule 19. We propose to continue demonstrating that the site poses no environmental threat by sampling each monitoring well for an additional four quarters (2007 calendar year). If quarterly sampling results support this conclusion, a final report will be submitted with a request for final closure in the first quarter of 2008. After site closure, the monitoring wells may remain operational, contributing data on an as-needed basis for the investigation of the upgradient offsite sources of chloride and TDS impacts to groundwater.

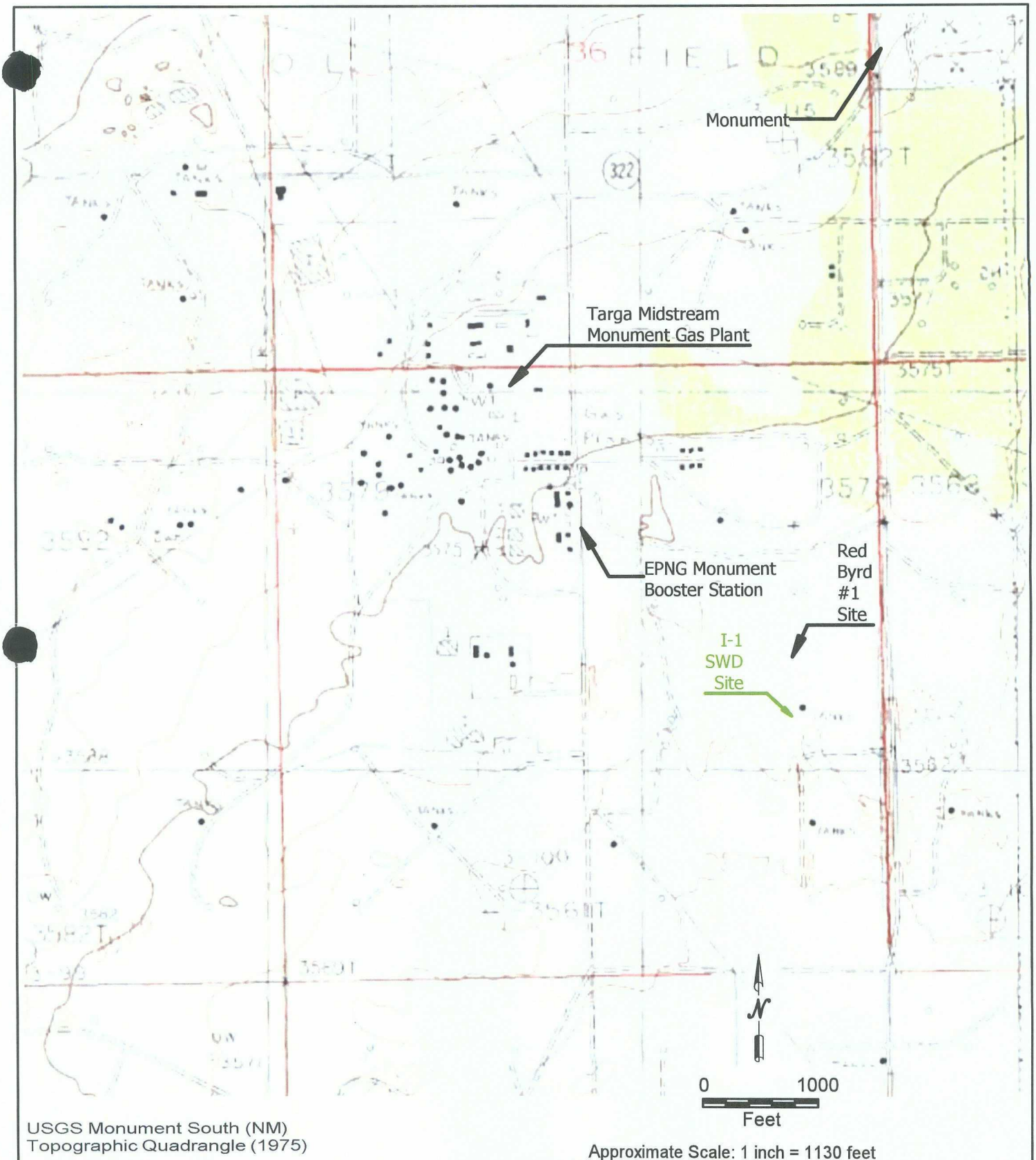
We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-8740 or Kristin Pope at 505-393-9174, if you have any questions.

Gilbert J. Van Deventer, REM, PG
Trident Environmental

cc: CDH, JSC, KFP

enclosures: Figures, tables, lithologic logs/well construction diagrams, photodocumentation, and lab reports

Figures



USGS Monument South (NM)
Topographic Quadrangle (1975)

Approximate Scale: 1 inch = 1130 feet

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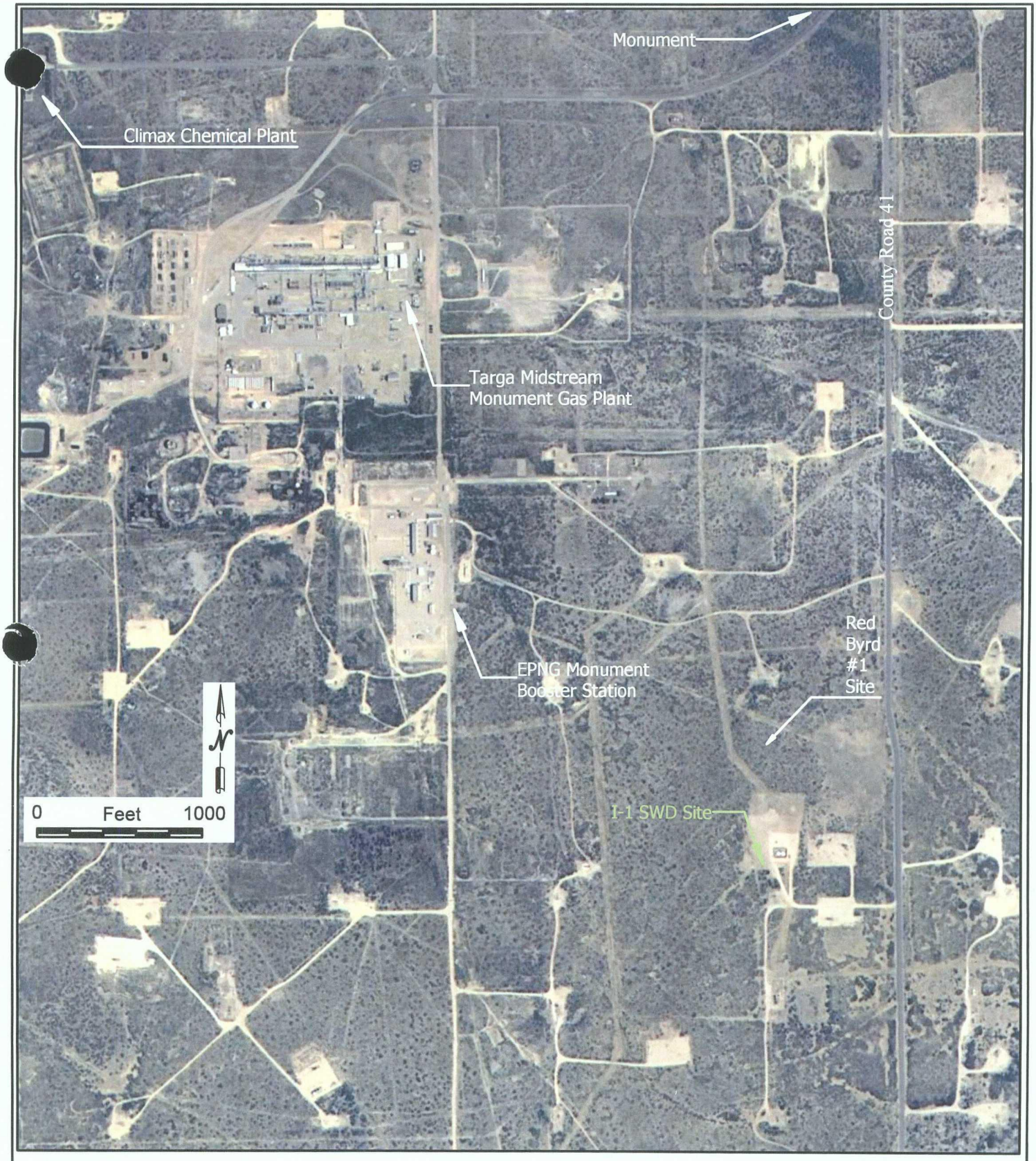
EME I-1 SWD SITE

T20S - R36E - Section 1 - Unit I

RICE *Operating Company*

FIGURE 1

TOPOGRAPHIC MAP



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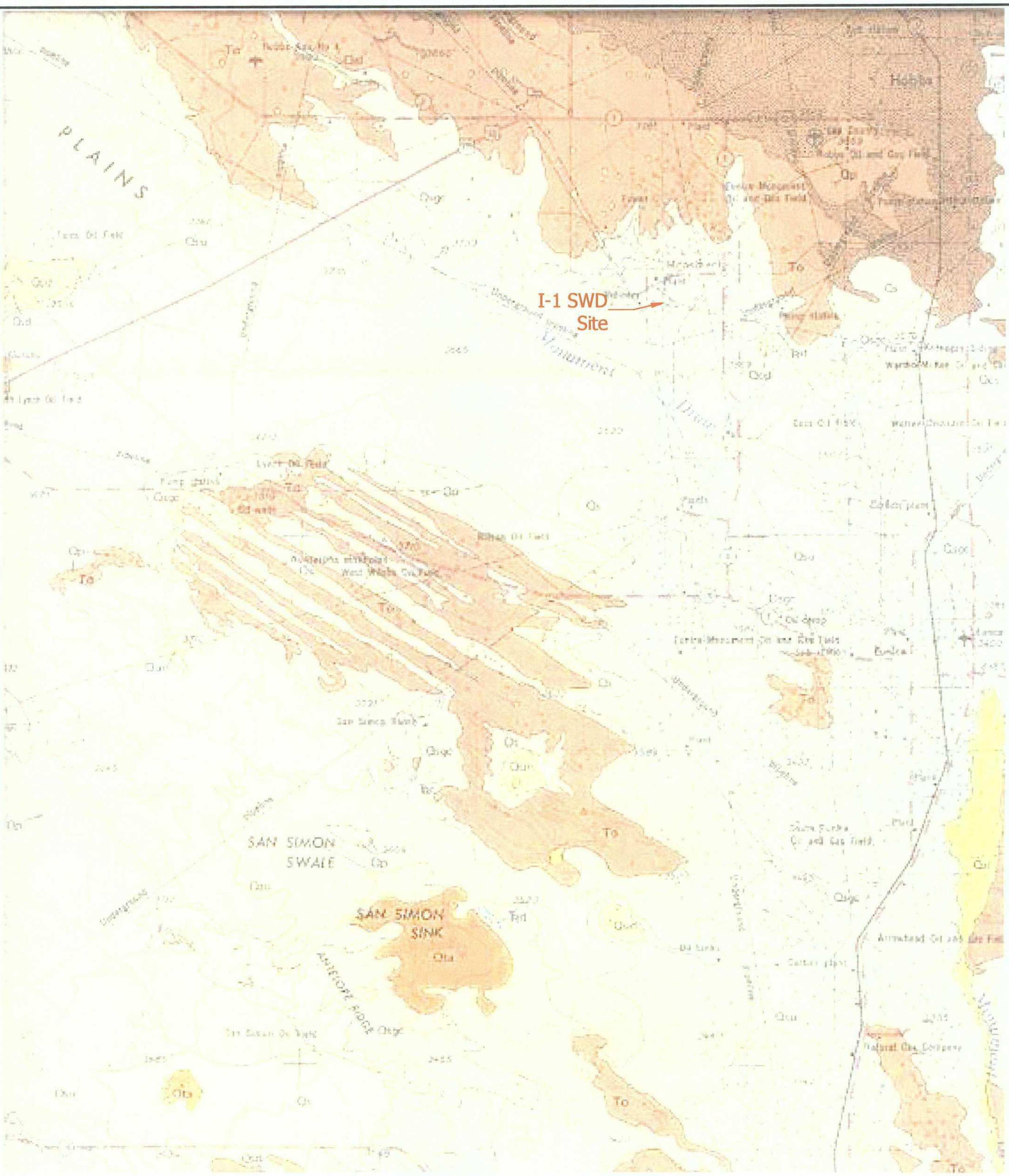
EME I-1 SWD SITE

T20S - R36E - Section 1 - Unit I

RICE *Operating Company*

FIGURE 2

AERIAL PHOTO (2005)



University of Texas
Bureau of Economic Geology
Hobbs Sheet (1976)

0 10
Approximate Scale (Miles)

NORTH

TRIDENT ENVIRONMENTAL

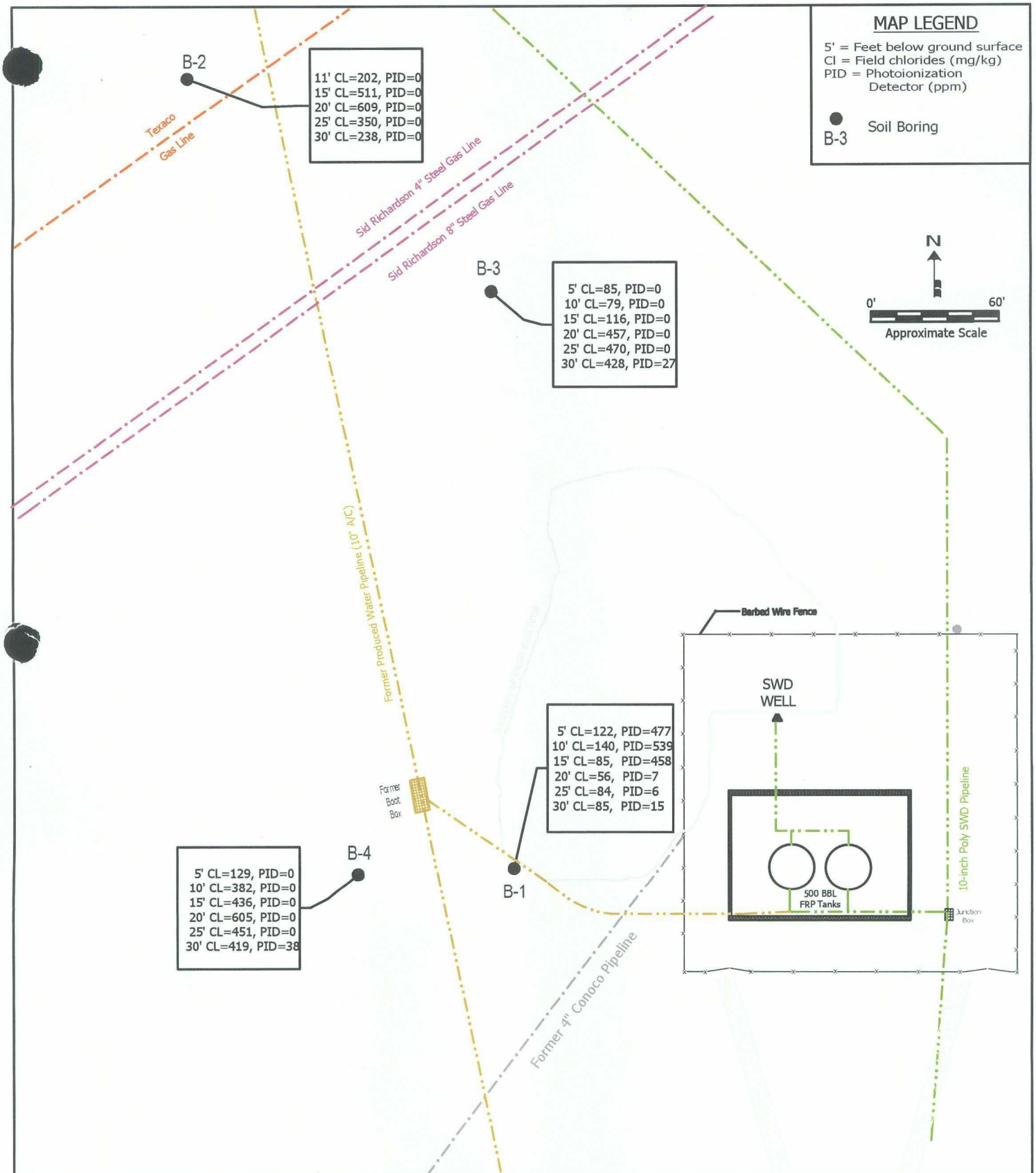
EME I-1 SWD SITE

T20S - R36E - Section 1 - Unit I

RICE *Operating Company*

FIGURE 3

GEOLOGIC MAP



TRIDENT ENVIRONMENTAL

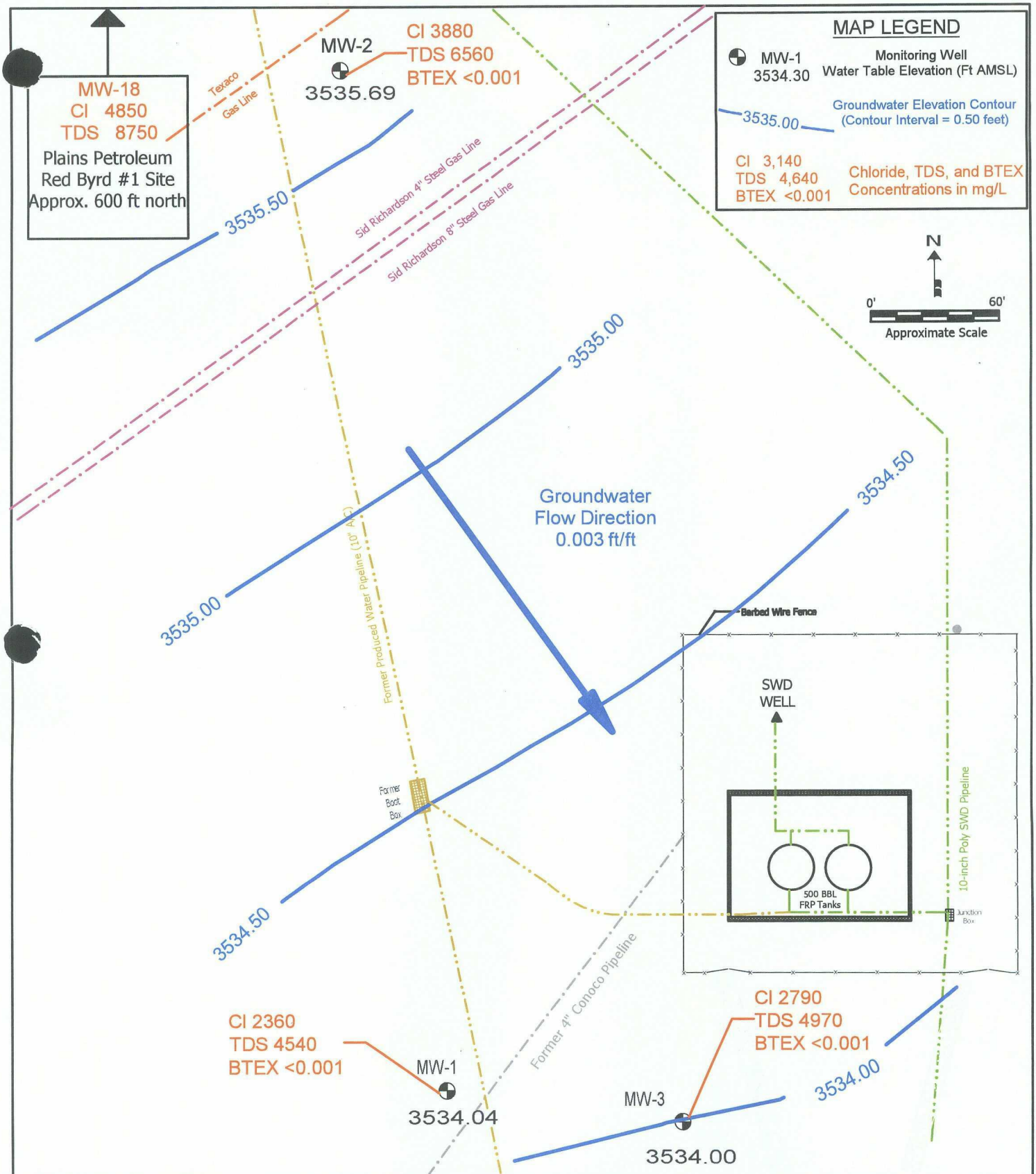
EME I-1 SWD Offsite Encroachment Site

T20S - R36E - Section 1 - Unit I

RICE Operating Company

FIGURE 4

SOIL SAMPLE RESULTS



TRIDENT ENVIRONMENTAL

EME I-1 SWD Offsite Encroachment Site

T20S - R36E - Section 1 - Unit I

RICE *Operating Company*

FIGURE 5
GROUNDWATER GRADIENT AND
CHLORIDE, TDS, & BTEX
CONCENTRATION MAP
AUGUST 28, 2006

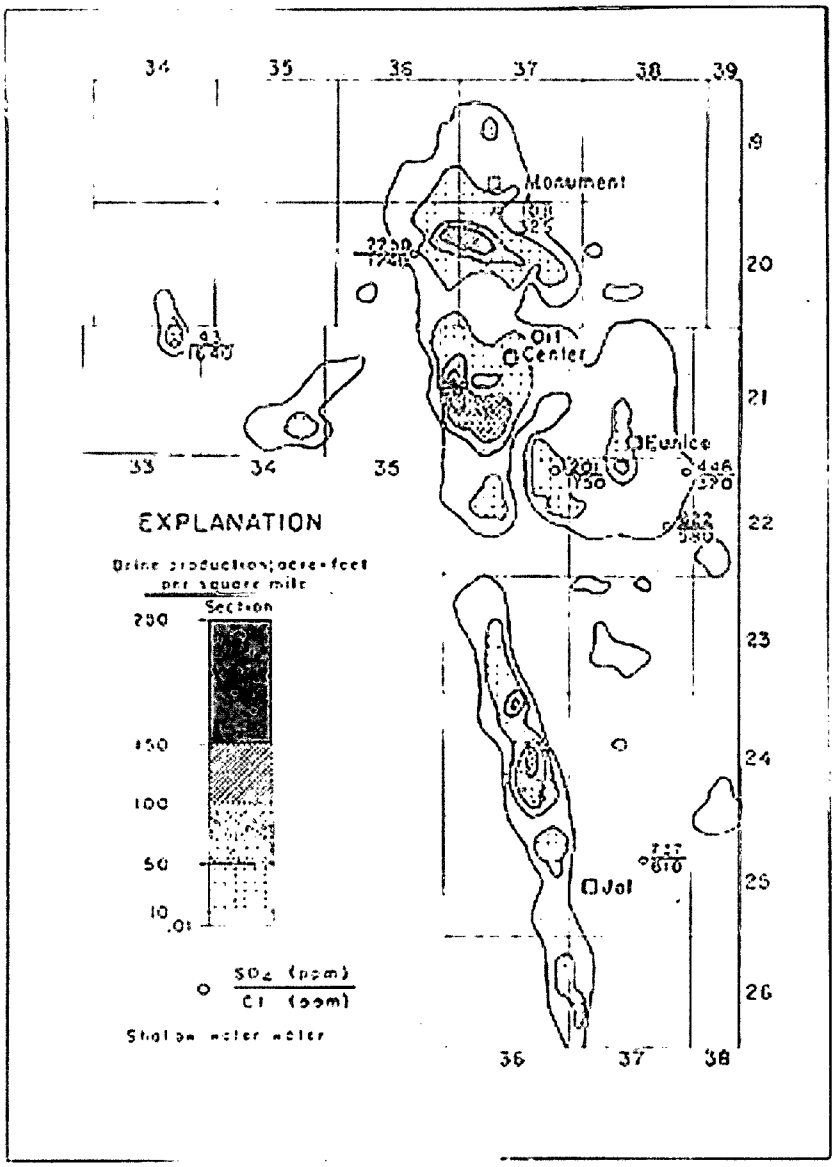


Figure 25

OIL-FIELD BRINE PRODUCTION IN SOUTHERN LEA COUNTY, N. MEX., 1952

Showing locations of selected water wells that have been contaminated by brine. Upper figure adjacent to well symbol is sulfate concentration; lower figure is chloride concentration.

The figure above "shows the distribution of and magnitude of brine production as of 1952. The data were taken from the New Mexico Oil Conservation Commission Annual Report for 1952." Areas with high brine production as "shown on the map constitute potential centers of ground water contamination."

TRIDENT ENVIRONMENTAL	EME I-1 SWD SITE T20S - R36E - Section 1 - Unit I RICE *Operating Company*	FIGURE 6 Source: Nicholson and Clebsch, Ground-Water Report 6, 1961 (pgs 88-89).

Tables

Table 1
Field Testing and Laboratory Analytical Results for Soil Boring Samples

Boring	Depth (ft bgs)	Field Chloride (ppm)	Lab Chloride (mg/kg)	PID (ppm)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)
B-1	5' - 7'	122	---	477	<0.400	<0.400	4.87	25.6	30.47	2090	10475
	10' - 12'	140	---	539	<0.400	<0.400	3.29	8.27	11.56	2780	16781
	15' - 17'	85	---	458	---	---	---	---	---	---	---
	20' - 22'	56	---	7	<0.025	<0.025	<0.025	<0.025	<0.025	---	---
	25' - 27'	84	---	6	---	---	---	---	---	---	---
	30' - 32'	85	---	15	<0.025	<0.025	<0.025	<0.025	<0.025	---	---
B-2	11' - 13'	202	---	0	---	---	---	---	---	---	---
	15' - 17'	511	---	0	---	---	---	---	---	---	---
	20' - 22'	609	---	0	---	---	---	---	---	---	---
	25' - 27'	350	---	0	---	---	---	---	---	---	---
	30' - 32'	238	---	0	---	---	---	---	---	---	---
B-3	5' - 7'	85	---	0	---	---	---	---	---	---	---
	11' - 13'	79	---	0	---	---	---	---	---	---	---
	15' - 17'	116	---	0	---	---	---	---	---	---	---
	20' - 22'	457	---	0	---	---	---	---	---	---	---
	25' - 27'	470	---	0	---	---	---	---	---	---	---
	30' - 32'	428	295	27	---	---	---	---	---	---	---
B-4	5' - 7'	129	---	0	---	---	---	---	---	---	---
	11' - 13'	382	---	0	---	---	---	---	---	---	---
	15' - 17'	436	---	0	---	---	---	---	---	---	---
	20' - 22'	605	---	0	---	---	---	---	---	---	---
	25' - 27'	451	---	0	---	---	---	---	---	---	---
	30' - 32'	419	537	38	<0.025	<0.025	<0.025	<0.025	<0.025	---	---

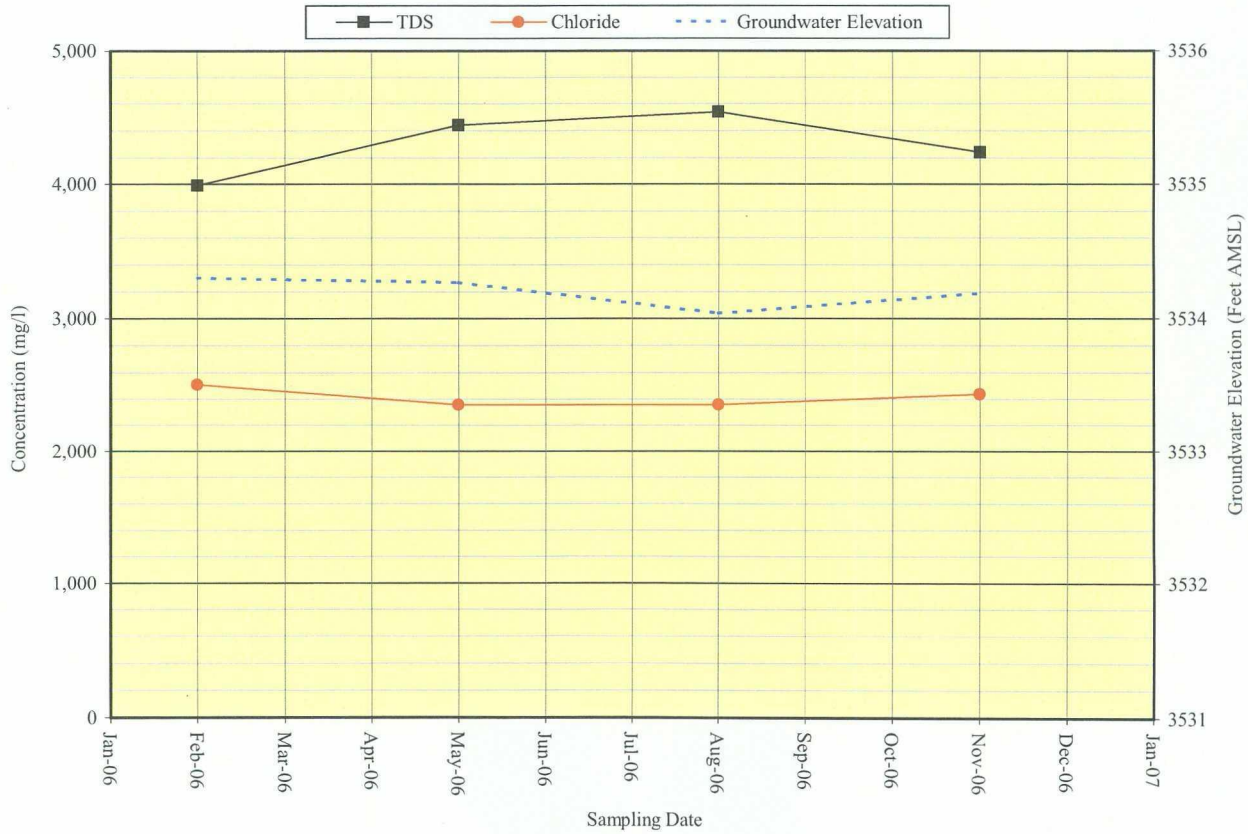
--- Indicates constituent was not measured or analyzed.
Field chloride values obtained using modified Method 9253 (QP-03). Lab chloride analyzed using EPA Method 300.0
PID readings obtained using a Thermal Instrument Model 580B calibrated with 100 isobutylene (QP-07).
BTEX analyzed by Environmental Lab of Texas using EPA Method 8021B.
GRO/DRO analyzed by Environmental Lab of Texas using Method TX 1005.

Table 2
Summary of Groundwater Sampling Results
EME I-1 SWD Site

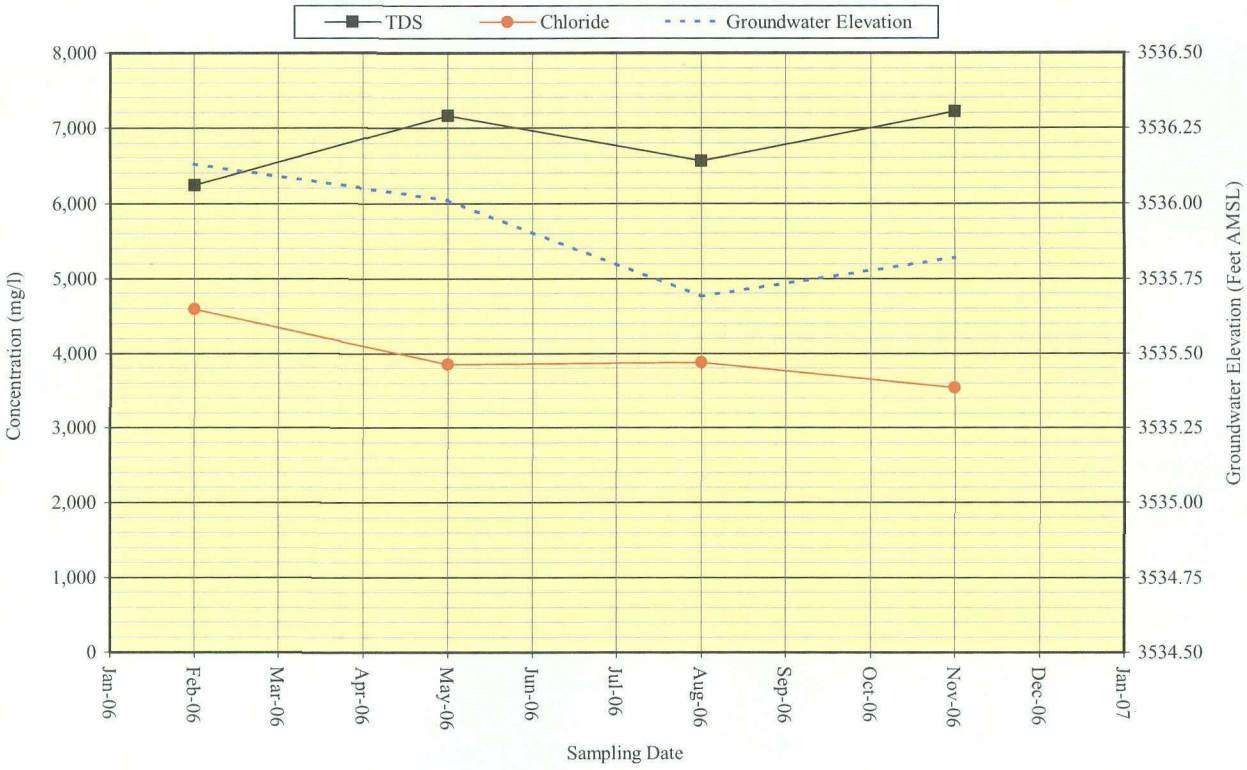
Monitoring Well	Sample Date	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet AMSL)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylene (mg/L)
MW-1	02/15/06	35.09	3534.30	**2,510**	**3,990**	< 0.001	< 0.001	< 0.001	< 0.001
	05/22/06	35.12	3534.27	**2,360**	**4,440**	<0.001	<0.001	<0.001	<0.001
	08/28/06	35.35	3534.04	**2,360**	**4,540**	< 0.001	< 0.001	< 0.001	< 0.001
	11/27/06	35.20	3534.19	**2,440**	**4,240**	0.001	0.001	0.001	<0.001
MW-2	02/15/06	33.52	3536.13	**4,590**	**6,240**	0.003	0.003	0.006	0.007
	05/22/06	33.64	3536.01	**3,850**	**7,160**	0.001	< 0.001	0.001	< 0.001
	08/28/06	33.96	3535.69	**3,880**	**6,560**	0.001	< 0.001	0.007	0.002
	11/27/06	33.83	3535.82	**3,540**	**7,220**	0.002	0.001	0.003	0.002
MW-3	02/15/06	34.59	3534.23	**3,140**	**4,640**	< 0.001	< 0.001	< 0.001	< 0.001
	05/22/06	34.63	3534.19	**2,750**	**5,410**	<0.001	<0.001	<0.001	<0.001
	08/28/06	34.82	3534.00	**2,790**	**4,970**	< 0.001	< 0.001	< 0.001	< 0.001
	11/27/06	34.72	3534.10	**2,850**	**4,990**	< 0.001	0.001	< 0.001	< 0.001
Red Byrd #1 MW-18	09/06/06	35.36	3535.81	**4,850**	**8,750**	---	---	---	---
WQCC Standards				250	1000	0.01	0.75	0.75	0.62

Total Dissolved Soilds (TDS), chloride, and BTEX concentrations listed in milligrams per liter (mg/L)
Analyses performed by Environmental Lab of Texas (Odessa TX) and TraceAnalysis (Midland 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.
The Red Byrd #1 (MW-18) site is under the direction of Plains Petroleum (NMOCD Case No. 1R050) and is located approximately 600 feet north of the I-1 SWD Site.

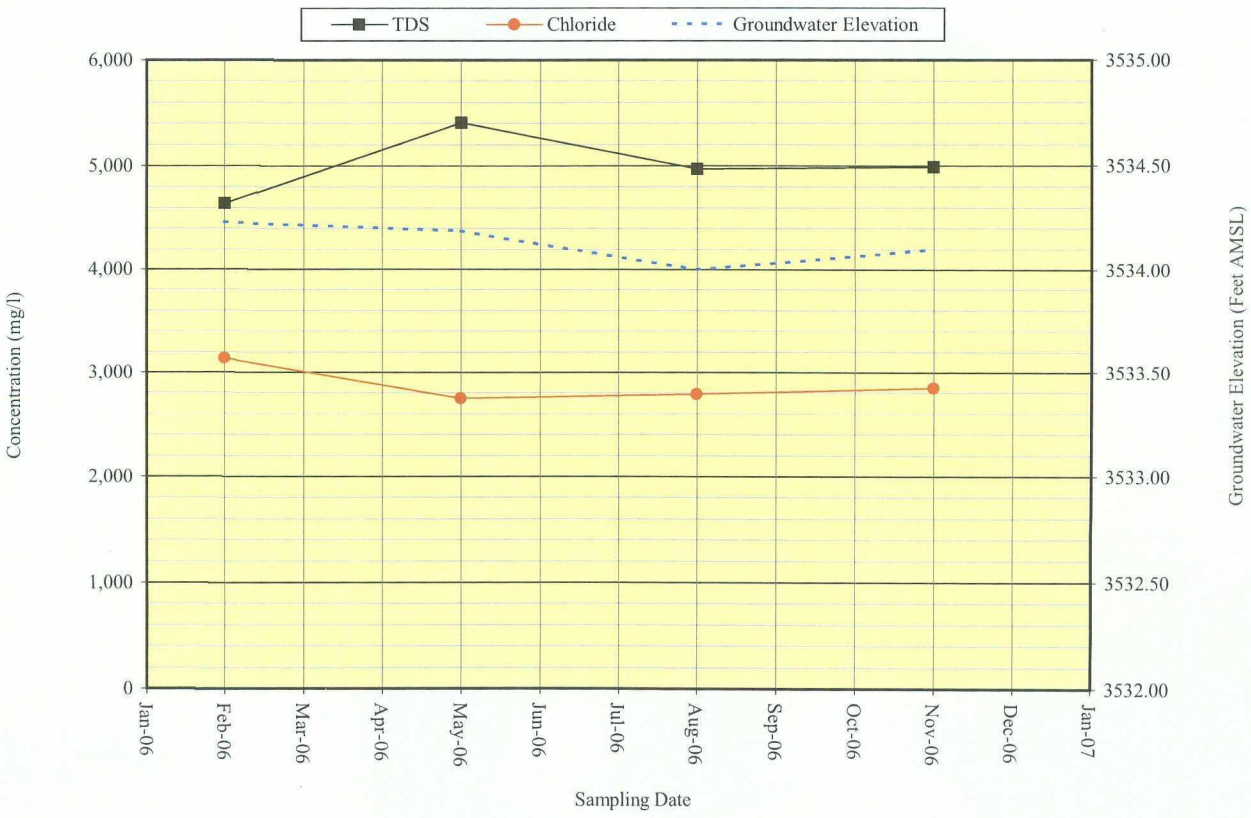
MW-1
Chloride, TDS, and Groundwater Elevation Values Versus Time



MW-2
Chloride, TDS, and Groundwater Elevation Values Versus Time



MW-3
Chloride, TDS, and Groundwater Elevation Values Versus Time

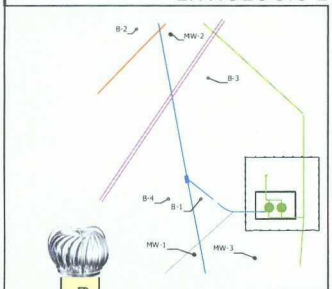


Appendix A

Lithologic Logs and

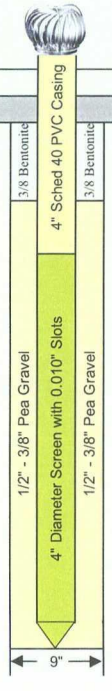
Well Construction Diagrams

LITHOLOGIC LOG AND PASSIVE VAPOR RECOVERY WELL CONSTRUCTION DIAGRAM



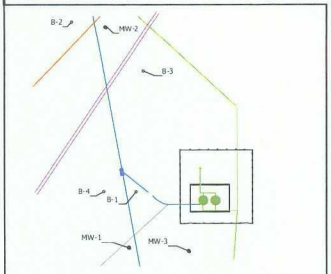
WELL ID.: B-1
SITE ID: EME I-1 SWD
CONTRACTOR: Eades Drilling & Pump Service
DRILLING METHOD: Air Rotary
START DATE: 02/08/06
COMPLETION DATE: 02/08/06
COMMENTS: Located adjacent to southwest corner of excavated area that has been backfilled and lined with clay. This boring was converted into a 4" diameter passive vapor extraction well and fitted with a wind-powered turbine (Empire model TV04G).

TOTAL DEPTH: 32 Feet
CLIENT: Rice Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit I
FIELD REP.: G. Van Deventer



USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SW			Surface			Tan fine-grained dune sand and caliche cover.
SM	5	1139	Split Spoon	122	477	Light brown (5R 5/6), greenish gray (5Y 6/1), and brownish black (5YR 2/1) silty fine sand, subrounded, moderately sorted, very moist with strong hydrocarbon odor, some oil seepage at 6 ft.
CAL/ SW	10	1149	Split Spoon	140	539	Caliche with some fine-grained sand in matrix and strong hydrocarbon odor. Caliche is soft to moderately hard and is light greenish gray (5 GY 8/1). Sand is pale yellowish brown (10 YR 6/2), moderately sorted, subangular grains.
SM/ CAL	15	1157	Split Spoon	85	458	Pale reddish brown (10R 4/6) silty fine to medium sand, moderately sorted, subrounded with caliche in matrix. Strong hydrocarbon odor. Caliche is soft and is very pale orange (10 YR 8/2). Caliche content decreasing with depth.
SW	20	1207	Split Spoon	56	7	Pale red (10R 6/2) fine to medium sand, moderately sorted, subrounded.
	25	1218	Split Spoon	84	6	Pale reddish brown (10R5/4) fine to medium sand, moderately sorted, subrounded.
	30 ▼	1229	Split Spoon	85	15	Pale red (10R 6/2) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
	35					Bottom of boring at 32 ft below ground surface.
	40					
	45					
	50					

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

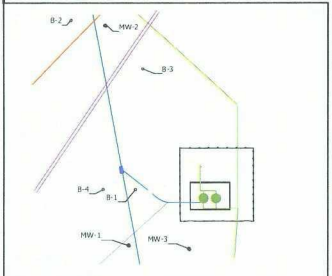


MONITOR WELL NO.: B-2
SITE ID: EME I-1 SWD
CONTRACTOR: Eades Drilling & Pump Service
DRILLING METHOD: Air Rotary
START DATE: 02/08/06
COMPLETION DATE: 02/08/06
COMMENTS: Located ~60 ft eastnortheast of where Texaco low pressure gas line crosses former Rice 10" AC water line.

TOTAL DEPTH: 32 Feet
CLIENT: Rice Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit I
FIELD REP.: G. Van Deventer

	USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
3/8 Bentonite Hole Plug	SW			Surface			Tan fine to medium grained dune sand
		5					According to driller, drill pipe "dropped" 6 ft past the 5 ft mark. Either a cavity or the driller forgot he had drilled 5 extra feet. No split spoon or cuttings available for description.
		10					
	SM		1338	Split Spoon		0	Reddish-brown (10R 4/6) and light olive gray (5Y 6/1) silty fine sand, subrounded, moderately sorted.
		15					
	SW/ CAL		1347	Split Spoon	511	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with caliche in matrix. Caliche content decreasing with depth.
		20					
			1358	Split Spoon	609	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with less caliche in matrix.
		25					
	SW		1418	Split Spoon	350	0	Light brown (5 YR 6/4) fine to medium sand, moderately sorted, subrounded.
		30					
		▼	1431	Split Spoon	238	0	Light brown (5 YR 6/4) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
		35					Bottom of boring at 32 ft below ground surface.
		40					
		45					
		50					

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



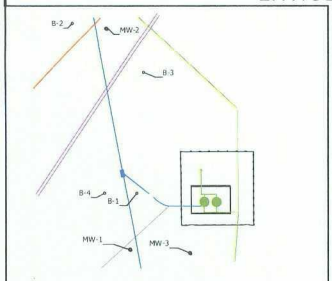
MONITOR WELL NO.: B-3
SITE ID: EME I-1 SWD
CONTRACTOR: Eades Drilling & Pump Service
DRILLING METHOD: Air Rotary
START DATE: 02/08/06
COMPLETION DATE: 02/08/06
COMMENTS: Located ~60 ft ENE of where Texaco low pressure gas line crosses former Rice 10" AC water line.

TOTAL DEPTH: 32 Feet
CLIENT: Rice Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit I
FIELD REP.: G. Van Deventer

3/8 Bentonite Hole Plug

USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SW			Surface			Tan fine to medium grained dune sand
SW	5					Reddish-brown (10R 4/6) medium-grained sand, subrounded, moderately sorted.
		1606	Split Spoon	85	0	
CAL/ SW	10					Caliche with some fine-grained sand in matrix. Caliche is soft and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately sorted, subangular grains.
SM		1613	Split Spoon	79	0	Pale reddish brown (10R 4/6) silty fine to medium sand, moderately sorted, subrounded with veinlets of caliche. Caliche is soft and is very pale orange (10 YR 8/2). Caliche content decreasing with depth.
	15					
SW/ CAL		1622	Split Spoon	116	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with caliche in matrix. Caliche content decreasing with depth.
	20					
		1631	Split Spoon	457	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with less caliche in matrix. Sample very moist in places at 21 ft.
SW	25					Light brown (5 YR 6/4) fine to medium sand, moderately sorted, subrounded.
		1646	Split Spoon	470	0	Light brown (5 YR 6/4) fine to medium sand, moderately sorted, subrounded.
	30					
	▼	1655	Split Spoon	428	27	Light brown (5 YR 6/4) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
	35					Bottom of boring at 32 ft below ground surface.
	40					
	45					
	50					

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

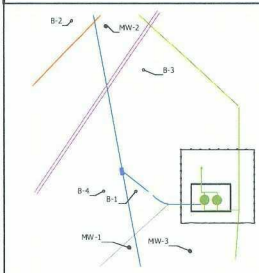


MONITOR WELL NO.: B-4
SITE ID: EME I-1 SWD
CONTRACTOR: Eades Drilling & Pump Service
DRILLING METHOD: Air Rotary
START DATE: 02/08/06
COMPLETION DATE: 02/08/06
COMMENTS: Located ~60 ft southwest of former boot and ~70 ft west of boring B-1.

TOTAL DEPTH: 32 Feet
CLIENT: Rice Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R36E-Sec 1-Unit I
FIELD REP.: G. Van Deventer

			USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
	3/8 Bentonite Hole Plug		SW			Surface			Tan fine to medium grained dune sand
			SM	5	1338	Split Spoon	129	0	Alternating thin layers of reddish-brown (10R 4/6) and light olive gray (5Y 6/1) silty fine sand, subrounded, moderately sorted.
				10					
			SW/ CAL	15	1348	Split Spoon	382	0	Pale reddish brown (10R 4/6) silty fine to medium sand, moderately sorted, subrounded with veinlets of caliche. Caliche is soft and is very pale orange (10 YR 8/2).
			CAL/ SW	20	1358	Split Spoon	436	0	Caliche with some fine-grained sand in matrix. Caliche is soft and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately sorted, subangular grains.
			SW	25	1405	Split Spoon	605	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded. Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded.
			SW	30	1416	Split Spoon	451	0	Pale reddish brown (10R5/4) fine to medium sand, moderately sorted, subrounded.
				▼	1429	Split Spoon	419	38	Pale red (10R 6/2) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
				35					Bottom of boring at 32 ft below ground surface.
				40					
				45					
				50					

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



MONITOR WELL NO.: MW-1 TOTAL DEPTH: 42 Feet

SITE ID: EME I-1 SWD Offsite Encroachment Site CLIENT: Rice Operating Company

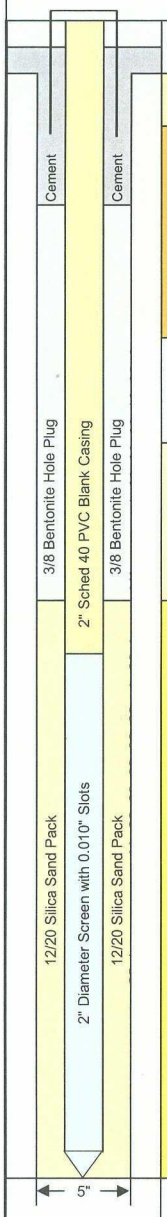
CONTRACTOR: Eades Drilling & Pump Service COUNTY: Lea

DRILLING METHOD: Air Rotary STATE: New Mexico

START DATE: 02/06/06 LOCATION: T20S-R36E-Sec 1-Unit I

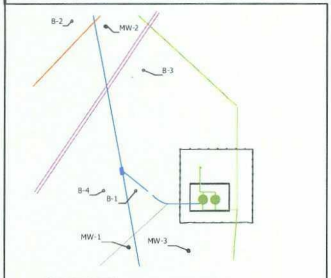
COMPLETION DATE: 02/06/06 FIELD REP.: G. Van Deventer

COMMENTS: Located ~30 ft southwest of where former Conoco 4" water line crosses former Rice 10" AC water line.



USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SW			Surface			Tan fine to medium grained dune sand
SM	5	0848	Split Spoon	151	4	Alternating thin layers of reddish-brown (10R 4/6) and light olive gray (5Y 6/1) silty fine sand, subrounded, moderately sorted.
	10					
CAL		0858	Split Spoon	598	0	Caliche with some fine-grained sand in matrix. Caliche is soft to moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately sorted, subangular grains.
CAL/ SW	15	0905	Split Spoon	516	0	Pale reddish brown (10R 4/6) silty fine to medium sand, moderately sorted, subrounded with veinlets of caliche. Caliche is soft and is very pale orange (10 YR 8/2). Caliche content decreasing with depth.
	20					
SW		0915	Split Spoon	290	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded.
	25					
		0928	Split Spoon	276	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded.
	30					
	▼	0950	Split Spoon	292	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
	35					
	40					
	45					Bottom of boring at 42 ft below ground surface.
	50					

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



MONITOR WELL NO.: MW-2 TOTAL DEPTH: 42 Feet

SITE ID: EME I-1 SWD Offsite Encroachment Site CLIENT: Rice Operating Company

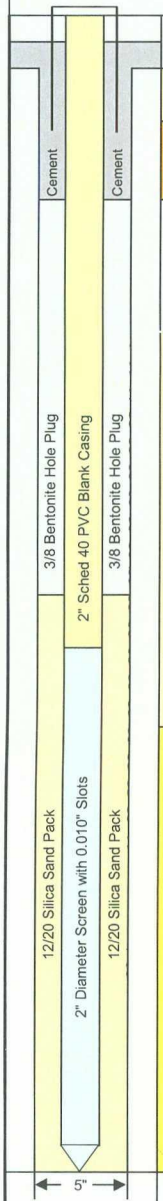
CONTRACTOR: Eades Drilling & Pump Service COUNTY: Lea

DRILLING METHOD: Air Rotary STATE: New Mexico

START DATE: 02/06/06 LOCATION: T20S-R36E-Sec 1-Unit I

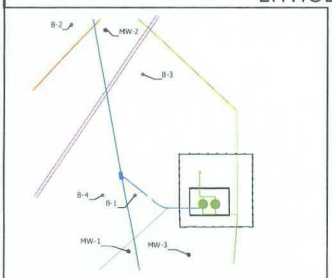
COMPLETION DATE: 02/08/06 FIELD REP.: G. Van Deventer

COMMENTS: Located ~25 ft east of where Texaco low pressure gas line crosses former Rice 10" AC water line.



USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SW	Surface					Tan fine to medium grained dune sand
SM	5					Reddish-brown (10R 4/6) fine sand, subrounded, moderately sorted.
CAL/ SW	10	1143	Split Spoon	296	0	Caliche with some fine-grained sand in matrix. Caliche is soft to moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately sorted, subangular grains.
SW/ CAL	15	1151	Split Spoon	628	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with caliche in matrix. Caliche is soft and is very pale orange (10 YR 8/2). Caliche content decreasing with depth.
	20	1156	Split Spoon	282	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with less caliche in matrix. Caliche content decreasing with depth.
	25	1205	Split Spoon	268	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded with much less caliche in matrix.
SW	30	1244	Split Spoon	425	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded.
	35	1255	Split Spoon	211	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
	40					
	45					Bottom of boring at 42 ft below ground surface.
	50					

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM



MONITOR WELL NO.: MW-3 TOTAL DEPTH: 41 Feet

SITE ID: EME I-1 SWD Offsite Encroachment Site CLIENT: Rice Operating Company

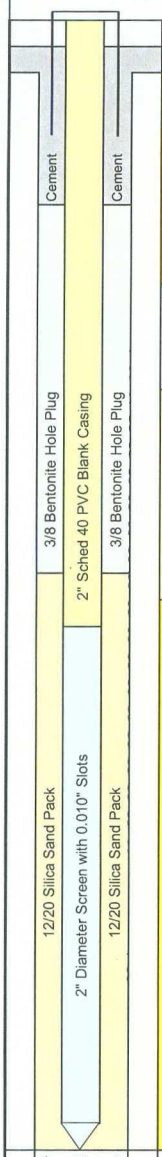
CONTRACTOR: Eades Drilling & Pump Service COUNTY: Lea

DRILLING METHOD: Air Rotary STATE: New Mexico

START DATE: 02/08/06 LOCATION: T20S-R36E-Sec 1-Unit I

COMPLETION DATE: 02/08/06 FIELD REP.: G. Van Deventer

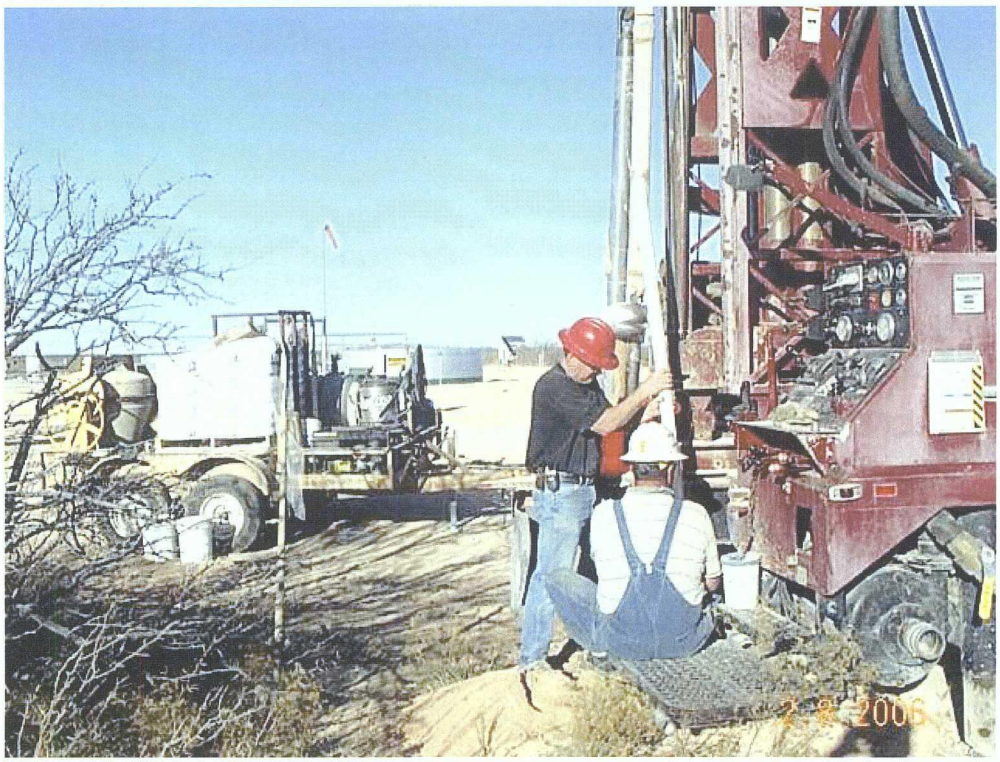
COMMENTS: Located ~170 ft southeast (downgradient) of boring B-1.



USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
SW			Surface			Tan fine to medium grained dune sand
SM	5	1455	Split Spoon	384	0	Alternating thin layers of reddish-brown (10R 4/6) and light olive gray (5Y 6/1) silty fine sand, subrounded, moderately sorted.
CAL/ SW	10	1503	Split Spoon	650	0	Caliche with some fine-grained sand in matrix. Caliche is soft to moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately sorted, subangular grains.
SW/ CAL	15	1509	Split Spoon	779	0	Pale reddish brown (10R 4/6) silty fine to medium sand, moderately sorted, subrounded with veinlets of caliche. Caliche is soft and is very pale orange (10 YR 8/2). Caliche content decreasing with depth.
SW	20	1517	Split Spoon	2249	0	Light brown (5R 5/6) fine to medium sand, moderately sorted, subrounded.
	25	1528	Split Spoon	846	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded.
	30	1538	Split Spoon	892	0	Pale reddish brown (10R 4/6) fine to medium sand, moderately sorted, subrounded. Groundwater encountered at approximately 31 ft below ground surface.
	35					
	40					
	45					Bottom of boring at 41 ft below ground surface.
	50					

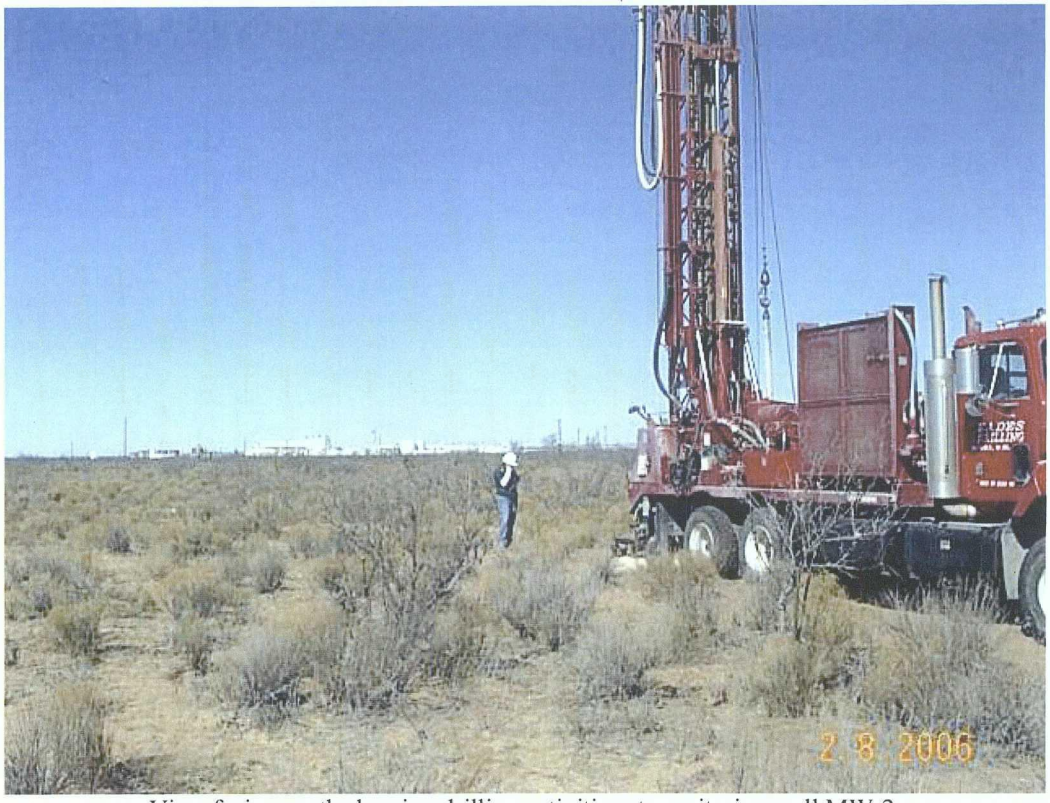
Appendix B

Photodocumentation

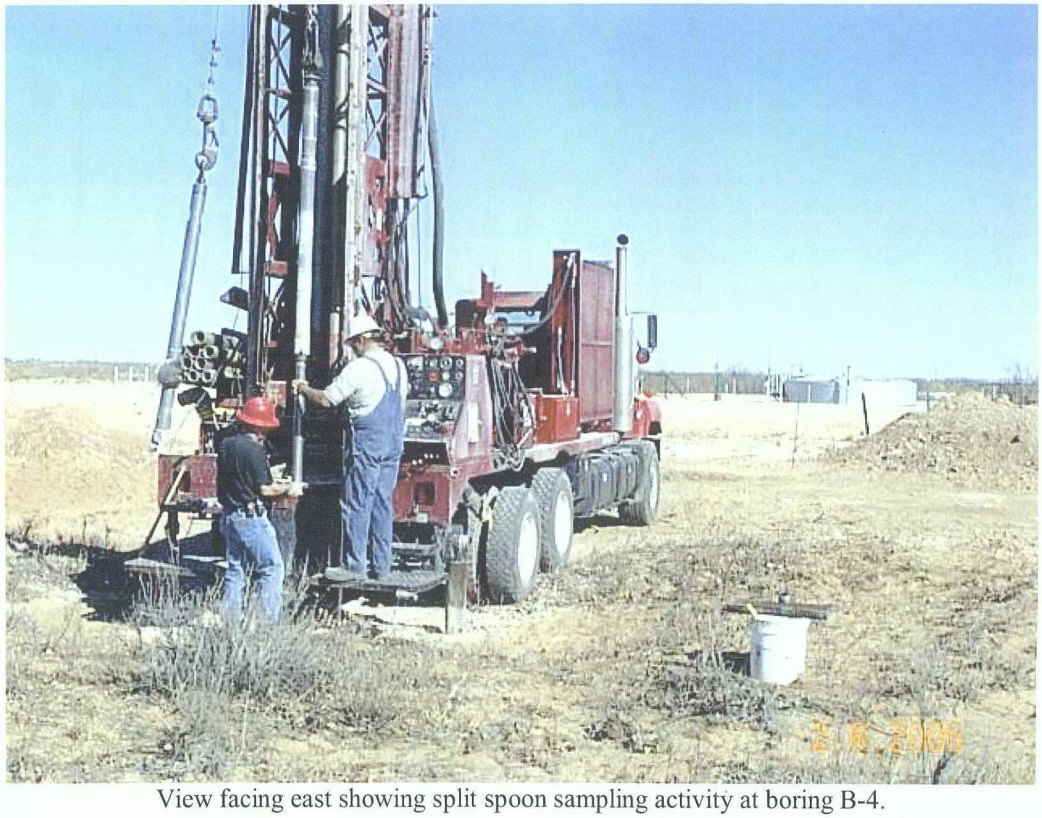


View facing north showing installation PVC casing into monitoring well MW-3.

View facing east showing passive vapor extraction well at location of boring B-1.



View facing north showing drilling activities at monitoring well MW-2.



View facing east showing split spoon sampling activity at boring B-4.

Appendix C

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-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME I-1

Project Number: None Given

Location: None Given

Lab Order Number: 6B07009

Report Date: 02/14/06

Rice Operating Co.	Project: EME I-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/14/06 10:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2 (10'-12')	6B07009-01	Soil	02/06/06 11:51	02/07/06 14:28
B-3 (30'-31')	6B07009-02	Soil	02/06/06 16:55	02/07/06 14:28

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

Rice Operating Co.	Project: EME I-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/14/06 10:17

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (10'-12') (6B07009-01) Soil									
Chloride	**180**	5.00	mg/kg	10	EB61301	02/10/06	02/13/06	EPA 300.0	
B-3 (30'-31') (6B07009-02) Soil									
Chloride	**295**	10.0	mg/kg	20	EB61301	02/10/06	02/13/06	EPA 300.0	
% Moisture	**18.2**	0.1	%	1	EB60806	02/07/06	02/08/06	% calculation	

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

Rice Operating Co.	Project: EME I-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/14/06 10:17

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-3 (30'-31') (6B07009-02) Soil									
Benzene	ND	25.0	ug/kg dry	25	EB61005	02/10/06	02/10/06	EPA 8260B	
Toluene	ND	25.0	"	"	"	"	"	"	
Ethylbenzene	ND	25.0	"	"	"	"	"	"	
Xylene (p/m)	ND	25.0	"	"	"	"	"	"	
Xylene (o)	ND	25.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*117 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*52-149*		"	"	"	"	
Surrogate: Toluene-d8		*97.4 %*	*76-125*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*	*66-145*		"	"	"	"	

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

Rice Operating Co.	Project: EME I-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/14/06 10:17

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 EB60806 - General Preparation (Prep)										
Blank (EB60806-BLK1)				Prepared: 02/07/06 Analyzed: 02/08/06						
% Solids	100		%							
Duplicate (EB60806-DUP1)	**Source: 6B06017-01**			Prepared: 02/07/06 Analyzed: 02/08/06						
% Solids	90.2		%		90.2			0.00	20	
Duplicate (EB60806-DUP2)	**Source: 6B06018-07**			Prepared: 02/07/06 Analyzed: 02/08/06						
% Solids	97.7		%		97.9			0.205	20	
Duplicate (EB60806-DUP3)	**Source: 6B06018-27**			Prepared: 02/07/06 Analyzed: 02/08/06						
% Solids	99.4		%		99.3			0.101	20	
Duplicate (EB60806-DUP4)	**Source: 6B07006-02**			Prepared: 02/07/06 Analyzed: 02/08/06						
% Solids	91.2		%		92.1			0.982	20	
Batch EB61301 - Water Extraction										
Blank (EB61301-BLK1)				Prepared: 02/10/06 Analyzed: 02/13/06						
Chloride	ND	0.500	mg/kg							
LCS (EB61301-BS1)				Prepared: 02/10/06 Analyzed: 02/13/06						
Chloride	8.86		mg/L	10.0		88.6	80-120			
Calibration Check (EB61301-CCV1)				Prepared: 02/10/06 Analyzed: 02/13/06						
Chloride	9.05		mg/L	10.0		90.5	80-120			
Duplicate (EB61301-DUP1)	**Source: 6B07009-01**			Prepared: 02/10/06 Analyzed: 02/13/06						
Chloride	180	5.00	mg/kg		180			0.00	20	

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

Rice Operating Co.	Project: EME I-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/14/06 10:17

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 EB61005 - EPA 5030C (GCMS)										
Blank (EB61005-BLK1)				Prepared & Analyzed: 02/10/06						
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	"							
Surrogate: Dibromofluoromethane	*61.8*		*ug/kg*	*50.0*		*124*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*53.3*		*"*	*50.0*		*107*	*52-149*			
Surrogate: Toluene-d8	*49.0*		*"*	*50.0*		*98.0*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*51.9*		*"*	*50.0*		*104*	*66-145*			
LCS (EB61005-BS1)				Prepared & Analyzed: 02/10/06						
Benzene	1130	25.0	ug/kg wet	1250		90.4	70-130			
Toluene	1330	25.0	"	1250		106	70-130			
Ethylbenzene	1400	25.0	"	1250		112	70-130			
Xylene (p/m)	2800	25.0	"	2500		112	70-130			
Xylene (o)	1500	25.0	"	1250		120	70-130			
Surrogate: Dibromofluoromethane	*62.8*		*ug/kg*	*50.0*		*126*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*55.8*		*"*	*50.0*		*112*	*52-149*			
Surrogate: Toluene-d8	*51.1*		*"*	*50.0*		*102*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*52.0*		*"*	*50.0*		*104*	*66-145*			
Calibration Check (EB61005-CCV1)				Prepared & Analyzed: 02/10/06						
Toluene	52.1		ug/kg	50.0		104	70-130			
Ethylbenzene	51.7		"	50.0		103	70-130			
Surrogate: Dibromofluoromethane	*58.8*		*"*	*50.0*		*118*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*53.7*		*"*	*50.0*		*107*	*52-149*			
Surrogate: Toluene-d8	*49.4*		*"*	*50.0*		*98.8*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*52.9*		*"*	*50.0*		*106*	*66-145*			

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

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 EB61005 - EPA 5030C (GCMS)										
Matrix Spike (EB61005-MS1)	**Source: 6B06017-13**			Prepared & Analyzed: 02/10/06						
Benzene	1410	25.0	ug/kg dry	1540	ND	91.6	70-130			
Toluene	1650	25.0	"	1540	ND	107	70-130			
Ethylbenzene	1730	25.0	"	1540	ND	112	70-130			
Xylene (p/m)	3480	25.0	"	3090	ND	113	70-130			
Xylene (o)	1860	25.0	"	1540	ND	121	70-130			
Surrogate: Dibromofluoromethane	*62.6*		*ug/kg*	*50.0*		*125*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*55.8*		*"*	*50.0*		*112*	*52-149*			
Surrogate: Toluene-d8	*49.8*		*"*	*50.0*		*99.6*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*51.5*		*"*	*50.0*		*103*	*66-145*			
Matrix Spike Dup (EB61005-MSD1)	**Source: 6B06017-13**			Prepared & Analyzed: 02/10/06						
Benzene	1430	25.0	ug/kg dry	1540	ND	92.9	70-130	1.41	20	
Toluene	1650	25.0	"	1540	ND	107	70-130	0.00	20	
Ethylbenzene	1740	25.0	"	1540	ND	113	70-130	0.889	20	
Xylene (p/m)	3490	25.0	"	3090	ND	113	70-130	0.00	20	
Xylene (o)	1860	25.0	"	1540	ND	121	70-130	0.00	20	
Surrogate: Dibromofluoromethane	*62.4*		*ug/kg*	*50.0*		*125*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*55.4*		*"*	*50.0*		*111*	*52-149*			
Surrogate: Toluene-d8	*51.0*		*"*	*50.0*		*102*	*76-125*			
Surrogate: 4-Bromofluorobenzene	*52.4*		*"*	*50.0*		*105*	*66-145*			

Rice Operating Co.	Project: EME I-1	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/14/06 10:17

Notes and Definitions

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: 2/14/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

12 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 Pope
Company Name: Rice Operating Company
Company Address: 122 W. Taylor
City/State/Zip: Hobbs NM 88240
Telephone No: 505/393-9174
Fax No:
Sampler Signature: Gil Van Deventer
Email: kpricesud@valornet.com and gil@rthicksconsult.com

Project Name: EME I-1
Project #:
Project Loc:
PO #:

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: TPH: 418.1 8015M 1005 1006	TCLP: Cations (Ca, Mg, Na, K)	TCLP: Anions (Cl, SO4, CO3, HCO3)	TCLP: SAR / ESP / CEC	TCLP: Metals: As Ag Ba Cd Cr Pb Hg Se	TCLP: Volatiles	TCLP: Semivolatiles	TOTAL: BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride			RUSH TAT (Pre-Schedule)	Standard TAT
6807009																														
-01	~~MW-1~~ SW (10'-12')	2-6-06	1151	1	✓									✓									~~BTEX~~			✓				✓
-02	B-3 (30'-31')	2-6-06	1655	1	✓									✓									✓			✓				✓

Special Instructions:

Sample Containers Intact? (Y) N
Labels on container? (Y) N
Custody Seals: Containers / Cooler
Temperature Upon Receipt: 2.5°C

Laboratory Comments: hand delivered by sampler

Relinquished by:	Date	Time	Received by:	Date	Time
Gil Van Deventer	2/7/06	2:28			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Jeanne McMurrey	02-07-06	1428

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

Client: Rice Operating Co.

Date/Time: 02-07-06 @ 1428

Order #: 6B07009

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	2.5	C
Shipping container/cooler in good condition?	(Yes)	No		
Custody Seals intact on shipping container/cooler?	Yes	No	(Not present)	hand delivered by sample
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:

ENVIRONMENTAL LAB OF
12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Rice Operating Co.

Project Number: None Given

Location: EME I-1 Site

Lab Order Number: 6B09015

Report Date: 02/21/06

Rice Operating Co.	Project: Rice Operating Co.	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/21/06 15:34

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-1 6'	6B09015-01	Soil	02/08/06 11:39	02/09/06 15:55
B-1 12'	6B09015-02	Soil	02/08/06 11:49	02/09/06 15:55
B-1 20'	6B09015-03	Soil	02/08/06 12:07	02/09/06 15:55
B-1 30'	6B09015-04	Soil	02/08/06 12:29	02/09/06 15:55
B-4 30'	6B09015-05	Soil	02/08/06 14:29	02/09/06 15:55
MW-3 20'-22'	6B09015-06	Soil	02/08/06 15:17	02/09/06 15:55

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-1 6' (6B09015-01) Soil									
Carbon Ranges C6-C12	**2090**	50.0	mg/kg dry	2	EB61031	02/13/06	02/13/06	TX 1005	
Carbon Ranges C12-C28	**3950**	50.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	**245**	50.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**6280**	50.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*86.8 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*60.0 %*	*70-130*		"	"	"	"	*S-06*
B-1 12' (6B09015-02) Soil									
Carbon Ranges C6-C12	**2780**	50.0	mg/kg dry	2	EB61031	02/13/06	02/13/06	TX 1005	
Carbon Ranges C12-C28	**6740**	50.0	"	"	"	"	"	"	
Carbon Ranges C28-C35	**261**	50.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**9780**	50.0	"	"	"	"	"	"	
Surrogate: 1-Chlorooctane		*100 %*	*70-130*		"	"	"	"	
Surrogate: 1-Chlorooctadecane		*90.0 %*	*70-130*		"	"	"	"	

Rice Operating Co.	Project: Rice Operating Co.	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/21/06 15:34

Fractionation of Aliphatics by TNRCC Method 1006

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-1 6' (6B09015-01) Soil									
C6-C8	**172**	10.0	mg/kg dry	1	EB62002	02/17/06	02/21/06	TX 1006	
>C8-C10	**314**	10.0	"	"	"	"	"	"	
>C10-C12	**318**	10.0	"	"	"	"	"	"	
>C12-C16	**733**	10.0	"	"	"	"	"	"	
>C16-C21	**612**	10.0	"	"	"	"	"	"	
>C21-C35	**568**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**2720**	10.0	"	"	"	"	"	"	
B-1 12' (6B09015-02) Soil									
C6-C8	**101**	10.0	mg/kg dry	1	EB62002	02/17/06	02/21/06	TX 1006	
>C8-C10	**382**	10.0	"	"	"	"	"	"	
>C10-C12	**571**	10.0	"	"	"	"	"	"	
>C12-C16	**1420**	10.0	"	"	"	"	"	"	
>C16-C21	**1230**	10.0	"	"	"	"	"	"	
>C21-C35	**925**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**4630**	10.0	"	"	"	"	"	"	

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

Rice Operating Co.	Project: Rice Operating Co.	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/21/06 15:34

Fractionation of Aromatics by TNRCC Method 1006

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-1 6' (6B09015-01) Soil									
C7-C8	**ND**	10.0	mg/kg dry	1	EB62002	02/17/06	02/21/06	TX 1006	
>C8-C10	**56.7**	10.0	"	"	"	"	"	"	
>C10-C12	**146**	10.0	"	"	"	"	"	"	
>C12-C16	**409**	10.0	"	"	"	"	"	"	
>C16-C21	**571**	10.0	"	"	"	"	"	"	
>C21-C35	**624**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**1810**	10.0	"	"	"	"	"	"	
B-1 12' (6B09015-02) Soil									
C7-C8	**ND**	10.0	mg/kg dry	1	EB62002	02/17/06	02/21/06	TX 1006	
>C8-C10	**45.6**	10.0	"	"	"	"	"	"	
>C10-C12	**124**	10.0	"	"	"	"	"	"	
>C12-C16	**344**	10.0	"	"	"	"	"	"	
>C16-C21	**469**	10.0	"	"	"	"	"	"	
>C21-C35	**488**	10.0	"	"	"	"	"	"	
Total Hydrocarbon C6-C35	**1470**	10.0	"	"	"	"	"	"	

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Rice Operating Co.	Project: Rice Operating Co.	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/21/06 15:34

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-1 6' (6B09015-01) Soil									
% Moisture	**4.4**	0.1	%	1	EB61305	02/10/06	02/13/06	% calculation	
B-1 12' (6B09015-02) Soil									
% Moisture	**1.0**	0.1	%	1	EB61305	02/10/06	02/13/06	% calculation	
B-1 20' (6B09015-03) Soil									
% Moisture	**0.4**	0.1	%	1	EB61305	02/10/06	02/13/06	% calculation	
B-1 30' (6B09015-04) Soil									
Chloride	**19.4**	5.00	mg/kg	10	EB61605	02/13/06	02/13/06	EPA 300.0	
% Moisture	**3.7**	0.1	%	1	EB61305	02/10/06	02/13/06	% calculation	
B-4 30' (6B09015-05) Soil									
Chloride	**537**	10.0	mg/kg	20	EB61605	02/13/06	02/13/06	EPA 300.0	
% Moisture	**2.9**	0.1	%	1	EB61305	02/10/06	02/13/06	% calculation	
V-3 20'-22' (6B09015-06) Soil									
Chloride	**2460**	50.0	mg/kg	100	EB61605	02/13/06	02/13/06	EPA 300.0	

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Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-1 6' (6B09015-01) Soil									
Benzene	ND	400	ug/kg dry	400	EB61006	02/10/06	02/10/06	EPA 8260B	
Toluene	ND	400	"	"	"	"	"	"	
Ethylbenzene	**4870**	400	"	"	"	"	"	"	
Xylene (p/m)	**25100**	400	"	"	"	"	"	"	
Xylene (o)	**500**	400	"	"	"	"	"	"	
Naphthalene	**4610**	400	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*121 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*70-121*		"	"	"	"	
Surrogate: Toluene-d8		*97.6 %*	*84-138*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.0 %*	*59-145*		"	"	"	"	
B-1 12' (6B09015-02) Soil									
Benzene	ND	400	ug/kg dry	400	EB61006	02/10/06	02/10/06	EPA 8260B	
Toluene	ND	400	"	"	"	"	"	"	
Ethylbenzene	**3290**	400	"	"	"	"	"	"	
Xylene (p/m)	**8270**	400	"	"	"	"	"	"	
Xylene (o)	ND	400	"	"	"	"	"	"	
Naphthalene	**3330**	400	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*123 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*111 %*	*70-121*		"	"	"	"	
Surrogate: Toluene-d8		*95.4 %*	*84-138*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.8 %*	*59-145*		"	"	"	"	
B-1 20' (6B09015-03) Soil									
Benzene	ND	25.0	ug/kg dry	25	EB61006	02/10/06	02/10/06	EPA 8260B	
Toluene	ND	25.0	"	"	"	"	"	"	
Ethylbenzene	ND	25.0	"	"	"	"	"	"	
Xylene (p/m)	**ND**	25.0	"	"	"	"	"	"	
Xylene (o)	ND	25.0	"	"	"	"	"	"	
Naphthalene	**J [18.3]**	25.0	"	"	"	"	"	"	J
Surrogate: Dibromofluoromethane		*113 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*101 %*	*70-121*		"	"	"	"	
Surrogate: Toluene-d8		*97.6 %*	*84-138*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*59-145*		"	"	"	"	

Rice Operating Co.	Project: Rice Operating Co.	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/21/06 15:34

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
B-1 30' (6B09015-04) Soil									
Benzene	ND	25.0	ug/kg dry	25	EB61006	02/10/06	02/10/06	EPA 8260B	
Toluene	ND	25.0	"	"	"	"	"	"	
Ethylbenzene	ND	25.0	"	"	"	"	"	"	
Xylene (p/m)	ND	25.0	"	"	"	"	"	"	
Xylene (o)	ND	25.0	"	"	"	"	"	"	
Naphthalene	**J [13.8]**	25.0	"	"	"	"	"	"	J
Surrogate: Dibromofluoromethane		*121 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*70-121*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*84-138*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*59-145*		"	"	"	"	
B-4 30' (6B09015-05) Soil									
Benzene	ND	25.0	ug/kg dry	25	EB61006	02/10/06	02/10/06	EPA 8260B	
Toluene	ND	25.0	"	"	"	"	"	"	
Ethylbenzene	ND	25.0	"	"	"	"	"	"	
Xylene (p/m)	ND	25.0	"	"	"	"	"	"	
ene (o)	ND	25.0	"	"	"	"	"	"	
Naphthalene	ND	25.0	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*116 %*	*70-139*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*70-121*		"	"	"	"	
Surrogate: Toluene-d8		*98.6 %*	*84-138*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*108 %*	*59-145*		"	"	"	"	

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 EB61031 - Solvent Extraction (GC)										
Blank (EB61031-BLK1)				Prepared: 02/10/06 Analyzed: 02/13/06						
Carbon Ranges C6-C12	ND	25.0	mg/kg wet							
Carbon Ranges C12-C28	ND	25.0	"							
Carbon Ranges C28-C35	ND	25.0	"							
Total Hydrocarbon C6-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*47.1*		*mg/kg*	*50.0*		*94.2*	*70-130*			
Surrogate: 1-Chlorooctadecane	*35.2*		*"*	*50.0*		*70.4*	*70-130*			
LCS (EB61031-BS1)				Prepared: 02/10/06 Analyzed: 02/13/06						
Carbon Ranges C6-C12	465	25.0	mg/kg wet	500		93.0	75-125			
Carbon Ranges C12-C28	525	25.0	"	500		105	75-125			
Total Hydrocarbon C6-C35	990	25.0	"	1000		99.0	75-125			
Surrogate: 1-Chlorooctane	*56.3*		*mg/kg*	*50.0*		*113*	*70-130*			
Surrogate: 1-Chlorooctadecane	*44.9*		*"*	*50.0*		*89.8*	*70-130*			
Calibration Check (EB61031-CCV1)				Prepared: 02/10/06 Analyzed: 02/13/06						
Carbon Ranges C6-C12	478		mg/kg	500		95.6	80-120			
Carbon Ranges C12-C28	563		"	500		113	80-120			
Total Hydrocarbon C6-C35	1040		"	1000		104	80-120			
Surrogate: 1-Chlorooctane	*58.5*		*"*	*50.0*		*117*	*70-130*			
Surrogate: 1-Chlorooctadecane	*54.4*		*"*	*50.0*		*109*	*70-130*			
Matrix Spike (EB61031-MS1)	**Source: 6B09002-08**			Prepared: 02/10/06 Analyzed: 02/13/06						
Carbon Ranges C6-C12	578	25.0	mg/kg dry	569	ND	102	75-125			
Carbon Ranges C12-C28	631	25.0	"	569	ND	111	75-125			
Total Hydrocarbon C6-C35	1210	25.0	"	1140	ND	106	75-125			
Surrogate: 1-Chlorooctane	*60.4*		*mg/kg*	*50.0*		*121*	*70-130*			
Surrogate: 1-Chlorooctadecane	*49.6*		*"*	*50.0*		*99.2*	*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 EB61031 - Solvent Extraction (GC)										
Matrix Spike Dup (EB61031-MSD1)	**Source: 6B09002-08**			Prepared: 02/10/06 Analyzed: 02/13/06						
Carbon Ranges C6-C12	564	25.0	mg/kg dry	569	ND	99.1	75-125	2.45	20	
Carbon Ranges C12-C28	640	25.0	"	569	ND	112	75-125	1.42	20	
Total Hydrocarbon C6-C35	1200	25.0	"	1140	ND	105	75-125	0.830	20	
Surrogate: 1-Chlorooctane	*59.5*		*mg/kg*	*50.0*		*119*	*70-130*			
Surrogate: 1-Chlorooctadecane	*48.1*		*"*	*50.0*		*96.2*	*70-130*			

Fractionation of Aliphatics by TNRCC Method 1006 - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB62002 - Solvent Extraction (GC)										
Blank (EB62002-BLK1)				Prepared: 02/17/06 Analyzed: 02/21/06						
C6-C8	ND	10.0	mg/kg wet							
>C8-C10	ND	10.0	"							
>C10-C12	ND	10.0	"							
>C12-C16	ND	10.0	"							
>C16-C21	ND	10.0	"							
>C21-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
LCS (EB62002-BS1)				Prepared: 02/17/06 Analyzed: 02/21/06						
Total Hydrocarbon C6-C35	788	10.0	mg/kg wet	1000		78.8	60-140			
Calibration Check (EB62002-CCV1)				Prepared: 02/20/06 Analyzed: 02/21/06						
Total Hydrocarbon C6-C35	973		mg/kg	1000		97.3	80-120			
Duplicate (EB62002-DUP1)	**Source: 6B09015-01**			Prepared: 02/20/06 Analyzed: 02/21/06						
C6-C8	144	10.0	mg/kg dry		172			17.7	20	
>C8-C10	264	10.0	"		314			17.3	20	
>C10-C12	261	10.0	"		318			19.7	20	
>C12-C16	604	10.0	"		733			19.3	20	
>C16-C21	533	10.0	"		612			13.8	20	
>C21-C35	476	10.0	"		568			17.6	20	
Total Hydrocarbon C6-C35	2280	10.0	"		2720			17.6	20	

Rice Operating Co.	Project: Rice Operating Co.	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	02/21/06 15:34

Fractionation of Aromatics by TNRCC Method 1006 - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB62002 - Solvent Extraction (GC)										
Blank (EB62002-BLK1)				Prepared: 02/17/06 Analyzed: 02/21/06						
C7-C8	ND	10.0	mg/kg wet							
>C8-C10	ND	10.0	"							
>C10-C12	ND	10.0	"							
>C12-C16	ND	10.0	"							
>C16-C21	ND	10.0	"							
>C21-C35	ND	10.0	"							
Total Hydrocarbon C6-C35	ND	10.0	"							
LCS (EB62002-BS1)				Prepared: 02/17/06 Analyzed: 02/21/06						
Total Hydrocarbon C6-C35	788	10.0	mg/kg wet	1000		78.8	60-140			
Calibration Check (EB62002-CCV1)				Prepared: 02/20/06 Analyzed: 02/21/06						
Total Hydrocarbon C6-C35	973		mg/kg	1000		97.3	80-120			
Duplicate (EB62002-DUP1)		**Source: 6B09015-01**		Prepared: 02/20/06 Analyzed: 02/21/06						
C7-C8	ND	10.0	mg/kg dry		ND				20	
>C8-C10	51.0	10.0	"		56.7			10.6	20	
>C10-C12	133	10.0	"		146			9.32	20	
>C12-C16	384	10.0	"		409			6.31	20	
>C16-C21	520	10.0	"		571			9.35	20	
>C21-C35	579	10.0	"		624			7.48	20	
Total Hydrocarbon C6-C35	1670	10.0	"		1810			8.05	20	

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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 EB61305 - General Preparation (Prep)										
Blank (EB61305-BLK1)				Prepared: 02/10/06 Analyzed: 02/13/06						
% Solids	100		%							
Duplicate (EB61305-DUP1)	**Source: 6B09009-01**			Prepared: 02/10/06 Analyzed: 02/13/06						
% Solids	97.2		%		96.6			0.619	20	
Duplicate (EB61305-DUP2)	**Source: 6B09016-06**			Prepared: 02/10/06 Analyzed: 02/13/06						
% Solids	90.4		%		94.9			4.86	20	
Duplicate (EB61305-DUP3)	**Source: 6B10001-09**			Prepared: 02/10/06 Analyzed: 02/13/06						
% Solids	95.1		%		95.4			0.315	20	
Duplicate (EB61305-DUP4)	**Source: 6B10005-05**			Prepared: 02/10/06 Analyzed: 02/13/06						
% Solids	73.9		%		75.0			1.48	20	
Batch EB61605 - Water Extraction										
Blank (EB61605-BLK1)				Prepared & Analyzed: 02/13/06						
Chloride	ND	0.500	mg/kg							
LCS (EB61605-BS1)				Prepared & Analyzed: 02/13/06						
Chloride	8.65		mg/L	10.0		86.5	80-120			
Calibration Check (EB61605-CCV1)				Prepared & Analyzed: 02/13/06						
Chloride	9.06		mg/L	10.0		90.6	80-120			
Duplicate (EB61605-DUP1)	**Source: 6B10001-05**			Prepared & Analyzed: 02/13/06						
Chloride	167	5.00	mg/kg		166			0.601	20	

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 EB61006 - EPA 5030C (GCMS)										
Blank (EB61006-BLK1)				Prepared & Analyzed: 02/09/06						
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	*56.3*		*ug/l*	*50.0*		*113*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*48.1*		*"*	*50.0*		*96.2*	*70-121*			
Surrogate: Toluene-d8	*46.9*		*"*	*50.0*		*93.8*	*84-138*			
Surrogate: 4-Bromofluorobenzene	*51.3*		*"*	*50.0*		*103*	*59-145*			
LCS (EB61006-BS1)				Prepared: 02/09/06 Analyzed: 02/10/06						
Benzene	1380	25.0	ug/kg wet	1250		110	70-130			
Toluene	1400	25.0	"	1250		112	70-130			
Ethylbenzene	1330	25.0	"	1250		106	70-130			
Xylene (p/m)	2730	25.0	"	2500		109	70-130			
Xylene (o)	1380	25.0	"	1250		110	70-130			
Naphthalene	1130	25.0	"	1250		90.4	70-130			
Surrogate: Dibromofluoromethane	*56.4*		*ug/l*	*50.0*		*113*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*57.2*		*"*	*50.0*		*114*	*70-121*			
Surrogate: Toluene-d8	*50.1*		*"*	*50.0*		*100*	*84-138*			
Surrogate: 4-Bromofluorobenzene	*48.5*		*"*	*50.0*		*97.0*	*59-145*			
Calibration Check (EB61006-CCV1)				Prepared & Analyzed: 02/09/06						
Toluene	49.3		ug/l	50.0		98.6	70-130			
Ethylbenzene	53.7		"	50.0		107	70-130			
Surrogate: Dibromofluoromethane	*59.0*		*"*	*50.0*		*118*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*53.6*		*"*	*50.0*		*107*	*70-121*			
Surrogate: Toluene-d8	*48.7*		*"*	*50.0*		*97.4*	*84-138*			
Surrogate: 4-Bromofluorobenzene	*52.4*		*"*	*50.0*		*105*	*59-145*			

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 EB61006 - EPA 5030C (GCMS)										
Matrix Spike (EB61006-MS1)	**Source: 6B08021-01**			Prepared: 02/09/06 Analyzed: 02/10/06						
Benzene	1530	25.0	ug/kg dry	1420	ND	108	70-130			
Toluene	1550	25.0	"	1420	ND	109	70-130			
Ethylbenzene	1460	25.0	"	1420	ND	103	70-130			
Xylene (p/m)	3090	25.0	"	2850	ND	108	70-130			
Xylene (o)	1550	25.0	"	1420	ND	109	70-130			
Naphthalene	1420	25.0	"	1420	15.3	98.9	70-130			
Surrogate: Dibromofluoromethane	*55.9*		*ug/l*	*50.0*		*112*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*57.8*		"	*50.0*		*116*	*70-121*			
Surrogate: Toluene-d8	*48.7*		"	*50.0*		*97.4*	*84-138*			
Surrogate: 4-Bromofluorobenzene	*48.9*		"	*50.0*		*97.8*	*59-145*			
Matrix Spike Dup (EB61006-MSD1)	**Source: 6B08021-01**			Prepared: 02/09/06 Analyzed: 02/10/06						
Benzene	1590	25.0	ug/kg dry	1420	ND	112	70-130	3.64	20	
Toluene	1600	25.0	"	1420	ND	113	70-130	3.60	20	
Ethylbenzene	1550	25.0	"	1420	ND	109	70-130	5.66	20	
Xylene (p/m)	3180	25.0	"	2850	ND	112	70-130	3.64	20	
Xylene (o)	1610	25.0	"	1420	ND	113	70-130	3.60	20	
Naphthalene	1460	25.0	"	1420	15.3	102	70-130	3.09	20	
Surrogate: Dibromofluoromethane	*57.2*		*ug/l*	*50.0*		*114*	*70-139*			
Surrogate: 1,2-Dichloroethane-d4	*58.2*		"	*50.0*		*116*	*70-121*			
Surrogate: Toluene-d8	*49.0*		"	*50.0*		*98.0*	*84-138*			
Surrogate: 4-Bromofluorobenzene	*50.0*		"	*50.0*		*100*	*59-145*			

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: 2/21/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

120 East I-20
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: Rice Operating Company
Project #:
Project Loc: EME I-1 Site
PO #:

ELOT # (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: TPH: 418.1 / 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	TOTAL: BTEX 8021B/5030 or BTEX 8260	ASTM C-117	ASTM C-136	Total Dissolved Solids	Chlorides	Moisture	TX1005	RUSH TAT (Pre-Schedule)	Standard TAT
602905																															
-01	B-1 (6')	2-8-06	1139	1	✓									✓									✓						✓		✓
-02	B-1 (12')	2-8-06	1149	1	✓									✓									✓						✓		✓
-03	B-1 (20')	2-8-06	1207	1	✓									✓									✓					mist	✓		✓
-04	B-1 (30')	2-8-06	1229	1	✓									✓									✓				✓				✓
-05	B-4 (30')	2-8-06	1429	1	✓									✓									✓				✓				✓
-06	MW-3 (20-22')	2-7-06	1517	1	✓									✓													✓				✓

Special Instructions: Email results to gil@rthicksconsult.com and kpriceswd@valornet.com

Sample Containers Intact? Y N
Temperature Upon Receipt: 3.5
Laboratory Comments: 4oz glass
Label seal ier

Relinquished by:	Date	Time	Received by:	Date	Time
	2/9/06	3:55			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				2/9/06	3:55

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

Client: Rice Op.

Date/Time: 2/9/06 3:55

Order #: 602090 15

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	3.5 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:

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME I-1 SWD

Project Number: None Given

Location: T20S-R36E-Sec1T, Lea County, NM

Lab Order Number: 6H31004

Report Date: 09/06/06

Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: EME I-1 SWD
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6H31004-01	Water	08/28/06 10:25	08-31-2006 10:15
Monitor Well #2	6H31004-02	Water	08/28/06 11:40	08-31-2006 10:15
Monitor Well #3	6H31004-03	Water	08/28/06 09:05	08-31-2006 10:15

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Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: EME I-1 SWD
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H31004-01) Water									
Benzene	ND	0.00100	mg/L	1	EH63104	08/31/06	08/31/06	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		*110 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.5 %*		*80-120*		"	"	"	
Monitor Well #2 (6H31004-02) Water									
Benzene	**0.00130**	0.00100	mg/L	1	EH63104	08/31/06	08/31/06	EPA 8021B	
Toluene	**I [0.000562]**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00359**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00229**	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*110 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.8 %*		*80-120*		"	"	"	
Monitor Well #3 (6H31004-03) Water									
Benzene	ND	0.00100	mg/L	1	EH63104	08/31/06	08/31/06	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		*101 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.5 %*		*80-120*		"	"	"	

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Rice Operating Co.	Project: EME J-1 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H31004-01) Water									
Total Alkalinity	**396**	4.00	mg/L	2	EH63107	08/31/06	08/31/06	EPA 310.1M	
Chloride	**2360**	25.0	"	50	EH63108	08/31/06	08/31/06	EPA 300.0	
Total Dissolved Solids	**4540**	10.0	"	1	EI60503	08/31/06	09/05/06	EPA 160.1	
Sulfate	**66.7**	25.0	"	50	EH63108	08/31/06	08/31/06	EPA 300.0	
Monitor Well #2 (6H31004-02) Water									
Total Alkalinity	**400**	4.00	mg/L	2	EH63107	08/31/06	08/31/06	EPA 310.1M	
Chloride	**3880**	50.0	"	100	EH63108	08/31/06	08/31/06	EPA 300.0	
Total Dissolved Solids	**6560**	10.0	"	1	EI60503	08/31/06	09/05/06	EPA 160.1	
Sulfate	**98.3**	50.0	"	100	EH63108	08/31/06	08/31/06	EPA 300.0	
Monitor Well #3 (6H31004-03) Water									
Total Alkalinity	**400**	4.00	mg/L	2	EH63107	08/31/06	08/31/06	EPA 310.1M	
Chloride	**2790**	50.0	"	100	EH63108	08/31/06	08/31/06	EPA 300.0	
Total Dissolved Solids	**4970**	10.0	"	1	EI60503	08/31/06	09/05/06	EPA 160.1	
Sulfate	**139**	50.0	"	100	EH63108	08/31/06	08/31/06	EPA 300.0	

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Rice Operating Co.	Project: EME I-1 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H31004-01) Water									
Calcium	409	4.05	mg/L	50	EH63111	08/31/06	08/31/06	EPA 6010B	
Magnesium	201	1.80	"	"	"	"	"	"	
Potassium	16.9	0.600	"	10	"	"	"	"	
Sodium	852	10.8	"	250	"	"	"	"	
Monitor Well #2 (6H31004-02) Water									
Calcium	609	20.2	mg/L	250	EH63111	08/31/06	08/31/06	EPA 6010B	
Magnesium	340	9.00	"	"	"	"	"	"	
Potassium	25.4	0.600	"	10	"	"	"	"	
Sodium	1260	10.8	"	250	"	"	"	"	
Monitor Well #3 (6H31004-03) Water									
Calcium	449	4.05	mg/L	50	EH63111	08/31/06	08/31/06	EPA 6010B	
Magnesium	195	1.80	"	"	"	"	"	"	
Potassium	18.4	0.600	"	10	"	"	"	"	
Sodium	952	10.8	"	250	"	"	"	"	

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Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: EME I-1 SWD
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EH63104 - EPA 5030C (GC)										
Blank (EH63104-BLK1)				Prepared & Analyzed: 08/31/06						
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	*39.0*		*ug/l*	*40.0*		*97.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.9*		"	*40.0*		*92.2*	*80-120*			
LCS (EH63104-BS1)				Prepared & Analyzed: 08/31/06						
Benzene	0.0489	0.00100	mg/L	0.0500		97.8	80-120			
Toluene	0.0518	0.00100	"	0.0500		104	80-120			
Ethylbenzene	0.0507	0.00100	"	0.0500		101	80-120			
Xylene (p/m)	0.119	0.00100	"	0.100		119	80-120			
Xylene (o)	0.0574	0.00100	"	0.0500		115	80-120			
Surrogate: a,a,a-Trifluorotoluene	*43.5*		*ug/l*	*40.0*		*109*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*47.5*		"	*40.0*		*119*	*80-120*			
Calibration Check (EH63104-CCV1)				Prepared & Analyzed: 08/31/06						
Benzene	51.7		ug/l	50.0		103	80-120			
Toluene	54.4		"	50.0		109	80-120			
Ethylbenzene	52.4		"	50.0		105	80-120			
Xylene (p/m)	109		"	100		109	80-120			
Xylene (o)	52.8		"	50.0		106	80-120			
Surrogate: a,a,a-Trifluorotoluene	*44.9*		"	*40.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*39.8*		"	*40.0*		*99.5*	*80-120*			
Matrix Spike (EH63104-MS1)	**Source: 6H31005-03**			Prepared & Analyzed: 08/31/06						
Benzene	0.0511	0.00100	mg/L	0.0500	ND	102	80-120			
Toluene	0.0537	0.00100	"	0.0500	ND	107	80-120			
Ethylbenzene	0.0500	0.00100	"	0.0500	ND	100	80-120			
Xylene (p/m)	0.118	0.00100	"	0.100	ND	118	80-120			
Xylene (o)	0.0564	0.00100	"	0.0500	ND	113	80-120			
Surrogate: a,a,a-Trifluorotoluene	*43.9*		*ug/l*	*40.0*		*110*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.1*		"	*40.0*		*115*	*80-120*			

Rice Operating Co.	Project: EME I-1 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EH63104 - EPA 5030C (GC)										
Matrix Spike Dup (EH63104-MSD1)	**Source: 6H31005-03**			Prepared & Analyzed: 08/31/06						
Benzene	0.0513	0.00100	mg/L	0.0500	ND	103	80-120	0.976	20	
Toluene	0.0536	0.00100	"	0.0500	ND	107	80-120	0.00	20	
Ethylbenzene	0.0511	0.00100	"	0.0500	ND	102	80-120	1.98	20	
Xylene (p/m)	0.112	0.00100	"	0.100	ND	112	80-120	5.22	20	
Xylene (o)	0.0531	0.00100	"	0.0500	ND	106	80-120	6.39	20	
Surrogate: a,a,a-Trifluorotoluene	*43.9*		*ug/l*	*40.0*		*110*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.1*		*"*	*40.0*		*115*	*80-120*			

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Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: EME I-1 SWD
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EH63107 - General Preparation (WetChem)										
Blank (EH63107-BLK1)				Prepared & Analyzed: 08/31/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EH63107-BS1)				Prepared & Analyzed: 08/31/06						
Bicarbonate Alkalinity	186	2.00	mg/L	200		93.0	85-115			
Duplicate (EH63107-DUP1)	Source: 6H29001-02			Prepared & Analyzed: 08/31/06						
Total Alkalinity	136	2.00	mg/L		140			2.90	20	
Reference (EH63107-SRM1)				Prepared & Analyzed: 08/31/06						
Total Alkalinity	252		mg/L	250		101	90-110			
Batch EH63108 - General Preparation (WetChem)										
Blank (EH63108-BLK1)				Prepared & Analyzed: 08/31/06						
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							
LCS (EH63108-BS1)				Prepared & Analyzed: 08/31/06						
Sulfate	10.6	0.500	mg/L	10.0		106	80-120			
Chloride	10.7	0.500	"	10.0		107	80-120			
Calibration Check (EH63108-CCV1)				Prepared & Analyzed: 08/31/06						
Sulfate	11.0		mg/L	10.0		110	80-120			
Chloride	10.8		"	10.0		108	80-120			
Duplicate (EH63108-DUP1)	Source: 6H31002-01			Prepared & Analyzed: 08/31/06						
Chloride	4150	100	mg/L		4180			0.720	20	
Sulfate	ND	100	"		ND				20	

Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: EME I-1 SWD
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EH63108 - General Preparation (WetChem)										
Duplicate (EH63108-DUP2)		**Source: 6H31006-02**		Prepared & Analyzed: 08/31/06						
Chloride	386	12.5	mg/L		386			0.00	20	
Sulfate	516	12.5	"		515			0.194	20	
Matrix Spike (EH63108-MS1)		**Source: 6H31002-01**		Prepared & Analyzed: 08/31/06						
Sulfate	2000	100	mg/L	2000	ND	100	80-120			
Chloride	6290	100	"	2000	4180	106	80-120			
Matrix Spike (EH63108-MS2)		***Source: 6H31006-02***		*Prepared & Analyzed: 08/31/06*						
Sulfate	777	12.5	mg/L	250	515	105	80-120			
Chloride	654	12.5	"	250	386	107	80-120			
Batch EI60503 - Filtration Preparation										
Blank (EI60503-BLK1)				Prepared: 08/30/06 Analyzed: 09/05/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EI60503-DUP1)		**Source: 6H30007-01**		Prepared: 08/30/06 Analyzed: 09/05/06						
Total Dissolved Solids	2770	10.0	mg/L		2820			1.79	5	
Duplicate (EI60503-DUP2)		**Source: 6H31005-04**		Prepared: 08/31/06 Analyzed: 09/05/06						
Total Dissolved Solids	3360	10.0	mg/L		3400			1.18	5	

Rice Operating Co.
122 W. Taylor
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Project: EME I-1 SWD
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EH63111 - 6010B/No Digestion										
Blank (EH63111-BLK1)				Prepared & Analyzed: 08/31/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EH63111-CCV1)				Prepared & Analyzed: 08/31/06						
Calcium	2.23		mg/L	2.00		112	85-115			
Magnesium	2.25		"	2.00		112	85-115			
Potassium	1.72		"	2.00		86.0	85-115			
Sodium	1.83		"	2.00		91.5	85-115			
Duplicate (EH63111-DUP1)		**Source: 6H30007-01**		Prepared & Analyzed: 08/31/06						
Calcium	11.8	0.810	mg/L		12.5			5.76	20	
Magnesium	5.41	0.360	"		4.96			8.68	20	
Potassium	6.31	0.600	"		6.38			1.10	20	
Sodium	908	10.8	"		857			5.78	20	

Rice Operating Co.	Project: EME I-1 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

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: 9/6/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
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 Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174
Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valomet.com

Project Name: EME I-1 SWD
Project Number:
Project Loc: T20S-R36E-Sec1T, Lea County NM
PO Number:

Analyze For: TCLP: / TOTAL: X (BTEX)

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl (2) 40 ml glass vials	NaOH	H_2SO_4	None (1) 1 Liter HDPE	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	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	RCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
01	Monitor Well #1	8/28/2006	10:25	3	X		2			1		X					X	X					X			X					X
02	Monitor Well #2	8/28/2006	11:40	3	X		2			1		X					X	X					X			X					X
03	Monitor Well #3	8/28/2006	9:05	3	X		2			1		X					X	X					X			X					X

Special Instructions:

PLEASE Email RESULTS TO: kpope@riceswd.com; mfranks@riceswd.com
rozanne@valomet.com

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	8/31/06	5:30	James Johnson	8/31/06	5:31
Relinquished by: James Johnson	8/31/06	10:15	Received by ELOT:	8/31/06	10:15

Sample Containers Intact? Y N
Labels on Container? Y N
Custody Seals: Containers / Cooler
Temperature Upon Receipt: 1.0°C
Laboratory Comments: w/ labels

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice Op.

Date/ Time: 8/31/06 10:15

Lab ID #: 608310004

Initials: CK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	1.0 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Yes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF
12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: Plains Pipeline

Project Number: None Given

Location: Monument Area- Lea County, NM

Lab Order Number: 6I13003

Report Date: 09/20/06

Rice Operating Co.	Project: Plains Pipeline	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Texaco Skelly F- Monitor Well #1	6I13003-01	Water	09/08/06 09:00	09-13-2006 07:50
Monument Barber- Monitor Well #4	6I13003-02	Water	09/08/06 11:45	09-13-2006 07:50
Red Byrd #1- Monitor Well #18	6I13003-03	Water	09/06/06 12:20	09-13-2006 07:50
Bob Durham- Monitor Well #21	6I13003-07	Water	09/07/06 13:15	09-13-2006 07:50

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Rice Operating Co.	Project: Plains Pipeline	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Texaco Skelly F- Monitor Well #1 (6I13003-01) Water									
Total Alkalinity	**544**	2.00	mg/L	1	EI61412	09/14/06	09/14/06	EPA 310.1M	
Chloride	**1300**	25.0	"	50	EI61313	09/13/06	09/13/06	EPA 300.0	
Total Dissolved Solids	**3400**	10.0	"	1	EI61502	09/13/06	09/14/06	EPA 160.1	
Sulfate	**553**	25.0	"	50	EI61313	09/13/06	09/13/06	EPA 300.0	
Monument Barber- Monitor Well #4 (6I13003-02) Water									
Total Alkalinity	**360**	2.00	mg/L	1	EI61412	09/14/06	09/14/06	EPA 310.1M	
Chloride	**260**	5.00	"	10	EI61313	09/13/06	09/13/06	EPA 300.0	
Total Dissolved Solids	**940**	10.0	"	1	EI61502	09/13/06	09/15/06	EPA 160.1	
Sulfate	**71.9**	5.00	"	10	EI61313	09/13/06	09/13/06	EPA 300.0	
Red Byrd #1- Monitor Well #18 (6I13003-03) Water									
Total Alkalinity	**820**	2.00	mg/L	1	EI61412	09/14/06	09/14/06	EPA 310.1M	
Chloride	**4850**	100	"	200	EI61313	09/13/06	09/13/06	EPA 300.0	
Total Dissolved Solids	**8750**	10.0	"	1	EI61502	09/13/06	09/14/06	EPA 160.1	
Sulfate	**343**	100	"	200	EI61313	09/13/06	09/13/06	EPA 300.0	
Bob Durham- Monitor Well #21 (6I13003-07) Water									
Total Alkalinity	**324**	2.00	mg/L	1	EI61412	09/14/06	09/14/06	EPA 310.1M	
Chloride	**74.1**	5.00	"	10	EI61313	09/13/06	09/13/06	EPA 300.0	
Total Dissolved Solids	**666**	10.0	"	1	EI61502	09/13/06	09/14/06	EPA 160.1	
Sulfate	**72.7**	5.00	"	10	EI61313	09/13/06	09/13/06	EPA 300.0	

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Rice Operating Co.	Project: Plains Pipeline	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Texaco Skelly F- Monitor Well #1 (6I13003-01) Water									
Calcium	**82.9**	0.810	mg/L	10	EI61402	09/14/06	09/14/06	EPA 6010B	
Magnesium	**56.4**	0.360	"	"	"	"	"	"	
Potassium	**20.1**	0.600	"	"	"	"	"	"	
Sodium	**1010**	10.8	"	250	"	"	"	"	
Monument Barber- Monitor Well #4 (6I13003-02) Water									
Calcium	**160**	4.05	mg/L	50	EI61402	09/14/06	09/14/06	EPA 6010B	
Magnesium	**39.2**	0.360	"	10	"	"	"	"	
Potassium	**10.9**	0.600	"	"	"	"	"	"	
Sodium	**89.6**	0.430	"	"	"	"	"	"	
Red Byrd #1- Monitor Well #18 (6I13003-03) Water									
Calcium	**233**	4.05	mg/L	50	EI61402	09/14/06	09/14/06	EPA 6010B	
Magnesium	**197**	1.80	"	"	"	"	"	"	
Potassium	**39.5**	0.600	"	10	"	"	"	"	
Sodium	**2870**	21.5	"	500	"	"	"	"	
Bob Durham- Monitor Well #21 (6I13003-07) Water									
Calcium	**103**	4.05	mg/L	50	EI61402	09/14/06	09/14/06	EPA 6010B	
Magnesium	**19.3**	0.360	"	10	"	"	"	"	
Potassium	**3.23**	0.600	"	"	"	"	"	"	
Sodium	**50.2**	0.430	"	"	"	"	"	"	

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Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: Plains Pipeline
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

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 EI61313 - General Preparation (WetChem)										
Blank (EI61313-BLK1)				Prepared & Analyzed: 09/13/06						
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							
LCS (EI61313-BS1)				Prepared & Analyzed: 09/13/06						
Sulfate	10.8	0.500	mg/L	10.0		108	80-120			
Chloride	10.5	0.500	"	10.0		105	80-120			
Calibration Check (EI61313-CCV1)				Prepared & Analyzed: 09/13/06						
Chloride	10.1		mg/L	10.0		101	80-120			
Sulfate	10.3		"	10.0		103	80-120			
Duplicate (EI61313-DUP1)	**Source: 6I11006-01**			Prepared & Analyzed: 09/13/06						
Sulfate	120	5.00	mg/L		121			0.830	20	
Chloride	107	5.00	"		108			0.930	20	
Duplicate (EI61313-DUP2)	**Source: 6I13003-07**			Prepared & Analyzed: 09/13/06						
Sulfate	73.3	5.00	mg/L		72.7			0.822	20	
Chloride	72.3	5.00	"		74.1			2.46	20	
Matrix Spike (EI61313-MS1)	**Source: 6I11006-01**			Prepared & Analyzed: 09/13/06						
Chloride	208	5.00	mg/L	100	108	100	80-120			
Sulfate	219	5.00	"	100	121	98.0	80-120			
Matrix Spike (EI61313-MS2)	**Source: 6I13003-07**			Prepared & Analyzed: 09/13/06						
Sulfate	180	5.00	mg/L	100	72.7	107	80-120			
Chloride	181	5.00	"	100	74.1	107	80-120			

Rice Operating Co.	Project: Plains Pipeline	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EI61412 - General Preparation (WetChem)										
Blank (EI61412-BLK1)				Prepared & Analyzed: 09/14/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EI61412-BS1)				Prepared & Analyzed: 09/14/06						
Total Alkalinity	190	2.00	mg/L	200		95.0	85-115			
Duplicate (EI61412-DUP1)	**Source: 6I11006-01**			Prepared & Analyzed: 09/14/06						
Total Alkalinity	192	2.00	mg/L		194			1.04	20	
Reference (EI61412-SRM1)				Prepared & Analyzed: 09/14/06						
Total Alkalinity	244		mg/L	250		97.6	90-110			
Batch EI61502 - Filtration Preparation										
Blank (EI61502-BLK1)				Prepared: 09/13/06 Analyzed: 09/14/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EI61502-DUP1)	**Source: 6I13001-01**			Prepared: 09/13/06 Analyzed: 09/14/06						
Total Dissolved Solids	808	10.0	mg/L		788			2.51	5	
Duplicate (EI61502-DUP2)	**Source: 6I13003-02**			Prepared: 09/13/06 Analyzed: 09/15/06						
Total Dissolved Solids	918	10.0	mg/L		940			2.37	5	

Rice Operating Co.	Project: Plains Pipeline	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

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 EI61402 - 6010B/No Digestion										
Blank (EI61402-BLK1)				Prepared & Analyzed: 09/14/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EI61402-CCV1)				Prepared & Analyzed: 09/14/06						
Calcium	2.18		mg/L	2.00		109	85-115			
Magnesium	2.18		"	2.00		109	85-115			
Potassium	1.84		"	2.00		92.0	85-115			
Sodium	1.91		"	2.00		95.5	85-115			
Duplicate (EI61402-DUP1)	**Source: 6I11006-01**			Prepared & Analyzed: 09/14/06						
Calcium	51.8	0.810	mg/L		51.8			0.00	20	
Magnesium	29.0	0.360	"		29.0			0.00	20	
Potassium	5.34	0.600	"		5.64			5.46	20	
Sodium	72.1	0.430	"		75.0			3.94	20	

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

Rice Operating Co.
122 W. Taylor
Hobbs NM, 88240

Project: Plains Pipeline
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

Notes and Definitions

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: 9/20/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
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 Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

Project Name: Plains Pipeline
Project #:
Project Loc: Monument Area ~ Lea County, NM
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3 (1) 250 ml HDPE	Preservative: HCl (5) 40 ml glass vials	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None (1) 1 Liter HDPE	Preservative: None (1) 250ml HDPE	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify): (1) 250 ml HDP	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	TOTAL: 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	RCI	N.O.R.M.	Total Dissolved Solids	RUSH TAT (Pre-Schedule)	Standard TAT
01	Texaco Skelly F ~ Monitor Well #1	9/8/2006	9:00	1	X					1		X					X	X					X			X		
02	Monument Barber ~ Monitor Well #4	9/8/2006	11:45	1	X					1		X					X	X					X			X		
03	Red Byrd #1 ~ Monitor Well #18	9/6/2006	12:20	1	X					1		X					X	X					X			X		
04	~~Monument #2 ~ Monitor Well #3~~ Cancel	9/5/2006	11:30	1	X					1		X					X	X					X			X		
05	~~Monument #18 ~ Monitor Well #7~~ Cancel	9/5/2006	13:00	1	X					1		X					X	X					X			X		
06	~~Lea-to-Monument 6" ~ Monitor Well #8~~ Cancel	9/5/2006	14:40	1	X					1		X					X	X					X			X		
07	Bob Durham ~ Monitor Well #21	9/7/2006	13:15	1	X					1		X					X	X					X			X		

Special Instructions:

PLEASE Email RESULTS TO: kpope@riceswd.com & mfranks@riceswd.com
rozanne@valornet.com

Sample Containers Intact? Y N
Labels on container? Y N
Custody Seals: Containers / Cooler
Temperature Upon Receipt 2.0°C

Laboratory Comments:
-04, -05, -06 Cancel - will resample
9-13-06 See attached email

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	9/13/06	5:00	James Johnson	9/13/06	5:01
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
James Johnson	9/13/06	0750		9-13-06	0750

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

[illegible]: Rice Op.

Date/ Time: 9/13/06 11:50

Lab ID # : 6I13003

Initials: CK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	2.0 °C	
#2	Shipping container in good condition?	Yes (circled)	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes (circled)	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes (circled)	No	Not Present	
#5	Chain of Custody present?	Yes (circled)	No		
#6	Sample instructions complete of Chain of Custody?	Yes (circled)	No		
#7	Chain of Custody signed when relinquished/ received?	Yes (circled)	No		
#8	Chain of Custody agrees with sample label(s)?	Yes (circled)	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes (circled)	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes (circled)	No		
#11	Containers supplied by ELOT?	Yes (circled)	No		
#12	Samples in proper container/ bottle?	Yes (circled)	No	See Below	
#13	Samples properly preserved?	Yes (circled)	No	See Below	
#14	Sample bottles intact?	Yes (circled)	No		
#15	Preservations documented on Chain of Custody?	Yes (circled)	No		
#16	Containers documented on Chain of Custody?	Yes (circled)	No		
#17	Sufficient sample amount for indicated test(s)?	Yes (circled)	No	See Below	
#18	All samples received within sufficient hold time?	Yes (circled)	No (circled)	See Below (circled)	
#19	VOC samples have zero headspace?	Yes (circled)	No	Not Applicable	

Variance Documentation

Contact: Rozanne Johnson Contacted by: Jeanne McMurray Date/ Time: ____________

Regarding: TDS expired hold time on 3 samples

Corrective Action Taken:

Client will resample

Check all that Apply:

- [X] See attached (e-mail circled)/ fax
- [ ] Client understands and would like to proceed with analysis
- [ ] Cooling process had begun shortly after sampling event

Appendix D

Investigation & Characterization Plan

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 2565

February 25, 2005

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

RE: **INVESTIGATION & CHARACTERIZATION PLAN**
EME I-1 Offsite Encroachment
T20S-R36E-Section 1, Unit Letter I
NMOCD CASE # 1R0336

Mr. Price:

RICE Operating Company (ROC) has retained Trident Environmental to address potential environmental concerns at the above-referenced site. ROC would like to retract the earlier submitted work plan dated October 1, 2004, for consideration of the further actions proposed herein as a response to the concerns expressed in your email dated December 8, 2004, which reads in part, as follows:

"The Trident report dated October 01, 2004 included in ROC's plan, mentioned above, does not clearly point out how this site will be remediated and closed. It appears it is a stand alone plan not to be associated with any generic plan previously approved. Therefore, OCD has the following concerns:

1. *What TPH, BTEX and Chlorides levels will be used for delineation.*
2. *Please define most highly contaminated soils. What TPH and Chloride levels?*
3. *Please define unimpacted overburden. What TPH, BTEX and Chloride levels?*
4. *What will be the levels of TPH, BTEX and Chlorides for backfill material. Will these materials be leachable?*
5. *If only one liner is installed and it is at the bottom, what will prevent infiltration from seeping through the backfill and simply running off to the side into groundwater?*
6. *The plan mentions the surface will be contoured, reseeded with native vegetation and monitored for growth, implying this procedure will eliminate any ponding and promote evapotranspiration, thereby minimizing natural infiltration. The plan does not provide any evidence this will work or a plan for future monitoring. OCD understands this year along there has been enormous rainfall in the Hobbs/Monument area. Is this accounted for?*
7. *Upon completion of activities, the plan mentions that closure samples will be collected. Please provide a more detail explanation.*
8. *Will the plan delineate to groundwater if necessary?*

Please respond so OCD may properly evaluate this proposal."

BACKGROUND

The I-1 Offsite Encroachment site is located on State Land in township 20 south, range 36 east, section 1, unit letter I approximately 1 mile south of the intersection of County Road 322 and County Road 41 in Lea County, NM as shown on the attached Site Location Map. ROC has a Salt Water Disposal Easement (SWD-062) with the New Mexico State Land Office at this location. Land in the site area is primarily utilized for crude oil production and cattle ranching. Area crude oil production is operated by ChevronTexaco and Amerada Hess.

PREVIOUS WORK

The upgrade of the EME I-1 SWD facility was initiated in February 2002 in accordance with the revised Generic Closure Plan for Existing Pits and Below-Grade Redwood Tanks (last revision February 23, 2000). Excavation activities began in October 2002. Because of the existence of an active 10-inch diameter asbestos-concrete saltwater pipeline and an abandoned Conoco 4-inch steel pipeline (see site map) excavation work did not extend further southwest due to safety concerns and suspected encroachment from an offsite source in that area not associated with the redwood tanks. ROC submitted the EME SWD I-1 Tank and Pit Closure (Partial) Report on November 5, 2004. This report was designated as "partial" because it addressed just the tank and pit closure area and not other suspected offsite encroachment sources.

RECOMMENDATION FOR FURTHER ACTIONS

Due to the excavation, lining and backfilling of the source area below the former redwood tanks and the emergency overflow pit there no longer remains a threat of impact from the vadose zone in that portion of the site. However, during the excavation activities it was apparent that impacted soils in the southwest portion of the site were from a source *other than* the redwood tanks and/or emergency pit (offsite source and/or historic line leaks). Further northwest of the site along the 10-inch pipeline is another area suspected of possible impact from offsite encroachment. Recently, the 10-inch pipeline and junction box were relocated to the eastern portion of the site allowing for further actions, as recommended below, to address these areas.

Task 1 *Evaluate Concentrations of Constituents of Concern in the Vadose Zone*

A more complete delineation of the vadose zone in this area of the site and assessment of the potential for groundwater impact are necessary to assist ROC in selecting the appropriate soil and/or groundwater remedy. An environmental drilling firm will be mobilized on site to acquire subsurface soil samples for characterization of the lateral and vertical extent of hydrocarbon- and chloride-impacted soil. Samples will be collected with a split-spoon sampling tool in accordance with the procedures explained in QP-02, QP-03, and QP-07 (attached). Soil samples will be collected periodically (five feet intervals) and field-tested for chloride content using the titration method. 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 will also be collected for headspace analysis using an organic vapor meter (OVM), which will be calibrated to assume a benzene response factor. Samples with headspace readings or GRO levels above 100 ppm will also be analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B.

The following concentrations of analytes will be used to delineate the lateral and vertical extent of impact to the vadose zone:

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

Task 2 *Evaluate Concentrations of Constituents of Concern in the Groundwater*

If the soil sampling conducted in Task 1 indicates groundwater impact from hydrocarbons and/or chlorides is likely, a minimum of one monitoring well will be installed at the location where impact is most suspected. If groundwater impact is confirmed above WQCC standards, additional monitoring wells may be installed to determine the extent of groundwater impact. Groundwater samples will be collected in accordance with procedures explained in QP-04 and QP-05 (attached), and analyzed for BTEX, major ions, and total dissolved solids (TDS).

The information gathered from tasks 1 and 2 will be evaluated and utilized to design a soil and/or ground water remedy if needed. The remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. Such recommendations and findings will be presented to NMOCD in a subsequent Corrective Action Plan (CAP). When evaluating 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. Therefore, your timely review of this submission is requested.

We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-3106 or Kristin Farris Pope at 505-393-9174, if you have any questions.

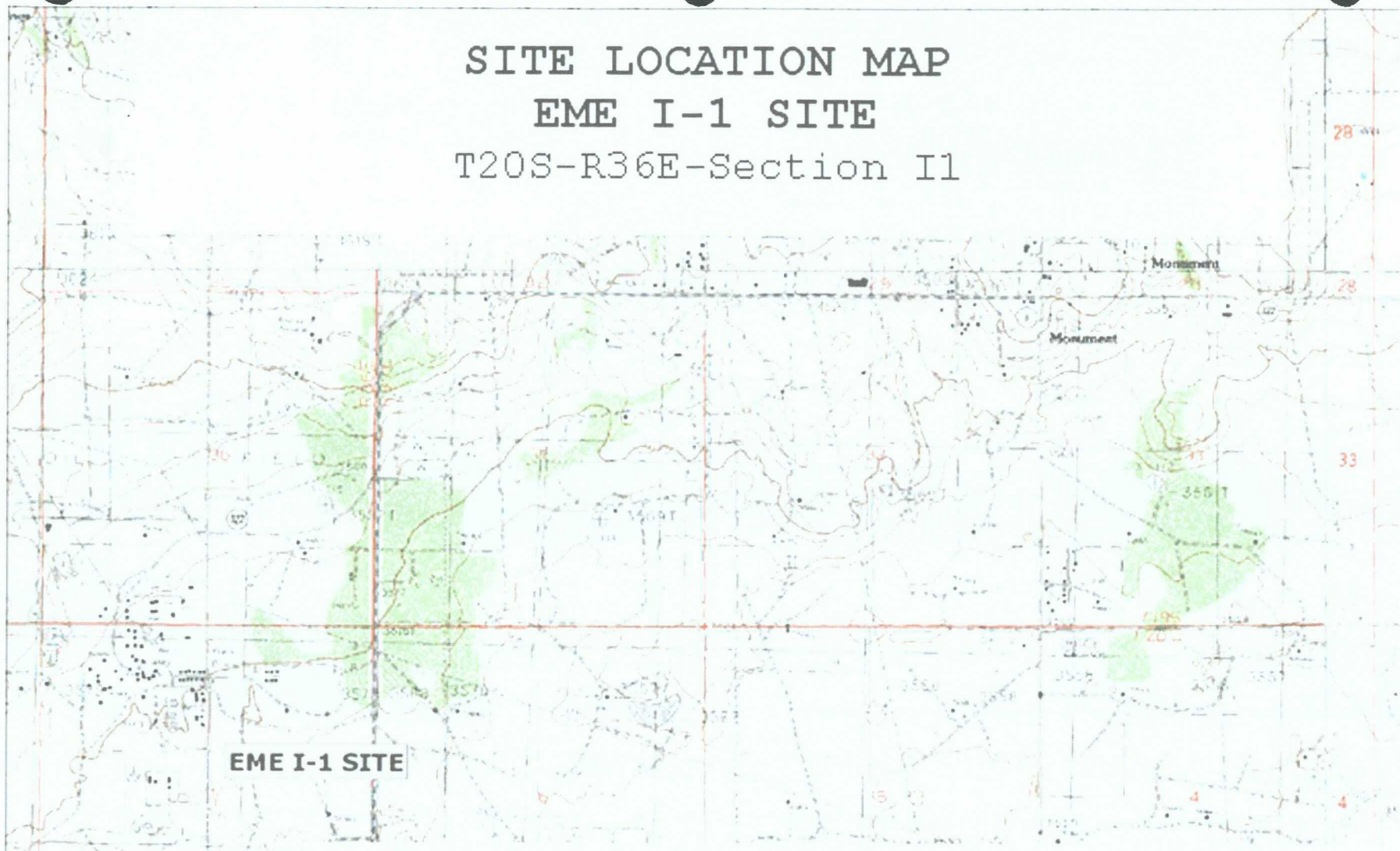
Sincerely,

Gilbert J. Van Deventer, REM, PG, NMCS
Trident Environmental - Project Manager

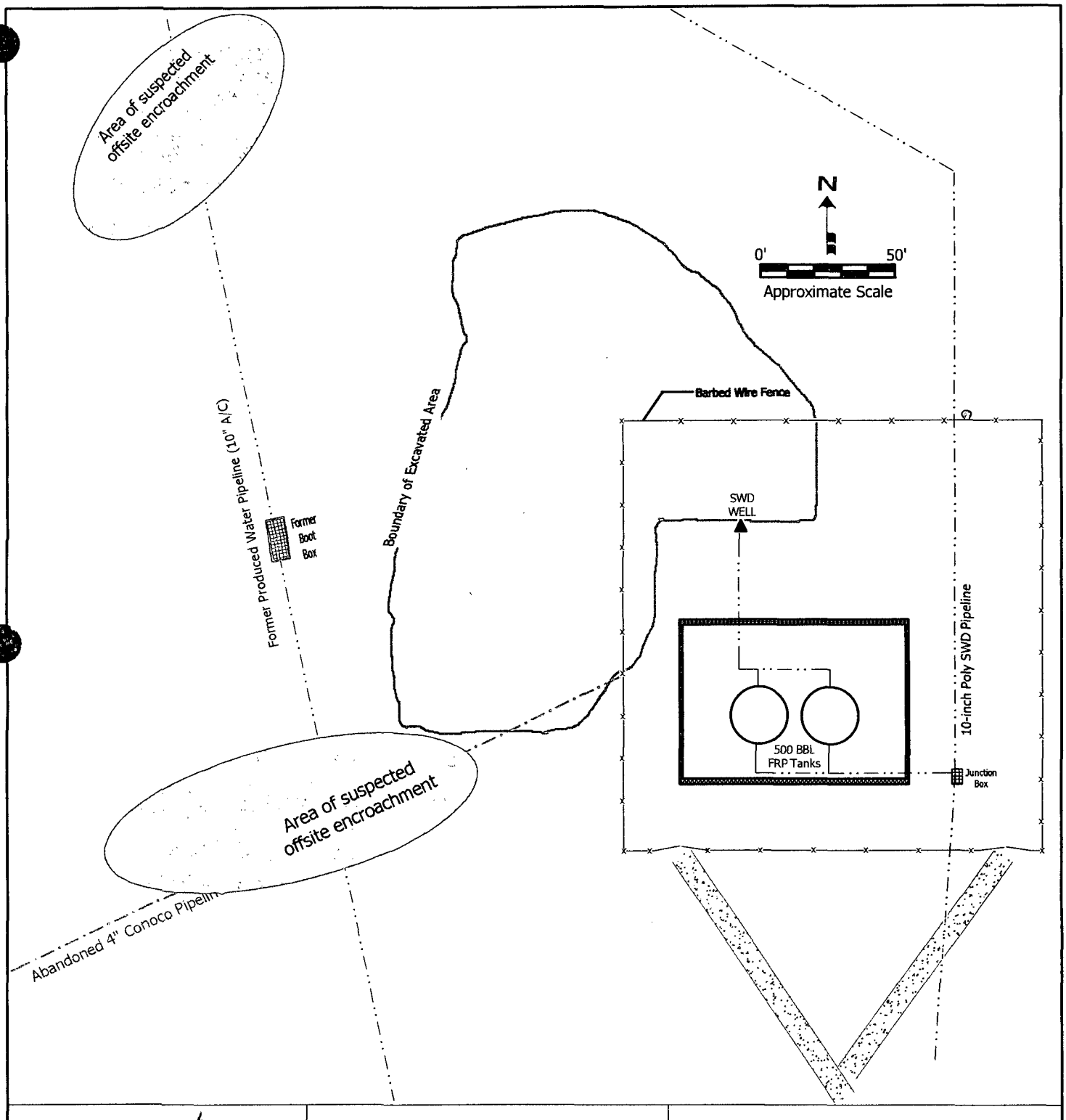
cc: CDH, KFP, file

enclosures: site location map, site map, and sampling procedures

SITE LOCATION MAP
EME I-1 SITE
T20S-R36E-Section I1



Directions: From the junction of Hwy 322 and Hwy 8 in Monument proceed 2 miles west on Hwy 322 then 0.5 miles south. Turn left onto CR 41 (Maddox Rd) and continue 1.1 miles south. Turn right onto caliche lease road and proceed west 0.1 miles. Turn right at next caliche road and continue 0.1 miles north to site.



TRIDENT ENVIRONMENTAL

Client: Rice Operating Company	SITE MAP
Date: January 31, 2006	EME I-1 SWD OFFSITE ENCROACHMENT
Author: GJV	
Approximate Scale: 1 inch = 50 feet	

Gilbert Van Deventer

From: "Gilbert Van Deventer" <gilbertvandeventer@cox.net>
To: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
Cc: "Wayne Price" <wayne.price@state.nm.us>; "Kristin Pope" <kpope@riceswd.com>; "Carolyn Haynes" <chaynes@riceswd.com>
Sent: Tuesday, February 27, 2007 12:26 PM
Attach: I1 CAP_text.pdf
Subject: Corrective Action Plan - EME I-1 SWD Offsite Encroachment Site (NMOCD Case No. 1R0464)

Attention: Edward Hansen, New Mexico Oil Conservation Division - Environmental Bureau

Subject: Corrective Action Plan

Site Name: EME I-1 SWD Offsite Encroachment Site

NMOCD Case No.: 1R0464

Site Location: T20S-R36E-Section 1, Unit Letter I

Site Agent: RICE *Operating Company*

Hello Edward:

Trident Environmental is pleased to submit the attached *Corrective Action Plan* (CAP) for the above-referenced site. Only the text portion is attached herein due to file size limitations. One complete hard copy and one copy on compact disk is being sent via USPS Certified Mail (# 7099 3400 0017 1737 2190).

Thank you for your consideration of this CAP. If you have any questions, please contact me at 432-638-8740, or Kristin Pope at ROC, 505-393-9174.

Sincerely,
Gilbert J. Van Deventer, PG, REM
Trident Environmental
P. O. Box 7624
Midland TX 79708

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Fax: 413-403-9968
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