AP - 65

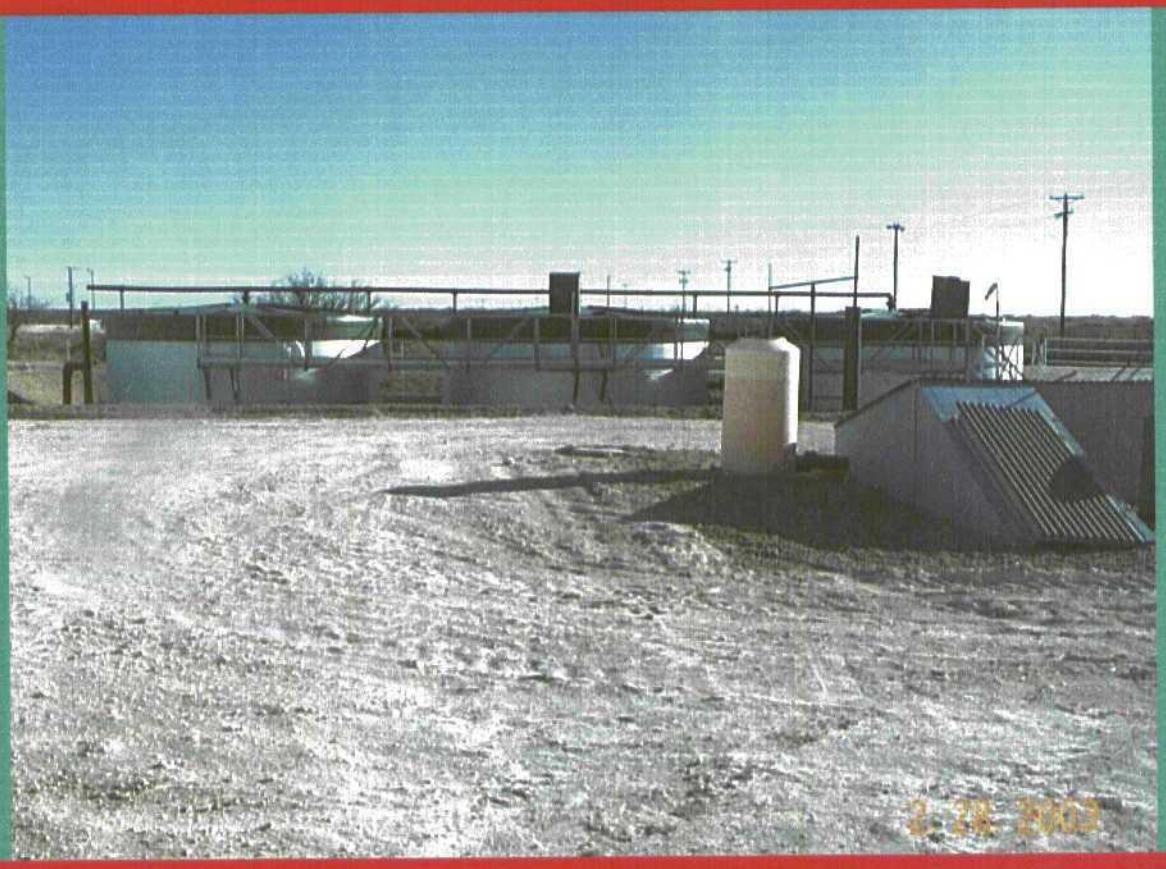
STAGE 1 & 2 WORKPLANS

DATE:

Dec. 30, 2005

December 30, 2005

Stage 1 Abatement Plan



EME M-9 SWD Site
T20S-R37E, Section 9, Unit Letter M
Lea County, New Mexico

R. T. Hicks Consultants, Ltd.

901 Rio Grande Blvd., NW, Suite F-142, Albuquerque, NM 87104

M-9 HOW WILL MW'S BE INSTALLED?
WHERE?

IS PA COMPLETE??

STAGE 1 ABATEMENT PLAN

EME M-9 SWD SITE

T20S, R37E, SECTION 9, UNIT LETTER M
LEA COUNTY, NEW MEXICO

NMOCD Case # 1R0331

Prepared for:

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DATE:

DECEMBER 30, 2005

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PRINCIPAL

DATE:

DECEMBER 30, 2005

R. T. HICKS CONSULTANTS, LTD.

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1.0 EXECUTIVE SUMMARY

The M-9 SWD site is operated by Rice Operating Company (ROC) and is located in Township 20 South, Range 37 East, Section 9, unit letter M approximately 3 miles south of Monument, NM. This Stage 1 Abatement Plan incorporates the preliminary findings from previous investigations and contents of the previously submitted Investigation and Characterization Plan (ICP) and recommendations for additional assessment activities to satisfy the required elements of a Stage 1 Abatement Plan in accordance with New Mexico Oil Conservation Division (OCD) Rule 19. Since this Stage 1 Abatement Plan incorporates all four groundwater sampling events conducted during 2005 it will also serve as the annual groundwater monitoring report.

There is no threat that regulated constituents from the vadose zone at this site will cause impairment of ground water because of the excavation, lining and backfilling of the former source area below the redwood tanks and junction boxes. Ground water data from 2005 show that chloride concentrations in range between 283 and 866 mg/L, above the numerical WQCC standard but within the range of water quality acceptable to livestock. However, chloride concentrations in monitoring well MW-3 indicates that the ambient ground water quality ranges between 296 and 329 mg/L for this same period. Chloride concentrations in MW-4 is generally 100 mg/L higher than the two monitoring wells (MW-1 and MW-2) closer to the former redwood tank area. Differentiating between any impact from the former redwood tanks or junction boxes, and off-site impacts is the principal goal of the proposed Stage 1 Abatement Plan

The work elements described in detail in Section 7.0 are proposed to determine the degree that any migration of constituents originating from the former redwood tanks or junction boxes have impacted groundwater quality relative to documented regional groundwater impairment. The purpose of these work elements is to assist ROC in selecting the soil and/or groundwater remedy that is commensurate with any contribution from the M-9 SWD site to the documented regional groundwater impairment. The proposed work elements are summarized below:

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

- Define regional groundwater flow direction, potential sources of chloride in groundwater and ambient groundwater chemistry
- Expand our groundwater characterization to include evaluation of monitoring data from other groundwater investigation sites in the area.
- Install additional monitoring wells as necessary to define the extent of impairment, if any, caused by the former redwood tanks. The need for additional monitoring wells is dependent on the analysis of data from other groundwater investigation sites.

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

ROC is the service provider (operator) for the EME SWD System (The System) and has no ownership of any portion of the pipelines, wells, or facilities. 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 Authorization for Expenditure (AFE) approval and work begins as funds are received. In general, project funding is not forthcoming until OCD approves the work plan.

2.0 CHRONOLOGY OF EVENTS

September 17, 2001	Subsurface soil investigation with a backhoe, field test for chloride and hydrocarbon levels. Sampling results indicated TPH and chloride impacts approaching the depth to groundwater at about 18 feet below ground surface (bgs).
April 2, 2002	A monitoring well (MW-1) was installed a few feet south of the former redwood tanks to further assess if groundwater was impacted with chlorides.
May 9, 2002	ROC submitted notification of groundwater impact to the NMOCD office in Santa Fe.
June 19, 2002	Excavation operations began with the removal of the redwood tanks in accordance with the Generic Closure Plan for Existing Pits and Below-Grade Redwood Tanks (February 23, 2000). Five junction boxes were also removed as they were within the area excavated at the facility. Excavation of approximately 8,000 cubic yards of TPH impacted soil was completed to a depth of 20 feet bgs and was land farmed on site. Due to the horizontal extent of the excavation, monitoring well MW-1 had to be removed.
September 9, 2002	Lining and backfilling of excavation was completed.
October 2, 2002	The junction box reports detailing all of the above-referenced work was completed and forwarded to the NMOCD in early 2003 along with the disclosure reports for other sites.
October 10, 2002	A replacement monitoring well (MW-1A) was installed immediately adjacent to the southeast corner of the excavated area. Subsequent sampling of MW-1A confirmed that chloride and TDS levels slightly above WQCC standards, however BTEX concentrations were well below the WQCC standards.
November 4, 2002	The *Redwood Tank Closure Report for EME Facility M-9* was submitted to the NMOCD.
June 20, 2003	A work plan addressing further actions was submitted by Trident Environmental.
June 27, 2003	The work plan was approved by the NMOCD.
August 20, 2003	Monitoring wells MW-2 and MW-3 were installed approximately 120 feet down gradient (southeast) and approximately 130 feet upgradient (northwest) of MW-1A, respectively.
February 17, 2004	Monitoring well MW-4 was installed approximately 150 feet southeast of MW-2 for further downgradient delineation.
March 23, 2005	The Annual Monitor Well Reports for the M-9 SWD site were submitted annually with the most recent submission on March 23, 2005.
March 28, 2005	Trident Environmental submitted an Investigation and Characterization Plan (ICP) to address potential environmental concerns at the above-referenced site.
May 5, 2005	Mr. Daniel Sanchez of the OCD requested that ROC submit an abatement plan to the OCD pursuant to Rule 19.

3.0 BACKGROUND

3.1 Site Location and Land Use

The M-9 SWD site and release is located in Township 20 South, Range 37 East, Section 9, unit letter M approximately 3 miles south of Monument, NM as shown on the attached Site Location Map (Plate 1). The facility is located on Fee land owned by SW Cattle Company. The 2 acre site lease agreement has been in effect since 1989 and will continue until 2009. The M-9 SWD facility collects produced water gathered by the EME SWD System in the site area for disposal into the on site salt water disposal well. Land in the site area is primarily utilized for crude oil, gas production, and cattle ranching. Plate 2 is a recent aerial photograph at the same scale as Plate 1 showing the land use.

Based on the NMOCD online database the following oil, gas, and injection wells listed in Table 1 are located within a quarter-mile of the site.

Table 1: Oil, Gas, and Injection Wells Within ¼ mile of the Site

OPERATOR	WELL NAME	Sec	UL	WELL TYPE
Chevron USA Inc.	L Van Etten #004	9	K	Oil
Chevron USA Inc.	L Van Etten #013	9	K	Oil
Chevron USA Inc.	L Van Etten #017	9	K	Gas
Chevron USA Inc.	L Van Etten #009	9	L	Oil
Chevron USA Inc.	L Van Etten #016	9	L	Oil
Chevron USA Inc.	L Van Etten #014	9	M	Oil
Chevron USA Inc.	Theodore Anderson #010	8	P	Oil
Chevron USA Inc.	Theodore Anderson #012	8	P	Oil
John H. Hendrix Corp.	State CC 16 #001	16	C	Oil
Pure Resources, LP	General G State #002	16	D	Gas
Pure Resources, LP	General G State #003	16	D	Oil
Rice Operating Company	EME SWD #009	9	M	Injection
XTO Energy Inc.	L Van Etten #015	9	N	Gas

According to the New Mexico State Land Office (NMSLO) website, companies that have lease agreements within a quarter-mile of the site are listed in Table 2 below.

Table 2: NMSLO Lease Agreements Within ¼ mile of the Site

COMPANY NAME	Sec	UNIT LETTERS	LEASE TYPE
Kelly Maclaskey Oilfield Services Inc.	16	D	Business Lease
SW Cattle Company	16	A-P	Grazing & Agriculture
Bruce A Wilbanks	16	CF	Oil & Gas
ConocoPhillips Company	16	E	Oil & Gas
Pure Resources, LP	16	D	Oil & Gas
Bandera Inc.	16	D	Right of Way
EOTT Energy Pipeline LP	16	BCDEFJKLMNO	Right of Way
GPM Gas Corp.	16	BDEFGJKLNO	Right of Way
Lea Partners LP	16	FKN	Right of Way
Texaco Exploration & Production Inc.	16	DELM	Right of Way
Versado Gas Processors LLC	16	CDEFKL	Right of Way
Rice Operating Company	16	D	Water

3.2 Nature of Release and Summary of Previous Work

Initial soil sampling activities for delineation of the M-9 SWD site began on September 17, 2001, prior to the removal of the redwood tanks. Sampling results indicated TPH and chloride impacts approaching the depth to groundwater at about 18 feet below ground surface (bgs). A monitoring well (MW-1) was installed on April 2, 2002. The subsurface soils primarily consist of caliche with varying amounts of very fine to fine-grained sand and some clayey silty fine sand.

On June 19, 2002 excavation operations began with the removal of the redwood tanks in accordance with the Generic Closure Plan for Existing Pits and Below-Grade Redwood Tanks (February 23, 2000). Five junction boxes were also removed as they were within the area excavated at the facility. Excavation of approximately 8,000 cubic yards of TPH impacted soil was completed to a depth of 20 feet bgs and was land farmed on site. Due to the horizontal extent of the excavation monitoring well MW-1 had to be removed. Clean backfill was placed in the deep excavation from 20 feet to 16 feet bgs. A 12-inch compacted clay liner was then installed prior to backfilling with the remediated soil in 3-foot lifts. The remaining remediated soil was placed on the surface and contoured to the surrounding terrain. Backfilling was completed on September 9, 2002. Three new fiberglass tanks were installed along the south end of the fenced facility. The Redwood Tank Closure Report detailing all of the above-referenced work was submitted to the NMOCD on November 4, 2002.

On October 10, 2002, a replacement monitoring well (MW-1A) was installed immediately adjacent to the southeast corner of the excavated area. Subsequent sampling of MW-1A confirmed that groundwater was impacted with chloride and TDS levels slightly above WQCC standards, however BTEX concentrations were well below the WQCC standards.

A work plan addressing further actions was submitted by Trident Environmental on June 20, 2003 and was approved by the NMOCD on June 27, 2003. In accordance with the work plan, monitoring wells MW-2 and MW-3 were installed approximately 120 feet down gradient (southeast) and approximately 130 feet upgradient (northwest) of MW-1A, respectively, on August 20, 2003. On February 17, 2004, monitoring well MW-4 was installed approximately 150 feet southeast of MW-2 for further downgradient delineation. Quarterly monitoring of the groundwater has been conducted since the installation of all monitoring wells.

Photographs of the site are included in Appendix A.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 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 one mile north of Monument along what is known as the Llano Estacado (caprock). The thickness of the colluvium deposits and Ogallala Formation is approximately 80-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). Plate 3 shows the surface geology of the site.

Based on the lithologic log descriptions provided by Trident Environmental the subsurface soils are composed caliche with varying amounts of very fine to fine-grained sand in matrix. (0-12 ft) and clayey silty very fine-grained sand with varying amounts of soft caliche in matrix (12-30 ft). More detailed descriptions of the subsurface lithology are provided on the lithologic logs in Appendix B.

4.2 Regional and Local Hydrogeology

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

Recharge to the Ogallala aquifer occurs primarily by infiltration of precipitation at a slow rate (typically one quarter to one half inch of water per year) due to the characteristically arid climate of southern Lea County (Nicholson and Clebsch, 1961). In the Monument Area, the colluvium is recharged by both precipitation and by flow from the Ogallala Aquifer into the colluvium. Monument Springs is a surface expression of the connection between the two saturated units.

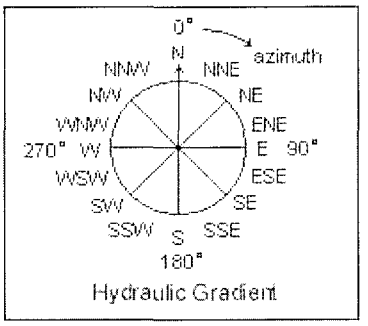
Hydraulic conductivity values are estimated between 26 and 50-feet per day and specific yields of 0.23 for the Ogallala aquifer near the site area based on limited published information (Hart & McAda, 1985). There are no surface water bodies located within a mile of the site.

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. Based on recent data from accessible wells located within two miles south and west of Monument, the regional hydraulic gradient is to the southeast at 0.003 feet/foot (Plate 4), which is consistent with published historical data. However, the hydraulic gradient in the more immediate area of the site has generally been relatively flat (0.0021 ft/ft to 0.0031 ft/ft) but at a south-southwest to south-southeast direction with the exception of the August 2003, August 2005, and November 2005 monitoring events in which it trended towards the east-northeast at a steeper slope (0.0055 ft/ft to 0.0077 ft/ft). Depth to groundwater beneath the site is approximately 16 to 17 feet below ground surface. A summary of the local hydraulic gradient over the past 2 years is shown in Table 3 below. The groundwater gradient for the four monitoring events conducted during 2005 is depicted in plates 5A through 5D.

Table 3: Local Hydraulic Gradient

Date	Gradient		
	Magnitude	Direction	Azimuth*
08/22/03	0.0077 ft/ft	ENE	73.7°
10/30/03	0.0031 ft/ft	SSE	166.0°
02/20/04	0.0026 ft/ft	SSE	166.3°
05/05/04	0.0026 ft/ft	SSW	185.0°
08/11/04	0.0021 ft/ft	SSE	168.6°
11/10/04	0.0022 ft/ft	S	178.4°
02/08/05	0.0027 ft/ft	SSW	188.6°
05/02/05	0.0026 ft/ft	SSW	188.7°
08/11/05	0.0062 ft/ft	ENE	72.0°
11/29/05	0.0055 ft/ft	ENE	77.4°

* Based on a true north reading of 0° (degrees).



A list of water wells obtained from the US Geological Survey and NMSEO on line databases located within the surrounding sections of the site is included in Appendix C. A water well survey map showing wells identified from state (NMSEO and NMOCD) and federal (USGS) databases is depicted in Plate 6.

5.0 VADOSE ZONE CHARACTERISTICS

ROC conducted initial upper vadose zone delineation field activities on September 17, 2001, prior to the removal of the redwood tanks. Sampling results from nine soil borings indicated TPH and chloride impacts approaching the depth to groundwater at about 18 feet below ground surface (bgs). A map and table showing the results of the soil borings is included on Exhibit 5 of the *Redwood Tank Closure Report for EME SWD Facility M-9* in Appendix D. The results are also summarized in Table 4 below.

Table 4: Soil Boring Sample Results

Sample Location	Date	Depth (Feet)	Chloride (mg/kg)
SB-1	09/17/01	5	401
		10	252
		15	135
SB-2	09/17/01	10	234
		15	149
SB-3	09/17/01	5	316
		10	415
		15	284
SB-4	09/17/01	5	319
		10	337
		15	170
SB-5	09/17/01	5	202
		10	85
		15	74
		30	542
SB-6	09/17/01	10	287
		15	414
		20	269
		25	542
SB-7	09/17/01	15	425
		20	106
SB-8	09/17/01	15	213
		20	213
SB-9	09/17/01	10	337
		15	241
		20	195

Sidewall and bottom samples were sent to the laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) using EPA Method 8021B, gas and diesel range organics (GRO/DRO) using EPA Method 8015M, and chlorides to confirm the completion of excavation activities. Results of the excavation closure sampling are listed in the Table 5.

Table 5: Soil Sample Results After Excavation (08/21/02 – 09/09/02)

Sample Location	Date	BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	Chloride (mg/kg)
Bottom (4-point composite at 16 ft bgs)	08/21/02		<10	50.3	354
Bottom (4-point composite at 20 ft bgs)	08/30/02	<0.025	<10	<10	94.5
Sidewalls (6-point composite)	08/30/02	<0.025	<10	<10	245
Inj. Well Wall (3-point composite at 13 ft bgs)	08/29/02		322	40	425

Due to the horizontal extent of the excavation monitoring well MW-1 had to be removed. Remediated soil was used as backfill material for the excavation from 20 feet to 15 feet bgs. A 12-inch compacted clay liner was then installed prior to backfilling with the remaining remediated soil in 3-foot lifts. A cross-section showing the placement of the clay liner and backfill with laboratory results is included on Exhibit 7 of the *Redwood Tank Closure Report for EME SWD Facility M-9* in Appendix D.

On October 10, 2002, a replacement monitoring well (MW-1A) was installed immediately adjacent to the southeast corner of the excavated area. Monitoring wells MW-2 and MW-3 were installed approximately 120 feet southeast and approximately 130 feet northwest of MW-1A, respectively, on August 20, 2003. On February 17, 2004, monitoring well MW-4 was installed approximately 150 feet southeast of MW-2 for further delineation of groundwater conditions. Soil samples were analyzed in the field for chlorides using field-adapted Method 9253 (QP-03). For quality assurance of field sampling techniques, two duplicate samples were analyzed by the laboratory. A summary of the sample results for the four monitoring wells on site are listed in Table 6 below. The monitoring well locations are shown on Plates 5A-5D.

Table 6: Monitoring Well Soil Sample Results

Monitoring Well	Date	Depth (Feet)	Field Chloride (mg/kg)	Lab Chloride (mg/kg)
MW-1	04/02/02	5	100	NA
		10	100	NA
		15	100	NA
		20	100	NA
		23	100	NA
		25	75	NA
		28	50	NA
		30	75	NA
MW-2	08/20/03	5	190	NA
		10	683	532
		15	125	70.9
MW-3	08/20/03	5	178	NA
		10	412	NA
		15	318	NA
MW-4	02/17/04	5	253	NA
		10	462	NA
		15	159	NA
		20	192	NA

NA indicates sample was not analyzed by the laboratory.

6.0 GROUNDWATER QUALITY

6.1 Monitoring Program

Monitoring wells MW-1, MW-2, MW-3, and MW-4 and water well WW-1, have been sampled on a quarterly basis for major ions, TDS, and BTEX. A summary of historical analytical results and groundwater elevations is listed in Table 7 and depicted in graphical format in Figures 1 through 5. Analytical results for the four sampling events conducted in 2005 are also shown on Plates 5A through 5D. A copy of the laboratory analytical report and chain of custody form for the most recent groundwater sampling event is included in Appendix E.

6.2 Hydrocarbons in Groundwater

BTEX concentrations in monitoring wells MW-1, MW-2, MW-3, and MW-4 and water well WW-1 have been well below the WQCC standards in every sampling event since April 8, 2002, and below the laboratory method detection limit of 0.001 mg/L for 10 consecutive quarters (since August 22, 2003).

6.3 Other Constituents of Concern

Chloride and TDS concentrations in the on-site monitoring wells have remained relatively consistent over the past few years. Monitoring well MW-3 has been consistently upgradient of the former redwood tanks for all monitoring events and appears to be representative of the ambient concentrations of chlorides and TDS for the site. Until further evaluation of regional groundwater quality data, background concentrations of chlorides and TDS cannot be defined at this time. Chloride concentrations in MW-3 have ranged from 296 to 337 mg/L, which is a very small range of values for this area. MW-4 is sometimes down gradient and often cross gradient from the redwood tanks with hloride concentrations ranging between 514 and 614 mg/L, which also is a very small range of values for the Monument area.

No correlations between chloride/TDS concentrations and changes in groundwater levels are evident. Based on the most recent sampling event conducted on November 29, 2005, the following conditions are noted:

- Chloride concentrations in monitoring wells MW-1A (283 mg/L), MW-2 (391 mg/L), MW-3 (296 mg/L), MW-4 (614 mg/L), and WW (558 mg/L), exceed the WQCC numerical standard of 250 mg/L.

- The TDS concentration in monitoring wells MW-1A (1,340 mg/L), MW-2 (1,630 mg/L), MW-3 (1,510 mg/L), MW-4 (1,850 mg/L), and WW (2,490 mg/L), exceed the numerical WQCC standard of 1,000 mg/L.

Table 7: Summary of Groundwater Monitoring Results

MW No.	Sample Date	Water Table Depth (feet BTOC)	Water Table Elevation (feet AMSL)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylene (mg/L)
MW-1A	10/28/02	19.10	3510.69	**372**	**1470**	< 0.001	< 0.001	< 0.001	< 0.001
	02/28/03	18.48	3511.31	**372**	**1500**	0.002	0.002	0.002	0.003
	05/16/03	19.00	3510.79	**390**	**1470**	0.001	< 0.001	< 0.001	0.001
	08/22/03	19.38	3510.41	**372**	**1470**	0.002	< 0.001	< 0.001	< 0.001
	10/30/03	19.57	3510.22	**346**	**1530**	< 0.001	< 0.001	< 0.001	< 0.001
	02/20/04	19.41	3510.38	**337**	**1390**	0.001	< 0.001	< 0.001	< 0.001
	05/05/04	17.76	3512.03	**337**	**1400**	0.001	< 0.001	< 0.001	< 0.001
	08/11/04	18.27	3511.52	**390**	**1690**	0.003	< 0.001	< 0.001	< 0.001
	11/10/04	17.23	3512.56	**390**	**1740**	0.003	< 0.001	< 0.001	< 0.001
	02/08/05	15.90	3513.89	**304**	**1500**	0.003	< 0.001	< 0.001	0.001
	05/02/05	20.03	3509.76	**329**	**1450**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/05	16.61	3513.18	**286**	**1480**	< 0.001	< 0.001	< 0.001	< 0.001
	11/29/05	16.28	3513.51	**283**	**1340**	0.001	< 0.001	< 0.001	< 0.001
MW-2	08/22/03	21.45	3510.07	**603**	**2060**	< 0.001	< 0.001	< 0.001	< 0.001
	10/30/03	21.61	3509.91	**709**	**2300**	< 0.001	< 0.001	< 0.001	< 0.001
	02/20/04	21.44	3510.08	**478**	**1800**	< 0.001	< 0.001	< 0.001	< 0.001
	05/05/04	19.67	3511.85	**328**	**1460**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/04	20.26	3511.26	**461**	**1770**	< 0.001	< 0.001	< 0.001	< 0.001
	11/10/04	19.13	3512.39	**346**	**1610**	< 0.001	< 0.001	< 0.001	< 0.001
	02/08/05	17.80	3513.72	**311**	**1390**	< 0.001	< 0.001	< 0.001	< 0.001
	05/02/05	21.94	3509.58	**295**	**1390**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/05	18.62	3512.90	**476**	**1840**	< 0.001	< 0.001	< 0.001	< 0.001
	11/29/05	18.24	3513.28	**391**	**1630**	< 0.001	< 0.001	< 0.001	< 0.001
MW-3	08/22/03	21.68	3510.76	**319**	**1590**	< 0.001	< 0.001	< 0.001	< 0.001
	10/30/03	21.86	3510.58	**328**	**1740**	< 0.001	< 0.001	< 0.001	< 0.001
	02/20/04	21.70	3510.74	**337**	**1550**	< 0.001	< 0.001	< 0.001	< 0.001
	05/05/04	20.10	3512.34	**328**	**1530**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/04	20.62	3511.82	**337**	**1560**	< 0.001	< 0.001	< 0.001	< 0.001
	11/10/04	19.61	3512.83	**337**	**1600**	< 0.001	< 0.001	< 0.001	< 0.001
	02/08/05	18.26	3514.18	**312**	**1450**	< 0.001	< 0.001	< 0.001	< 0.001
	05/02/05	22.38	3510.06	**329**	**1510**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/05	18.95	3513.49	**300**	**1480**	< 0.001	< 0.001	< 0.001	< 0.001
	11/29/05	18.43	3514.01	**296**	**1510**	< 0.001	< 0.001	< 0.001	< 0.001
MW-4	02/20/04	22.61	3509.47	**585**	**1820**	< 0.001	< 0.001	< 0.001	< 0.001
	05/05/04	20.77	3511.31	**549**	**1760**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/04	21.28	3510.80	**567**	**1770**	< 0.001	< 0.001	< 0.001	< 0.001
	11/10/04	20.21	3511.87	**514**	**1790**	< 0.001	< 0.001	< 0.001	< 0.001
	02/08/05	18.90	3513.18	**520**	**1670**	< 0.001	< 0.001	< 0.001	< 0.001
	05/02/05	22.99	3509.09	**591**	**1790**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/05	19.75	3512.33	**571**	**1830**	< 0.001	< 0.001	< 0.001	< 0.001
	11/29/05	19.40	3512.68	**614**	**1850**	< 0.001	< 0.001	< 0.001	< 0.001
WW-1	10/30/03	20.25	3510.21	**284**	**1150**	< 0.001	< 0.001	< 0.001	0.002
	02/20/04	20.07	3510.39	**292**	**1100**	< 0.001	< 0.001	< 0.001	0.002
	05/14/04	18.29	3512.17	**266**	**1040**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/04	18.92	3511.54	**266**	**1810**	< 0.001	< 0.001	< 0.001	< 0.001
	11/10/04	17.82	3512.64	**284**	**959**	< 0.001	< 0.001	< 0.001	< 0.001
	02/08/05	16.41	3514.05	**395**	**1180**	< 0.001	< 0.001	< 0.001	< 0.001
	05/02/05	20.54	3509.92	**866**	**2470**	< 0.001	< 0.001	< 0.001	< 0.001
	08/11/05	18.11	3512.35	**751**	**2900**	< 0.001	< 0.001	< 0.001	< 0.001
	11/29/05	17.60	3512.86	**558**	**2490**	< 0.001	< 0.001	< 0.001	< 0.001
			WQCC Standards	250	1000	0.01	0.75	0.75	0.62

Figure 1
Chloride, TDS, and Groundwater Elevation Values Versus Time (MW-1A)

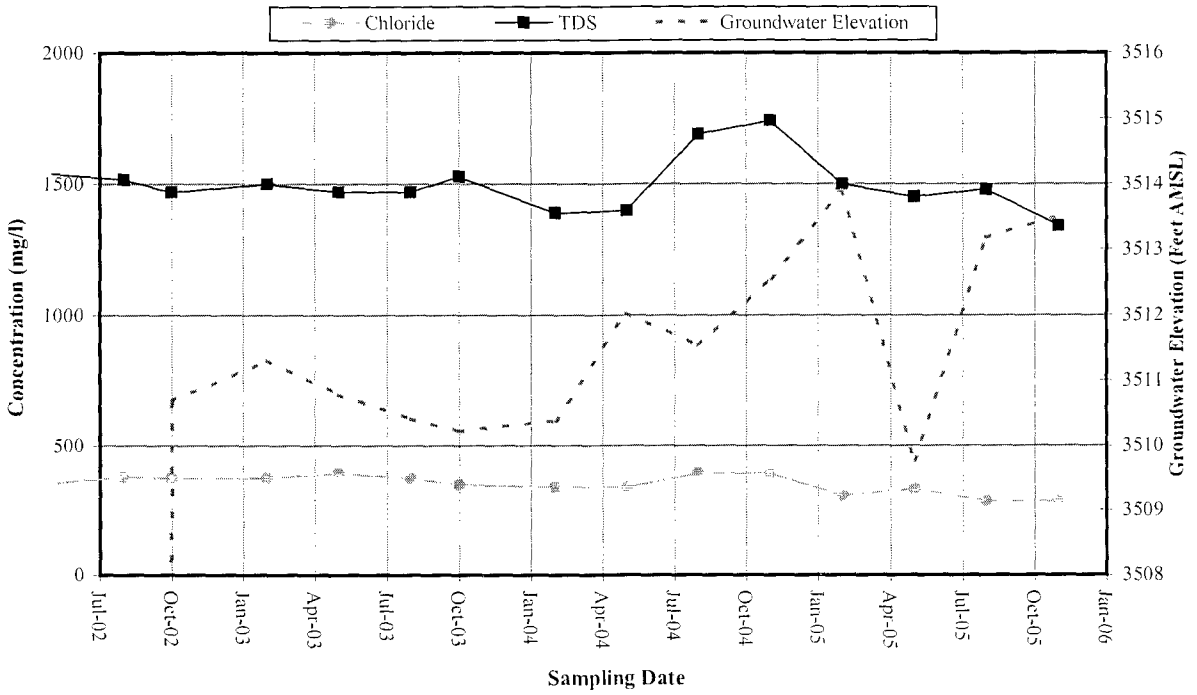


Figure 2
Chloride, TDS, and Groundwater Elevation Values Versus Time (MW-2)

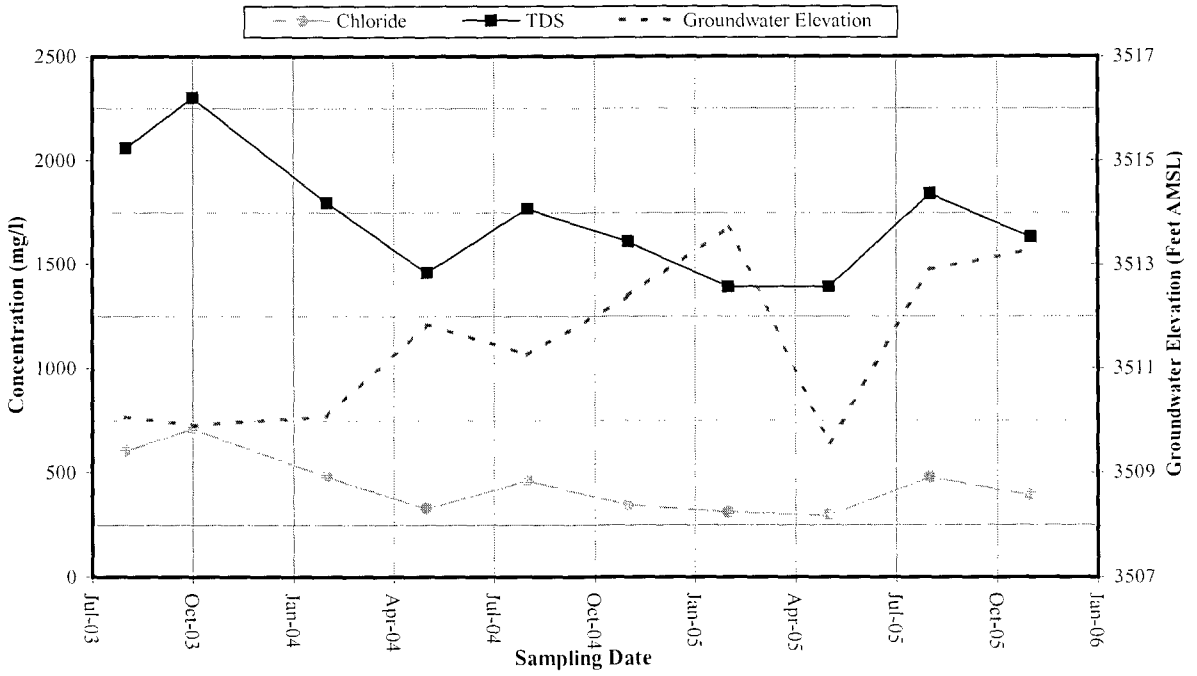


Figure 3
Chloride, TDS, and Groundwater Elevation Values Versus Time (MW-3)

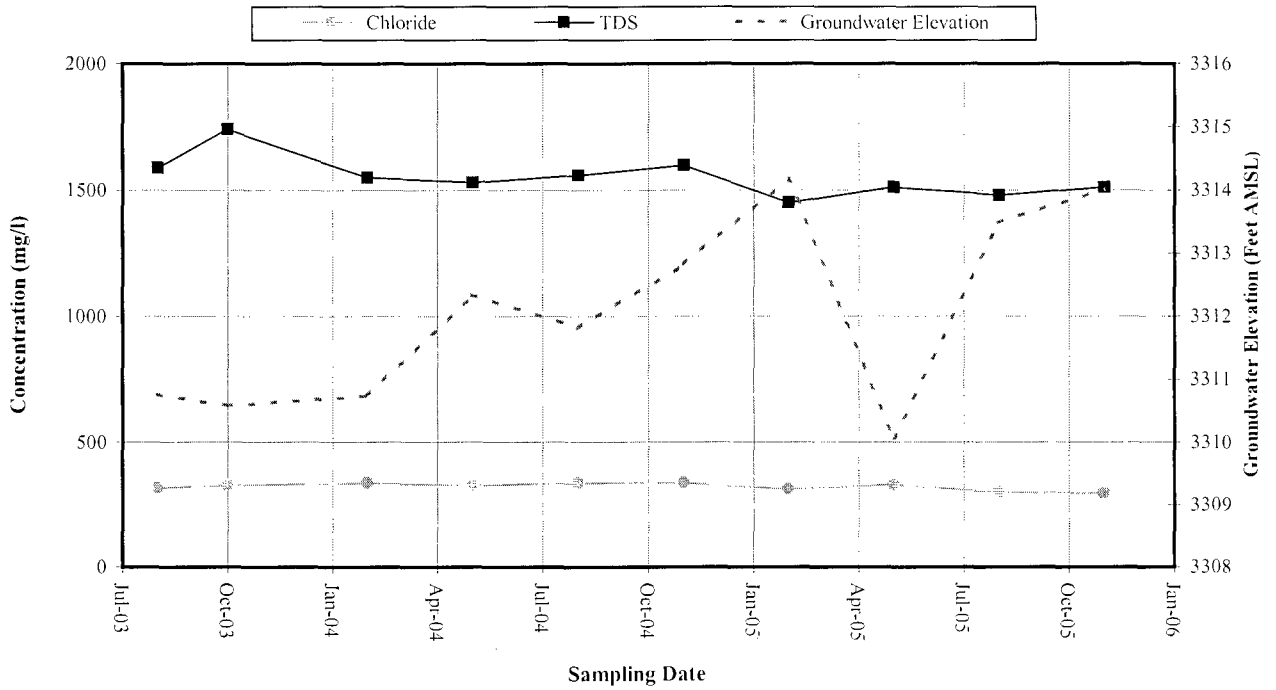


Figure 4
Chloride, TDS, and Groundwater Elevation Values Versus Time (MW-4)

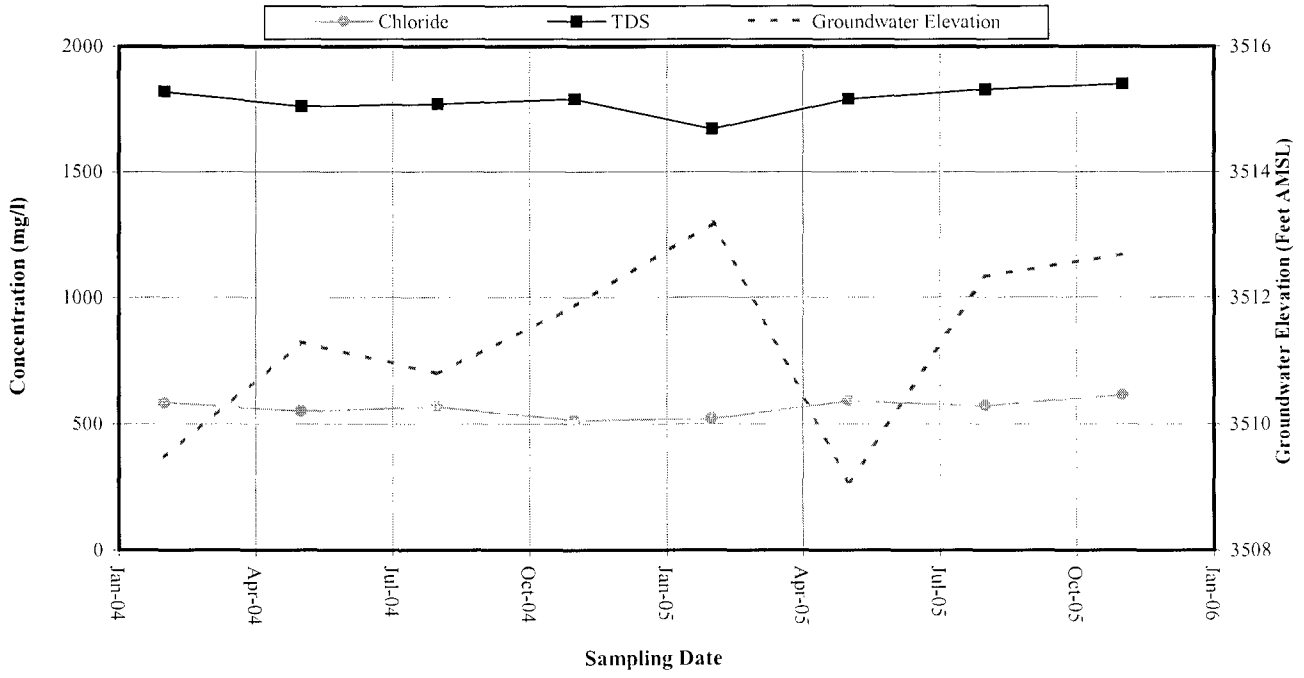
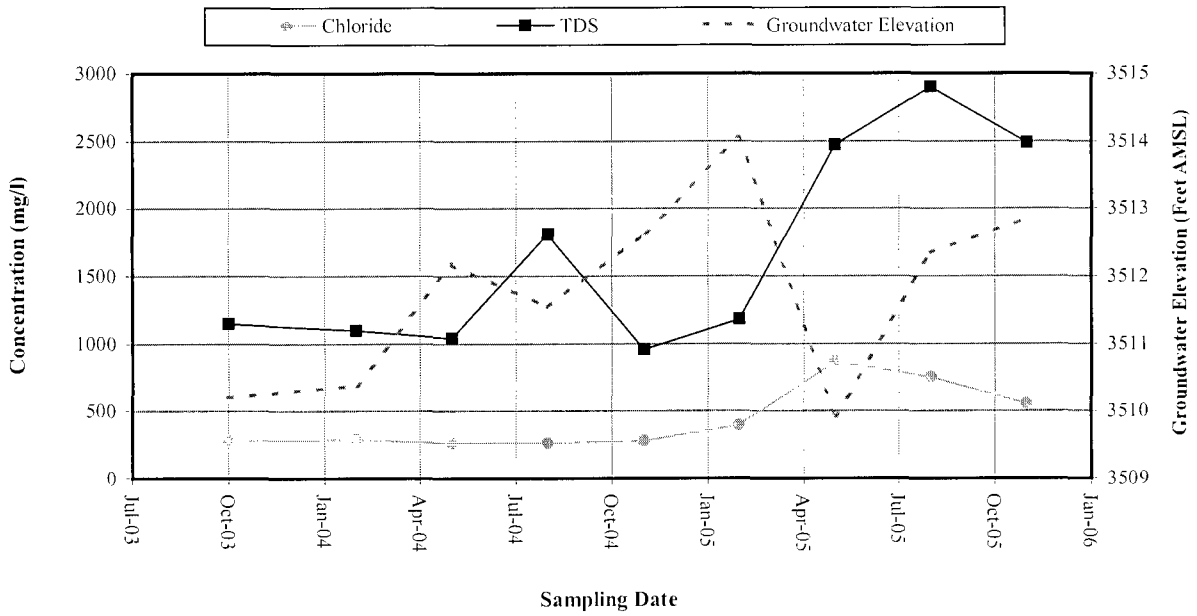


Figure 5
Chloride, TDS, and Groundwater Elevation Values Versus Time (WW)



7.0 STAGE 1 ABATEMENT PLAN

We will first determine if the documented releases from the M-9 SWD have caused a measurable groundwater impact relative to any regional groundwater impairment. If this site caused, contributed to, or could contribute to groundwater impairment, we will collect sufficient data to design an appropriate remedy. We propose collecting regional groundwater data and a subsequent field program at the site to make this determination and collect the data required for any necessary remedy. No further soil investigation of the vadose zone is warranted unless field observations suggest otherwise.

7.1 Define Regional Groundwater Flow Direction, Potential Sources of Chloride in Groundwater and Ambient Groundwater Chemistry

State records will be examined for evidence of releases up gradient from the M-9 site. We also plan to completely examine records at the OCD, NMED, Office of the State Engineer (OSE) and the US Geological Survey (USGS) for water quality and water level data for wells identified within a one-mile radius of the site. This file search will provide a better understanding of groundwater flow and ambient (and possibly background) water chemistry. Plate 6 shows the locations of nearby water supply and monitoring wells obtained from ROC, OCD, NMED, OSE, and USGS databases so far. Further examination of data for these wells identified during a field survey will assist us in understanding the contribution of the M-9 site to the observed regional chemistry. Our characterization of groundwater will include evaluation of monitoring data from other groundwater investigation sites in the area. It may be necessary to determine elevations of any additional monitoring points by a registered surveyor. The water well inventory will also assist in identifying the location of potential water supply receptors (domestic, irrigation, or livestock wells).

7.2 Installation of Additional Monitoring Wells for Further Delineation

If groundwater sampling and our file research indicate that impairment caused by releases from the redwood tank site may extend beyond the current monitoring well network, we will install additional monitoring wells.

During any drilling operations, soil samples will be collected periodically (five feet intervals) and field-tested for chloride content using the titration method. The monitoring wells will be constructed in accordance with OCD and industry standard methods with 5 feet of well screen above the water table and a minimum of 10 feet of well screen below the water table. At least one well will penetrate the entire thickness of the aquifer. We will employ field data to evaluate the need to complete a well cluster in this deep well. No further soil investigation of the vadose zone is warranted unless field observations suggest otherwise.

7.3 Groundwater Monitoring

Continued monitoring of depth to groundwater and groundwater quality (major ions and TDS) for the on-site monitoring wells is recommended on a quarterly frequency. Analysis for BTEX concentrations will be suspended, as each component of BTEX has been below the laboratory method detection limit of 0.001 mg/L since August 22, 2003 (10 consecutive quarters). In addition, groundwater quality and water table elevation data for area water wells will be evaluated based on availability and accessibility of the data from the responsible party of those wells.

7.4 Corrective Action/Closure

The information gathered from the results of the additional assessment actions described above will be evaluated and utilized to design the appropriate groundwater remedy, if necessary. 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 OCD in a subsequent Stage 2 Abatement Plan. 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.

8.0 QUALITY ASSURANCE / QUALITY CONTROL

Sampling and analytical procedures shall be performed in accordance with Title 20 NMAC 6.3107.B and Section 903 of the Water Quality Standards for Interstate and Intrastate Streams in New Mexico (20 NMAC 6.1).

Soil samples will be screened in the field using a PID (QP-07) and field tested for chlorides (QP-03). Soil samples with a PID response of 100 ppm or greater will be submitted to the laboratory for analysis of BTEX. Ten percent (10%) of the soil samples will be submitted for laboratory analysis of chlorides as confirmation of the field analysis.

Groundwater samples will be collected in accordance with procedures explained in QP-04 and QP-05, and analyzed for BTEX, major ions, and TDS.

Specific quality procedures for collecting and analyzing soil and groundwater samples are included in Appendix F.

9.0 PROPOSED SCHEDULE OF ACTIVITIES

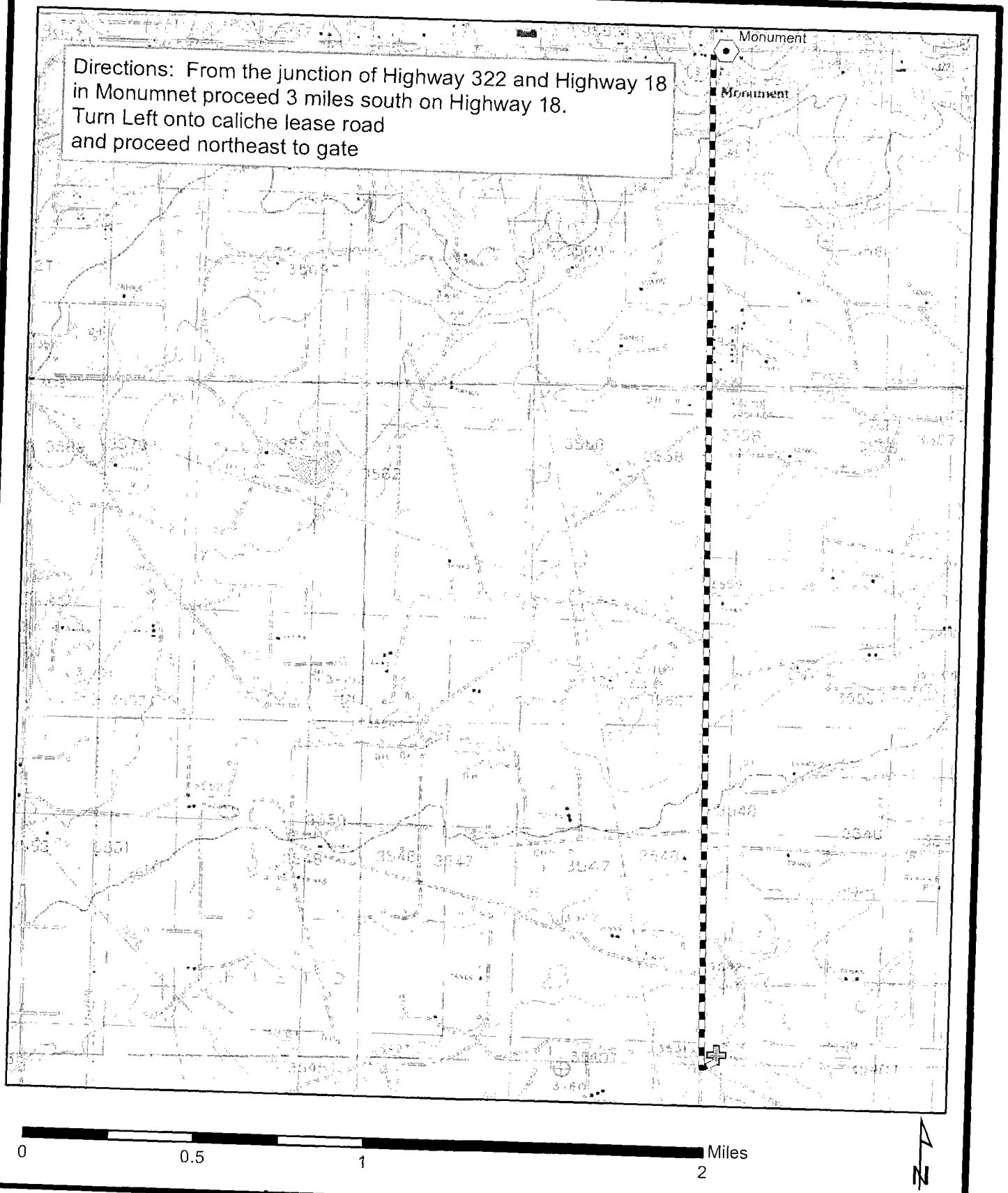
The proposed schedule of activities is summarized in Table 8 below.

Table 8: Proposed Schedule of Activities

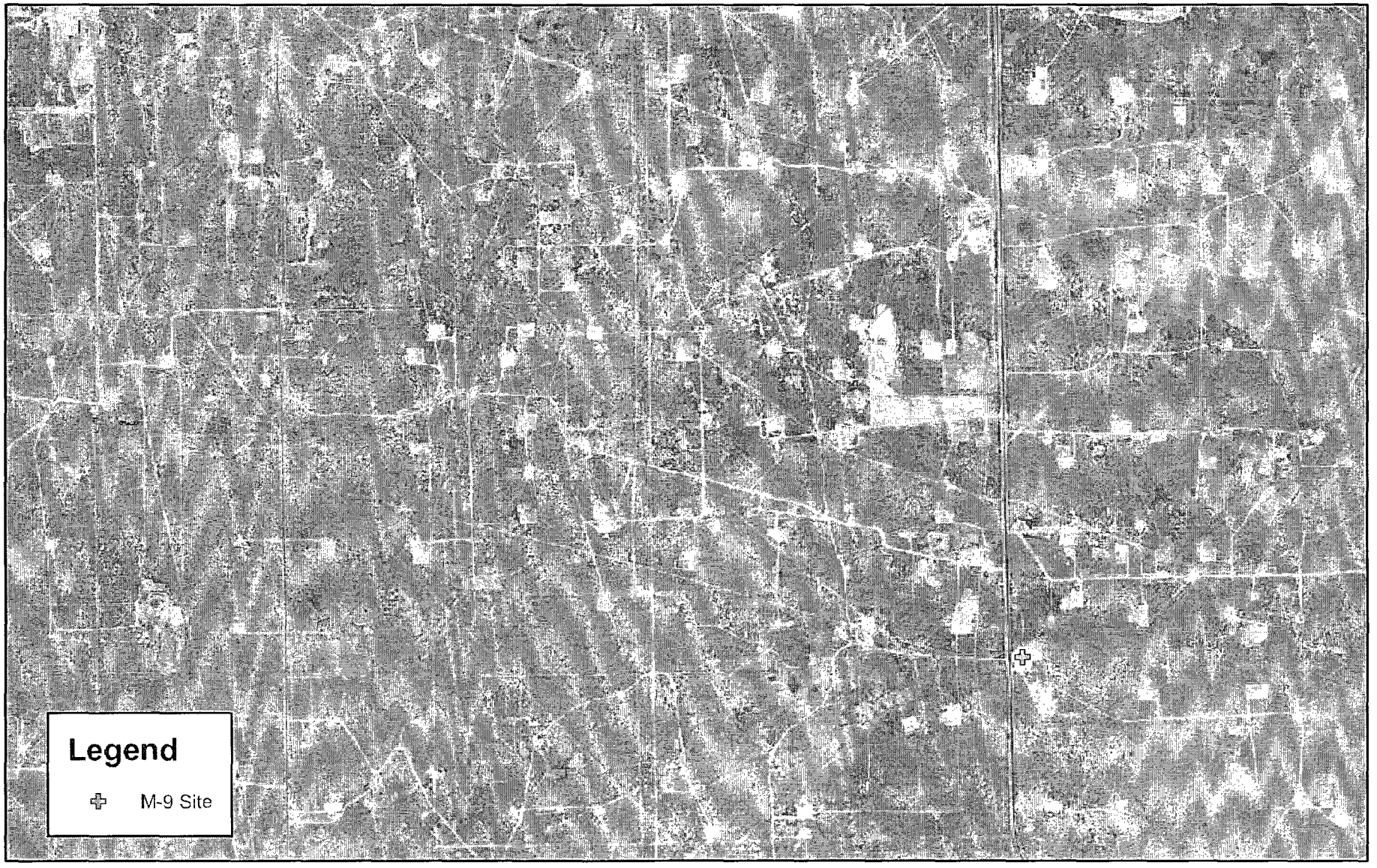
Task	Description	Date of Task Completion
Progress Reports	Submit progress reports to OCD explaining current status of site activities.	Quarterly beginning 30 days from approval of Stage 1 Abatement Plan by OCD
Groundwater Monitoring	Collect water table depth measurements and groundwater samples for analysis of chloride and TDS concentrations from on-site monitoring wells.	Continued on a quarterly basis. Annual Groundwater Monitoring Reports will be submitted to the OCD by April 1st of each year.
Water Well Inventory (Data Collection)	Complete inventory of water wells within 1-mile of the site and collect groundwater quality and water table depth data of identified wells.	Within 45 days of Stage 1 Abatement Plan approval by OCD
Water Well Inventory (Data Evaluation)	Evaluate data from water well survey to expand characterization of the groundwater gradient and ambient water chemistry, for comparison with on-site data.	Within 30 days of completion of data collection from water well survey.
Complete Delineation of Groundwater Conditions (if necessary)	Install additional monitoring wells based on evaluation of water well survey and predominant groundwater conditions.	Within 30 days of completion of evaluation of data from water well survey.
Stage 2 Abatement Plan (if necessary)	The information gathered from the results of the additional assessment actions described above will be evaluated and utilized to design a groundwater remedy, if necessary, in the Stage 2 Abatement Plan.	Within 45 days of completion of tasks summarized in this Stage 1 Abatement Plan

It may be necessary to extend the completion dates for the tasks outlined above dependent on contractor availability, weather conditions, or other unforeseen considerations. We suggest a phone conference or meeting to discuss the results of our regional examination of ground water data in the Monument area and our recommendations regarding additional monitoring wells for this site.

PLATES



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Site Location: M-9	Plate 1
	Rice Operating Company	December 2005



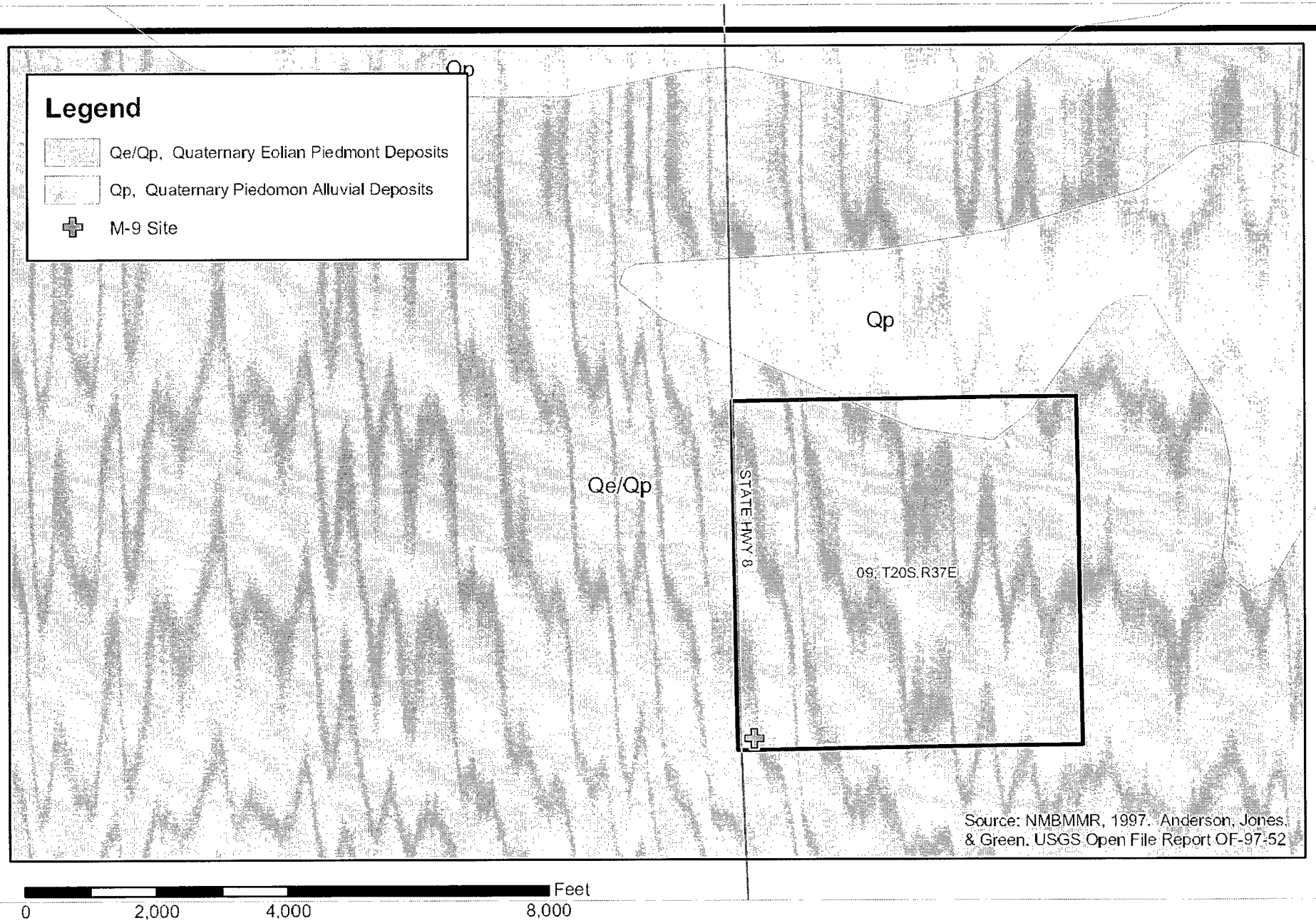
Feet
0 2,000 4,000 8,000

Souce: http://rgis.unm.edu (2004)

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

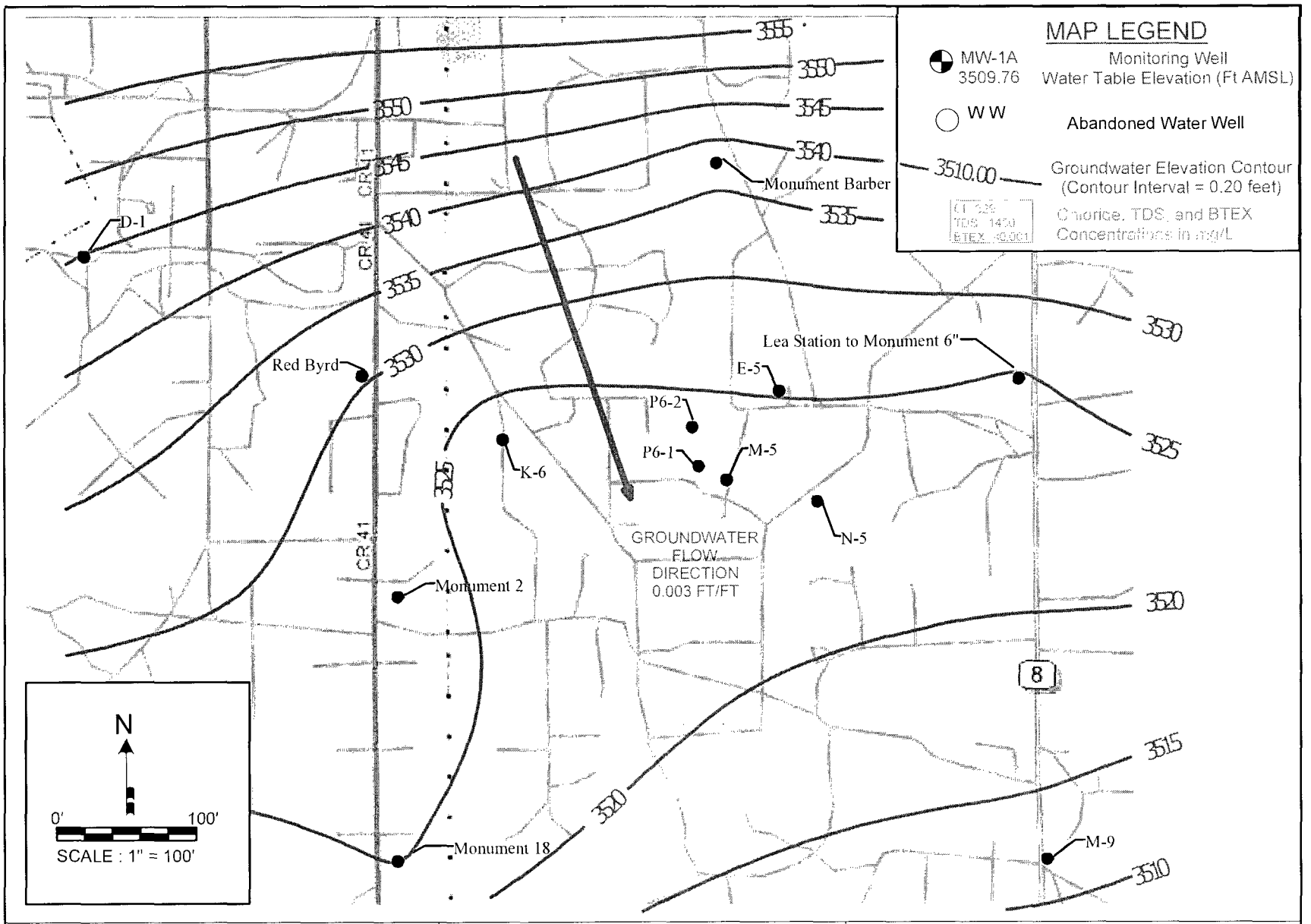
2004 Aerial Photo: M-9	Plate 2
Rice Operating Company	December 2005

N
W E
S



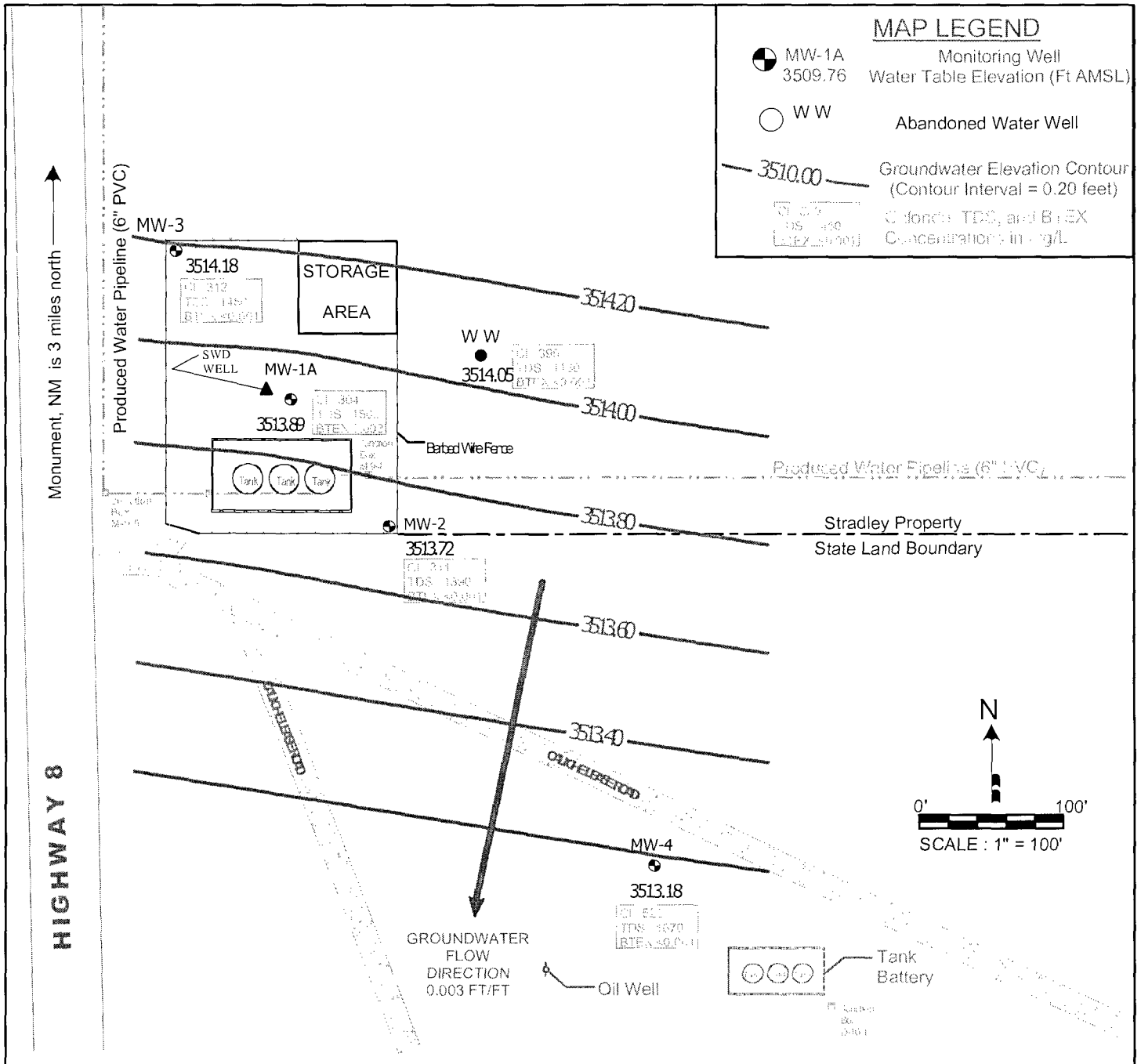
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Geology: M-9	Plate 3
	Rice Operating Company	December 2005

N
W E
S

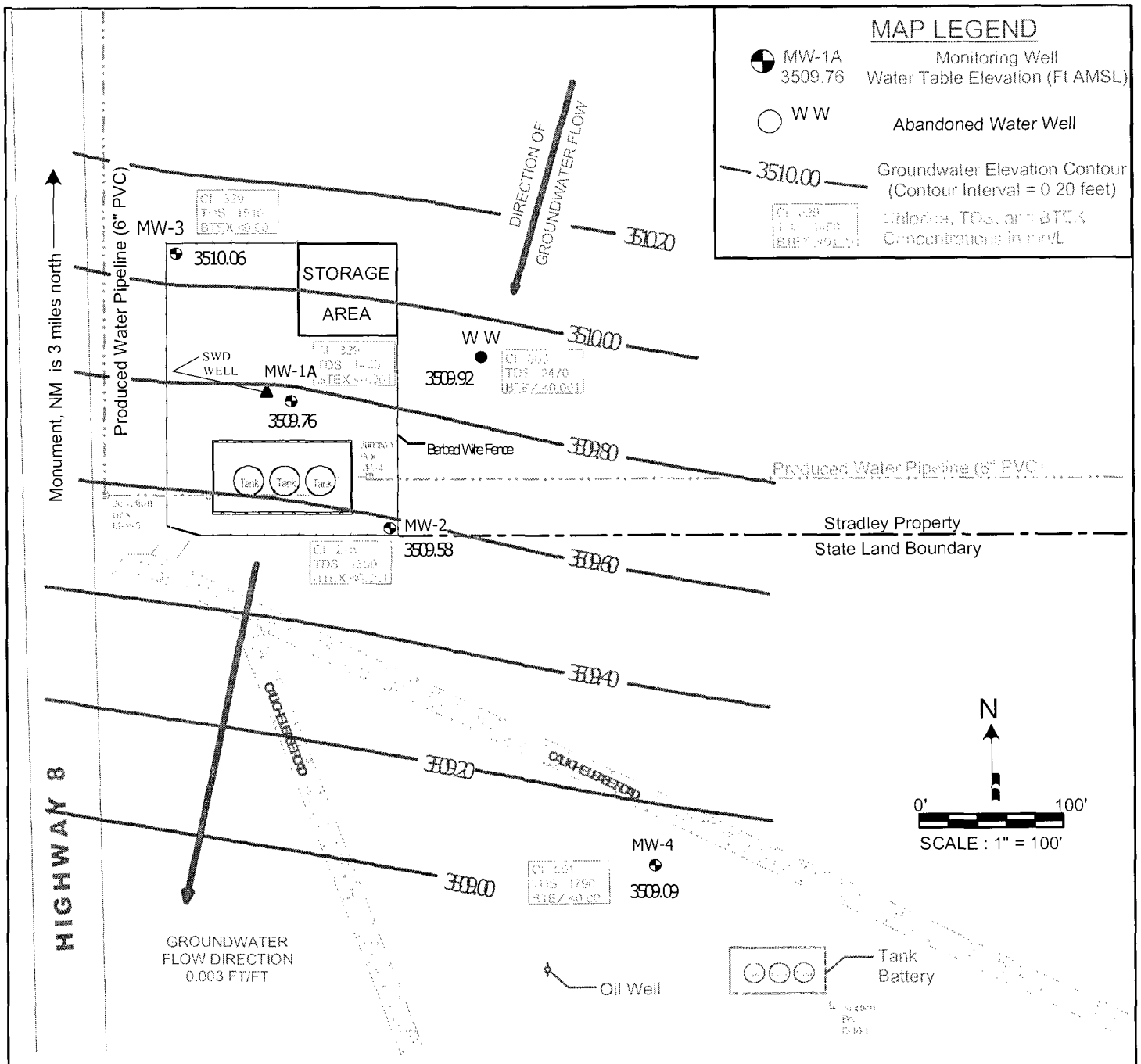


R. T. HICKS CONSULTANTS, LTD. 1909 Brunson Ave., Midland TX 79701	Client: Rice Operating Co. Site: M-9 SWD Date: November 9-11, 2004 Approx. Scale: 1 in = 2250 ft

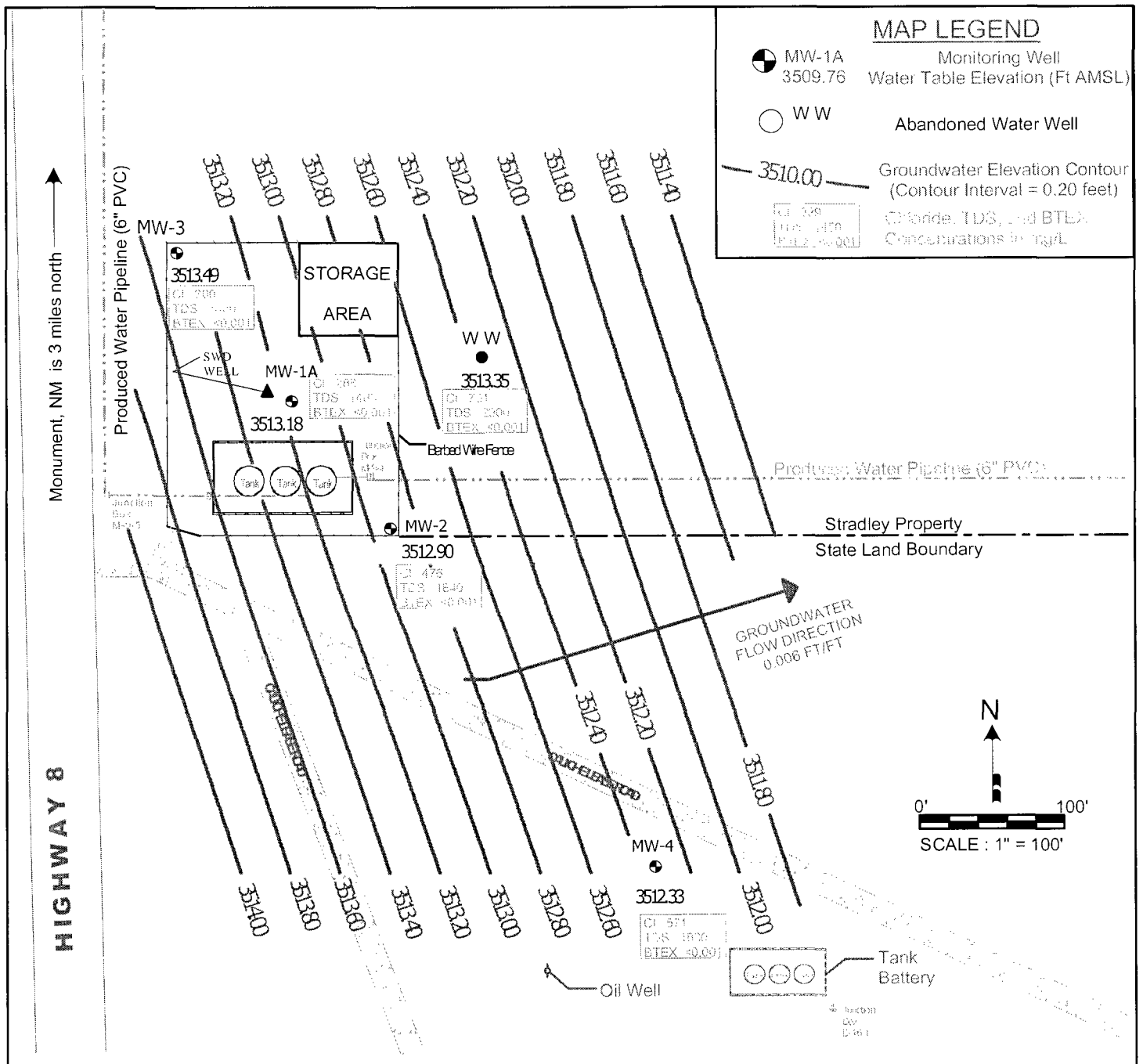
PLATE 4
REGIONAL GROUNDWATER GRADIENT MAP



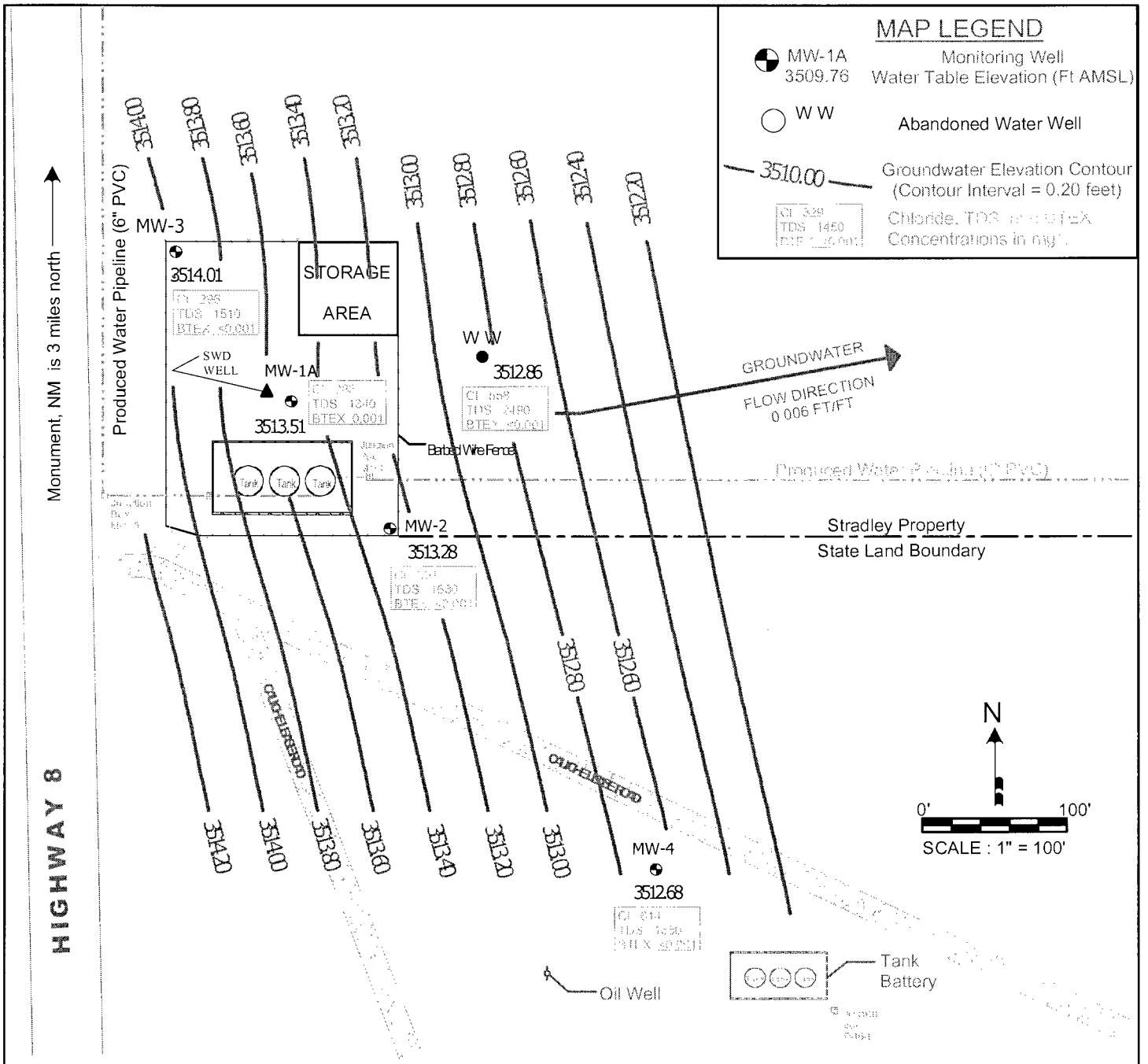
R. T. HICKS CONSULTANTS, LTD. 1909 Brunson Ave., Midland TX 79701	Client: Rice Operating Co. Site: M-9 SWD Sampling Date: 02/08/05 Approx. Scale: 1 in = 100 ft	PLATE 5A Groundwater Gradient and Chloride/TDS Concentration Map



R. T. HICKS CONSULTANTS, LTD. 1909 Brunson Ave., Midland TX 79701	Client: Rice Operating Co. Site: M-9 SWD Sampling Date: 05/02/05 Approx. Scale: 1 in = 100 ft	PLATE 5B Groundwater Gradient and Chloride/TDS Concentration Map



R. T. HICKS CONSULTANTS, LTD. 1909 Brunson Ave., Midland TX 79701	Client: Rice Operating Co. Site: M-9 SWD Sampling Date: 08/11/05 Approx. Scale: 1 in = 100 ft	PLATE 5C Groundwater Gradient and ChlorideTDS Concentration Map

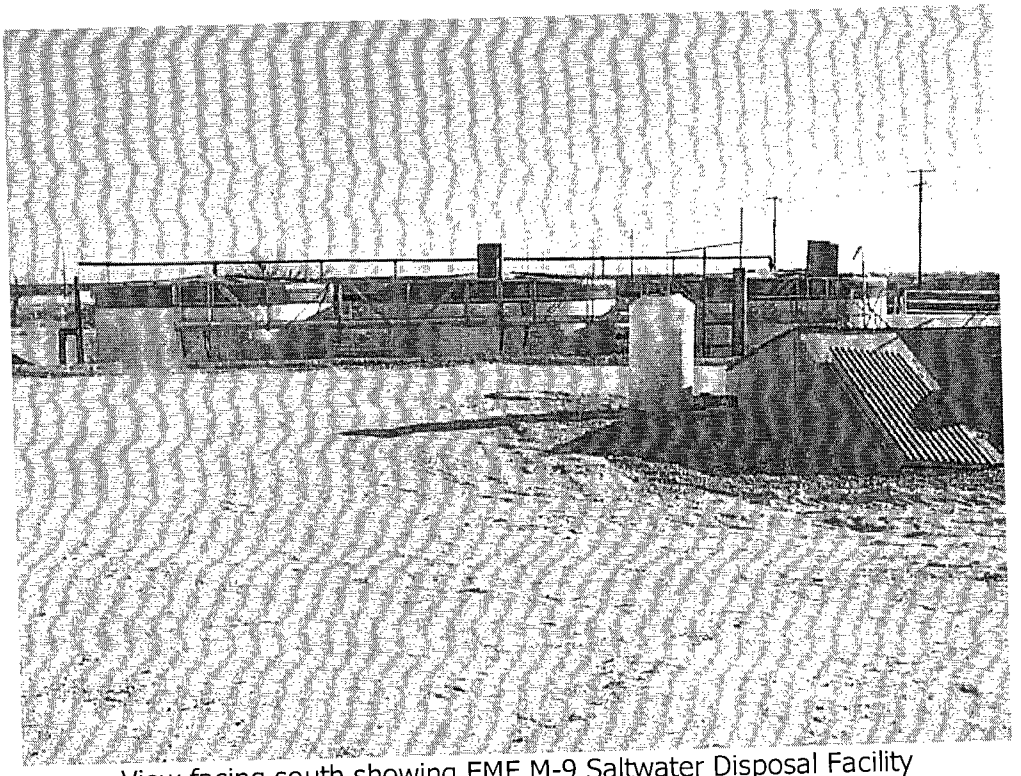


R. T. HICKS CONSULTANTS, LTD. 1909 Brunson Ave., Midland TX 79701	Client: Rice Operating Co. Site: M-9 SWD Sampling Date: 11/29/05 Approx. Scale: 1 in = 100 ft	PLATE 5D Groundwater Gradient and Chloride/TDS Concentration Map

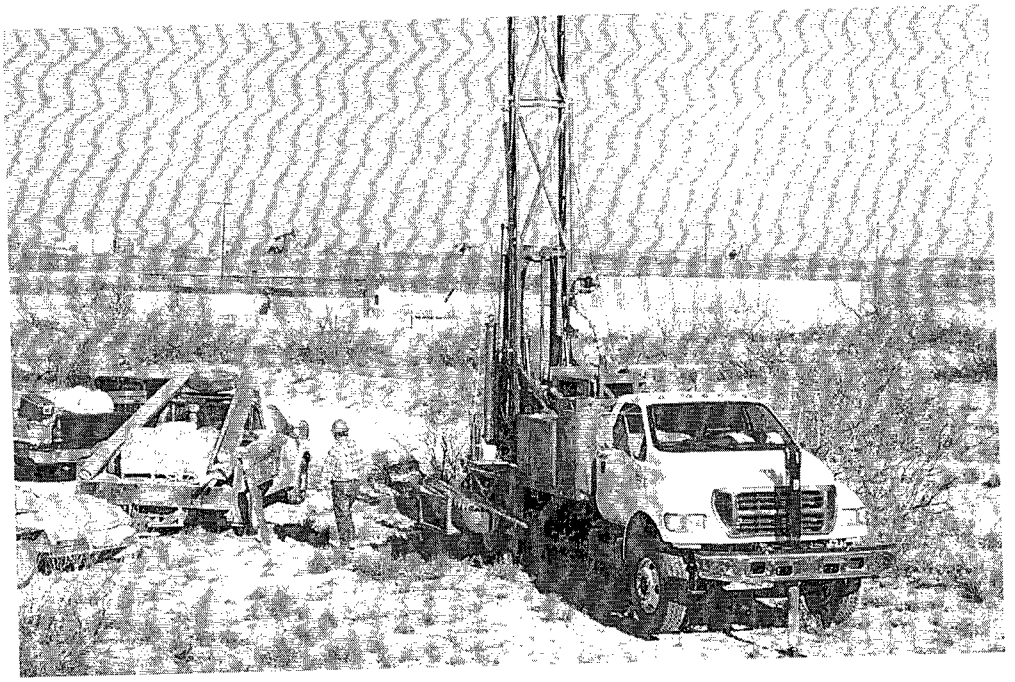
APPENDICES

APPENDIX A

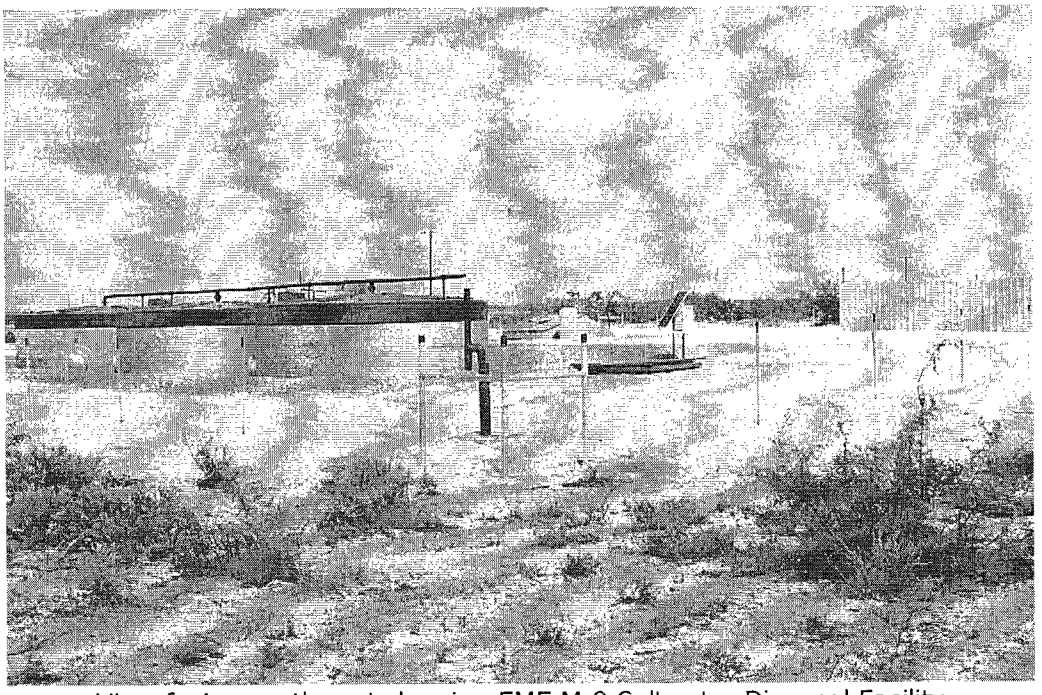
EME M-9 SWD Site
T20S R37E Sec 9 Unit Letter M



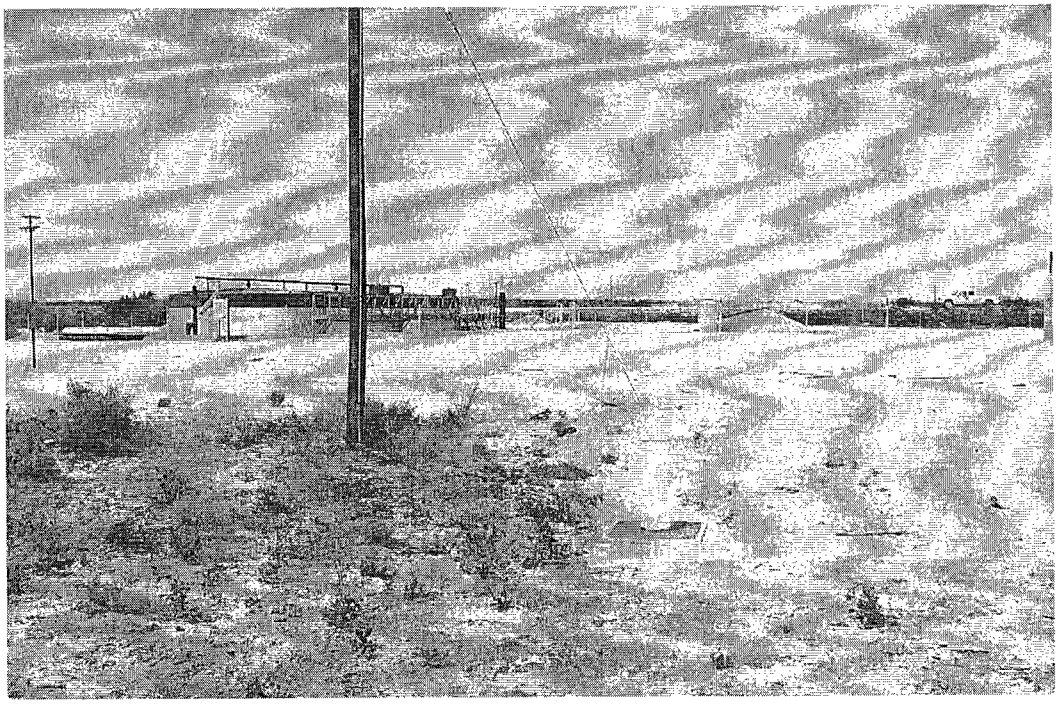
View facing south showing EME M-9 Saltwater Disposal Facility



View facing northwest showing installation of
monitoring well MW-4 southeast of EME M-9 SWD facility.



View facing northwest showing EME M-9 Saltwater Disposal Facility
with monitoring well MW-2 in foreground



View facing southwest showing EME M-9 SWD facility
with abandoned water well in foreground.

APPENDIX B

MW-1

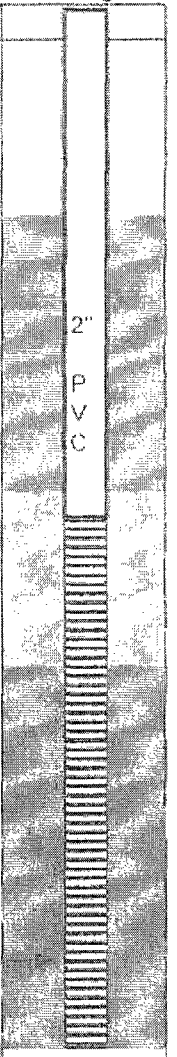
DRILLING LOG	Site Name/Location				Logged by: L. Kerr
RICE Operating Company	M-9 SWD Facility	Well No.: MW1	Date Drilled: 4/2002	Driller: Eades	Comments:
122 West Taylor	9-T20S-R37E	Well Depth: 35'	Boring Depth: 35'	Well Material: PVC	Sand and
Hobbs, New Mexico 88240	EME	Casing Length: 20'	Boring Diameter: 7.75"	Casing Size: 2"	bentonite above
Phone: (505) 393-9174	SWD System	Screen Length: 15'	Drilling Method: Air Rotary	Slot Size: N/A	screen.
Fax: (505) 397-1471	Lea County, NM				

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	TEST (ppm)	REMARKS	Boring
0	Ground surface		CF	TPH (EPA 418.1)	
1	Topsoil			ppm	
2					
3	Sand & sandy clay				
4					
5		Grab	100	13	
6				cuttings	
7					
8					
9					
10		Grab	100	10	
11					
12					
13					
14					
15		Grab	100	14	
16				bentonite	
17					
18	Sand				
19					
20	Sand & sandy brown clay	Grab	100	17	
21					
22					
23		Grab	100	13	
24				water	
25		Grab	75	14	
26					
27					
28		Grab	50	20	
29					
30		Grab	75	16	
31				screen	
32					
33					
34					
35					

MW Boring: 2" PVC

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: A. Eades
RICE *Operating Company*	**M-9 SWD Facility**	Well No. MW - 1A	Date Drilled: 10-10-02	Driller: Eades	Completion:
122 West Taylor	**9-T20S-R37E**	Well Depth: 29'	Boring Depth: 29'	Well Material: PVC	Sand and
Hobbs, New Mexico 88240	**EME SWD System**	Casing Length: 29"	Boring Diameter: 4.5"	Casing Size: 2"	bentonite above
(505) 393-9174	**Lea County, NM**	Screen Length: 15'	Drilling Method: Air Rotary	Slot Size: N/A	screen.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl'	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
1	Topsoil					
2						
3					grout	
4						
5						
6						
7						
8						
9						
10						
11					bentonite	
12	Caliche					
13						
14						
15						
16					sand	
17						
18						
19						
20						
21					water	
22						
23						
24						
25						
26						
27					screen	
28						
29	Sand					

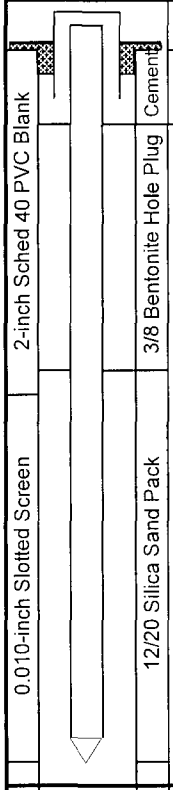


LITHOLOGIC LOG (MONITORING WELL)

TRIDENT ENVIRONMENTAL
PO BOX 7624
MIDLAND, TEXAS 79708

MONITOR WELL NO.: MW-2
SITE ID: EME M-9
SURFACE ELEVATION: 3528.9
CONTRACTOR: Eades Drilling & Pump Service
DRILLING METHOD: Air Rotary
START DATE: 08/20/03
COMPLETION DATE: 08/20/03
COMMENTS: Located inside southeast corner of fence.

TOTAL DEPTH: 29 Feet
CLIENT: Rice Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 9-Unit M
FIELD REP.: G. Van Deventer
FILE NAME: Projects/Rice/MW_Diagram.xls

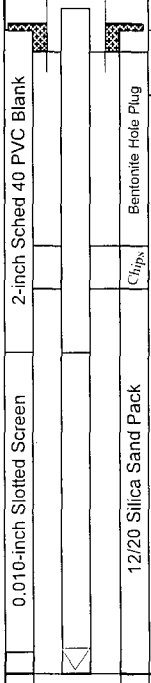


LITH.	USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING
	CAL		1022	Surface		Unconsolidated caliche gravel cover.
		5	1024	Cuttings	190 (field)	Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains.
		10	1030	Split Spoon	683 (field) 532 (lab)	As above (Split Spoon sample taken from 9' - 11')
		15	1044	Split Spoon	125 (field) 70.9 (lab)	As above (Split Spoon sample taken from 13' - 15')
	CAL/ SM					Groundwater encountered at 18 ft below ground surface.
		20	1055	Cuttings		Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains.
		25	1058	Cuttings		Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains, moderately moist.
		30	1100	Cuttings		Lithology as above. Bottom of boring at 30 ft below ground surface.

LITHOLOGIC LOG (MONITORING WELL)

TRIDENT ENVIRONMENTAL
PO BOX 7624
MIDLAND, TEXAS 79708

MONITOR WELL NO.:	MW-3	TOTAL DEPTH:	30 Feet
SITE ID:	EME M-9	CLIENT:	Rice Operating Company
SURFACE ELEVATION:	3529.9	COUNTY:	Lea
CONTRACTOR:	Eades Drilling & Pump Service	STATE:	New Mexico
DRILLING METHOD:	Air Rotary	LOCATION:	T20S-R37E-Sec 9-Unit M
START DATE:	08/20/03	FIELD REP.:	G. Van Deventer
COMPLETION DATE:	08/20/03	FILE NAME:	Projects/Rice/MW_Diagram.xls
COMMENTS:	Located inside northwest corner of fence.		



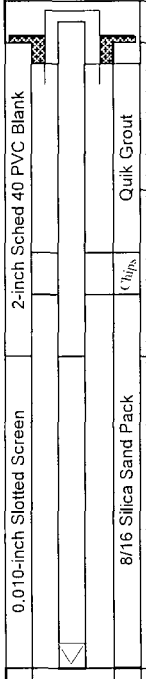
LITH.	USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
	CAL		0828	Surface		Unconsolidated caliche gravel cover.
		5	0830	Cuttings	178 (field)	*Caliche with varying amounts of very fine to fine-grained sand in matrix.* Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains.
		10	0845	Split Spoon	412 (field)	As above (Split Spoon sample taken from 10' - 12') Silty fine sand stringer at 11', mod sorted, slightly moist.
			0900	Split Spoon	318 (field)	(Split Spoon sample taken from 13' - 15') Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2).
	CAL/ SM	15				Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains. Groundwater encountered at 18 ft below ground surface.
		20	0910	Cuttings		Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains, slightly moist.
		25	0912	Cuttings		Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is pale yellowish brown (10 YR 6/2), moderately well sorted, subangular grains, moderately moist.
		30	0915	Cuttings		*As above*
						Bottom of boring at 30 ft below ground surface.

LITHOLOGIC LOG (MONITORING WELL)

TRIDENT ENVIRONMENTAL
PO BOX 7624
MIDLAND, TEXAS 79708

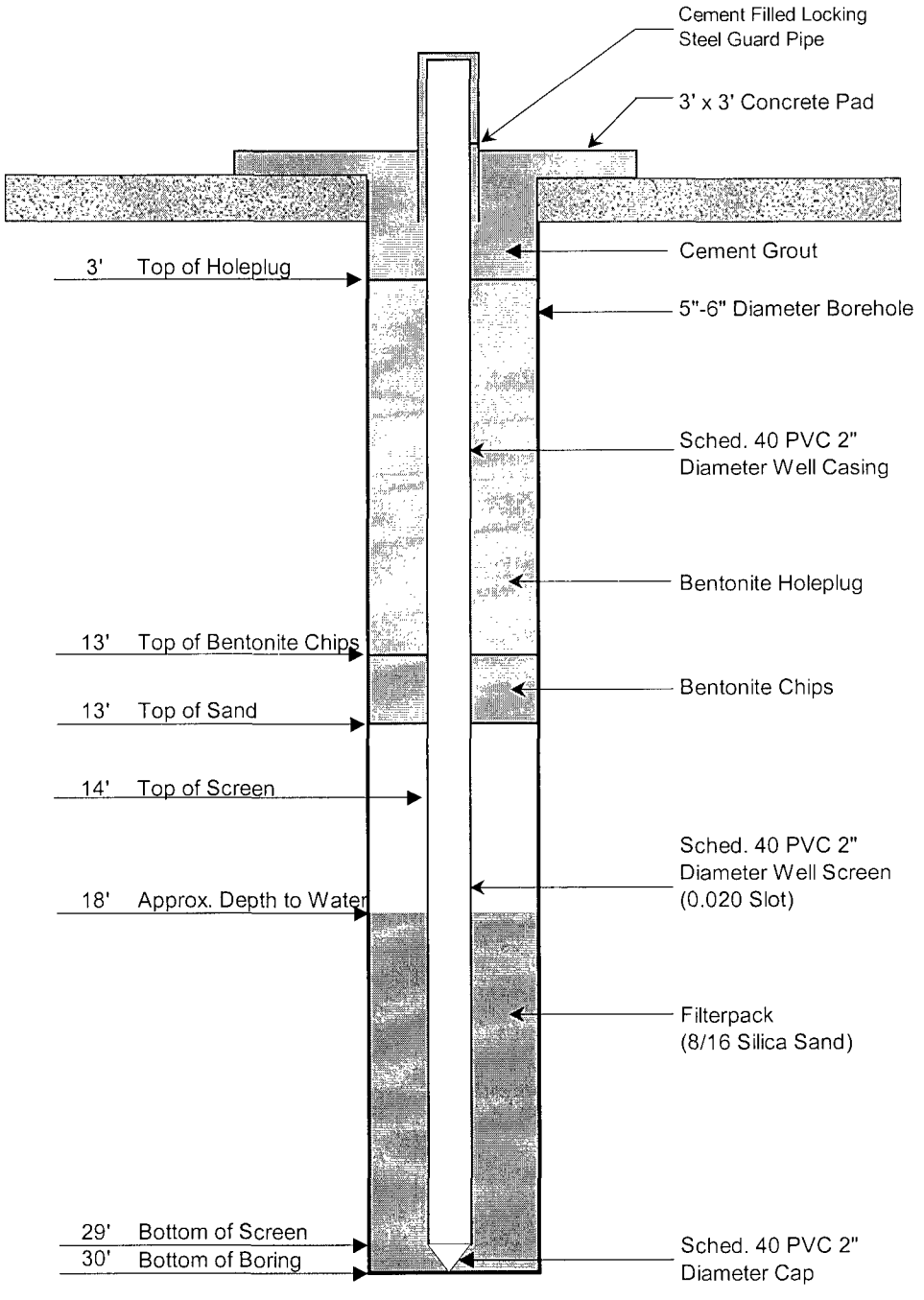
MONITOR WELL NO.: MW-4
SITE ID: EME M-9
SURFACE ELEVATION: 3529.2
CONTRACTOR: Atkins Engineering Associates Inc.
DRILLING METHOD: Hollow Stem Auger
START DATE: 02/17/04
COMPLETION DATE: 02/17/04
COMMENTS: Located approximately 30 feet southeast of MW-2.

TOTAL DEPTH: 30 Feet
CLIENT: Rice Operating Company
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 16-Unit D
FIELD REP.: G. Van Deventer
FILE NAME: Projects/Rice/MW_Diagram.xls



LITH.	USCS	Sample Depth	Sample Time	Sample Type	Chloride (ppm)	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
			0855			
	CAL/ SM	5	0900	Split Spoon (4-6)	253 (field)	Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is grayish orange pink (5 YR 7/2), moderately well sorted, subangular
	CAL/ SM	10	0907	Split Spoon (9-11)	462 (field)	Caliche with varying amounts of very fine to fine-grained sand in matrix. Caliche is moderately hard and is very pale orange (10 YR 8/2). Sand is grayish orange pink (5 YR 7/2), moderately well sorted, subangular
	CAL/ SM	15	0915	Split Spoon (14-16)	159 (field)	Clayey silty very fine-grained sand with varying amounts of soft caliche in Sand is light brown (5 YR 5/6), moderately well sorted, subangular grains. Caliche is moderately hard and is very pale orange (10 YR 8/2).
	CAL/ SM	20	0924	Split Spoon (19-21)	192 (field)	Fine-grained sand with varying amounts of soft caliche in matrix. Sand is grayish orange (10 YR 7/4), moderately well sorted, subangular Caliche is moderately hard and is very pale orange (10 YR 8/2).
	CAL/ SM	25	0912	Cuttings		As above
	CAL/ SM	30	0915	Cuttings		As above
						Bottom of boring at 30 ft below ground surface.

MONITORING WELL CONSTRUCTION DIAGRAM
(Not to Scale)

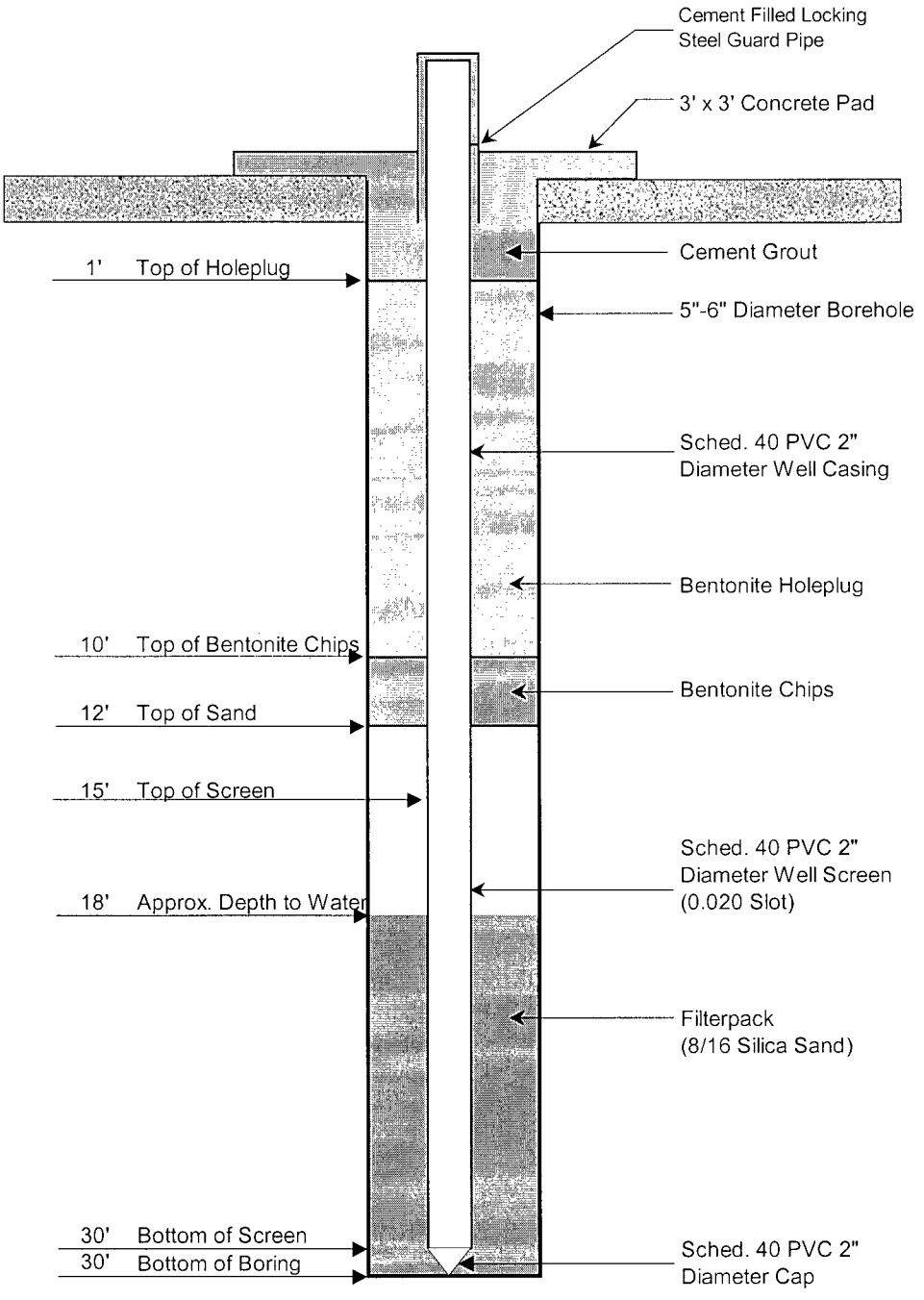


TRIDENT ENVIRONMENTAL	Client:	Rice Operating Company
	Site Name:	EME M-9 SWD Site
	Completion Date:	August 20, 2003
	On Site Geologist:	Gil Van Deventer

MW-2
Monitoring Well
Construction Diagram

MONITORING WELL CONSTRUCTION DIAGRAM

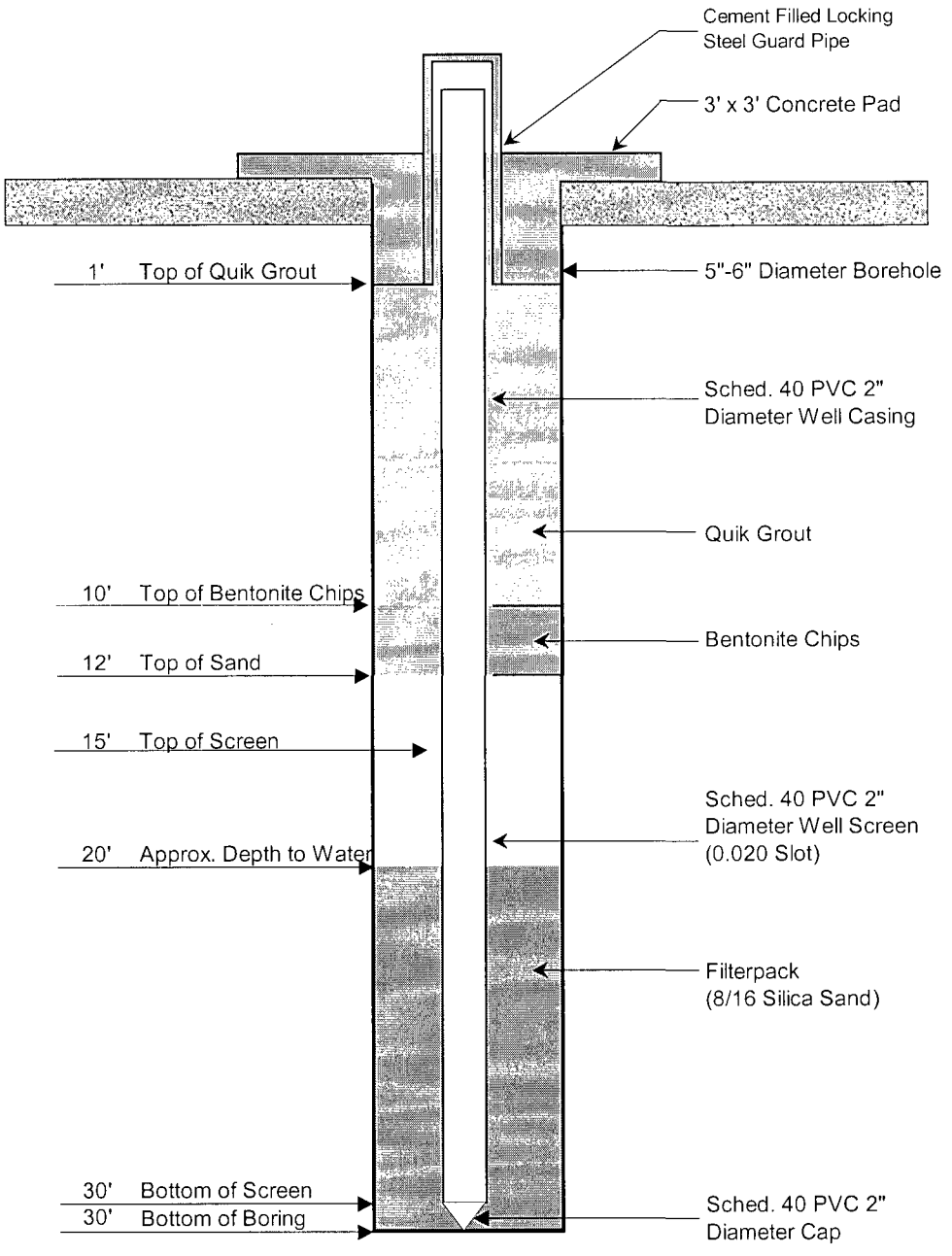
(Not to Scale)



TRIDENT ENVIRONMENTAL	Client:	Rice Operating Company
	Site Name:	EME M-9 SWD Site
	Completion Date:	August 20, 2003
	On Site Geologist:	Gil Van Deventer

MW-3
Monitoring Well
Construction Diagram

MONITORING WELL CONSTRUCTION DIAGRAM
(Not to Scale)



TRIDENT ENVIRONMENTAL	Client:	Rice Operating Company
	Site Name:	EME M-9 SWD Site
	Completion Date:	February 17, 2004
	On Site Geologist:	Gil Van Deventer

MW-4
Monitoring Well
Construction Diagram

APPENDIX C

New Mexico Office of the State Engineer
Well Reports and Downloads

Township: 20S Range: 37E Sections: 3,4,5,9,10,15,16,17

NAD27 X: Y: Zone: Search Radius:

County: LE Basin: Number: Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

Well / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | WATERS Menu | Help

WELL / SURFACE DATA REPORT 12/08/2005

(acre ft per annum) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest X Y are in Fe

DB	File Nbr	Use	Diversion	Owner	Well Number	Source	Tws	Rng	Sec	q	q	q	Zone	X
L	01450	PRO	3	OHIO OIL CO.	L 01450		20S	37E	05	1	3			
L	01450 (1)	PRO	0	THE OHIO OIL COMPANY	L 01450 (1)		20S	37E	05	1	3			
L	01450 (10)	PRO	0	MARATHON OIL COMPANY	L 01450 (10)		20S	37E	05	1	3			
L	01450 (11)	PRO	0	MARATHON OIL COMPANY	L 01450 (11)		20S	37E	05	1	3			
L	01450 (12)	PRO	0	MARATHON OIL COMPANY	L 01450 (12)		20S	37E	05	1	3			
L	01450 (13)	PRO	0	MARATHON OIL COMPANY	L 01450 (13)		20S	37E	05	1	3			
L	01450 (14)	PRO	0	MARATHON OIL COMPANY	L 01450 (14)		20S	37E	05	1	3			
L	01450 (2)	PRO	0	MARATON OIL COMPANY	L 01450 (2)		20S	37E	05	1	3			
L	01450 (3)	PRO	0	THE MARATHON OIL COMPANY	L 01450 (3)		20S	37E	05	1	3			
L	01450 (4)	PRO	0	MARATHON OIL COMPANY	L 01450 (4)		20S	37E	05	1	3			
L	01450 (5)	PRO	0	MARATHON OIL COMPANY	L 01450 (5)		20S	37E	05	1	3			
L	01450 (6)	PRO	0	MARATHON OIL COMPANY	L 01450 (6)		20S	37E	05	1	3			
L	01450 (7)	PRO	0	MARATHON OIL COMPANY	L 01450 (7)		20S	37E	05	1	3			
L	01450 (8)	PRO	0	MARATHON OIL COMPANY	L 01450 (8)		20S	37E	05	1	3			
L	01450 (9)	PRO	0	MARATHON OIL COMPANY	L 01450 (9)		20S	37E	05	1	3			
L	01572	PRO	3	EXPLORATION DRILLING COMPANY	L 01572 APPRO	Shallow	20S	37E	05	3	3	1		
L	02102	PRO	3	E. F. INC. MORAN	L 02102	Shallow	20S	37E	05	3	4			
					L 02102 APPRO	Shallow	20S	37E	05	3	4			
L	02278	DOM	3	LAUGHLIN ESTATE	L 02278	Shallow	20S	37E	05	4	3			
					L 02278 APPRO		20S	37E	05	4	3			
L	02488	PRO	3	THE TEXAS CO.	L 02488	Shallow	20S	37E	05	2	3			
					L 02488 APPRO	Shallow	20S	37E	05	2	3			
L	02497	PRO	3	AMERADA PETROLEUM CORPORATION	L 02497	Shallow	20S	37E	05	3	3	3		

L	02501	PRO	3	AMARADA PETROLEUM CO.	L	02497 APPRO		20S	37E	05	3	3 3
					L	02501		20S	37E	05	3	3 3
					L	02501 EXP		20S	37E	05	3	3 3
L	05686	PRO	0	GULF OIL CORPORATION	L	05686 EXP		20S	37E	03	3	2 3
L	05980	DOM	0	J.S., DAVID EARL & LAUGHLIN	L	05980 DCL		20S	37E	04	3	4 1
L	08068	DOM	0	S W CATTLE COMPANY	L	08068 DCL		20S	37E	10	1	
L	08070	DOM	0	S W CATTLE COMPANY	L	08070 DCL		20S	37E	16	2	
L	09779	DOM	3	DOLORES NASH DAVIS	L	09779	Shallow	20S	37E	05	2	2 2
L	10069	STK	3	JIMMIE COOPER	L	10069	Shallow	20S	37E	04	1	1
L	10150	STK	0	S&U CATTLE CO.	L	10150	Shallow	20S	37E	09	4	1
					L	10150 EXP		20S	37E	09	4	1
L	10356	STK	0	S-W CATTLE CO	L	10356		20S	37E	09	3	1 1

Record Count: 35

New Mexico Office of the State Engineer
Well Reports and Downloads

Township: 20S Range: 37E Sections: 3,4,5,9,10,15,16,17

NAD27 X: Y: Zone: Search Radius:

County: LE Basin: Number: Suffix:

Owner Name: (First) (Last) Non-Domestic Domestic All

Well / Surface Data Report | Avg Depth to Water Report | Water Column Report

Clear Form | WATERS Menu | Help

WATER COLUMN REPORT 12/08/2005

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

Well Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Depth Well	Depth Water	Water (in feet) Column
L 10069	20S	37E	04	1	1					39	22	17
L 05980 DCL	20S	37E	04	3	4	1				95		
L 09779	20S	37E	05	2	2	2				50	40	10
L 02488	20S	37E	05	2	3					63	32	31
L 02488 APPRO	20S	37E	05	2	3					63	32	31
L 01572 APPRO	20S	37E	05	3	3	1				70		
L 02497	20S	37E	05	3	3	3					35	
L 02497 APPRO	20S	37E	05	3	3	3				125		
L 02102 APPRO	20S	37E	05	3	4					70	46	24
L 02102	20S	37E	05	3	4					70	46	24
L 02278	20S	37E	05	4	3					65	37	28
L 02278 APPRO	20S	37E	05	4	3							
L 10150	20S	37E	09	4	1					30		

Record Count: 13

APPENDIX D

RICE Operating Company
122 West Taylor • Hobbs, New Mexico 88240
Phone: (505)393-9174 • Fax: (505) 397-1471

CERTIFIED MAIL
RETURN RECEIPT NO. 7002 0510 0000 9384 5877

November 4, 2002

Mr. Wayne Price
NM Energy, Minerals, and Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87505

RE: REDWOOD TANK CLOSURE REPORT FOR EME SWD FACILITY M-9
Letter M, Sec. 9, T20S, R37E
Lea County, New Mexico
NMOCD Case # 1R0331

Mr. Price:

Rice Operating Company (ROC) petitions the NMOCD for closure of the excavation portion of the below grade redwood tanks site at the Eumont Monument Eunice (EME) Salt Water Disposal Facility SWD Well M-9, located in Unit Letter M, Sec 9, T20S, R37E, Lea County, NM.

ROC is the service provider (operator) for the EME Salt Water Disposal System and has no ownership of any portion of the pipeline, well or facility. The EME System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Closure projects require System Partner AFE approval and work begins as funds are received. The System Partners approved the Closure Project for the SWD M-9 Facility and work was started in January 2002.

The final excavation of the redwood tanks site resulted in TPH and BTEX levels at bottom and sides that are below the recommended guidelines for vadose zone impact when a Total Ranking Score is 20. Groundwater in this area is 18 feet bgs. The sampling results are attached. All closure samples were verified by a certified lab.

This facility is located on Fee Land owned by SW Cattle Company. The 2 acre site lease agreement has been in effect since 1989 and will continue until 2009.

ROC proposes to install a monitor well at this site to monitor groundwater constituents. The proposal includes sampling the groundwater for two years and testing for major cations and anions as well as BTEX. ROC will submit an annual report on the sampling results to the NMOCD by the first of March of the subsequent year. Three samples were taken from the sacrificed monitor well at this site in 2002. The results averaged 360 ppm chlorides and 1523 ppm TDS, with BTEX levels under NMOCD guidelines. Foreseeable future use of the groundwater in this area is limited to agriculture, including livestock watering.

ROC is applying for closure of the excavation at the M-9 Facility and is submitting the Excavation Closure Report and supplemental collected data. Thank you for your consideration of this closure request.

If you have any questions, please call.

RICE OPERATING COMPANY

Donnie Anderson
Project Leader – Environmental

Enclosures Excavation Closure Report M-9 SWD Facility

Cc: CDH,file, Mr. Chris Williams
NMOCD, district I Office
1625 French Drive
Hobbs, NM 88240

Trent Stradley
SW Cattle Company
P.O. Box 549
Hobbs, NM 88240

District I
1625 N. French Drive, Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
2040 South Pacheco
Santa Fe, NM 87505

Submit 1 copy to Appropriate District Office and 1 copy to Santa Fe Office

PIT REMEDIATION AND CLOSURE REPORT

Operator: RICE OPERATING COMPANY Telephone: 505-393-9174

Address: 122 West Taylor, Hobbs, NM 88240

Facility or: EME SWD WELL M-9 FACILITY
Well Name

Location: Unit or Qtr/Qtr Sec Unit Letter M Sec 9 T 20S R 37E County LEA

Pit type: Separator _____ Dehydrator _____ Other Below Grade Redwood Tanks

Land Type: BLM _____ State _____ Fee X Other _____

Pit Location Pit Dimensions: length _____ width 28' depth 8'
(Attach diagram)

Reference: wellhead _____ other _____

Footage from reference: *see diagram in report*

Direction from reference: _____ Degrees _____ East North _____
of
_____ West South _____

Depth to Ground Water (Vertical distance from contaminants to seasonal high water elevation of ground water)	Less than 50 feet 50 feet to 99 feet Greater than 100 feet	(20 points) (10 points) (0 points)	20
Wellhead Protection Area (Less than 200 feet from a private domestic water source, or; less than 1000 feet from all other water sources)	Yes No	(20 points) (0 points)	20
Distance to Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet 200 feet to 1000 feet Greater than 1000 feet	(20 points) (10 points) (0 points)	0
		RANKING SCORE (TOTAL POINTS):	40

Date Remediation Started: June 19,2002 Date Completed: September 9,2002

Remediation Method: (Check all appropriate sections) Excavation yes Approx. cubic yards 8000 excavated

Landfarmed 8000 cu yds In-situ Bioremediation no

Other

Remediation Location: (ie.: landfarmed onsite, name and location of offsite facility) Onsite Yes Offsite

General Description of Remedial Action: Excavated redwood tanks area to below OCD guidelines. Removed all TPH impacted soil. Backfilled with blended landfarmed soil, installed and tested clay liner,and contoured to surrounding terrain. A new monitor well will be installed in October.

***Facility site completion date was September 9, 2002.**

Ground Water Encountered: No Yes XX Depth 18' BGS

Final Pit Closure Sampling (If multiple samples, attach sample results and diagram of sample locations and depths)

Sample location Composite samples of sidewalls, bottom and lifts. Analyticals, CoC, etc. are included in this closure package.

Sample depth Bottom: 20' feet BGS

Sample date Sample time

Sample Results

Benzene (ppm) See report analytical results

Total BTEX (ppm) See report analytical results

Field headspace (ppm)

TPH See report analytical results

Ground Water Sample: Yes XX No *(If yes, attach sample results)*

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE September 27, 2002 PRINTED NAME Donnie Anderson

SIGNATURE TITLE Project Leader-Environmental

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised March 25, 1999

WELL API NO.
30-025-12801

5. Indicate Type of Lease
STATE ☐ FEE X

6. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:
Oil Well ☐ Gas Well ☐ Other SWD Well

7. Lease Name or Unit Agreement Name:
Eunice Monument Eumont (EME)

2. Name of Operator
RICE OPERATING COMPANY

8. Well No.
M-9

3. Address of Operator
122 W. TAYLOR, HOBBS, NM 88240

9. Pool name or Wildcat
SAN ANDRES

4. Well Location
Unit Letter N 100 feet from the SOUTH line and 250 feet from the WEST line

Section 9 Township 20S Range 37E NMPM LEA County

10. Elevation *(Show whether DR, RKB, RT, GR, etc.)*
3525' GL; 3537' KB

11. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	☐	PLUG AND ABANDON	☐	REMEDIAL WORK	☐	ALTERING CASING	☐
TEMPORARILY ABANDON	☐	CHANGE PLANS	☐	COMMENCE DRILLING OPNS.	☐	PLUG AND ABANDONMENT	☐
PULL OR ALTER CASING	☐	MULTIPLE COMPLETION	☐	CASING TEST AND CEMENT JOB	☐		
OTHER:			☐	OTHER: Remediate Below-grade Redwood Tanks	■		

12. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompilation.

ROC began remediation activity on June 19, 2002; excavated approximately 8000 cubic yards of soil and land farmed on site. Impacted soil was removed to 20' bgs, ground water was found at 18' bgs. Installed and tested compacted clay liner. Backfilled with remediated soil and contoured to surrounding terrain. The work was completed on September 9, 2002.

A monitor well, installed in April, 2002 was sacrificed due to the extent of the excavation. Another monitor well is scheduled for installation in October, 2002.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE D. E. Anderson TITLE Project Leader-Environmental DATE 10/12/02

Type or print name D. E. Anderson Telephone No. 505-393-9174

(This space for State use)

APPPROVED BY _____ TITLE _____ DATE _____

Conditions of approval, if any:

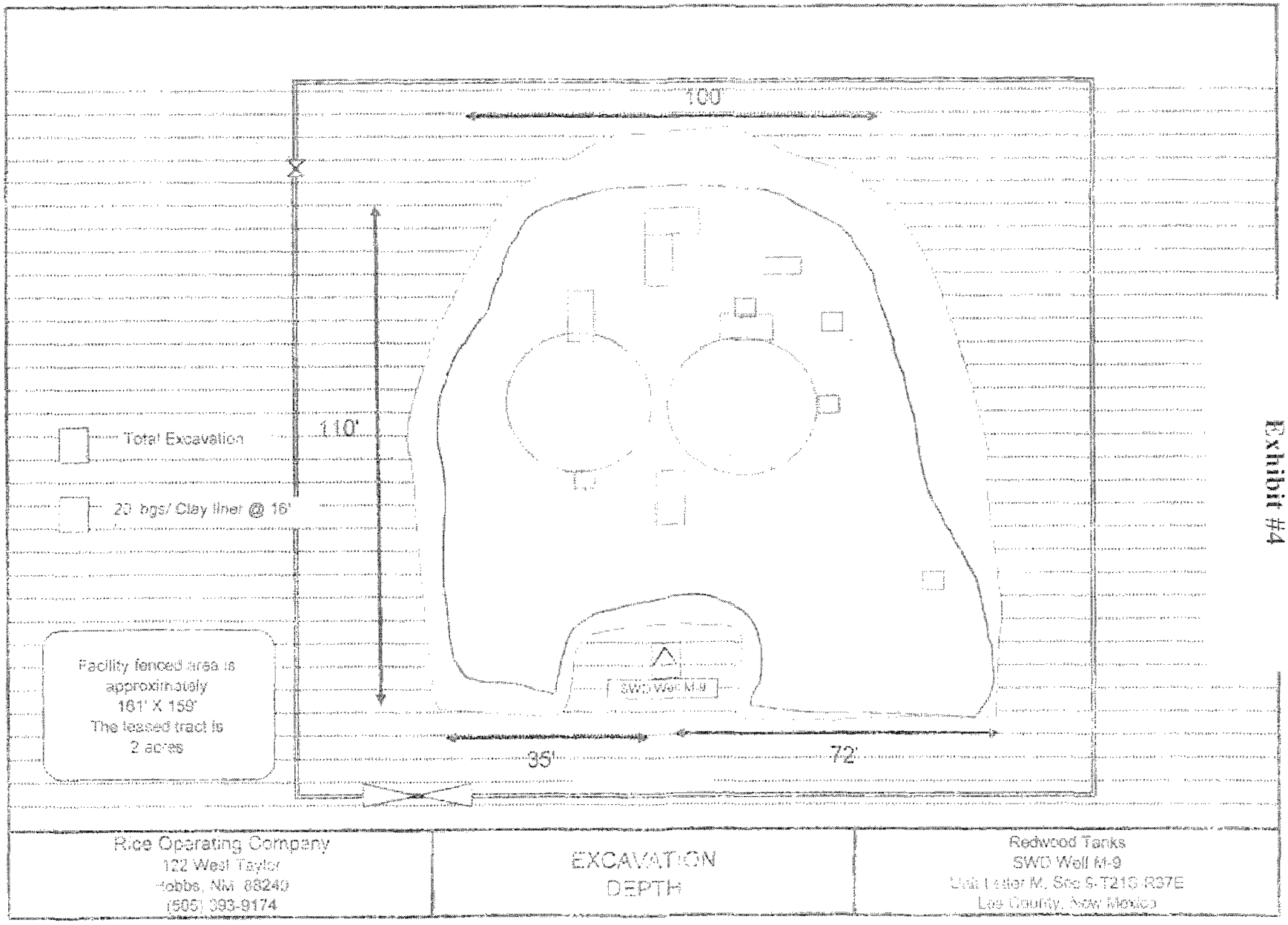
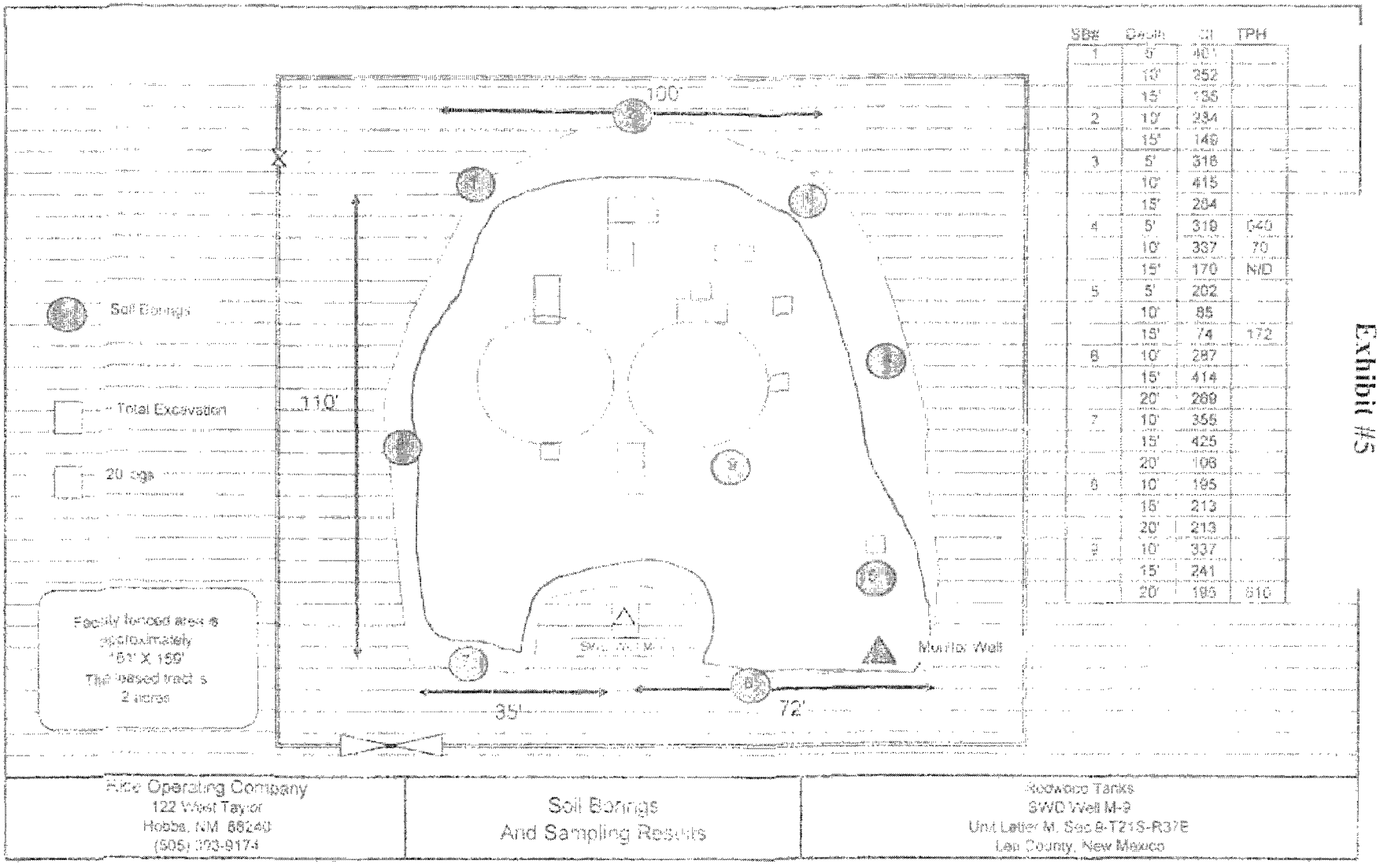

100'
110'
Total Excavation
20' bgs/ Clay liner @ 16'
Facility fenced area is
approximately
161' X 159'
The leased tract is
2 acres
SWD Well M-9
35'
72'
Rice Operating Company
122 West Taylor
Hobbs, NM 88240
(505) 393-9174
EXCAVATION
DEPTH
Redwood Tanks
SWD Well M-9
Unit Letter M, Sec 9-T21S-R37E
Lea County, New Mexico

Exhibit #4

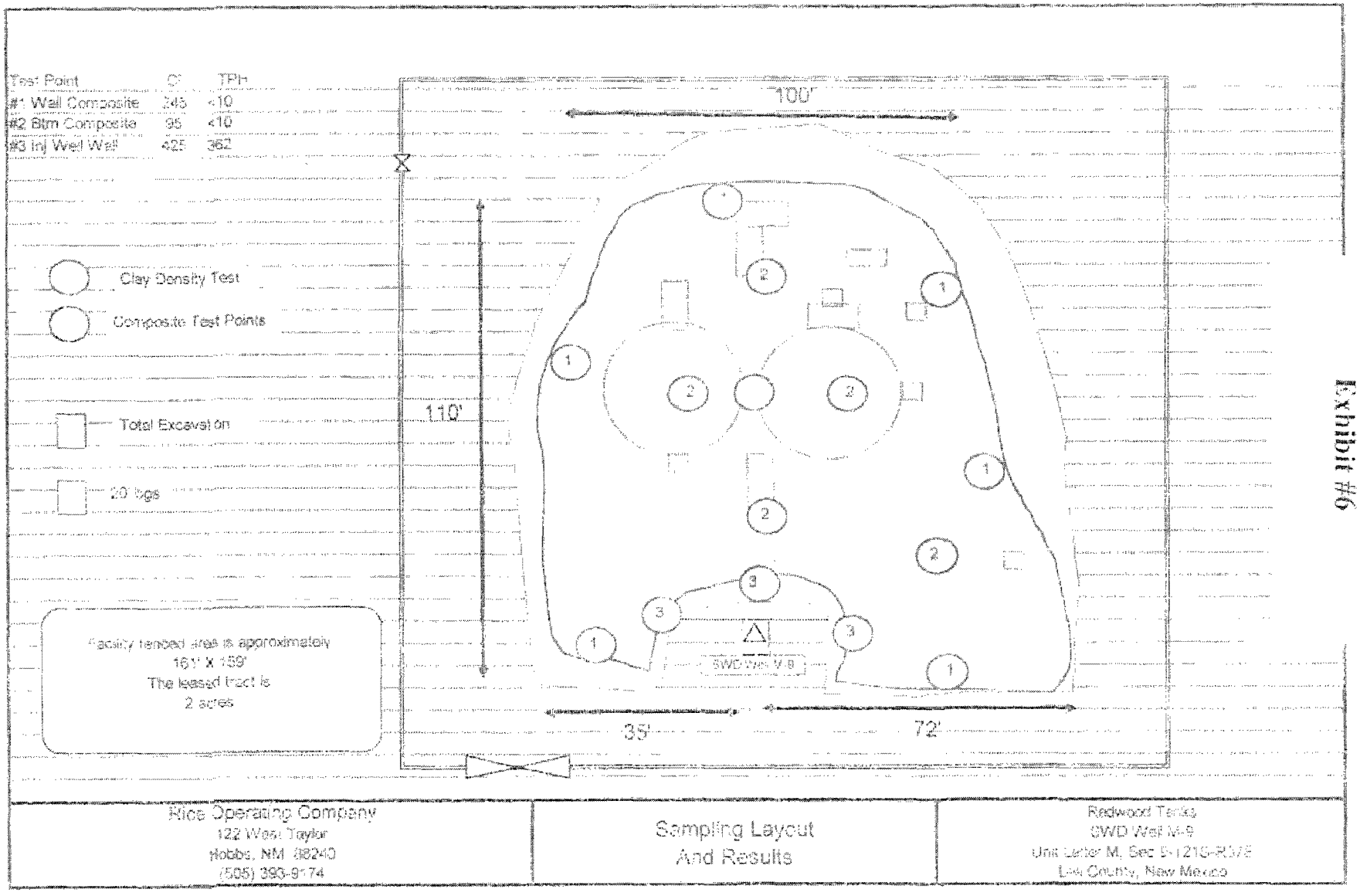


SB#	Depth	Cl	TPH
1	5'	401	
	10'	252	
	15'	136	
2	10'	334	
	15'	146	
3	5'	318	
	10'	415	
	15'	284	
4	5'	319	040
	10'	337	70
	15'	170	N/D
5	5'	202	
	10'	85	
	15'	74	172
6	10'	287	
	15'	414	
	20'	269	
7	10'	355	
	15'	425	
	20'	106	
8	10'	195	
	15'	213	
	20'	213	
9	10'	337	
	15'	241	
	20'	195	810

Rice Operating Company 122 West Taylor Hobbs, NM 88240 (505) 393-9174	Soil Borings And Sampling Results	Rockaco Tanks SWD Well M-9 Unit Letter M, Sec 8-T21S-R37E Lea County, New Mexico

Exhibit #5

Exhibit #6


Test Point | Cl | TPH
#1 Wall Composite | 245 | <10
#2 Btm Composite | 95 | <10
#3 Inj Well Well | 425 | 362
Clay Density Test
Composite Test Points
Total Excavation
20' bgs
Facility fenced area is approximately 161' X 159'
The leased tract is 2 acres
100'
110'
35'
72'
SWD Well M-9
Rice Operating Company
122 West Taylor
Hobbs, NM 88240
(505) 393-9174
Sampling Layout And Results
Redwood Tanks
SWD Well M-9
Unit Letter M, Sec 5-T21S-R37E
Lea County, New Mexico

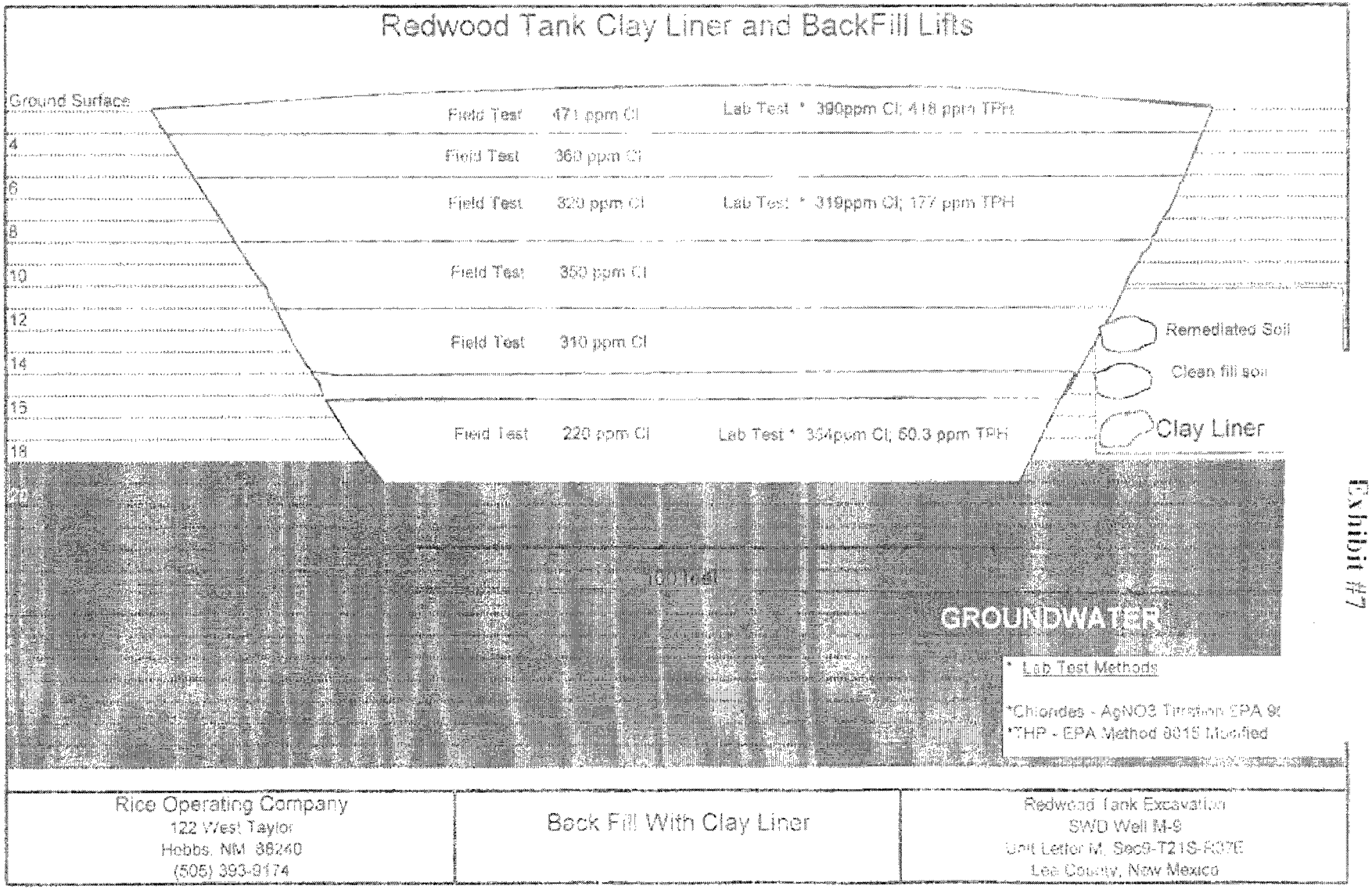

Redwood Tank Clay Liner and BackFill Lifts
Ground Surface
4
6
8
10
12
14
15
18
20
Field Test 471 ppm Cl
Lab Test * 390ppm Cl; 418 ppm TPH
Field Test 360 ppm Cl
Field Test 320 ppm Cl
Lab Test * 319ppm Cl; 177 ppm TPH
Field Test 350 ppm Cl
Field Test 310 ppm Cl
Field Test 220 ppm Cl
Lab Test * 354ppm Cl; 60.3 ppm TPH
Remediated Soil
Clean fill soil
Clay Liner
GROUNDWATER
* Lab Test Methods
*Chlorides - AgNO3 Titration EPA 9
*THP - EPA Method 8015 Modified
Rice Operating Company
122 West Taylor
Hobbs, NM 88240
(505) 393-9174
Back Fill With Clay Liner
Redwood Tank Excavation
SWD Well M-9
Unit Letter M, Sec9-T21S-R37E
Lea County, New Mexico

Exhibit #7

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	M-9-1	M	9	20S	37E	LEA			

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER S & W CATTLE CO OTHER _____

Depth to Groundwater 18 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 06/19/2002 Date Completed 09/09/2002 OCD Witness YES

Soil Excavated 8000 cubic yards Excavation Length 110 Width 100 Depth 20 feet

Soil Disposed _____ cubic yards Offsite Facility _____ Location _____

FINAL ANALYTICAL RESULTS: **Sample Date** 09/09/2002 **Sample Depth** 20

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
SIDEWALLS	<0.025	<0.025	<0.025	<0.025	<10	<10	245
BOTTOM	<0.025	<0.025	<0.025	<0.025	<10	<10	95

General Description of Remedial Action: This junction box was located within the area excavated and remediated at the M-9 SWD Facility. All samples and test results were taken form the M-9 SWD Facility remediation site. The site was excavated to 20' bgs and then backfilled with 4' of clean overburden soil. A compacted red-bed clay liner was installed and density tested. The excavation was backfilled with remediated soil. The remediated soil was tested in 3' lifts. A monitor well was installed to sample groundwater constituents. Any remaining hydrocarbon will naturally attenuate.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	13'	260
BOTTOM	20'	100
4' fill above gw	16'	220
1st lift above liner	12'	310
2nd lift	9'	350
3rd lift	6'	320
4th lift	3'	360
Surface	0'	471

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE October 2, 2002 PRINTED NAME D. E. Anderson

SIGNATURE _____ TITLE Project Leader - Environmental

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	M-9-2	M	9	20S	37E	LEA			

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER S & W CATTLE CO OTHER _____

Depth to Groundwater 18 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 06/19/2002 Date Completed 09/09/2002 OCD Witness YES

Soil Excavated 8000 cubic yards Excavation Length 110 Width 100 Depth 20 feet

Soil Disposed _____ cubic yards Offsite Facility _____ Location _____

FINAL ANALYTICAL RESULTS: **Sample Date** 09/09/2002 **Sample Depth** 20

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
SIDEWALLS	<0.025	<0.025	<0.025	<0.025	<10	<10	245
BOTTOM	<0.025	<0.025	<0.025	<0.025	<10	<10	95

General Description of Remedial Action: This junction box was located within the area excavated and remediated at the M-9 SWD Facility. All samples and test results were taken form the M-9 SWD Facilty remediation site. The site was excavated to 20' bgs and then backfilled with 4' of clean overburden soil. A compacted red-bed clay liner was installed and density tested. The excavation was backfilled with remediated soil. The remediated soil was tested in 3' lifts. A monitor well was installed to sample groundwater constituents. Any remaining hydrocarbon will naturally attenuate.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	13'	260
BOTTOM	20'	100
4' fill above gw	16'	220
1st lift above liner	12'	310
2nd lift	9'	350
3rd lift	6'	320
4th lift	3'	360
Surface	0'	471

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE October 21 2002 PRINTED NAME D. E. Anderson

SIGNATURE _____ TITLE Project Leader - Environmental

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	M-9-3	M	9	20S	37E	LEA			

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER S & W CATTLE CO OTHER _____

Depth to Groundwater 18 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 06/19/2002 Date Completed 09/09/2002 OCD Witness YES

Soil Excavated 8000 cubic yards Excavation Length 110 Width 100 Depth 20 feet

Soil Disposed _____ cubic yards Offsite Facility _____ Location _____

FINAL ANALYTICAL RESULTS: **Sample Date** 09/09/2002 **Sample Depth** 20

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
SIDEWALLS	<0.025	<0.025	<0.025	<0.025	<10	<10	245
BOTTOM	<0.025	<0.025	<0.025	<0.025	<10	<10	95

General Description of Remedial Action: This junction box was located within the area excavated and remediated at the M-9 SWD Facility. All samples and test results were taken form the M-9 SWD Facility remediation site. The site was excavated to 20' bgs and then backfilled with 4' of clean overburden soil. A compacted red-bed clay liner was installed and density tested. The excavation was backfilled with remediated soil. The remediated soil was tested in 3' lifts. A monitor well was installed to sample groundwater constituents. Any remaining hydrocarbon will naturally attenuate.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	13'	260
BOTTOM	20'	100
4' fill above gw	16'	220
1st lift above liner	12'	310
2nd lift	9'	350
3rd lift	6'	320
4th lift	3'	360
Surface	0'	471

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE October 2, 2002 PRINTED NAME D. E. Anderson

SIGNATURE _____ TITLE Project Leader - Environmental

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	M-9-4	M	9	20S	37E	LEA			

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER S & W CATTLE CO OTHER _____

Depth to Groundwater 18 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 06/19/2002 Date Completed 09/09/2002 OCD Witness YES

Soil Excavated 8000 cubic yards Excavation Length 110 Width 100 Depth 20 feet

Soil Disposed _____ cubic yards Offsite Facility _____ Location _____

FINAL ANALYTICAL RESULTS: **Sample Date** 09/09/2002 **Sample Depth** 20

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
SIDEWALLS	<0.025	<0.025	<0.025	<0.025	<10	<10	245
BOTTOM	<0.025	<0.025	<0.025	<0.025	<10	<10	95

General Description of Remedial Action: This junction box was located within the area excavated and remediated at the M-9 SWD Facility. All samples and test results were taken form the M-9 SWD Facility remediation site. The site was excavated to 20' bgs and then backfilled with 4' of clean overburden soil. A compacted red-bed clay liner was installed and density tested. The excavation was backfilled with remediated soil. The remediated soil was tested in 3' lifts. A monitor well was installed to sample groundwater constituents. Any remaining hydrocarbon will naturally attenuate

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	13'	260
BOTTOM	20'	100
4' fill above gw	16'	220
1st lift above liner	12'	310
2nd lift	9'	350
3rd lift	6'	320
4th lift	3'	360
Surface	0'	471

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE October 2, 2002 PRINTED NAME D. E. Anderson

SIGNATURE D E Anderson TITLE Project Leader - Environmental

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	M-9-5	M	9	20S	37E	LEA			

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER S & W CATTLE CO OTHER _____

Depth to Groundwater 18 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 06/19/2002 Date Completed 09/09/2002 OCD Witness YES

Soil Excavated 8000 cubic yards Excavation Length 110 Width 100 Depth 20 feet

Soil Disposed _____ cubic yards Offsite Facility _____ Location _____

FINAL ANALYTICAL RESULTS: **Sample Date** 09/09/2002 **Sample Depth** 20

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
SIDEWALLS	<0.025	<0.025	<0.025	<0.025	<10	<10	245
BOTTOM	<0.025	<0.025	<0.025	<0.025	<10	<10	95

General Description of Remedial Action: This junction box was located within the area excavated and remediated at the M-9 SWD Facility. All samples and test results were taken form the M-9 SWD Facility remediation site. The site was excavated to 20' bgs and then backfilled with 4' of clean overburden soil. A compacted red-bed clay liner was installed and density tested. The excavation was backfilled with remediated soil. The remediated soil was tested in 3' lifts. A monitor well was installed to sample groundwater constituents. Any remaining hydrocarbon will naturally attenuate.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	13'	260
BOTTOM	20'	100
4' fill above gw	16'	220
1st lift above liner	12'	310
2nd lift	9'	350
3rd lift	6'	320
4th lift	3'	360
Surface	0'	471

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE October 2, 2002 PRINTED NAME D. E. Anderson

SIGNATURE D E Anderson TITLE Project Leader - Environmental

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	M-9-6	M	9	20S	37E	LEA			

LAND TYPE: BLM ____ STATE ____ FEE LANDOWNER S & W CATTLE CO OTHER ____

Depth to Groundwater 20 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 03/21/2002 Date Completed 03/21/2002 OCD Witness NO

Soil Excavated 100 cubic yards Excavation Length 20 Width 12 Depth 16 feet

Soil Disposed ____ cubic yards Offsite Facility ____ Location ____

FINAL ANALYTICAL RESULTS: **Sample Date** 03/21/2002 **Sample Depth** 16'

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
SIDEWALLS	<0.025	<0.025	<0.025	<0.025	<10	<10	292
BOTTOM	<0.025	<0.025	<0.025	<0.025	<10	81	97

General Description of Remedial Action: Delineated vertical and lateral extent.

Vertical delineation found a decline in chlorides from 750 ppm @ 10' bgs to 100 ppm @ 16' bgs.

These results indicate impact did not reach groundwater. The excavated soil was blended with fresh soil to 300 ppm chlorides and backfilled. This site is no longer a junction and does not require a box.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	5'	300
BOTTOM	16'	100
Vertical Trench	5'	350
	8'	700
	10'	750
	12'	750
	14'	400
	16'	100

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE April 12, 2002 PRINTED NAME D. E. Anderson

SIGNATURE D E Anderson TITLE Project Leader - Environmental

APPENDIX E

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System M-9 SWD Site

Project Number: None Given

Location: T20S, R37E, Sec 9, Unit Letter M

Lab Order Number: 5B09004

Report Date: 02/18/05

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/18/05 17:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	5B09004-01	Water	02/08/05 15:12	02/09/05 07:00
MW-2	5B09004-02	Water	02/08/05 14:20	02/09/05 07:00
MW-3	5B09004-03	Water	02/08/05 13:53	02/09/05 07:00
MW-4	5B09004-04	Water	02/08/05 15:53	02/09/05 07:00
WW	5B09004-05	Water	02/08/05 13:15	02/09/05 07:00

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5B09004-01) Water									
Benzene	**0.00279**	0.00100	mg/L	1	EB51807	02/14/05	02/15/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00115**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*80.5 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.5 %*	*80-120*		"	"	"	"	
MW-2 (5B09004-02) Water									
Benzene	ND	0.00100	mg/L	1	EB51807	02/14/05	02/15/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*103 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*	*80-120*		"	"	"	"	
MW-3 (5B09004-03) Water									
Benzene	ND	0.00100	mg/L	1	EB51807	02/14/05	02/15/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*105 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*80-120*		"	"	"	"	
MW-4 (5B09004-04) Water									
Benzene	ND	0.00100	mg/L	1	EB51807	02/14/05	02/15/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*82.0 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.0 %*	*80-120*		"	"	"	"	

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: *Kristin Farris*	02/18/05 17:58

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WW (5B09004-05) Water									
Benzene	ND	0.00100	mg/L	1	EB51807	02/14/05	02/15/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*108 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*	*80-120*		"	"	"	"	

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Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	Reported:
Hobbs NM, 88240	Project Manager: Kristin Farris	02/18/05 17:58

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5B09004-01) Water									
Total Alkalinity	**340**	2.00	mg/L	1	EB51404	02/15/05	02/15/05	EPA 310.2M	
Chloride	**304**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
Total Dissolved Solids	**1500**	5.00	"	1	EB51004	02/09/05	02/10/05	EPA 160.1	
Sulfate	**356**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
MW-2 (5B09004-02) Water									
Total Alkalinity	**290**	2.00	mg/L	1	EB51404	02/15/05	02/15/05	EPA 310.2M	
Chloride	**311**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
Total Dissolved Solids	**1390**	5.00	"	1	EB51004	02/09/05	02/10/05	EPA 160.1	
Sulfate	**308**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
MW-3 (5B09004-03) Water									
Total Alkalinity	**226**	2.00	mg/L	1	EB51404	02/15/05	02/15/05	EPA 310.2M	
Chloride	**312**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
Total Dissolved Solids	**1450**	5.00	"	1	EB51004	02/09/05	02/10/05	EPA 160.1	
Sulfate	**407**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
MW-4 (5B09004-04) Water									
Total Alkalinity	**250**	2.00	mg/L	1	EB51404	02/15/05	02/15/05	EPA 310.2M	
Chloride	**520**	12.5	"	25	EB51713	02/10/05	02/10/05	EPA 300.0	
Total Dissolved Solids	**1670**	5.00	"	1	EB51004	02/09/05	02/10/05	EPA 160.1	
Sulfate	**311**	12.5	"	25	EB51713	02/10/05	02/10/05	EPA 300.0	
WW (5B09004-05) Water									
Total Alkalinity	**264**	2.00	mg/L	1	EB51404	02/15/05	02/15/05	EPA 310.2M	
Chloride	**395**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	
Total Dissolved Solids	**1180**	5.00	"	1	EB51004	02/09/05	02/10/05	EPA 160.1	
Sulfate	**155**	10.0	"	20	EB51713	02/10/05	02/10/05	EPA 300.0	

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Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/18/05 17:58

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (5B09004-01) Water									
Calcium	**135**	1.00	mg/L	100	EB51702	02/14/05	02/16/05	EPA 6010B	
Magnesium	**80.5**	0.0500	"	50	"	"	"	"	
Potassium	**10.8**	0.500	"	10	"	"	"	"	
Sodium	**239**	1.00	"	100	"	"	"	"	
MW-2 (5B09004-02) Water									
Calcium	**105**	1.00	mg/L	100	EB51702	02/14/05	02/16/05	EPA 6010B	
Magnesium	**64.4**	0.0500	"	50	"	"	"	"	
Potassium	**11.4**	0.250	"	5	"	"	"	"	
Sodium	**256**	1.00	"	100	"	"	"	"	
MW-3 (5B09004-03) Water									
Calcium	**175**	1.00	mg/L	100	EB51702	02/14/05	02/16/05	EPA 6010B	
Magnesium	**73.2**	0.0500	"	50	"	"	"	"	
Potassium	**8.65**	0.250	"	5	"	"	"	"	
Sodium	**276**	1.00	"	100	"	"	"	"	
MW-4 (5B09004-04) Water									
Calcium	**131**	1.00	mg/L	100	EB51702	02/14/05	02/16/05	EPA 6010B	
Magnesium	**76.1**	0.0500	"	50	"	"	"	"	
Potassium	**11.3**	0.250	"	5	"	"	"	"	
Sodium	**327**	1.00	"	100	"	"	"	"	
WW (5B09004-05) Water									
Calcium	**114**	0.500	mg/L	50	EB51702	02/14/05	02/16/05	EPA 6010B	
Magnesium	**60.6**	0.0500	"	"	"	"	"	"	
Potassium	**9.08**	0.250	"	5	"	"	"	"	
Sodium	**201**	1.00	"	100	"	"	"	"	

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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 EB51807 - EPA 5030C (GC)										
Blank (EB51807-BLK1)				Prepared & Analyzed: 02/14/05						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*16.5*		*ug/l*	*20.0*		*82.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.4*		*"*	*20.0*		*87.0*	*80-120*			
LCS (EB51807-BS1)				Prepared & Analyzed: 02/14/05						
Benzene	105		ug/l	100		105	80-120			
Toluene	105		"	100		105	80-120			
Ethylbenzene	95.9		"	100		95.9	80-120			
Xylene (p/m)	196		"	200		98.0	80-120			
Xylene (o)	95.7		"	100		95.7	80-120			
Surrogate: a,a,a-Trifluorotoluene	*16.5*		*"*	*20.0*		*82.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*16.8*		*"*	*20.0*		*84.0*	*80-120*			
LCS Dup (EB51807-BSD1)				Prepared & Analyzed: 02/14/05						
Benzene	113		ug/l	100		113	80-120	7.34	20	
Toluene	112		"	100		112	80-120	6.45	20	
Ethylbenzene	107		"	100		107	80-120	10.9	20	
Xylene (p/m)	224		"	200		112	80-120	13.3	20	
Xylene (o)	111		"	100		111	80-120	14.8	20	
Surrogate: a,a,a-Trifluorotoluene	*18.6*		*"*	*20.0*		*93.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*20.2*		*"*	*20.0*		*101*	*80-120*			
Calibration Check (EB51807-CCV1)				Prepared: 02/14/05 Analyzed: 02/16/05						
Benzene	97.5		ug/l	100		97.5	80-120			
Toluene	104		"	100		104	80-120			
Ethylbenzene	93.1		"	100		93.1	80-120			
Xylene (p/m)	194		"	200		97.0	80-120			
Xylene (o)	97.9		"	100		97.9	80-120			
Surrogate: a,a,a-Trifluorotoluene	*16.7*		*"*	*20.0*		*83.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.8*		*"*	*20.0*		*89.0*	*80-120*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB51807 - EPA 5030C (GC)										
Matrix Spike (EB51807-MS1)	**Source: 5B09008-01**			Prepared: 02/14/05 Analyzed: 02/18/05						
Benzene	93.3		ug/l	100	ND	93.3	80-120			
Toluene	101		"	100	ND	101	80-120			
Ethylbenzene	102		"	100	ND	102	80-120			
Xylene (p/m)	206		"	200	ND	103	80-120			
Xylene (o)	97.3		"	100	ND	97.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*23.3*		"	*20.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*20.4*		"	*20.0*		*102*	*80-120*			

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 EB51004 - General Preparation (WetChem)										
Blank (EB51004-BLK1)				Prepared: 02/09/05 Analyzed: 02/10/05						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EB51004-DUP1)	**Source: 5B09003-01**			Prepared: 02/09/05 Analyzed: 02/10/05						
Total Dissolved Solids	16200	5.00	mg/L		14600			10.4	20	
Batch EB51404 - General Preparation (WetChem)										
Blank (EB51404-BLK1)				Prepared & Analyzed: 02/15/05						
Total Alkalinity	ND	2.00	mg/L							
Duplicate (EB51404-DUP1)	**Source: 5B09003-01**			Prepared & Analyzed: 02/15/05						
Total Alkalinity	395	2.00	mg/L		396			0.253	20	
Reference (EB51404-SRM1)				Prepared & Analyzed: 02/15/05						
Carbonate Alkalinity	0.0510		mg/L	0.0500		102	80-120			
Batch EB51713 - General Preparation (WetChem)										
Blank (EB51713-BLK1)				Prepared & Analyzed: 02/10/05						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EB51713-BS1)				Prepared & Analyzed: 02/10/05						
Sulfate	9.66		mg/L	10.0		96.6	80-120			
Chloride	9.56		"	10.0		95.6	80-120			

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	02/18/05 17:58

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 EB51713 - General Preparation (WetChem)										
LCS Dup (EB51713-BSD1)				Prepared & Analyzed: 02/10/05						
Sulfate	9.64		mg/L	10.0		96.4	80-120	0.207	20	
Chloride	9.51		"	10.0		95.1	80-120	0.524	20	
Calibration Check (EB51713-CCV1)				Prepared & Analyzed: 02/10/05						
Chloride	9.73		mg/L	10.0		97.3	80-120			
Sulfate	9.88		"	10.0		98.8	80-120			
Duplicate (EB51713-DUP1)	**Source: 5B09004-01**			Prepared & Analyzed: 02/10/05						
Chloride	304	10.0	mg/L		304			0.00	20	
Sulfate	357	10.0	"		356			0.281	20	

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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 EB51702 - 6010B/No Digestion										
Blank (EB51702-BLK1)				Prepared: 02/14/05 Analyzed: 02/16/05						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EB51702-CCV1)				Prepared: 02/14/05 Analyzed: 02/16/05						
Calcium	2.22		mg/L	2.00		111	85-115			
Magnesium	2.08		"	2.00		104	85-115			
Potassium	1.75		"	2.00		87.5	85-115			
Sodium	1.94		"	2.00		97.0	85-115			
Duplicate (EB51702-DUP1)	**Source: 5B09003-01**			Prepared: 02/14/05 Analyzed: 02/16/05						
Calcium	905	1.00	mg/L		848			6.50	20	
Magnesium	254	0.100	"		239			6.09	20	
Potassium	88.3	2.50	"		90.7			2.68	20	
Sodium	5810	10.0	"		4840			18.2	20	

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: 2/18/2005

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

Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

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

Project Name: EME System M-9 SWD Site
Project #:
Project Location: T20S, R37E, Sec 9, Unit Letter M
COC #: V117M9-0205

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	H2SO4	NaOH	H3PO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TPH: 418.1 8015M 1005 1004	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260B	RCI	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Sched)	Standard TAT
01	MW-1	2-8-05	1512	3	✓		✓					✓					✓	✓					✓			✓				✓
02	MW-2	2-8-05	1420	3	✓		✓					✓					✓	✓					✓			✓				✓
03	MW-3	2-8-05	1353	3	✓		✓					✓					✓	✓					✓			✓				✓
04	MW-4	2-8-05	1553	3	✓		✓					✓					✓	✓					✓			✓				✓
05	WW	2-8-05	1315	3	✓		✓					✓					✓	✓					✓			✓				✓

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

Sample Containers Intact? (Y) N
Temperature Upon Receipt: 1.0°C
Laboratory Comments:
1-L HDPE
2. 40mL glass w/HCl
Seal on Black Box

Relinquished by:	Date	Time	Received by:	Date	Time
	2/8/05	8:00p			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
Drop Box	2-9-5	0700		2-9-5	0700

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

Client: Rice Consulting Co.

Date/Time: 02-09-05 @ 0700

Order #: 530900

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	-1.0 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	(Yes)	No	Not present → on Black Bag
Custody Seals intact on sample bottles?	Yes	No	(Not present)
Chain of custody present?	Yes	(No)	→ not in drop box. Client dropped off later
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: Gil Van Deventer Date/Time: 02-09-05 @ 0830 Contacted by: Jessica McMurry

Regarding:

missing COC

Corrective Action Taken:

Client will bring COC by later this morning

ENVIRONMENTAL LAB OF

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Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System M-9 SWD Site

Project Number: V117M9

Location: T20S, R37E, Sec 9, Unit Letter M

Lab Order Number: 5E09004

Report Date: 05/16/05

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WW-1	5E09004-01	Water	05/02/05 11:20	05/06/05 16:40
MW-1	5E09004-02	Water	05/02/05 16:02	05/06/05 16:40
MW-2	5E09004-03	Water	05/02/05 14:16	05/06/05 16:40
MW-3	5E09004-04	Water	05/02/05 13:40	05/06/05 16:40
MW-4	5E09004-05	Water	05/02/05 15:07	05/06/05 16:40

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Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WW-1 (5E09004-01) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/10/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*99.0 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*116 %*	*80-120*		"	"	"	"	
MW-1 (5E09004-02) Water									
Benzene	**J [0.000499]**	0.00100	mg/L	1	EE51006	05/10/05	05/10/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**J [0.000517]**	0.00100	"	"	"	"	"	"	
Xylene (o)	**J [0.000491]**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*115 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*118 %*	*80-120*		"	"	"	"	
MW-2 (5E09004-03) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/10/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*109 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*118 %*	*80-120*		"	"	"	"	
MW-3 (5E09004-04) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/10/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*112 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.0 %*	*80-120*		"	"	"	"	

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (5E09004-05) Water									
Benzene	ND	0.00100	mg/L	1	EE51006	05/10/05	05/10/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*107 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*112 %*	*80-120*		"	"	"	"	

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General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WW-1 (5E09004-01) Water									
Total Alkalinity	**256**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**866**	12.5	"	25	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**2470**	5.00	"	1	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**420**	12.5	"	25	EE51001	05/09/05	05/09/05	EPA 300.0	
MW-1 (5E09004-02) Water									
Total Alkalinity	**274**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**329**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**1450**	5.00	"	1	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**358**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
MW-2 (5E09004-03) Water									
Total Alkalinity	**275**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**295**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**1390**	5.00	"	1	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**332**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
MW-3 (5E09004-04) Water									
Total Alkalinity	**242**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**329**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**1510**	5.00	"	1	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**417**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
MW-4 (5E09004-05) Water									
Total Alkalinity	**258**	2.00	mg/L	1	EE51104	05/09/05	05/09/05	EPA 310.2M	
Chloride	**591**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	
Total Dissolved Solids	**1790**	5.00	"	1	EE51105	05/09/05	05/10/05	EPA 160.1	
Sulfate	**337**	10.0	"	20	EE51001	05/09/05	05/09/05	EPA 300.0	

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WW-1 (5E09004-01) Water									
Calcium	**188**	0.500	mg/L	50	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**119**	0.0500	"	"	"	"	"	"	
Potassium	**12.1**	0.500	"	10	"	"	"	"	
Sodium	**370**	0.500	"	50	"	"	"	"	
MW-1 (5E09004-02) Water									
Calcium	**110**	0.100	mg/L	10	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**64.5**	0.0100	"	"	"	"	"	"	
Potassium	**9.39**	0.500	"	"	"	"	"	"	
Sodium	**261**	0.500	"	50	"	"	"	"	
MW-2 (5E09004-03) Water									
Calcium	**120**	0.100	mg/L	10	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**60.3**	0.0100	"	"	"	"	"	"	
Potassium	**9.76**	0.250	"	5	"	"	"	"	
Sodium	**199**	0.500	"	50	"	"	"	"	
MW-3 (5E09004-04) Water									
Calcium	**121**	0.500	mg/L	50	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**60.8**	0.0100	"	10	"	"	"	"	
Potassium	**7.62**	0.250	"	5	"	"	"	"	
Sodium	**242**	0.500	"	50	"	"	"	"	
MW-4 (5E09004-05) Water									
Calcium	**110**	0.500	mg/L	50	EE50905	05/09/05	05/09/05	EPA 6010B	
Magnesium	**73.7**	0.0100	"	10	"	"	"	"	
Potassium	**10.2**	0.500	"	"	"	"	"	"	
Sodium	**327**	0.500	"	50	"	"	"	"	

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Organics by GC - Quality Control

Environmental Lab of Texas

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

Organics by GC - Quality Control

Environmental Lab of Texas

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

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

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

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

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

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Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

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

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Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	05/16/05 07:42

Notes and Definitions

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

Report Approved By: Raland K Tuttle Date: 5/16/2005

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

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Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

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

Project Name: EME System M-9 SWD Site
Project #: V117M9
Project Location: T20S, R37E, Sec 9, Unit Letter M
COC #: V117M9-0505

SE09004

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: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
-01	WW-1	5-1-05	1120	3	✓		✓					✓					✓	✓					✓			✓					✓
-02	MW-1	5-1-05	1602	3	✓		✓					✓					✓	✓					✓			✓					✓
-03	MW-2	5-1-05	1416	3	✓		✓					✓					✓	✓					✓			✓					✓
-04	MW-3	5-1-05	1340	3	✓		✓					✓					✓	✓					✓			✓					✓
-05	MW-4	5-1-05	1507	3	✓		✓					✓					✓	✓					✓			✓					✓

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

Sample Containers Intact? Y N
Temperature Upon Receipt: 4.0°C
Laboratory Comments: 1 L plastic 2 VOA

Relinquished by:	Date	Time	Received by:	Date	Time
	5-5-05	4:40p			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Carrie Kelley	5/6/05	9:40

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

Client: Rice Operating Co.

Date/Time: 05-26-05 @ 1700

Order #: 5E09004

Initials: JMM

Sample Receipt Checklist

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

Other observations:

Variance Documentation:

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

Regarding:

Corrective Action Taken:

* Sample date changed as per attached e-mail (2) fax

May 9, 2005

Ms. Jeanne Mc Murrey, Technical Director
Environmental Lab of Texas
12600 West I-20 East
Odessa, Texas 79765

Ms. Mc Murrey:

Please note that during groundwater sampling activities last week I incorrectly assigned the wrong day of the month as the sample date on the chains-of-custody for *each* groundwater sample submitted. Starting with Monday May 2nd I started dating all samples by the previous day that it was actually sampled on. One day should be added for each sample to report the correct date of sampling. For clarity, the correct sample dates are listed in the table below.

COC No.	Project Name	Field Code	Date Sampled
V117M9-0505	M-9 SWD Site	WW-1	May 2, 2005
		MW-1	May 2, 2005
		MW-2	May 2, 2005
		MW-3	May 2, 2005
		MW-4	May 2, 2005
V117N5-0505	N-5 Junction Box Site	MW-1	May 2, 2005
V117K6-0505	K-6 Junction Box Site	MW-1	May 3, 2005
V117P6-0505	P-6 Line Leak Site	P6-1	May 3, 2005
		P6-2	May 3, 2005
V117M5-0505	M-5 SWD Site	M5-1	May 3, 2005
V117E5-0505	E-5 Junction Box Site	MW-1	May 3, 2005
V117D1-0505	D-1 Junction Box and Line Leak Site	MW-1	May 3, 2005
V118J26-0505	J-26 Junction Box Site	MW-1	May 4, 2005
		MW-2	May 5, 2005
		MW-3	May 5, 2005
		Windmill #138	May 4, 2005
		Windmill #220	May 4, 2005
		Wallach #914	May 4, 2005
		Wallach #36.211	May 4, 2005
		Well # 23.333	May 5, 2005

Thank you for your assistance in this matter. Please feel free to call me at 432-638-3106, if you have any questions.

Sincerely,

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

cc: CDH, KFP, file

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME System M-9 SWD Site

Project Number: V117M9

Location: T20S, R37E, Sec. 9, Unit Letter M

Lab Order Number: 5H12013

Report Date: 08/24/05

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	08/24/05 16:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1A	5H12013-01	Water	08/11/05 13:25	08/12/05 14:00
MW-2	5H12013-02	Water	08/11/05 11:52	08/12/05 14:00
MW-3	5H12013-03	Water	08/11/05 11:20	08/12/05 14:00
MW-4	5H12013-04	Water	08/11/05 12:40	08/12/05 14:00
WW-1	5H12013-05	Water	08/11/05 10:45	08/12/05 14:00

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Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	08/24/05 16:17

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1A (5H12013-01) Water									
Total Alkalinity	**290**	2.00	mg/L	1	EH51603	08/15/05	08/15/05	EPA 310.2M	
Chloride	**286**	10.0	"	20	EH52302	08/22/05	08/22/05	EPA 300.0	
Total Dissolved Solids	**1480**	5.00	"	1	EH51210	08/16/05	08/17/05	EPA 160.1	
Sulfate	**326**	10.0	"	20	EH52302	08/22/05	08/22/05	EPA 300.0	
MW-2 (5H12013-02) Water									
Total Alkalinity	**308**	2.00	mg/L	1	EH51603	08/15/05	08/15/05	EPA 310.2M	
Chloride	**476**	12.5	"	25	EH52302	08/22/05	08/22/05	EPA 300.0	
Total Dissolved Solids	**1840**	5.00	"	1	EH51210	08/16/05	08/17/05	EPA 160.1	
Sulfate	**389**	12.5	"	25	EH52302	08/22/05	08/22/05	EPA 300.0	
MW-3 (5H12013-03) Water									
Total Alkalinity	**230**	2.00	mg/L	1	EH51603	08/15/05	08/15/05	EPA 310.2M	
Chloride	**300**	10.0	"	20	EH52302	08/22/05	08/22/05	EPA 300.0	
Total Dissolved Solids	**1480**	5.00	"	1	EH51210	08/16/05	08/17/05	EPA 160.1	
Sulfate	**377**	10.0	"	20	EH52302	08/22/05	08/22/05	EPA 300.0	
MW-4 (5H12013-04) Water									
Total Alkalinity	**260**	2.00	mg/L	1	EH51603	08/15/05	08/15/05	EPA 310.2M	
Chloride	**571**	12.5	"	25	EH52302	08/22/05	08/22/05	EPA 300.0	
Total Dissolved Solids	**1830**	5.00	"	1	EH51210	08/16/05	08/17/05	EPA 160.1	
Sulfate	**303**	12.5	"	25	EH52302	08/22/05	08/22/05	EPA 300.0	
WW-1 (5H12013-05) Water									
Total Alkalinity	**252**	2.00	mg/L	1	EH51603	08/15/05	08/15/05	EPA 310.2M	
Chloride	**751**	25.0	"	50	EH52302	08/22/05	08/22/05	EPA 300.0	
Total Dissolved Solids	**2900**	5.00	"	1	EH51210	08/16/05	08/17/05	EPA 160.1	
Sulfate	**915**	25.0	"	50	EH52302	08/22/05	08/22/05	EPA 300.0	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1A (5H12013-01) Water									
Calcium	**87.4**	0.100	mg/L	10	EH51610	08/16/05	08/16/05	EPA 6010B	
Magnesium	**43.2**	0.00100	"	1	"	"	"	"	
Potassium	**9.87**	0.500	"	10	"	"	"	"	
Sodium	**287**	0.500	"	50	"	"	"	"	
MW-2 (5H12013-02) Water									
Calcium	**134**	0.500	mg/L	50	EH51610	08/16/05	08/16/05	EPA 6010B	
Magnesium	**53.4**	0.0100	"	10	"	"	"	"	
Potassium	**13.8**	0.500	"	"	"	"	"	"	
Sodium	**481**	0.500	"	50	"	"	"	"	
MW-3 (5H12013-03) Water									
Calcium	**101**	0.100	mg/L	10	EH51610	08/16/05	08/16/05	EPA 6010B	
Magnesium	**42.3**	0.0100	"	"	"	"	"	"	
Potassium	**8.38**	0.250	"	5	"	"	"	"	
Sodium	**292**	0.500	"	50	"	"	"	"	
MW-4 (5H12013-04) Water									
Calcium	**121**	0.500	mg/L	50	EH51610	08/16/05	08/16/05	EPA 6010B	
Magnesium	**52.2**	0.0100	"	10	"	"	"	"	
Potassium	**9.94**	0.500	"	"	"	"	"	"	
Sodium	**475**	0.500	"	50	"	"	"	"	
WW-1 (5H12013-05) Water									
Calcium	**214**	0.500	mg/L	50	EH51610	08/16/05	08/16/05	EPA 6010B	
Magnesium	**80.4**	0.0100	"	10	"	"	"	"	
Potassium	**15.1**	0.500	"	"	"	"	"	"	
Sodium	**457**	1.00	"	100	"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1A (5H12013-01) Water									
Benzene	ND	1.00	ug/l	1	EH51810	08/17/05	08/19/05	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*109 %*	*68-129*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*90.8 %*	*72-132*		"	"	"	"	
Surrogate: Toluene-d8		*95.2 %*	*74-118*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.0 %*	*65-140*		"	"	"	"	
MW-2 (5H12013-02) Water									
Benzene	ND	1.00	ug/l	1	EH51810	08/17/05	08/17/05	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*113 %*	*68-129*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*93.4 %*	*72-132*		"	"	"	"	
Surrogate: Toluene-d8		*98.0 %*	*74-118*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.4 %*	*65-140*		"	"	"	"	
MW-3 (5H12013-03) Water									
Benzene	ND	1.00	ug/l	1	EH51810	08/17/05	08/17/05	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*	*68-129*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*73.4 %*	*72-132*		"	"	"	"	
Surrogate: Toluene-d8		*108 %*	*74-118*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*117 %*	*65-140*		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-4 (5H12013-04) Water									
Benzene	ND	1.00	ug/l	1	EH51810	08/17/05	08/17/05	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*119 %*		*68-129*		"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*97.2 %*		*72-132*		"	"	"	
Surrogate: Toluene-d8		*101 %*		*74-118*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.4 %*		*65-140*		"	"	"	
WW-1 (5H12013-05) Water									
Benzene	ND	1.00	ug/l	1	EH51810	08/17/05	08/17/05	EPA 8260B	
Toluene	ND	1.00	"	"	"	"	"	"	
Ethylbenzene	ND	1.00	"	"	"	"	"	"	
Xylene (p/m)	ND	1.00	"	"	"	"	"	"	
Xylene (o)	ND	1.00	"	"	"	"	"	"	
Naphthalene	ND	1.00	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*123 %*		*68-129*		"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*94.2 %*		*72-132*		"	"	"	
Surrogate: Toluene-d8		*101 %*		*74-118*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.0 %*		*65-140*		"	"	"	

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 EH51210 - General Preparation (WetChem)										
Blank (EH51210-BLK1)				Prepared: 08/16/05 Analyzed: 08/17/05						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EH51210-DUP1)	**Source: 5H11001-01**			Prepared: 08/16/05 Analyzed: 08/17/05						
Total Dissolved Solids	628	5.00	mg/L		603			4.06	5	
Batch EH51603 - General Preparation (WetChem)										
Blank (EH51603-BLK1)				Prepared & Analyzed: 08/16/05						
Total Alkalinity	ND	2.00	mg/L							
Duplicate (EH51603-DUP1)	**Source: 5H12005-01**			Prepared & Analyzed: 08/16/05						
Total Alkalinity	221	2.00	mg/L		220			0.454	20	
Reference (EH51603-SRM1)				Prepared & Analyzed: 08/16/05						
Bicarbonate Alkalinity	229		mg/L	200		114	80-120			
Batch EH52302 - General Preparation (WetChem)										
Blank (EH52302-BLK1)				Prepared & Analyzed: 08/22/05						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EH52302-BS1)				Prepared & Analyzed: 08/22/05						
Sulfate	8.50		mg/L	10.0		85.0	80-120			
Chloride	8.21		"	10.0		82.1	80-120			

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 EH52302 - General Preparation (WetChem)										
Calibration Check (EH52302-CCV1)				Prepared & Analyzed: 08/22/05						
Chloride	8.78		mg/L	10.0		87.8	80-120			
Sulfate	10.0		"	10.0		100	80-120			
Duplicate (EH52302-DUP1)	**Source: 5H12005-01**			Prepared & Analyzed: 08/22/05						
Chloride	240	5.00	mg/L		228			5.13	20	
Sulfate	203	5.00	"		191			6.09	20	

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 EH51610 - 6010B/No Digestion										
Blank (EH51610-BLK1)				Prepared & Analyzed: 08/16/05						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EH51610-CCV1)				Prepared & Analyzed: 08/16/05						
Calcium	1.76		mg/L	2.00		88.0	85-115			
Magnesium	1.86		"	2.00		93.0	85-115			
Potassium	1.89		"	2.00		94.5	85-115			
Sodium	1.94		"	2.00		97.0	85-115			
Duplicate (EH51610-DUP1)	**Source: 5H12005-01**			Prepared & Analyzed: 08/16/05						
Calcium	104	0.100	mg/L		95.0			9.05	20	
Magnesium	39.1	0.0100	"		36.8			6.06	20	
Potassium	10.1	0.500	"		11.4			12.1	20	
Sodium	122	0.500	"		108			12.2	20	
Duplicate (EH51610-DUP2)	**Source: 5H16004-01**			Prepared & Analyzed: 08/16/05						
Calcium	213	2.00	mg/L		213			0.00	20	
Magnesium	40.9	0.0100	"		41.8			2.18	20	
Potassium	25.4	0.500	"		24.1			5.25	20	
Sodium	2200	4.00	"		2180			0.913	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 EH51810 - EPA 5030C (GCMS)										
Blank (EH51810-BLK1)				Prepared & Analyzed: 08/17/05						
Benzene	ND	1.00	ug/l							
Toluene	ND	1.00	"							
Ethylbenzene	ND	1.00	"							
Xylene (p/m)	ND	1.00	"							
Xylene (o)	ND	1.00	"							
Naphthalene	ND	1.00	"							
Surrogate: Dibromofluoromethane	*57.2*		"	*50.0*		*114*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*47.7*		"	*50.0*		*95.4*	*72-132*			
Surrogate: Toluene-d8	*47.1*		"	*50.0*		*94.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*46.4*		"	*50.0*		*92.8*	*65-140*			
LCS (EH51810-BS1)				Prepared & Analyzed: 08/17/05						
Benzene	47.6		ug/l	50.0		95.2	70-130			
Toluene	45.9		"	50.0		91.8	70-130			
Ethylbenzene	44.3		"	50.0		88.6	70-130			
Xylene (p/m)	71.0		"	100		71.0	70-130			
Xylene (o)	43.6		"	50.0		87.2	70-130			
Naphthalene	45.2		"	50.0		90.4	70-130			
Surrogate: Dibromofluoromethane	*55.6*		"	*50.0*		*111*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*52.4*		"	*50.0*		*105*	*72-132*			
Surrogate: Toluene-d8	*48.6*		"	*50.0*		*97.2*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*45.5*		"	*50.0*		*91.0*	*65-140*			
Calibration Check (EH51810-CCV1)				Prepared & Analyzed: 08/17/05						
Toluene	43.4		ug/l	50.0		86.8	70-130			
Ethylbenzene	42.2		"	50.0		84.4	70-130			
Surrogate: Dibromofluoromethane	*57.0*		"	*50.0*		*114*	*0-200*			
Surrogate: 1,2-Dichloroethane-d4	*49.9*		"	*50.0*		*99.8*	*0-200*			
Surrogate: Toluene-d8	*48.5*		"	*50.0*		*97.0*	*0-200*			
Surrogate: 4-Bromofluorobenzene	*46.8*		"	*50.0*		*93.6*	*0-200*			

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 EH51810 - EPA 5030C (GCMS)										
Matrix Spike (EH51810-MS1)	**Source: 5H15013-01**			Prepared: 08/17/05 Analyzed: 08/19/05						
Benzene	48.8		ug/l	50.0	ND	97.6	70-130			
Toluene	47.2		"	50.0	ND	94.4	70-130			
Ethylbenzene	44.6		"	50.0	ND	89.2	70-130			
Xylene (p/m)	72.2		"	100	ND	72.2	70-130			
Xylene (o)	43.8		"	50.0	ND	87.6	70-130			
Naphthalene	46.2		"	50.0	ND	92.4	70-130			
Surrogate: Dibromofluoromethane	*54.4*		"	*50.0*		*109*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*51.4*		"	*50.0*		*103*	*72-132*			
Surrogate: Toluene-d8	*50.0*		"	*50.0*		*100*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*45.3*		"	*50.0*		*90.6*	*65-140*			
Matrix Spike Dup (EH51810-MSD1)	**Source: 5H15013-01**			Prepared: 08/17/05 Analyzed: 08/19/05						
Benzene	48.5		ug/l	50.0	ND	97.0	70-130	0.617	20	
Toluene	46.4		"	50.0	ND	92.8	70-130	1.71	20	
Ethylbenzene	43.9		"	50.0	ND	87.8	70-130	1.58	20	
Xylene (p/m)	70.8		"	100	ND	70.8	70-130	1.96	20	
Xylene (o)	43.3		"	50.0	ND	86.6	70-130	1.15	20	
Naphthalene	49.5		"	50.0	ND	99.0	70-130	6.90	20	
Surrogate: Dibromofluoromethane	*56.3*		"	*50.0*		*113*	*68-129*			
Surrogate: 1,2-Dichloroethane-d4	*52.0*		"	*50.0*		*104*	*72-132*			
Surrogate: Toluene-d8	*49.8*		"	*50.0*		*99.6*	*74-118*			
Surrogate: 4-Bromofluorobenzene	*44.9*		"	*50.0*		*89.8*	*65-140*			

Rice Operating Co.	Project: EME System M-9 SWD Site	Fax: (505) 397-1471
122 W. Taylor	Project Number: V117M9	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris	08/24/05 16:17

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: Celey D Keene Date: 8/24/2005

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

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Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

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

Project Name: EME System M-9 SWD Site
Project #: V117M9
Project Location: T20S, R37E, Sec 9, Unit Letter M
COC #: V117M9-0805

LAB # (lab use only) 5H1203	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl (BTEX only) V&A	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N O R M	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
-01	MW-1A	8/11/05	1325	3	X		X					X					X	X					X			X					X
-02	MW-2	8/11/05	1152	3	X		X					X					X	X					X			X					X
-03	MW-3	8/11/05	1120	3	X		X					X					X	X					X			X					X
-04	MW-4	8/11/05	1240	3	X		X					X					X	X					X			X					X
-05	WW-1	8/11/05	1045	3	X		X					X					X	X					X			X					X

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

Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments: 6.0
1 L-poly
Seal Labels

Relinquished by:	Date	Time	Received by:	Date	Time
	8/12/05	2:00pm			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Cecil Cobb	8/12/05	2:00

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

Client: Rice Op.

Date/Time: 6/12/05 2:00

Order #: 5H1203

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	6.0 C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	Not present
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Samples brought in by sampler on ice.

Received only 1 vial w/HCl for MW-4

Variance Documentation:

Contact Person: Gilbert Date/Time: 6/12/05 2:00 Contacted by: Carrie

Regarding:

Analysis labels differ from COC.

Corrective Action Taken:

Containers have labels requesting NO_2

Follow directions on COC per Gilbert

Jeanne McMurrey

From: "Jeanne McMurrey" <jeanne@elabtexas.com>
To: "Gilbert Van Deventer" <gil@trident-environmental.com>
Sent: Monday, August 15, 2005 8:47 AM
Subject: Re: EME System M-9 SWD samples

Good Morning Gil,
I need to inform you that we only received 1 VOA w/HCl for your sample MW-4 for EME System M-9 SWD. We can still use the single VOA for BTEX analysis. I just needed to let you know we received a total of 2 containers instead of 3 containers for that sample point.
Thanks,
Jeanne

Jeanne

Jeanne McMurrey
Environmental Lab of Texas I, Ltd.
12600 West I-20 East
Odessa, Texas 79765
432-563-1800

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 M-9 SWD

Project Number: None Given

Location: Lea County

Lab Order Number: 5K30020

Report Date: 12/15/05

Rice Operating Co.	Project: EME M-9 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	12/15/05 17:09

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1A	5K30020-01	Water	11/29/05 13:15	11/30/05 12:57
Monitor Well #2	5K30020-02	Water	11/29/05 12:05	11/30/05 12:57
Monitor Well #3	5K30020-03	Water	11/29/05 10:40	11/30/05 12:57
Monitor Well #4	5K30020-04	Water	11/29/05 09:10	11/30/05 12:57
Water Well	5K30020-05	Water	11/29/05 15:05	11/30/05 12:57

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Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1A (5K30020-01) Water									
Benzene	**0.00143**	0.00100	mg/L	1	EL50605	12/06/05	12/07/05	EPA 8021B	
Toluene	**J [0.000328]**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**ND**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**ND**	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*94.8 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*80-120*		"	"	"	"	
Monitor Well #2 (5K30020-02) Water									
Benzene	ND	0.00100	mg/L	1	EL50605	12/06/05	12/07/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*84.5 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.0 %*	*80-120*		"	"	"	"	
Monitor Well #3 (5K30020-03) Water									
Benzene	ND	0.00100	mg/L	1	EL50605	12/06/05	12/07/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*87.2 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*92.2 %*	*80-120*		"	"	"	"	
Monitor Well #4 (5K30020-04) Water									
Benzene	ND	0.00100	mg/L	1	EL50605	12/06/05	12/07/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*80.8 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*81.2 %*	*80-120*		"	"	"	"	

Rice Operating Co.	Project: EME M-9 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	12/15/05 17:09

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Water Well (5K30020-05) Water									
Benzene	ND	0.00100	mg/L	1	EL50605	12/06/05	12/07/05	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*82.2 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*82.2 %*		*80-120*		"	"	"	

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Rice Operating Co.	Project: EME M-9 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	12/15/05 17:09

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1A (5K30020-01) Water									
Total Alkalinity	**330**	2.00	mg/L	1	EL50712	12/07/05	12/07/05	EPA 310.2M	
Chloride	**602**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Total Dissolved Solids	**1340**	5.00	"	1	EL50501	12/01/05	12/02/05	EPA 160.1	
Sulfate	**57.1**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Monitor Well #2 (5K30020-02) Water									
Total Alkalinity	**321**	2.00	mg/L	1	EL50712	12/07/05	12/07/05	EPA 310.2M	
Chloride	**440**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Total Dissolved Solids	**1630**	5.00	"	1	EL50501	12/01/05	12/02/05	EPA 160.1	
Sulfate	**55.5**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Monitor Well #3 (5K30020-03) Water									
Total Alkalinity	**240**	2.00	mg/L	1	EL50712	12/07/05	12/07/05	EPA 310.2M	
Chloride	**272**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Total Dissolved Solids	**1510**	5.00	"	1	EL50501	12/01/05	12/02/05	EPA 160.1	
Sulfate	**268**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Monitor Well #4 (5K30020-04) Water									
Total Alkalinity	**252**	2.00	mg/L	1	EL50712	12/07/05	12/07/05	EPA 310.2M	
Chloride	**378**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Total Dissolved Solids	**1850**	5.00	"	1	EL50501	12/01/05	12/02/05	EPA 160.1	
Sulfate	**332**	10.0	"	20	EL50207	12/12/05	12/13/05	EPA 300.0	
Water Well (5K30020-05) Water									
Total Alkalinity	**274**	2.00	mg/L	1	EL50712	12/07/05	12/07/05	EPA 310.2M	
Chloride	**775**	12.5	"	25	EL50207	12/12/05	12/13/05	EPA 300.0	
Total Dissolved Solids	**2490**	5.00	"	1	EL50501	12/01/05	12/02/05	EPA 160.1	
Sulfate	**385**	12.5	"	25	EL50207	12/12/05	12/13/05	EPA 300.0	

Rice Operating Co.	Project: EME M-9 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	12/15/05 17:09

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1A (5K30020-01) Water									
Calcium	**65.8**	0.100	mg/L	10	EL50506	12/05/05	12/05/05	EPA 6010B	
Magnesium	**51.8**	0.0100	"	"	"	"	"	"	
Potassium	**9.33**	0.500	"	"	"	"	"	"	
Sodium	**246**	0.500	"	50	"	"	"	"	
Monitor Well #2 (5K30020-02) Water									
Calcium	**131**	0.500	mg/L	50	EL50506	12/05/05	12/05/05	EPA 6010B	
Magnesium	**57.8**	0.0100	"	10	"	"	"	"	
Potassium	**13.2**	0.500	"	"	"	"	"	"	
Sodium	**312**	0.500	"	50	"	"	"	"	
Monitor Well #3 (5K30020-03) Water									
Calcium	**121**	0.500	mg/L	50	EL50506	12/05/05	12/05/05	EPA 6010B	
Magnesium	**50.3**	0.0100	"	10	"	"	"	"	
Potassium	**6.05**	0.500	"	"	"	"	"	"	
Sodium	**239**	0.500	"	50	"	"	"	"	
Monitor Well #4 (5K30020-04) Water									
Calcium	**129**	0.500	mg/L	50	EL50506	12/05/05	12/05/05	EPA 6010B	
Magnesium	**71.0**	0.0100	"	10	"	"	"	"	
Potassium	**9.72**	0.500	"	"	"	"	"	"	
Sodium	**351**	0.500	"	50	"	"	"	"	
Water Well (5K30020-05) Water									
Calcium	**168**	0.500	mg/L	50	EL50506	12/05/05	12/05/05	EPA 6010B	
Magnesium	**79.2**	0.0100	"	10	"	"	"	"	
Potassium	**12.0**	0.500	"	"	"	"	"	"	
Sodium	**482**	2.00	"	200	"	"	"	"	

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 EL50605 - EPA 5030C (GC)										
Blank (EL50605-BLK1)				Prepared & Analyzed: 12/06/05						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*32.5*		*ug/l*	*40.0*		*81.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*32.7*		*"*	*40.0*		*81.8*	*80-120*			
LCS (EL50605-BS1)				Prepared: 12/06/05 Analyzed: 12/07/05						
Benzene	0.0572	0.00100	mg/L	0.0500		114	80-120			
Toluene	0.0583	0.00100	"	0.0500		117	80-120			
Ethylbenzene	0.0593	0.00100	"	0.0500		119	80-120			
Xylene (p/m)	0.112	0.00100	"	0.100		112	80-120			
Xylene (o)	0.0571	0.00100	"	0.0500		114	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.0*		*ug/l*	*40.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*44.9*		*"*	*40.0*		*112*	*80-120*			
Calibration Check (EL50605-CCV1)				Prepared: 12/06/05 Analyzed: 12/07/05						
Benzene	46.6		ug/l	50.0		93.2	80-120			
Toluene	49.5		"	50.0		99.0	80-120			
Ethylbenzene	45.6		"	50.0		91.2	80-120			
Xylene (p/m)	87.3		"	100		87.3	80-120			
Xylene (o)	44.8		"	50.0		89.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	*37.8*		*"*	*40.0*		*94.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*39.7*		*"*	*40.0*		*99.2*	*80-120*			
Matrix Spike (EL50605-MS1)	**Source: 5K30020-02**			Prepared: 12/06/05 Analyzed: 12/08/05						
Benzene	0.0466	0.00100	mg/L	0.0500	ND	93.2	80-120			
Toluene	0.0492	0.00100	"	0.0500	ND	98.4	80-120			
Ethylbenzene	0.0452	0.00100	"	0.0500	ND	90.4	80-120			
Xylene (p/m)	0.0871	0.00100	"	0.100	ND	87.1	80-120			
Xylene (o)	0.0450	0.00100	"	0.0500	ND	90.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	*37.5*		*ug/l*	*40.0*		*93.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*37.5*		*"*	*40.0*		*93.8*	*80-120*			

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL50605 - EPA 5030C (GC)										
Matrix Spike Dup (EL50605-MSD1)		**Source: 5K30020-02**		Prepared: 12/06/05 Analyzed: 12/07/05						
Benzene	0.0535	0.00100	mg/L	0.0500	ND	107	80-120	13.8	20	
Toluene	0.0555	0.00100	"	0.0500	ND	111	80-120	12.0	20	
Ethylbenzene	0.0503	0.00100	"	0.0500	ND	101	80-120	11.1	20	
Xylene (p/m)	0.0955	0.00100	"	0.100	ND	95.5	80-120	9.20	20	
Xylene (o)	0.0491	0.00100	"	0.0500	ND	98.2	80-120	8.71	20	
Surrogate: a,a,a-Trifluorotoluene	*36.1*		*ug/l*	*40.0*		*90.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.0*		*"*	*40.0*		*90.0*	*80-120*			

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 EL50207 - General Preparation (WetChem)										
Blank (EL50207-BLK1)				Prepared: 12/12/05 Analyzed: 12/13/05						
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							
LCS (EL50207-BS1)				Prepared: 12/12/05 Analyzed: 12/13/05						
Sulfate	9.23		mg/L	10.0		92.3	80-120			
Chloride	8.00		"	10.0		80.0	80-120			
Calibration Check (EL50207-CCV1)				Prepared: 12/12/05 Analyzed: 12/13/05						
Chloride	8.15		mg/L	10.0		81.5	80-120			
Sulfate	8.74		"	10.0		87.4	80-120			
Duplicate (EL50207-DUP1)	**Source: 5K30015-01**			Prepared: 12/12/05 Analyzed: 12/13/05						
Chloride	7650	100	mg/L		7580			0.919	20	
Sulfate	970	100	"		1040			6.97	20	
Batch EL50501 - General Preparation (WetChem)										
Blank (EL50501-BLK1)				Prepared: 12/01/05 Analyzed: 12/02/05						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EL50501-DUP1)	**Source: 5K30019-01**			Prepared: 12/01/05 Analyzed: 12/02/05						
Total Dissolved Solids	1280	5.00	mg/L		1300			1.55	5	
Duplicate (EL50501-DUP2)	**Source: 5K30020-04**			Prepared: 12/01/05 Analyzed: 12/02/05						
Total Dissolved Solids	1790	5.00	mg/L		1850			3.30	5	

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 EL50712 - General Preparation (WetChem)										
Blank (EL50712-BLK1)				Prepared & Analyzed: 12/07/05						
Total Alkalinity	ND	2.00	mg/L							
Calibration Check (EL50712-CCV1)				Prepared & Analyzed: 12/07/05						
Bicarbonate Alkalinity	230		mg/L	200		115	80-120			
Duplicate (EL50712-DUP1)	**Source: 5K30015-01**			Prepared & Analyzed: 12/07/05						
Total Alkalinity	221	2.00	mg/L		222			0.451	20	

Rice Operating Co.	Project: EME M-9 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	12/15/05 17:09

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 EL50506 - 6010B/No Digestion										
Blank (EL50506-BLK1)				Prepared & Analyzed: 12/05/05						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EL50506-CCV1)				Prepared & Analyzed: 12/05/05						
Calcium	1.99		mg/L	2.00		99.5	85-115			
Magnesium	1.94		"	2.00		97.0	85-115			
Potassium	1.73		"	2.00		86.5	85-115			
Sodium	1.96		"	2.00		98.0	85-115			
Duplicate (EL50506-DUP1)	**Source: 5K30015-01**			Prepared & Analyzed: 12/05/05						
Calcium	1350	2.00	mg/L		1330			1.49	20	
Magnesium	505	0.200	"		507			0.395	20	
Potassium	34.2	2.50	"		37.1			8.13	20	
Sodium	2310	20.0	"		2360			2.14	20	

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Rice Operating Co.	Project: EME M-9 SWD	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	12/15/05 17:09

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: 12/15/2005

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.

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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 kpriceswd@valornet.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: EME M-9 SWD
Project #:
Project Loc: Lea County
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl 40mL glass (2)	NaOH	H2SO4	None 1L HDPE (1)	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	Analyze For: TCLP: TOTAL: TPH 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	PCI	N.O.R.M.	Total Dissolved Solids				RUSH TAT (Pre-Schedule)	Standard TAT
12/30/05																															
-01	Monitor Well # 1A	11/29/05	13:15	3	X		X					X					X	X					X			X				X	
-02	" 2	"	12:05	3	X		X					X					X	X					X			X				X	
-03	" 3	"	10:40	3	X		X					X					X	X					X			X				X	
-04	" 4	"	9:10	3	X		X					X					X	X					X			X				X	
-05	Water Well	"	15:05	3	X		X					X					X	X					X			X				X	

Special Instructions:
PLEASE Email RESULTS TO: kpriceswd@valornet.com & mfranks@riceswd.com

Sample Containers Intact? Y N
Labels on container? Y N
Custody Seals: Container / Cooler
Temperature Upon Receipt: 0 °C

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	11/30/05	1257			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Joanne McMurray	11-30-05	1257

Laboratory Comments:
1 L HDPE
2 40mL glass w/HCl
Preservation Confirmed

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

Client: Rice Op.

Date/Time: 11/30/05 12:57

Order #: 5K30020

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	0.0 C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	Not present
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Date/Time: Contacted by:

Regarding:

Corrective Action Taken:

APPENDIX F

Rice Operating Company

QUALITY PROCEDURE

Sampling and Testing Protocol Chloride Titration Using .282 Normal Silver Nitrate Solution

1.0 Purpose

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

2.0 Scope

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

3.0 Sample Collection and Preparation

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

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

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

4.0 Sample Preparation

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

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

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

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

5.0 Titration Procedure

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

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

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

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

5.5 Record the ml of silver nitrate used.

6.0 Calculation

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

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

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

Record all results on the delineation form.

Rice Operating Company

Quality Procedure
Development of Cased Water-Monitoring Wells

1.0 Purpose

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

2.0 Scope

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

3.0 Sample Collection and Preparation

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

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

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

4.0 Purging

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

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

5.0 Water Disposal

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

6.0 Records

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

Rice Operating Company

Quality Procedure

Procedure for Obtaining Water Samples (Cased Wells) Using One Liter Bailer

1.0 Purpose

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

2.0 Scope

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

3.0 Preliminary

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

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

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

4.0 Chain of Custody

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

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

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

5.0 Bailing Procedure

5.1 Identify the well to be sampled on the site schematics. Place pre-labeled jar(s) next to the well. Remove the plastic cap from the well bore by first lifting the inner cap and then unscrewing the entire assembly.

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

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

6.0 Sampling Procedure

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

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

4.0 Chain of Custody

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

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

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

5.0 Bailing Procedure

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

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

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

6.0 Sampling Procedure

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

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

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

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

7.0 Documentation

7.1 The testing laboratory shall provide the following minimum information:

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

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

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

Example:

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

Rice Operating Company

QUALITY PROCEDURE
Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

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

2.0 Scope

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

3.0 Procedure

3.1 Sample Collection and Preparation

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

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

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

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

3.2 Sampling Procedure

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

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

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

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

4.0 Clean-up

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