1R - 424

REPORTS

DATE:

9/10/2004

BURY WASTE ISSUE

September 10, 2004

Corrective Action Plan

M-5 REDWOOD TANKS
MONUMENT, NEW MEXICO

Prepared for:

Rice Operative Company
122 West Taylor
Hobbs, NM 88240

R.T. HICKS CONSULTANTS, LTD.
901 RIO GRANDE BLVD. NW, SUITE F-142, ALBUQUERQUE, NM 87104

1.0 BACKGROUND

The M-5 Redwood Tank Site is located about 2 miles southwest of Monument, New Mexico (Section 5 T20S R37E Unit M). Rice Operating Company (ROC) is the service provider (operator) for the Eunice-Monument-Eumount (EME) Saltwater Disposal System and has no ownership of any portion of 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. ROC abandoned the use of these tanks on February 11, 2004. Plate 1 is a topographic map that shows the location of the site and nearby water supply and monitoring wells in the Monument area.

On October 2, 2003, R.T. Hicks Consultants, Ltd. (Hicks Consultants) submitted a work plan to NMOCD describing the activities upon which this Corrective Action Plan is based. NMOCD approved our workplan on that same day. Plate 2 shows the locations of soil borings and monitoring wells used to characterize the lease area, as described in the work plan. Plate 1 also shows the location of monitoring and water supply wells near the site. We obtained data from many of these nearby wells to better characterize regional water quality and ground water flow direction.

The field procedures employed by Hicks Consultants were consistent with industry practice and with previously-submitted ROC characterization plans (e.g. junction box plan). Hicks Consultants used the site data and obtained additional data from public sources to evaluate the potential impact to ground water quality as a result of any leakage from the tanks and to develop a remedy to protect ground water quality and to restore the ground surface.

2.0 RESULTS OF FIELD PROGRAMS AND INVESTIGATIONS

LITHOLOGIC CHARACTERISTICS OF THE VADOSE ZONE

As shown in Plate 2, we drilled three soil borings (B-1, B-2, B-3) and one hand-auger boring (B-4) to characterize the magnitude and extent of any impact due to produced water seepage from the Redwood Tanks. After evaluation of ground water elevations in nearby monitoring wells (Plate 3), we confirmed the regional ground water flow direction, which is generally to the south-southeast. We then installed a monitoring well cluster at the southeastern corner of the lease.

The logs for each of these borings are included in Appendix A. We observed a 33-foot thick vadose zone that is composed of fine sand and caliche. The sand is very similar to dune sand, which dominates the ground surface around the site. We commonly penetrated well-indurated sand and in some core samples, we observed calcite/caliche veins. Clay was present in small amounts.

In SB-4, which we hand-augered to 7 feet deep, the sand was jet black due to hydrocarbons. Samples from this boring resembled an asphalt.

CHLORIDE AND HYDROCARBON DISTRIBUTION IN THE VADOSE ZONE

Table 1 shows the laboratory results of soil/sediment sampling during the October field program (see also Appendix B). Our observations at the M-5 Redwood Tank site are similar to our findings at other sites: total petroleum hydrocarbons can exceed 20,000 ppm yet the constituents of concern, such as benzene, are below 100 ppb (see sample M5 B4-4 feet on Table 1). In most samples, benzene is below the laboratory detection limits.

Chloride concentrations in soil/sediment samples were also very low (Table 1 and Appendix A). The lithologic logs presented in Appendix A show that field chloride concentrations range between 209 and 479 ppm, a very narrow range that is consistent with natural conditions. Because of the lack of variability in chloride measurements, we elected to forego field analysis of B3 and MW-1.

Field analyses overestimated soil chloride concentration compared to laboratory tests during this program. We split samples in SB-1 for the 7.0

foot depth and the 16.8 foot depth. We found that the laboratory reported chloride values of <20.0 and 53.2 ppm respectively whereas the field values for these samples were 208 and 218 ppm. For SB-2 at 12 feet below grade, the laboratory result is 142 ppm and the field test showed 321. These types of difference between laboratory and field analyses are common, especially in samples with low chloride content. Regardless of this difference in values, the results clearly show no material impact to soil from the high chloride produced water stored in the tanks.

CHARACTERISTICS OF THE SATURATED ZONE

The log of MW-1 (Appendix A) shows that the lithology of the saturated zone contains more caliche and clay than samples retrieved from the vadose zone. The air rotary drilling process did not produce large volumes of water from the monitoring well or any of the soil borings, further testifying to the fine-grained nature of the saturated zone. At the M5-1 monitoring well, we ceased drilling when we encountered the characteristic red clay of the Dockum Group at 55 feet below grade.

The hydrogeologic map of Nicholsen and Clebsch (1961) shows that the Ogallala Aquifer is not present in much of the Monument area. The absence of a gravel unit immediately overlying the red beds, which is typical of the Ogallala, supports the mapping of Nicholsen and Clebsch. We conclude that the Ogallala Aqufer is not present at the site.

As displayed in Plate 3 the water table elevation within 1-mile of the site is very flat. On a larger scale, Plate 4 shows that groundwater flows south-southeast, perpendicular to the ground surface elevation in this general area. Table 2 shows the data used to compile this potentiometric surface map.

CHLORIDE AND HYDROCARBON DISTRIBUTION IN GROUND WATER

We obtained ground water grab samples from the temporary piezometers installed in B1, B2, and B3. In these piezometers, benzene was below laboratory detection levels in B1 and B3. In B2, the benzene concentration of 7.6 ppb is below the New Mexico Water Quality Control Commission standards (10 ppb). No volatile organic compounds exceed the WQCC standards in any of these grab samples. Below the former redwood tanks, ground water TDS is 15,000-18,600 ppm. The dissolved solids are dominated by sodium, chloride and calcium.

In M5-1, which lies about 200 feet southeast from the redwood tanks, three sampling events have not detected any volatile organic constituents in M5-Is (Table 3). The quarterly sampling data also data suggest that

TDS ranges between 10,000 and 15,000 ppm and chloride in ground water is 5000-6500 ppm. Chloride is distributed throughout the thickness of the saturated zone.

Examination of ground water chemistry data from nearby monitoring wells (see Plate 5) shows TDS values exceeding 5,000 ppm up gradient and cross-gradient of the redwood tanks at M-5. Monitoring well P6-2, which is located up gradient from a known pipeline leak site and up gradient from the M-5 redwood tank site, shows a TDS of nearly 20,000 ppm.

3.0 DISCUSSION AND CONCLUSIONS

The soil/sediment sampling data clearly show that any seepage from the former redwood tanks have not caused impairment of ground water with respect to hydrocarbons. Moreover, the ground water data also provide empirical evidence that the asphaltic sands that surround the former tanks are not releasing hydrocarbons to ground water. Benzene was detected in only one of 12 samples and this single analyses showed a concentration of less than 75 ppm. We conclude that low concentrations of residual asphaltic hydrocarbons in the vadose zone and on ground surface pose no threat to ground water quality.

Soil chemistry shows that residual chloride in the vadose zone is at or near background concentrations. Because chloride concentrations are at or near background levels, residual chloride also poses no threat to ground water quality.

Residual hydrocarbon and chloride in the vadose zone also pose no threat to the success of surface restoration, human health or the environment. Ground water TDS and chloride at the temporary piezometers is slightly higher than the TDS observed in M5-1, which samples a larger portion of the aquifer than the discrete sampling point of the piezometers. We conclude that the slightly higher TDS and chloride in the piezometers does not suggest that the redwood tanks released sufficient produced water to create measurable impairment. Additionally all of the ground water samples from the M-5 site show a lower TDS than the up gradient well P 6-2. We conclude that regional degradation of ground water quality with respect to chloride and TDS is due to past releases up gradient from the M-5 site.

4.0 REMEDY EVALUATION AND PROPOSED ALTERNATIVE

We examined the potential remedies for the M-5 Redwood Tank restoration identified in the NMOCD-approved work plan. Based upon our evaluation, Hicks Consultants recommends burial of the asphaltic hydrocarbons sands which are now on the ground surface in the hole created by the tank removal and importation of clean fill. The site may then be graded and eventually re-seeded when ROC plugs and abandons this active saltwater disposal well.

Removal of surface asphaltic material, which generally contain no regulated constituents of concern (e.g. benzene), creates an environmental benefit by allowing natural re-vegetation at the edges of the site in areas where ROC future operations associated with the salt water disposal well will be minimal . Restoration of the surface through importation of soil and eventual re-seeding will return this parcel to the same productive capacity of the surrounding land. We elected to minimize any excavation of stained soil below the root zone because such excavation provides no environmental benefit and instead creates environmental damage. For example, unnecessary excavation causes environmental damage in the form of air pollution (dust, vehicle exhaust). The subsurface asphaltic material does not contain regulated constituents in concentrations high enough to cause impairment of fresh water or a threat to human health or the environment. Therefore, excavation of this material is unnecessary.

We also plan to import sand/soil from the adjacent property that now houses the tanks associated with the active salt water disposal well at the site. Employing a source of soil close to the facility also minimizes the environmental damage (air pollution, dust, etc.) which can result from our proposed action.

The surface and subsurface asphaltic material has remained on site for the past several decades and has not caused impairment of ground water with respect to hydrocarbons. As stated above, the hydrocarbons in this asphaltic material generally contain no regulated constituents of concern and represent no threat to human health, the environment or the eventual surface re-vegetation of the site.

After ROC plugs and abandons the saltwater disposal well, final surface restoration could include placement of sand over the area to mimic the stabilized sand dunes that surround the site. The Shinnery Oak can

colonize the restored sand dunes over the former redwood tanks, because upward movement of chloride into the root zone is not a technical problem. High levels of chloride do not exist in the vadose zone at this site. We believe the vadose zone at this site does not contain any regulated constituents in concentrations that are materially different from background conditions.

We recommend voluntary semi-annual sampling of ground water at the M-5 site to assist in the establishment of a database for future regional groundwater characterization. Final surface restoration, as described above, may be a condition for the plugging and abandonment of the saltwater disposal well. We recommend closure of the regulatory file upon documentation of site grading.

TABLES

Table 1. Laboratory Results of Soil Samples at M-5 Site

Well_ID	Date	Field Cl	Chloride	GRO_C6_C12	DRO_>C12_C35	TOTAL_C6_C35	Benzene	Toluene	Ethylbenzene	p/mXylene	oXylene	Naphthalene
		Results in mg/kg					Results in ug/kg					
M5 B-1 29.5	11/5/2003			507	1470	1977	<25	<25	1450	1250	<25	297
M5 B-1 6'	11/5/2003	208										
M5 B-1 7'	11/5/2003		<20	116	474	590	<25	<25	25.2	26.6	<25	51
M5 B-1 11'	11/5/2003	251										
M5-B-1 15'	11/5/2003	218										
M5 B-1 16.8	11/5/2003		53.2	857	1480	2337	<100	<100	4650	5370	135	1380
M5-B-1 21'	11/5/2003	360										
M5 B-1 26-27'	11/5/2003			4780	11100	15880	<200	<200	13700	15100	633	4160
M5-B-1 27'	11/5/2003	479										
M5-B-1 31'	11/5/2003	383										
M5 B-2 8'	11/5/2003	262										
M5 B-2 12'	11/5/2003	321										
M5 SB2 12'	11/5/2003			1140	4210	5350	<25	<25	326	795	61.9	78.2
M5 B-2 15'	11/5/2003	386										
M5 B-2 19'	11/5/2003	352										
M5 SB2 23'	11/5/2003			897	3310	4207	<25	<25	165	837	<25	91.2
M5 B-2 27'	11/5/2003	273										
M5 B-2 30'	11/5/2003	458										
M5 B-3 11'	11/5/2003			606	5370	5976	<25	<25	314	304	<25	479
M5 B-3 16.5'	11/5/2003		106	<10	<10	<10	<25	<25	<25	<25	<25	<25
M5 B-4 4'	11/5/2003			1740	11300	13040	74.1	<25	476	1560	65.9	249
M5 B-4 2'	11/5/2003		88.6	203	2210	2413	<25	<25	1090	228	25.3	45
M5 B-4 6'	11/5/2003			133	593	726	<25	<25	325	<25	<25	150
M5 B-4 7'	11/5/2003		35.4	56.6	161	218	<25	<25	143	38	<25	135

Table 2. Water Elevations of wells in Monument Area

Site Name	Depth to Water	Surface Elevation	Ground Water Elevation
	(feet)		
EME Jct K-33-1	37.3	3559.7	3522.4
EME Jct M-16-1	22.8	3551.5	3528.7
EME Jct N-5-1	37.8	3555.4	3517.6
EME Jct E-5-1	40.9	3558.1	3517.2
EME Jct K-6-1	37.6	3561.3	3523.7
EME P-6-1 Leak Site	37.4	3557	3519.6
EME M-9	22.61	3557	3534.39
EME Jct N-4-1	31	3555.1	3524.1
EME M-5-1	32.8	3556.1	3523.3
EME SWD System	37	3557.4	3520.4
EME B-6	28	3560.3	3532.3
EME F-29	17	3609.9	3592.9
EME I-1-A & I-1-C	26	3565.6	3539.6
EME I-35	122	3546.9	3424.9
EME J-9	25	3543.3	3518.3
EME K-36	115	3541	3426
EME N-16-1	32	3523.9	3491.9
EME P-6-2 Leak Site	37.97	3558	3520

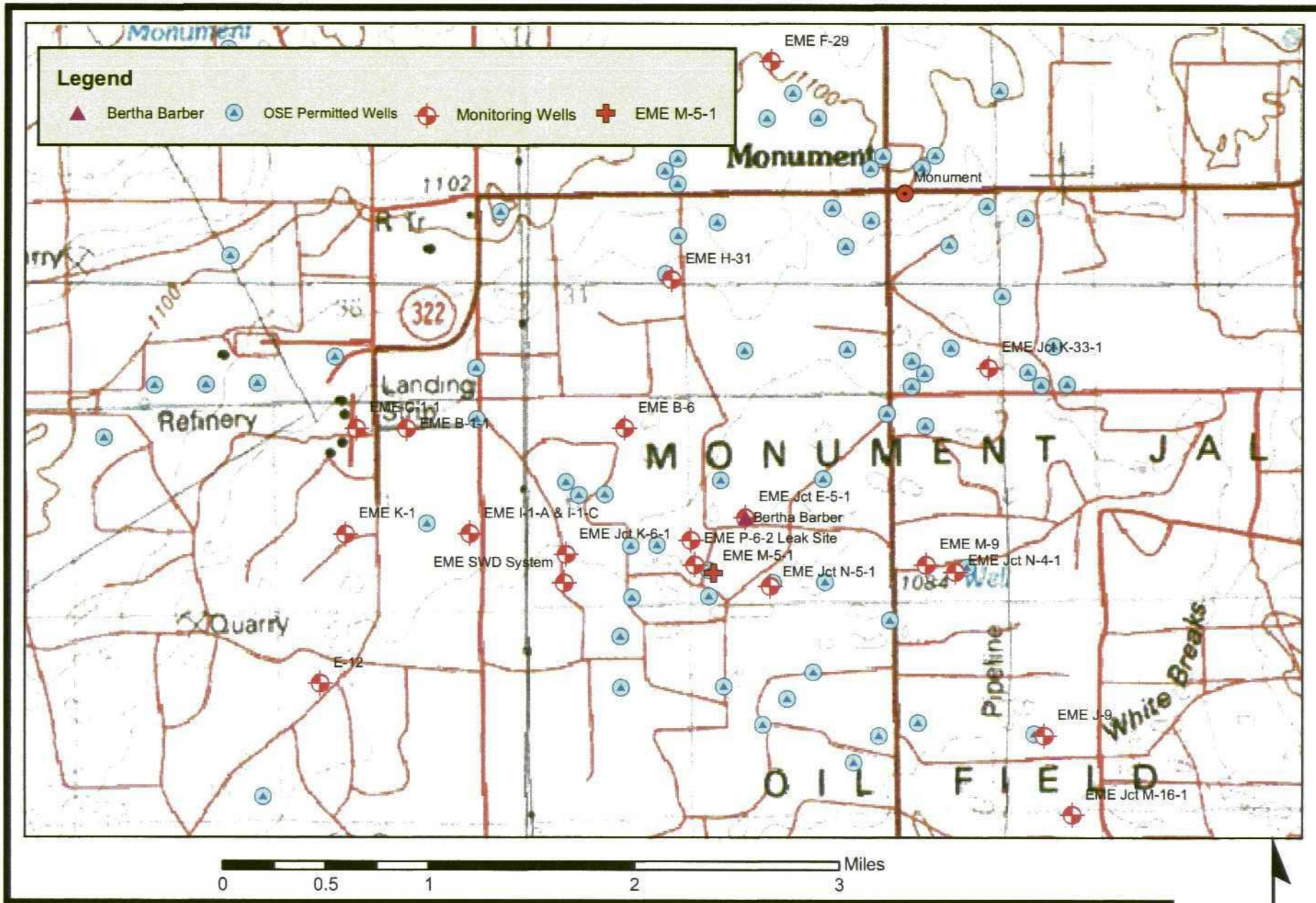
Source: ROC files and NMOCD files

Table 3. Groundwater Chemistry at M-5 Site

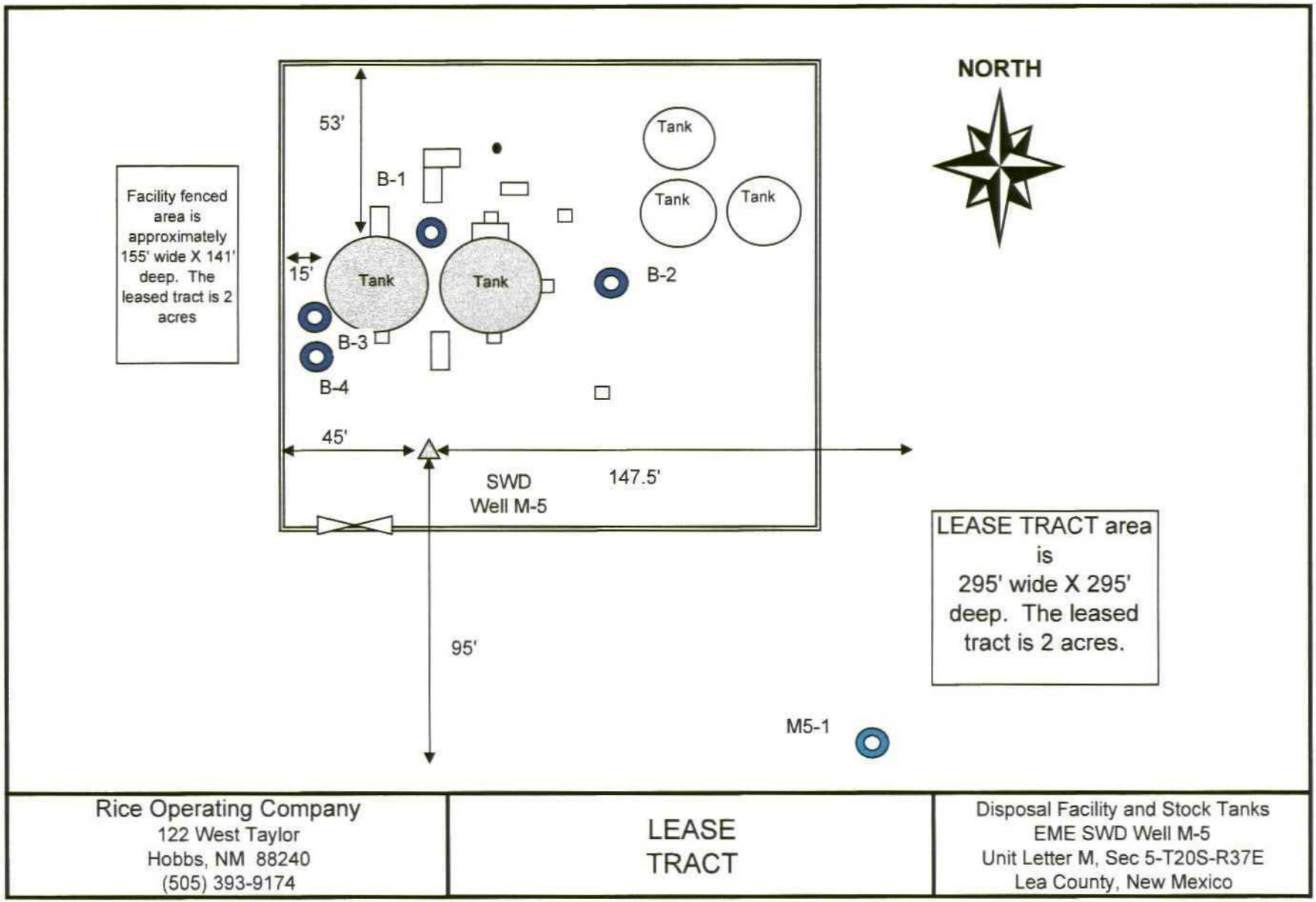
Well_ID	Date	Bicarbonate_ Alkalilnity	Caronate_ Alkalinity	Chloride	Hydroxide_ Alkalinity	Sulfate_37 5.4	Calcium	Magnesium	Potassium	Sodium	Bromide_3 00	TDS
		mg/L										
B1 grab	11/5/2003	188	<0.1	8600	<0.1	599	1610	470	46.2	2910	<50	17200
B2 grab	11/5/2003	208	<0.1	7090	<0.1	566	1640	445	44.8	2490	<50	15000
B3 grab	11/5/2003	188	<0.2	7890	<0.2	660	1550	490	57.4	3033	<100	18600
MW-1s	12/11/2003			6198								10784
MW-1s	2/20/04			5320								14500
MW-1s	5/6/04			5940								12400
MW-1d				6198								11736

Well_ID	Date	Benzene	Toluene	Ethylbenz ene	p/mXylene	oXylene	Total Xylenes	Naphthale ne	Dibromofluor omethane	1_2_dichlor oethance_d 4	Toluene_d 8	4_Bromofl uorobenze ne
		Results in ug/kg							% Recovered			
B1 (voa)	11/5/2003	<1	<1	7.84	7.97	<1		4.15	124	123	116	116
B2 (voa)	11/5/2003	7.6	1.02	15	26.8	1.11		11.5	126	125	106	125
B3 (voa)	11/5/2003	<1	<1	12.4	2.89	<1		11.5	127	127	113	111
MW-1s	12/11/03	<0.002	<0.002	<0.002			<0.002					
	2/20/04	<0.001	<0.001	<0.001			<0.001					
	5/6/04	<0.001	<0.001	<0.001			<0.001					
MW-1d	12/11/2003	<0.002	<0.002	<0.002			<0.002					

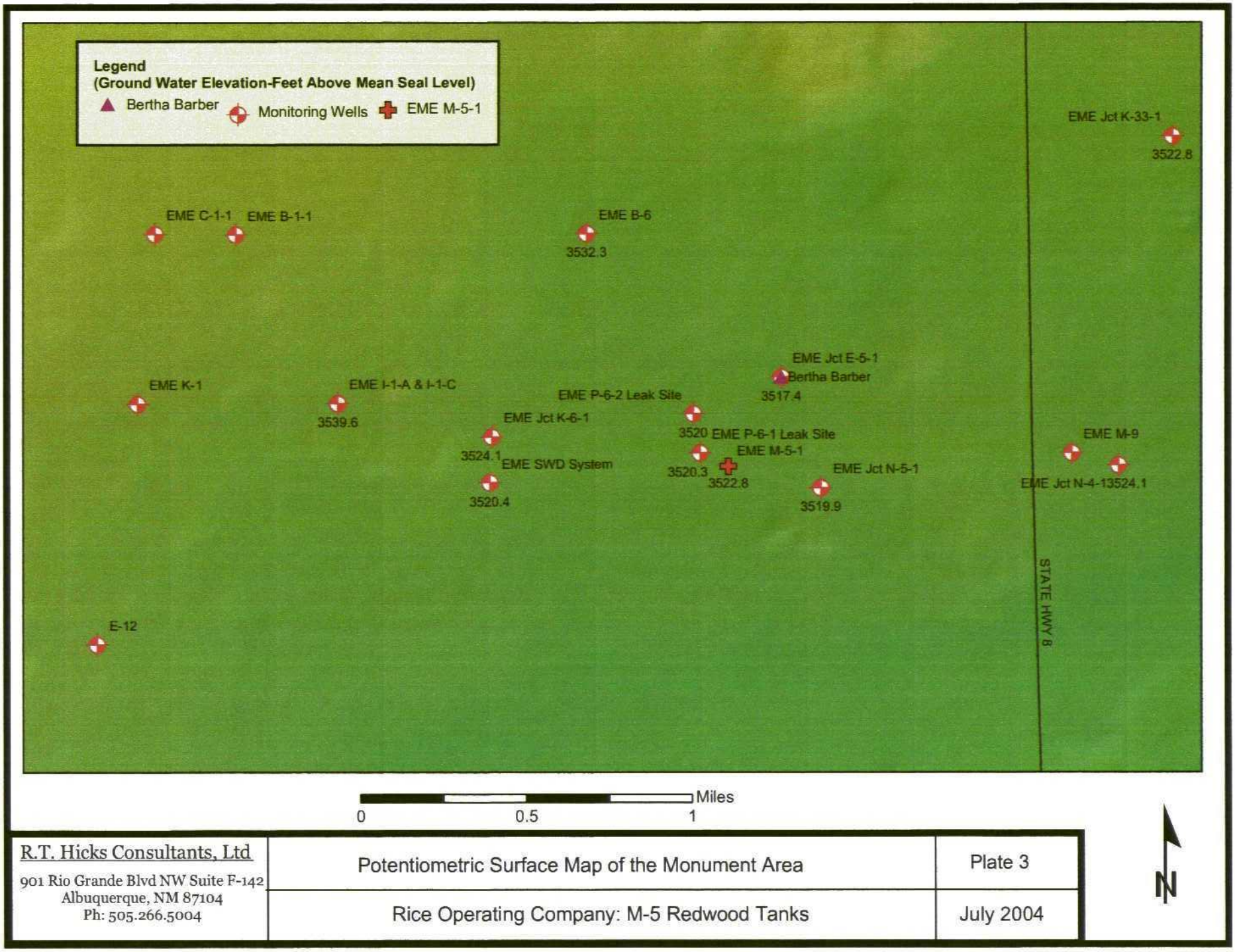
PLATES



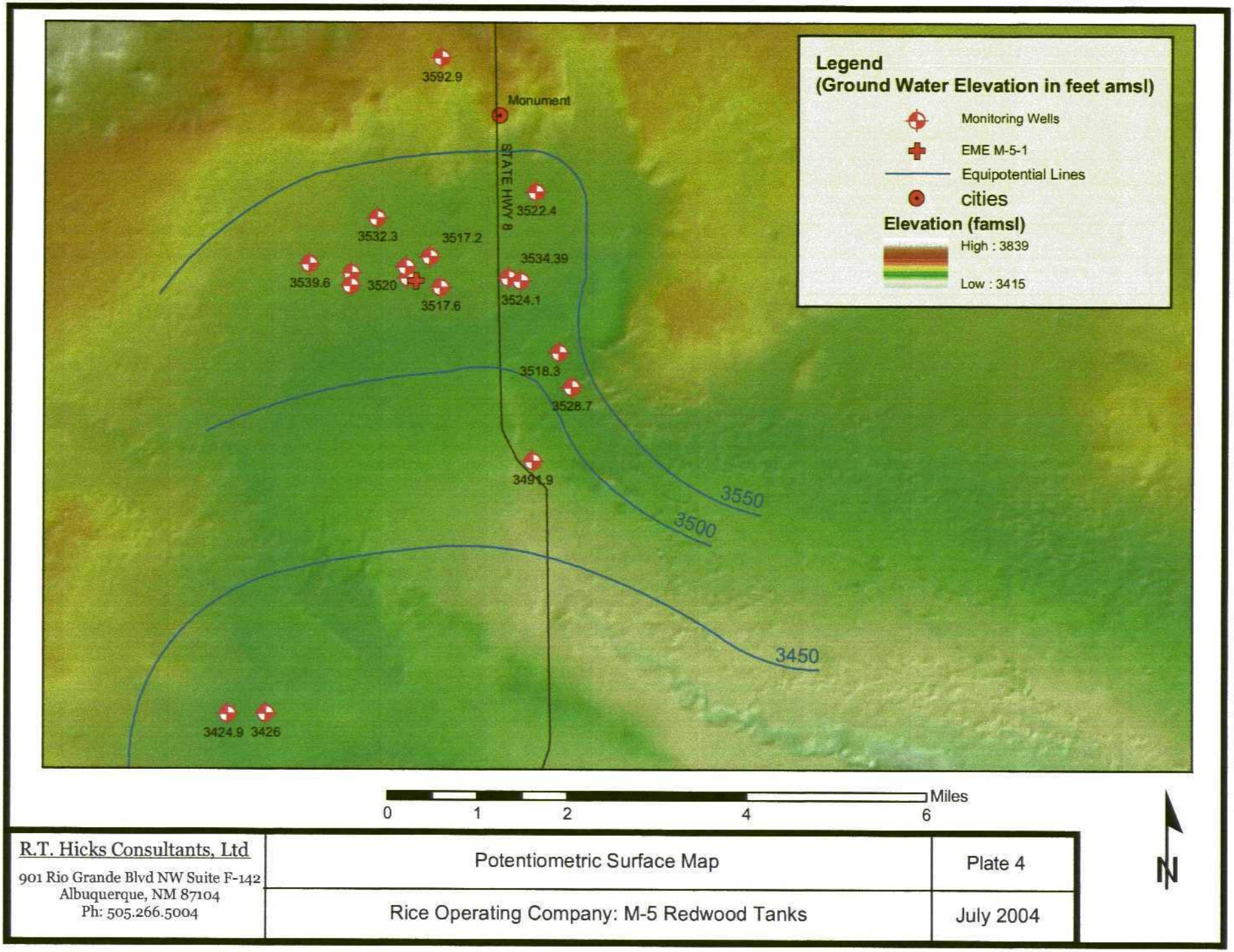
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Map Showing Location of Monitoring Wells and Water Well Permits	Plate 1
	Rice Operating Company: M-5 Redwood Tanks	July 2004



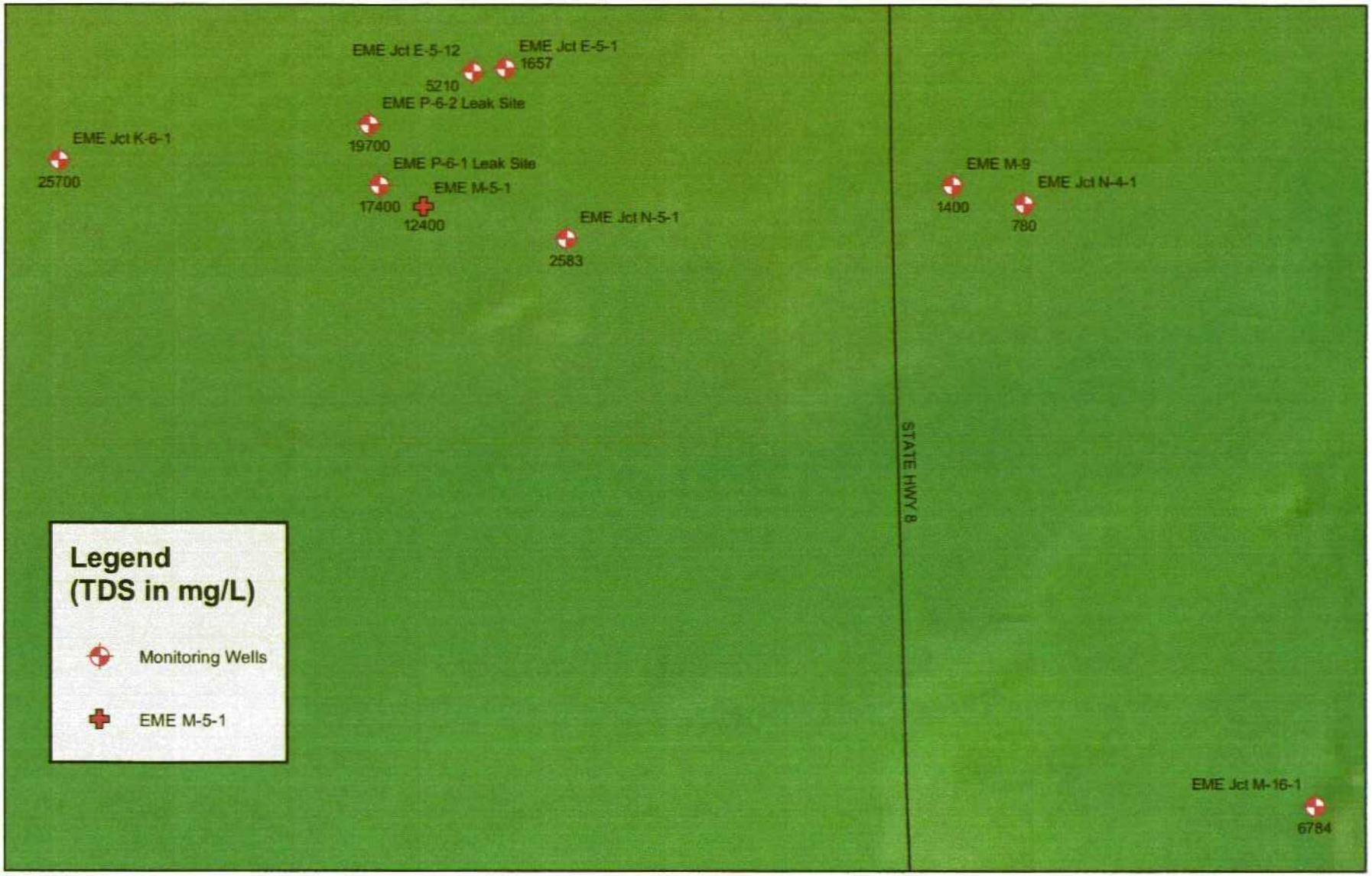
Rice Operating Company 122 West Taylor Hobbs, NM 88240 (505) 393-9174	LEASE TRACT	Disposal Facility and Stock Tanks EME SWD Well M-5 Unit Letter M, Sec 5-T20S-R37E Lea County, New Mexico



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Potentiometric Surface Map of the Monument Area	Plate 3
	Rice Operating Company: M-5 Redwood Tanks	July 2004



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Potentiometric Surface Map	Plate 4
	Rice Operating Company: M-5 Redwood Tanks	July 2004



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Total Dissolved Solids (TDS) in nearby Wells	Plate 5
	Rice Operating Company: M-5 Redwood Tanks	July 2004

APPENDIX A

R.T.Hicks Consultants, Ltd. 901 Rio Grande NW, Suite F-142 Albuquerque, New Mexico 87104		M-5 Project Name	Rice M-5
		Rice Client	
Logger	R. Hicks		
Driller	Eades Drilling	T20S R39E S30 1380 FEL 560 FSL	
Method	Air Rotary		
Start Date	11/16/2003	Lea County	Boring #1, North side between tanks
End Date	11/16/2003	New Mexico	

Sample			Description		Lith	Well Construction
Depth	Number	Cl		Grade		Cement Pad
			0-5.5 Slough			
				5		
6		208	5.5-6.5 Drk Gray-grn fine sand w/ hydrocarbon odor - v. little clay			
			6.5-15 black mottled fine sand with hydrocarbon odor, dry,	10		
11		251	some clay, odor decreasing with depth			
16		218		15		
16.8	1103031249		15-25 white to buff fine sand with some caliche, slight hydrocarbon odor			
20-21	1103031300			20		
21		360				
				25		
26-27	1103031323	479	25-28 indurated caliche and cemented dune sand, some HC odor, white to brown			
			28-30 as above, moist			
29-29.5	1103031335			30		
30		383				
				35		
				40		
			Cuttings suggest lithology as above			

R.T.Hicks Consultants, Ltd. 901 Rio Grande NW, Suite F-142 Albuquerque, New Mexico 87104		M-5 Project Name	Rice M-5
		Rice Client	
Logger	R. Hicks		
Driller	Eades Drilling	T20S R39E S30 1380 FEL 560 FSL	
Method	Air Rotary		B-3, west of tanks within berm
Start Date	11/16/2003	Lea County	
End Date	11/16/2003	New Mexico	

Sample			Description		Lith	Well Construction
Depth	Number	Cl		Grade		Cement Pad
				5		
			5-10 Light Brown Fine Blow Sand (No Cement)			
				10		
11	1104030852		10-20 White Caliche w/ some White Sand Plus Caliche			
				15		
16.5	1103030905					
				20		
			20-25 LT Brown Sand w/some Caliche (Cement Slightly Moist)			
				25		
			Moist "Mudballs" of Clay. Caliche w/some Sand			
			"Mudballs" Red on Outside - Tan Caliche w/ Sand on Inside (Moist)	30		
				35		
			Moist "Mudballs" of Clay. Caliche w/some Sand			
				40		
			Cuttings suggest lithology is as above			

R.T.Hicks Consultants, Ltd. 901 Rio Grande NW, Suite F-142 Albuquerque, New Mexico 87104		M-5 Project Name	Rice M-5
		Rice Client	
Logger	R. Hicks		
Driller	Eades Drilling	T20S R39E S30 1380 FEL 560 FSL	
Method	Air Rotary		
Start Date	11/16/2003	Lea County	Boring #2, East of tank berm
End Date	11/16/2003	New Mexico	

Sample			Description		Lith	Well Construction
Depth	Number	Cl		Grade		
			0-5 no core, cuttings are black sand			
				5		
			5-7 drk gray/blk fine-grained dune sand			
6.0-7.0	1103031443	262	6-7 light brn/buff fine sand, dry, v. slight HC odor			
				10		
			10-18 brn/tan sand with caliche cement, some clay and faint HC odor			
12	1103031459	321				
				15		
15		386				
19		352	18-20 caliche with sand, white			
20	1103031518		to buff, faint HC odor	20		
			22-25 caliche and fine dune sand, faint HC odor, brown to buff			
23		326				
24	1103031532					
				25		
			26-28 indurated fine sand with caliche cement, "veins" of calcite/caliche, some gray-brn clay, slt HC odor			
27		273				
28	1103031543					
31.5	1103031550	458	30-31.5 Sand and caliche, buff, slight HC odor, wet	30		
				35		
				40		
			Cuttings suggest lithology is as above			

APPENDIX B

ANALYTICAL REPORT

Prepared for:

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Project:	M-5 SWD Soil Bore #1
PO#:	758
Order#:	G0307862
Report Date:	11/18/2003

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

Rice Operating
122 W. Taylor
Hobbs, NM 88240
505-397-1471 #1

Order#: G0307862
Project:
Project Name: M-5 SWD Soil Bore #1
Location: EME

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Contuiner	Preservative
0307862-01	M5 7.0	SOIL	11/3/03	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
	Chloride					
0307862-02	M5 16.8	SOIL	11/3/03 12:49	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
	Chloride					
0307862-03	M5 B1	SOIL	11/3/03 13:23	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
0307862-04	M5 29.5	SOIL	11/3/03 13:35	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307862
Project:
Project Name: M-5 SWD Soil Bore #1
Location: EME

Lab ID: 0307862-01
Sample ID: M5 7.0 #1

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	116	10.0
DRO, >C12-C35	474	10.0
TOTAL, C6-C35	590	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	99%	70	130
1-Chlorooctadecane	106%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 15:46	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	25.2	25.0
p/m-Xylene	26.6	25.0
o-Xylene	<25.0	25.0
Naphthalene	51.0	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	111%	53	144
1,2-dichloroethane-d4	104%	57	147
Toluene-d8	98%	64	128
4-Bromofluorobenzene	100%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307862
Project:
Project Name: M-5 SWD Soil Bore #1
Location: EME

Lab ID: 0307862-02
Sample ID: M5 16.8 #1

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	857	10.0
DRO, >C12-C35	1,480	10.0
TOTAL, C6-C35	2,337	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	102%	70	130
1-Chlorooctadecane	111%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 16:11	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<100	100
Toluene	<100	100
Ethylbenzene	4650	100
p/m-Xylene	5370	100
o-Xylene	135	100
Naphthalene	1380	100

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	114%	53	144
1,2-dichloroethane-d4	114%	57	147
Toluene-d8	98%	64	128
4-Bromofluorobenzene	100%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307862
Project:
Project Name: M-5 SWD Soil Bore #1
Location: EME

Lab ID: 0307862-03
Sample ID: M5 B1 26-27

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	5	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	4,780	50.0
DRO, >C12-C35	11,100	50.0
TOTAL, C6-C35	15,880	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	18%	70	130
1-Chlorooctadecane	33%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 16:46	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<200	200
Toluene	<200	200
Ethylbenzene	13700	200
p/m-Xylene	15100	200
o-Xylene	633	200
Naphthalene	4160	200

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	119%	53	144
1,2-dichloroethane-d4	121%	57	147
Toluene-d8	101%	64	128
4-Bromofluorobenzene	101%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307862
Project:
Project Name: M-5 SWD Soil Bore #1
Location: EME

Lab ID: 0307862-04
Sample ID: M5 29.5

#1

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	507	10.0
DRO, >C12-C35	1,470	10.0
TOTAL, C6-C35	1,977	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	102%	70	130
1-Chlorooctadecane	109%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 17:11	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	1450	25.0
p/m-Xylene	1250	25.0
o-Xylene	<25.0	25.0
Naphthalene	297	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	117%	53	144
1,2-dichloroethane-d4	116%	57	147
Toluene-d8	100%	64	128
4-Bromofluorobenzene	100%	47	158

Approval: Celey D. Keene 11/18/03
Date

Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307862
Project:
Project Name: M-5 SWD Soil Bore #1
Location: EME

Lab ID: 0307862-01
Sample ID: M5 7.0 #1

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	<20.0	mg/kg	1	20	9253	11/7/03	SB

Lab ID: 0307862-02
Sample ID: M5 16.8

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	53.2	mg/kg	1	20	9253	11/7/03	SB

Approval: Celey D. Keene 11/18/03
Raland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8015M

Order#: G0307862

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-02			<10.0		
CONTROL SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-03		952	759	79.7%	
CONTROL DUP SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-04		952	756	79.4%	0.4%
SRM SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-05		1000	856	85.6%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8260B BTEX + NAPHTHALENE by GC/MS

Order#: G0307862

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/kg	0007451-02			<25.0		
Toluene-µg/kg	0007451-02			<25.0		
Ethylbenzene-µg/kg	0007451-02			<25.0		
p/m-Xylene-µg/kg	0007451-02			<25.0		
o-Xylene-µg/kg	0007451-02			<25.0		
Naphthalene-µg/kg	0007451-02			<25.0		
CONTROL SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/kg	0007451-03		50	63	126.%	
Toluene-µg/kg	0007451-03		50	63	126.%	
Ethylbenzene-µg/kg	0007451-03		50	51	102.%	
p/m-Xylene-µg/kg	0007451-03		100	100	100.%	
o-Xylene-µg/kg	0007451-03		50	54	108.%	
Naphthalene-µg/kg	0007451-03		50	44	88.%	
CONTROL DUP SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/kg	0007451-04		50	59	118.%	6.6%
Toluene-µg/kg	0007451-04		50	57	114.%	10.%
Ethylbenzene-µg/kg	0007451-04		50	48	96.%	6.1%
p/m-Xylene-µg/kg	0007451-04		100	91	91.%	9.4%
o-Xylene-µg/kg	0007451-04		50	49	98.%	9.7%
Naphthalene-µg/kg	0007451-04		50	51	102.%	14.7%
SRM SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/kg	0007451-05		50	53.6	107.2%	
Toluene-µg/kg	0007451-05		50	54.7	109.4%	
Ethylbenzene-µg/kg	0007451-05		50	47.8	95.6%	
p/m-Xylene-µg/kg	0007451-05		100	95.1	95.1%	
o-Xylene-µg/kg	0007451-05		50	49.4	98.8%	
Naphthalene-µg/kg	0007451-05		50	48.8	97.6%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0307862

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0007361-01			<20.0		
MS SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0307873-01	354	500	851	99.4%	
MSD SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0307873-01	354	500	868	102.8%	2.%
SRM SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0007361-04		5000	4960	99.2%	

CASE NARRATIVE

ENVIRONMENTAL LAB OF TEXAS

Prepared for:

Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307862

Project: M-5 SWD Soil Bore #1

The following samples were received as indicated below and on the attached Chain of Custody record. All analyses were performed within the holding time and with acceptable quality control results unless otherwise noted.

SAMPLE ID	LAB ID	MATRIX	Date Collected	Date Received
M5 7.0	0307862-01	SOIL	11/03/2003	11/05/2003
M5 16.8	0307862-02	SOIL	11/03/2003	11/05/2003
M5 B1	0307862-03	SOIL	11/03/2003	11/05/2003
M5 29.5	0307862-04	SOIL	11/03/2003	11/05/2003

Surrogate recoveries on the 8015M TPH are outside of control limits due to dilution (G0307862-03).

The enclosed results of analyses are representative of the samples as received by the laboratory. Environmental Lab of Texas makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved By: Alex D. Kuna Date: 11/18/03

Environmental Lab of Texas I, Ltd.

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris

Company Name: RICE Operating

Company Address: 122 W. Taylor

City/State/Zip: Hobbs, NM 88240

Telephone No: (505) 393-9174

Fax No: (505) 397-1471

Sampler Signature: Randall H

Project Name: M-5 SWD Soil Bore #1

Project #:

Project Loc: EME

PO #: 158

Analyze For: TCLP: / TOTAL:

No. of Containers note: 4 oz glass

LAB # (lab use only) 0307862	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Water	Sludge	Soil	Other (specify)	TDS (Cl) SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 + (NaP)	RUSH TAT (Pre-Schedule)	Standard TAT
-01	M5 7.0	110303	[illegible]	1	X									+		X			X				X		
-02	M5 16.8	110303	1249	1	X									+		X			X				X		
-03	M5 B1	110303	1323	1	X									+					X				X		
-04	M5 29.5	110303	1335	1	X									+					X				X		

Special Instructions: Napthalene w/ BTEX; Fax to RANDY HICKS - email (505) 266-0945

Relinquished by:	Date	Time	Received by:	Date	Time
Randall H	1105	1900			
Relinquished by:	Date	Time	Received by ELOT: Rick HO.	11-07-03	1850

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments: Ra 6°C

ANALYTICAL REPORT

Prepared for:

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Project:	M-5 SWD Soil Bores #3 & #4 #2
PO#:	758
Order#:	G0307864
Report Date:	11/18/2003

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

Rice Operating
122 W. Taylor
Hobbs, NM 88240
505-397-1471

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0307864-01	M5 SB4 4'	SOIL	11/4/03 11:00	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
0307864-02	M5 SB4 2'	SOIL	11/4/03 11:11	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
	Chloride					
0307864-03	M5 SB4 6.0'	SOIL	11/4/03 11:20	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
0307864-04	M5 SB4 7'	SOIL	11/4/03 11:30	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
	Chloride					
0307864-05	M5 B3 11'	SOIL	11/4/03 8:52	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
0307864-06	M5 B3 16.5'	SOIL	11/4/03 9:05	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
	Chloride					

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

Rice Operating
122 W. Taylor
Hobbs, NM 88240
505-397-1471

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0307864-07	M5 B2 12'	SOIL	11/3/03 14:57	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					
	Chloride					
0307864-08	M5 B2 23'	SOIL	11/3/03 15:32	11/5/03 18:50	4 oz glass	Ice
	Lab Testing:	Rejected: No		Temp: 5 C		
	8015M					
	8260B BTEX + NAPHTHALENE by GC/MS					

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-01
Sample ID: M5 SB4 4'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	5	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	1,740	50.0
DRO, >C12-C35	11,300	50.0
TOTAL, C6-C35	13,040	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	23%	70	130
1-Chlorooctadecane	23%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 17:35	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	74.1	25.0
Toluene	<25.0	25.0
Ethylbenzene	476	25.0
p/m-Xylene	1560	25.0
o-Xylene	65.9	25.0
Naphthalene	249	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	123%	53	144
1,2-dichloroethane-d4	123%	57	147
Toluene-d8	101%	64	128
4-Bromofluorobenzene	114%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-02
Sample ID: M5 SB4 2'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	5	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	203	50.0
DRO, >C12-C35	2,210	50.0
TOTAL, C6-C35	2,413	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	19%	70	130
1-Chlorooctadecane	21%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 17:59	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	1090	25.0
p/m-Xylene	228	25.0
o-Xylene	25.3	25.0
Naphthalene	45.0	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	118%	53	144
1,2-dichloroethane-d4	117%	57	147
Toluene-d8	99%	64	128
4-Bromofluorobenzene	95%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris	Order#: G0307864
Rice Operating	Project:
122 W. Taylor	Project Name: M-5 SWD Soil Bores #3 & #4
Hobbs, NM 88240	Location: EME

Lab ID: 0307864-03
Sample ID: M5 SB4 6.0'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	133	10.0
DRO, >C12-C35	593	10.0
TOTAL, C6-C35	726	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	92%	70	130
1-Chlorooctadecane	97%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 18:24	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	325	25.0
p/m-Xylene	<25.0	25.0
o-Xylene	<25.0	25.0
Naphthalene	150	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	118%	53	144
1,2-dichloroethane-d4	114%	57	147
Toluene-d8	98%	64	128
4-Bromofluorobenzene	99%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-04
Sample ID: M5 SB4 7'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	56.6	10.0
DRO, >C12-C35	161	10.0
TOTAL, C6-C35	218	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	96%	70	130
1-Chlorooctadecane	108%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 18:48	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	143	25.0
p/m-Xylene	38.0	25.0
o-Xylene	<25.0	25.0
Naphthalene	135	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	121%	53	144
1,2-dichloroethane-d4	114%	57	147
Toluene-d8	101%	64	128
4-Bromofluorobenzene	113%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-05
Sample ID: M5 B3 11'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	5	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	606	50.0
DRO, >C12-C35	5,370	50.0
TOTAL, C6-C35	5,976	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	21%	70	130
1-Chlorooctadecane	23%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 19:13	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	314	25.0
p/m-Xylene	304	25.0
o-Xylene	<25.0	25.0
Naphthalene	479	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	120%	53	144
1,2-dichloroethane-d4	119%	57	147
Toluene-d8	101%	64	128
4-Bromofluorobenzene	122%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-06
Sample ID: M5 B3 16.5'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	<10.0	10.0
DRO, >C12-C35	<10.0	10.0
TOTAL, C6-C35	<10.0	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	95%	70	130
1-Chlorooctadecane	104%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 19:37	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	<25.0	25.0
p/m-Xylene	<25.0	25.0
o-Xylene	<25.0	25.0
Naphthalene	<25.0	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	123%	53	144
1,2-dichloroethane-d4	114%	57	147
Toluene-d8	108%	64	128
4-Bromofluorobenzene	103%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-07
Sample ID: M5 B2 12'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	5	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	1,140	50.0
DRO, >C12-C35	4,210	50.0
TOTAL, C6-C35	5,350	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	21%	70	130
1-Chlorooctadecane	21%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 20:01	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	326	25.0
p/m-Xylene	795	25.0
o-Xylene	61.9	25.0
Naphthalene	78.2	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	128%	53	144
1,2-dichloroethane-d4	122%	57	147
Toluene-d8	99%	64	128
4-Bromofluorobenzene	111%	47	158

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris		Order#:	G0307864
Rice Operating		Project:	
122 W. Taylor		Project Name:	M-5 SWD Soil Bores #3 & #4
Hobbs, NM 88240		Location:	EME

Lab ID: 0307864-08
Sample ID: M5 B2 23'

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		11/6/03	1	1	JLH	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	897	10.0
DRO, >C12-C35	3,310	10.0
TOTAL, C6-C35	4,207	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	103%	70	130
1-Chlorooctadecane	113%	70	130

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007451-02		11/17/03 20:50	1	1	CK	8260B

Parameter	Result µg/kg	RL
Benzene	<25.0	25.0
Toluene	<25.0	25.0
Ethylbenzene	165	25.0
p/m-Xylene	837	25.0
o-Xylene	<25.0	25.0
Nuphthalene	91.2	25.0

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	121%	53	144
1,2-dichloroethane-d4	120%	57	147
Toluene-d8	97%	64	128
4-Bromofluorobenzene	105%	47	158

Approval: Celey D. Keene 11/18/03
Raland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864
Project:
Project Name: M-5 SWD Soil Bores #3 & #4
Location: EME

Lab ID: 0307864-02
Sample ID: M5 SB4 2'

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	88.6	mg/kg	1	20	9253	11/7/03	SB

Lab ID: 0307864-04
Sample ID: M5 SB4 7'

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	35.4	mg/kg	1	20	9253	11/7/03	SB

Lab ID: 0307864-06
Sample ID: M5 B3 16.5'

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	106	mg/kg	1	20	9253	11/7/03	SB

Lab ID: 0307864-07
Sample ID: M5 B2 12'

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	142	mg/kg	1	20	9253	11/7/03	SB

Approval: Celey D. Keene 11/18/03
Date

Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8015M

Order#: G0307864

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-02			<10.0		
CONTROL SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-03		952	759	79.7%	
CONTROL DUP SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-04		952	756	79.4%	0.4%
SRM SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0007353-05		1000	856	85.6%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8260B BTEX + NAPHTHALENE by GC/MS

Order#: G0307864

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/kg	0007451-02			<25.0		
Toluene-µg/kg	0007451-02			<25.0		
Ethylbenzene-µg/kg	0007451-02			<25.0		
p/m-Xylene-µg/kg	0007451-02			<25.0		
o-Xylene-µg/kg	0007451-02			<25.0		
Naphthalene-µg/kg	0007451-02			<25.0		
CONTROL SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-µg/kg	0007451-03		50	63	126.%	
Toluene-µg/kg	0007451-03		50	63	126.%	
Ethylbenzene-µg/kg	0007451-03		50	51	102.%	
p/m-Xylene-µg/kg	0007451-03		100	100	100.%	
o-Xylene-µg/kg	0007451-03		50	54	108.%	
Naphthalene-µg/kg	0007451-03		50	44	88.%	
CONTROL DUP SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-µg/kg	0007451-04		50	59	118.%	6.6%
Toluene-µg/kg	0007451-04		50	57	114.%	10.%
Ethylbenzene-µg/kg	0007451-04		50	48	96.%	6.1%
p/m-Xylene-µg/kg	0007451-04		100	91	91.%	9.4%
o-Xylene-µg/kg	0007451-04		50	49	98.%	9.7%
Naphthalene-µg/kg	0007451-04		50	51	102.%	14.7%
SRM SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-µg/kg	0007451-05		50	53.6	107.2%	
Toluene-µg/kg	0007451-05		50	54.7	109.4%	
Ethylbenzene-µg/kg	0007451-05		50	47.8	95.6%	
p/m-Xylene-µg/kg	0007451-05		100	95.1	95.1%	
o-Xylene-µg/kg	0007451-05		50	49.4	98.8%	
Naphthalene-µg/kg	0007451-05		50	48.8	97.6%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0307864

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0007361-01			<20.0		
MS SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0307873-01	354	500	851	99.4%	
MSD SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0307873-01	354	500	868	102.8%	2.%
SRM SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0007361-04		5000	4960	99.2%	

CASE NARRATIVE

ENVIRONMENTAL LAB OF TEXAS

Prepared for:

Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307864

Project: M-5 SWD Soil Bores #3 & #4

The following samples were received as indicated below and on the attached Chain of Custody record. All analyses were performed within the holding time and with acceptable quality control results unless otherwise noted.

SAMPLE ID	LAB ID	MATRIX	Date Collected	Date Received
M5 SB4 4'	0307864-01	SOIL	11/04/2003	11/05/2003
M5 SB4 2'	0307864-02	SOIL	11/04/2003	11/05/2003
M5 SB4 6.0'	0307864-03	SOIL	11/04/2003	11/05/2003
M5 SB4 7'	0307864-04	SOIL	11/04/2003	11/05/2003
M5 B3 11'	0307864-05	SOIL	11/04/2003	11/05/2003
M5 B3 16.5'	0307864-06	SOIL	11/04/2003	11/05/2003
M5 B2 12'	0307864-07	SOIL	11/03/2003	11/05/2003
M5 B2 23'	0307864-08	SOIL	11/03/2003	11/05/2003

Surrogate recoveries on the 8015M TPH are outside of control limits due to dilution. (G0307864-01, 02, 05, & 07)

The enclosed results of analyses are representative of the samples as received by the laboratory. Environmental Lab of Texas makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved By: _____ Date: 11/18/03

Environmental Lab of Texas I, Ltd.

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763

Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris

Company Name: RICE Operating

Company Address: 122 W. Taylor

City/State/Zip: Hobbs, NM 88240

Telephone No: (505) 393-9174

Fax No: (505) 397-1471

Sampler Signature: Randall Hicks

Project Name: M-5 SWD Soil Bores #3 + #4

Project #:

Project Loc: EME

PO #: 758

LAB # (lab use only): 0307864

No. of Containers: 4 oz glass

LAB #	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Ice	Soil	TDS (Cl) SAR / EC	TPH 8015M GRO/DRO	BTEX 8021B/5030 + Napth
-01	M5 SB4 4'	110403	1100	1	X	X		X	X
-02	M5 SB4 2'	110403	1111	1	X	X	X	X	X
-03	M6 SB4 6.0'	110403	1120	1	X	X		X	X
-04	M5 SB4 7'	110403	1130	1	X	X	X	X	X
-05	M5-B3-11'	110403	0852	1	X	X		X	X
-06	M5 B3 16.5'	110403	0905	1	X	X	X	X	X
-07	M5 B2 12'	110303	1457	1	X	X	X	X	X
-08	M5 B2 23'	110303	1532	1	X	X		X	X

Other column headings on the form (no entries): Preservative: HNO3, HCl, NaOH, H_2SO_4, None, Other (Specify); Matrix: Water, Sludge, Other (specify); Analyze For (TCLP: / TOTAL:): TPH 418.1, TPH TX 1005/1006, Metals: As Ag Ba Cd Cr Pb Hg Se, Volatiles, Semivolatiles; RUSH TAT (Pre-Schedule); Standard TAT.

Special Instructions: Fax to R. HICKS (e-mail) Napthalene w/BTEX; (505) 266-0745

Relinquished by:	Date	Time	Received by:	Date	Time
Randall T. H	1105	1900			
Relinquished by:	Date	Time	Received by ELOT: Ral. [signature]	11-05-03	1850

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments: Rec. 5°C

ANALYTICAL REPORT

Prepared for:

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Project:	M-5
PO#:	
Order#:	G0307863
Report Date:	11/07/2003

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

Rice Operating
122 W. Taylor
Hobbs, NM 88240
505-397-1471

Order#: G0307863
Project:
Project Name: M-5
Location: None Given

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0307863-01	M5 B2 11	SOIL	11/3/03 14:55	11/5/03 18:50	Plastic Bag	Ice
	Lab Testing: Density, Moisture	Rejected: No		Temp: 4 C		
0307863-02	M5 B2 19'	SOIL	11/3/03 15:15	11/5/03 18:50	Plastic Bag	Ice
	Lab Testing: Density, Moisture	Rejected: No		Temp: 4 C		
0307863-03	M5 B3 21	SOIL	11/4/03 9:15	11/5/03 18:50	Plastic Bag	Ice
	Lab Testing: Density, Moisture	Rejected: No		Temp: 4 C		
0307863-04	M5 B3 11.5	SOIL	11/4/03 8:32	11/5/03 18:50	Plastic Bag	Ice
	Lab Testing: Density, Moisture	Rejected: No		Temp: 4 C		

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307863
Project:
Project Name: M-5
Location: None Given

Lab ID: 0307863-01
Sample ID: M5 B2 11

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Density	1.336	g/cm3(wet)	1	N/A	ASTM4292	11/7/03	SB
Moisture	15.0	%	1	1.00	CLP	11/6/03	SB

Lab ID: 0307863-02
Sample ID: M5 B2 19'

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Density	1.162	g/cm3(wet)	1	N/A	ASTM4292	11/7/03	SB
Moisture	15.0	%	1	1.00	CLP	11/6/03	SB

Lab ID: 0307863-03
Sample ID: M5 B3 21

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Density	1.432	g/cm3(wet)	1	N/A	ASTM 4292	11/7/03	SB
Moisture	13.0	%	1	1.00	CLP	11/6/03	SB

Lab ID: 0307863-04
Sample ID: M5 B3 11.5

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Density	1.512	g/cm3(wet)	1	N/A	ASTM4292	11/7/03	SB
Moisture	7.00	%	1	1.00	CLP	11/6/03	SB

Approval: Celey D. Keene 11/10/03
Date

Roland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0307863

DUPLICATE SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Moisture-%	0307863-04	7		9.00		25.%

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris

Company Name: RICE Operating

Company Address: 122 W. Taylor

City/State/Zip: Hobbs, NM 88240

Telephone No: (505)393-9174

Fax No: (505)397-1471

Sampler Signature: [illegible signature]

Project Name: M-5

Project #:

Project Loc:

PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers (plastic bags)	Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Water	Sludge	Soil	Other (specify)	TDS / Cl / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	Soil moisture	Density	RUSH TAT (Pre-Schedule)	Standard TAT
01	M5 B2 11	110303	1455	1	X									X										✓	✓		
02	M5 B2 19'	110303	1515	1	X									X										✓	✓		
03	M5 B3 21	110403	0945	1	X									X										✓	✓		
04	M5 B3 11.5	110403	0832	1	X									X										✓	✓		

Special Instructions: Soil Moisture + Density

Relinquished by:	Date	Time	Received by:	Date	Time
[illegible signature]	1105	1900			
Relinquished by:	Date	Time	Received by ELOT: [illegible signature]	11-5-03	1830

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

ANALYTICAL REPORT

Prepared for:

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Project:	M-5 SWD Water
PO#:	758
Order#:	G0307865
Report Date:	11/18/2003

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

Rice Operating
122 W. Taylor
Hobbs, NM 88240
505-397-1471

Order#: G0307865
Project:
Project Name: M-5 SWD Water
Location: EME

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0307865-01	B1 grab	WATER	11/3/03 15:23	11/5/03 18:50	See COC	See COC
	Lab Testing:	Rejected: No		Temp: 4 C		
	Anions					
	Cations					
	Bromide - 300.0					
	Total Dissolved Solids (TDS)					
0307865-02	B1 (voa)	WATER	11/4/03 8:20	11/5/03 18:50	See COC	See COC
	Lab Testing:	Rejected: No		Temp: 4 C		
	8260B BTEX + NAPHTHALENE by GC/MS					
0307865-03	B2 grab	WATER	11/3/03 16:35	11/5/03 18:50	See COC	See COC
	Lab Testing:	Rejected: No		Temp: 4 C		
	Anions					
	Cations					
	Bromide - 300.0					
	Total Dissolved Solids (TDS)					
0307865-04	B2 (voa)	WATER	11/4/03 12:15	11/5/03 18:50	See COC	See COC
	Lab Testing:	Rejected: No		Temp: 4 C		
	8260B BTEX + NAPHTHALENE by GC/MS					
0307865-05	B3	WATER	11/4/03 15:40	11/5/03 18:50	See COC	See COC
	Lab Testing:	Rejected: No		Temp: 4 C		
	Anions					
	Cations					
	Bromide - 300.0					
	Total Dissolved Solids (TDS)					
0307865-06	B3 (voa)	WATER	11/4/03 12:50	11/5/03 18:50	See COC	See COC
	Lab Testing:	Rejected: No		Temp: 4 C		
	8260B BTEX + NAPHTHALENE by GC/MS					

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris	Order#: G0307865
Rice Operating	Project:
122 W. Taylor	Project Name: M-5 SWD Water
Hobbs, NM 88240	Location: EME

Lab ID: 0307865-02
Sample ID: B1 (voa)

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007452-02		11/17/03 21:15	1	1	CK	8260B

Parameter	Result µg/L	RL
Benzene	<1.00	1.00
Toluene	<1.00	1.00
Ethylbenzene	7.84	1.00
p/m-Xylene	7.97	1.00
o-Xylene	<1.00	1.00
Naphthalene	4.15	1.00

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	124%	53	144
1,2-dichloroethane-d4	123%	57	147
Toluene-d8	116%	64	128
4-Bromofluorobenzene	116%	65	140

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307865
Project:
Project Name: M-5 SWD Water
Location: EME

Lab ID: 0307865-04
Sample ID: B2 (voa)

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007452-02		11/18/03 11:20	1	1	CK	8260B

Parameter	Result µg/L	RL
Benzene	7.60	1.00
Toluene	1.02	1.00
Ethylbenzene	15.0	1.00
p/m-Xylene	26.8	1.00
o-Xylene	1.11	1.00
Naphthalene	11.5	1.00

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	126%	53	144
1,2-dichloroethane-d4	125%	57	147
Toluene-d8	106%	64	128
4-Bromofluorobenzene	125%	65	140

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris		Order#:	G0307865
Rice Operating		Project:	
122 W. Taylor		Project Name:	M-5 SWD Water
Hobbs, NM 88240		Location:	EME

Lab ID: 0307865-06
Sample ID: B3 (voa)

8260B BTEX + NAPHTHALENE by GC/MS

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0007452-02		11/17/03 22:03	1	1	CK	8260B

Parameter	Result µg/L	RL
Benzene	<1.00	1.00
Toluene	<1.00	1.00
Ethylbenzene	12.4	1.00
p/m-Xylene	2.89	1.00
o-Xylene	<1.00	1.00
Naphthalene	11.5	1.00

Surrogates	% Recovered	QC Limits (%)	
Dibromofluoromethane	127%	53	144
1,2-dichloroethane-d4	127%	57	147
Toluene-d8	113%	64	128
4-Bromofluorobenzene	111%	65	140

Approval: Celey D. Keene 11/19/03
Raland K. Tuttle, Lab Director, QA Officer — Date
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307865
Project:
Project Name: M-5 SWD Water
Location: EME

Lab ID: 0307865-01
Sample ID: B1 grab

Anions

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Bicarbonate Alkalinity	188	mg/L	1	2.00	310.1	11/6/03	SB
Carbonate Alkalinity	<0.10	mg/L	1	0.10	310.1	11/6/03	SB
Chloride	8600	mg/L	1	5.00	325	11/6/03	SB
Hydroxide Alkalinity	<0.10	mg/L	1	0.10	310.1	11/6/03	SB
SULFATE, 375.4	599	mg/L	12.5	6.25	375.4	11/7/03	SB

Cations

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Calcium	1610	mg/L	1000	10.0	6010B	11/6/03	SM
Magnesium	470	mg/L	100	0.10	6010B	11/6/03	SM
Potassium	46.2	mg/L	10	0.50	6010B	11/6/03	SM
Sodium	2910	mg/L	1000	10.0	6010B	11/6/03	SM

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Bromide - 300.0	< 50.0	mg/L	100	50.0	300.0	11/10/03	RKT
Total Dissolved Solids (TDS)	17200	mg/L	2	10.0	160.1	11/6/03	SB

Lab ID: 0307865-03
Sample ID: B2 grab

Anions

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Bicarbonate Alkalinity	208	mg/L	1	2.00	310.1	11/6/03	SB
Carbonate Alkalinity	<0.10	mg/L	1	0.10	310.1	11/6/03	SB
Chloride	7090	mg/L	1	5.00	325	11/6/03	SB
Hydroxide Alkalinity	<0.10	mg/L	1	0.10	310.1	11/6/03	SB
SULFATE, 375.4	566	mg/L	12.5	6.25	375.4	11/7/03	SB

Cations

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Calcium	1640	mg/L	1000	10.0	6010B	11/6/03	SM
Magnesium	445	mg/L	100	0.10	6010B	11/6/03	SM
Potassium	44.8	mg/L	10	0.50	6010B	11/6/03	SM
Sodium	2490	mg/L	1000	10.0	6010B	11/6/03	SM

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Bromide - 300.0	< 50.0	mg/L	100	50.0	300.0	11/10/03	RKT
Total Dissolved Solids (TDS)	15,000	mg/L	2	10.0	160.1	11/6/03	SB

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris		Order#:	G0307865
Rice Operating		Project:	
122 W. Taylor		Project Name:	M-5 SWD Water
Hobbs, NM 88240		Location:	EME

Lab ID: 0307865-05
Sample ID: B3

Anions

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Bicarbonate Alkalinity	188	mg/L	2	4.0	310.1	11/6/03	SB
Carbonate Alkalinity	<0.20	mg/L	2	0.20	310.1	11/6/03	SB
Chloride	7890	mg/L	1	5.00	325	11/6/03	SB
Hydroxide Alkalinity	<0.20	mg/L	2	0.20	310.1	11/6/03	SB
SULFATE, 375.4	660	mg/L	12.5	6.25	375.4	11/7/03	SB

Cations

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Calcium	1550	mg/L	1000	10.0	6010B	11/6/03	SM
Magnesium	490	mg/L	100	0.10	6010B	11/6/03	SM
Potassium	57.4	mg/L	10	0.50	6010B	11/6/03	SM
Sodium	3033	mg/L	1000	10.0	6010B	11/6/03	SM

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Bromide - 300.0	< 100	mg/L	200	100	300.0	11/10/03	RKT
Total Dissolved Solids (TDS)	18600	mg/L	4	20.0	160.1	11/6/03	SB

Approval: Celey D Keene 11/19/03
Date

Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit N/A = Not Applicable

ENVIRONMENTAL LAB OF TEXAS I, LTD. 12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8260B BTEX + NAPHTHALENE by GC/MS

Order#: G0307865

BLANK WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/L	0007452-02			<1.00		
Toluene-µg/L	0007452-02			<1.00		
Ethylbenzene-µg/L	0007452-02			<1.00		
p/m-Xylene-µg/L	0007452-02			<1.00		
o-Xylene-µg/L	0007452-02			<1.00		
Naphthalene-µg/L	0007452-02			<1.00		
CONTROL WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/L	0007452-03		50	63	126.%	
Toluene-µg/L	0007452-03		50	63	126.%	
Ethylbenzene-µg/L	0007452-03		50	51	102.%	
p/m-Xylene-µg/L	0007452-03		100	100	100.%	
o-Xylene-µg/L	0007452-03		50	54	108.%	
Naphthalene-µg/L	0007452-03		50	44	88.%	
CONTROL DUP WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/L	0007452-04		50	59	118.%	6.6%
Toluene-µg/L	0007452-04		50	57	114.%	10.%
Ethylbenzene-µg/L	0007452-04		50	48	96.%	6.1%
p/m-Xylene-µg/L	0007452-04		100	91	91.%	9.4%
o-Xylene-µg/L	0007452-04		50	49	98.%	9.7%
Naphthalene-µg/L	0007452-04		50	51	102.%	14.7%
SRM WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-µg/L	0007452-05		50	53.6	107.2%	
Toluene-µg/L	0007452-05		50	54.7	109.4%	
Ethylbenzene-µg/L	0007452-05		50	47.8	95.6%	
p/m-Xylene-µg/L	0007452-05		100	95.1	95.1%	
o-Xylene-µg/L	0007452-05		50	49.4	98.8%	
Naphthalene-µg/L	0007452-05		50	48.8	97.6%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Anions

Order#: G0307865

BLANK WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bicarbonate Alkalinity-mg/L	0007363-01			<2.00		
Carbonate Alkalinity-mg/L	0007364-01			<0.10		
Chloride-mg/L	0007362-01			<5.00		
Hydroxide Alkalinity-mg/L	0007365-01			<0.10		
SULFATE, 375.4-mg/L	0007381-01			<0.50		
DUPLICATE WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bicarbonate Alkalinity-mg/L	0307865-01	188		186		1.1%
Carbonate Alkalinity-mg/L	0307865-01	0		<0.10		0.%
Hydroxide Alkalinity-mg/L	0307865-01	0		<0.10		0.%
SULFATE, 375.4-mg/L	0307865-01	599		601		0.3%
MS WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/L	0307865-01	8600	5000	13100	90.%	
MSD WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/L	0307865-01	8600	5000	13000	88.%	0.8%
SRM WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bicarbonate Alkalinity-mg/L	0007363-04		0.05	0.0496	99.2%	
Carbonate Alkalinity-mg/L	0007364-04		0.05	0.0496	99.2%	
Chloride-mg/L	0007362-04		5000	4960	99.2%	
Hydroxide Alkalinity-mg/L	0007365-04		0.05	0.0496	99.2%	
SULFATE, 375.4-mg/L	0007381-04		50	48.7	97.4%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Cations

Order#: G0307865

BLANK WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Calcium-mg/L	0007349-02			<0.010		
Magnesium-mg/L	0007349-02			<0.001		
Potassium-mg/L	0007349-02			<0.050		
Sodium-mg/L	0007349-02			<0.010		
DUPLICATE WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Calcium-mg/L	0307865-01	1610		1590		1.3%
Magnesium-mg/L	0307865-01	470		472		0.4%
Potassium-mg/L	0307865-01	46.2		46.4		0.4%
Sodium-mg/L	0307865-01	2910		2870		1.4%
SRM WATER	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Calcium-mg/L	0007349-05		2	1.77	88.5%	
Magnesium-mg/L	0007349-05		2	2.16	108.%	
Potassium-mg/L	0007349-05		2	1.88	94.%	
Sodium-mg/L	0007349-05		2	2.11	105.5%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0307865

BLANK WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bromide - 300.0-mg/L	0007459-01			< 0.50		
Total Dissolved Solids (TDS)-mg/L	0007369-01			<5.00		
CONTROL WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bromide - 300.0-mg/L	0007459-02		10	9.83	98.3%	
CONTROL DUP WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bromide - 300.0-mg/L	0007459-03		10	10.05	100.5%	2.2%
DUPLICATE WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Total Dissolved Solids (TDS)-mg/L	0307865-01	17200		17600		2.3%
SRM WATER	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Bromide - 300.0-mg/L	0007459-04		10	10.03	100.3%	

... Lab of Texas, Inc.
12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: RICE Operating
Company Address: 122 W. Taylor
City/State/Zip: Hobbs, NM 88240
Telephone No: (505) 393-9174
Fax No: (505) 397-1471
Sampler Signature: [signature]

Project Name: M-5 SWD water
Project #:
Project Loc: EME
PO #: 758

LAB # (lab use only) 0307865	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify)	TDS/Cl/SAR/EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 Napthalene	Anions/cations	Br⁻	RUSH TAT (Pre-Schedule)	Standard TAT
-01	B1 grab	110303	1523	1								✓				✓								✓	✓		
-02	B1 (VOA)	110403	0820	2	X							X											✓				
-03	B2 grab	110303	11.35	1								X				✓								✓	✓		
-04	B2 (VOA)	110403	1215	2	X							X											✓				
-05	B3	110403	1540	1								X				✓								✓	✓		
-06	B3 (VOA)	110403	1250	1	X							X											✓				

Special Instructions: Fax to R. HICKS
Napthalene w/BTEX; (505) 266-0745
BR

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	1105	19a			
Relinquished by:	Date	Time	Received by ELOT: [signature]	11-05-03	1150

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments: Ice 4°C
L HDPE (TDS Anions/Cations)
40ml glass (BTEX)

BTEXN – CALL MICHELLE HUNTER 505-266-5004

[illegible] Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: RICE Operating
Company Address: 122 W. Taylor
City/State/Zip: Hobbs, NM 88240
Telephone No: (505) 393-9174
Fax No: (505) 397-1471
Sampler Signature: Kristin Farris

Project Name: M-5 SWD water
Project #:
Project Loc: EME
PO #: 758

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TDS/CL/SAR/EC	TOTAL: TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 Naphthalene	Anions/Cations							RUSH TAT (Pre-Schedule)	Standard TAT
	B1 grab	110303	1523	1								✓				✓								✓								
	B1 (VOA)	110403	0820	2	X							X											✓									
	B2 grab	110303	1135	1								X				✓								✓								
	B2 (VOA)	110403	1215	2	X							X											✓									
	B3	110403	1540	1								X				✓								✓								
	B3 (VOA)	110403	1250	1	X							X											✓									

Special Instructions: Fax to: R. HICKS
Naphthalene w/BTEX ; (505) 266-0745
BR

Sample Containers Intact? Y
Temperature Upon Receipt:
Laboratory Comments: Ice 4°C

Relinquished by:	Date	Time	Received by:	Date	Time
Kristin Farris	1105	19a			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			[illegible]	11-05-03	1150

BTEX = CALL MICHELLE HUNTER 505-266-5004