1R - 427-91

REPORTS

DATE:

4-1-08

EME Jct E-8 5
Bertha Barber EOL

IR427-91

CLOSURE

4-1-08

RICE OPERATING COMPANY

JUNCTION BOX CLOSURE REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	jct. E-5 (Marathon Barber EOL)	E	5	20S	37E	Lea	no box--jct. eliminated		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Barber Estate OTHER _____

Depth to Groundwater 40 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 1/11/2002 Date Completed 1/16/2007 NMOCD Witness no

Soil Excavated 128 cubic yards Excavation Length 48 Width 18 Depth 4 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

General Description of Remedial Action:

After initial investigation, a monitoring well was installed on site in 2002. This junction box was excavated according the the OCD-approved Corrective Action Plan submitted by R.T. Hicks Consultants. A May 2007 Final Closure Report by Hicks requests closure of this junction box site and is included with this form.

enclosures: Final Closure Report by Hicks (April 2007)

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

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

DATE 4/4/2007 TITLE Project Scientist

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

May 16, 2007

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
VIA email and FedEx

RE: Final Site Investigation Report & Abatement Completion Report:
Bertha Barber EME E-5 Junction Box
NMOCD Case No.: 1R0427-91

Dear Mr. Price

On behalf of Rice Operating Company, we are pleased to submit the Final Site Investigation Report & Abatement Completion Report for the above-referenced site. The Junction Box Closure Form is attached.

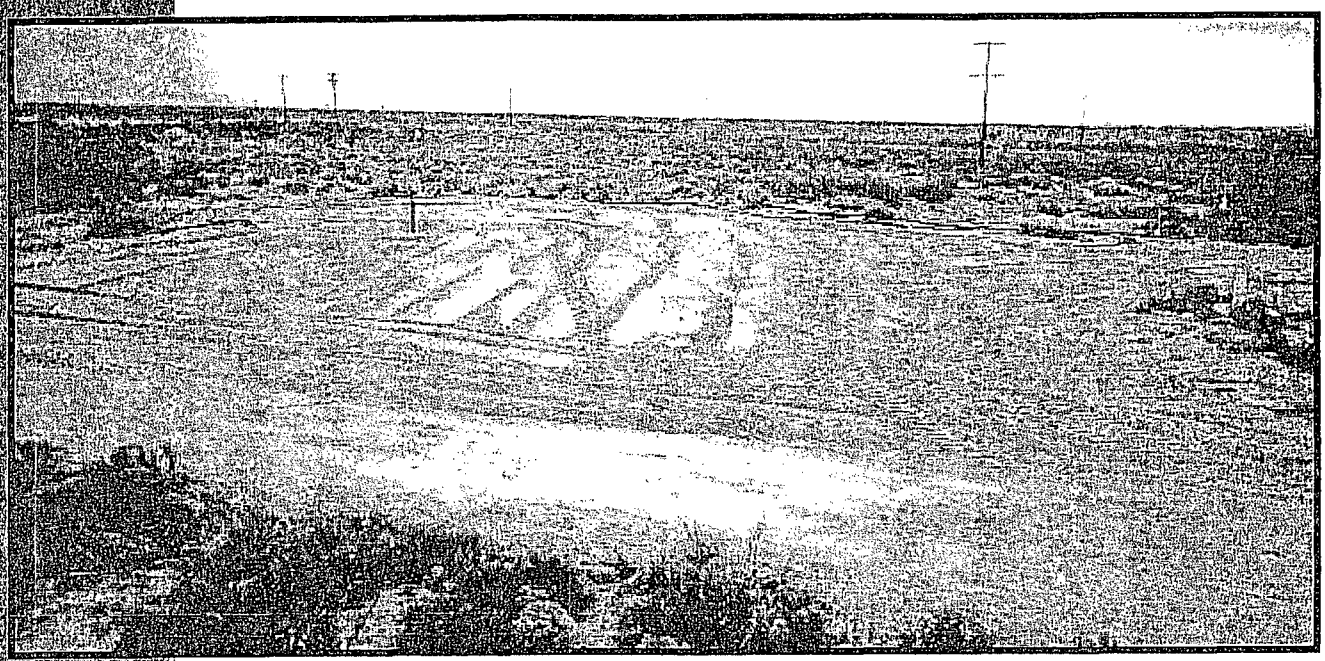
Please contact us with any comments or questions regarding our recommended closure protocol for this site.

Sincerely,
R.T. Hicks Consultants, Ltd.

Randall Hicks
Principal

Copy: Rice Operating Company, Hobbs NM

May 15, 2007



Final Site Investigation Report & Abatement Completion Report: Bertha Barber EME E-5 Junction Box

R.T. Hicks Consultants, Ltd.

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

May 15, 2007

Final Site Investigation Report & Abatement Completion Report: Bertha Barber EOL Junction Box

EME E-5 Junction Box Site
T20S-R37E-Section 5, Unit Letter E
NMOCD Case No. 1R0427-91

prepared for:

Rice Operating Company
122 West Taylor
Hobbs, NM 88240

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

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Plates & Tables

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Appendices

1.0 Location

Unit E, Section 5 Township 20S Range 37E
Latitude: N 32° 36' 37.32"
Longitude: W 103° 17' 34.47"
NMOCD #: 1R0427-91

Plate 1 shows the location of the E-5 junction box site relative to Monument, New Mexico, the up gradient Marathon E-5 site, and local roads.

2.0 Work Elements Completed

1. In January 2002, ROC replaced the E-5 junction, excavated soil from the former junction box site and collected samples from the excavation (see Appendix A, 2002 Junction Box Disclosure Form).
2. In January, 2002, ROC drilled a soil boring and installed a monitoring well at the site (see Appendix A, MW-1 Well Boring Log).
3. Since 2002, ROC collected ground water samples from E-5 MW-1 on a routine basis (see Appendix B, Ground Water Monitoring Data).
4. In June, 2005, R.T. Hicks Consultants, Inc. (Hicks Consultants) summarized ground water data for the E-5 site in the Bertha Barber Tank Battery 2004–2005 Annual Report (see Appendix C).
5. In July, 2005, Hicks Consultants presented an evaluation of the E-5 site ground water chemistry to NMOCD (see Appendix D).
6. On January 15, 2006, Hicks Consultants submitted a Corrective Action Plan to prevent migration of residual constituents in the vadose zone (see Appendix D).
7. In December, 2006, ROC and Hicks Consultants installed the NMOCD-approved remedy (see Appendix E).
8. In April, 2007 ROC seeded the site with a seed drill (Appendix E).

3.0 Conclusions and Supporting Data

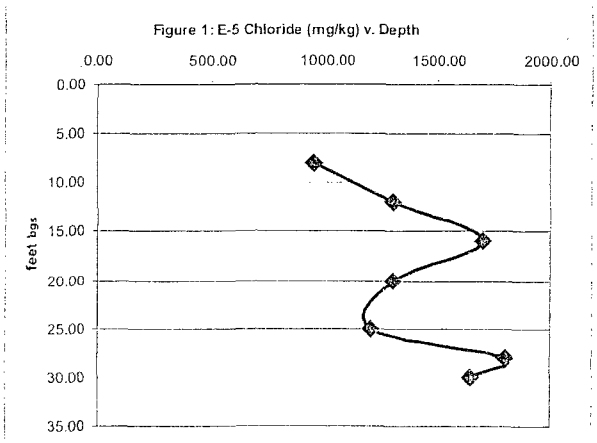
3.1 Petroleum Hydrocarbons

Residual petroleum hydrocarbons are not present in the vadose zone at the site. Observations during the 2002 excavation of the junction box and from an adjacent soil boring show no evidence of residual petroleum hydrocarbons. Ground water monitoring shows levels of BTEX that are below WQCC Standards, futher evidence that the vadose zone was not impacted by petroleum hydrocarbons. Therefore no BTEX soil analyses were conducted. Closure activities were conducted as approved.

3.2 Chloride

Past operations at the site released brine and caused chloride to enter ground water. Soil samples show chloride concentrations are relatively constant from the junction box to ground water, which is 30–40 feet below ground surface (see Figure 1). This chloride signature suggests that saturated or near-saturated flow existed during past operations. Nevertheless, this information does not suggest a large mass of chloride entered ground water and caused measurable impairment.

Figure 1: Chloride Concentrations in the Vadose Zone, 2002



3.3 Ground Water Flow

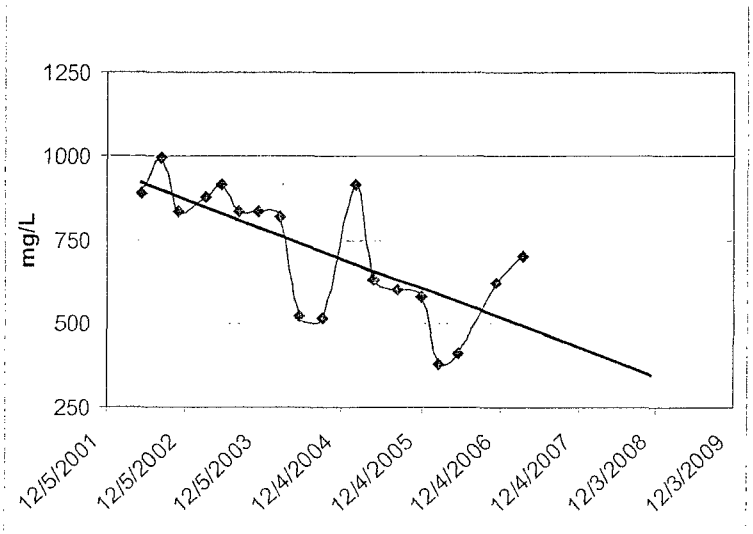
Plate 2 shows that ground water flows east-southeast in this area as presented in the 2005 Marathon Barber Annual Report. As seen in Plate 3, this is consistent with regional data, as shown by the Nicholsen and Clebsch map (2003 Marathon Barber Annual Report). Both of these Marathon reports are included in Appendix C.

3.4 Impact From Up Gradient Sources

Chloride concentrations at the E-5 monitoring well exceed WQCC Standards due to impact from up gradient sources. Chloride concentrations in ground water up-gradient and cross-gradient from the E-5 junction box site at the Marathon E-5 site to the northwest (see Plate 1) range from 455 mg/L (up gradient MW-5, 2005) to 2,550 mg/L (cross-gradient MW-12, 2004). Plate 2 shows locations of Marathon wells in relation to the site and potentiometric surface contours. Chloride concentrations in samples from ROC MW-1 are consistent with up-gradient and cross-gradient wells during the 2003 and 2005 sampling events depicted in Plates 4 and 5. At the site, chloride concentrations are 916 mg/L in February, 2005, and 833 mg/L in August, 2003. NMOCD concurred with the conclusion the chloride levels observed at the site are due to up gradient sources in its November 2005 letter (Appendix D).

Unusually high ground water chloride concentrations in samples at the site from MW-1 obtained on 12/21/04 and 1/26/05 are due to laboratory or sampling deficiences. Chloride and TDS analyses from many ROC sites were unusually high during this time-frame. Research conducted by ROC and their consultants traced the problem to deficiencies at the laboratory. This problem has not re-occurred since this time.

Figure 2. Chloride Concentration in MW-1 Over Time.



3.5 Natural Restoration

Natural restoration (dilution and dispersion) will mitigate the impact to ground water caused by up-gradient sources by about 2009. Figure 2 shows the chloride concentrations in MW-1 over time after deleting the spurious results discussed above. Figure 2 shows the calculated trendline that predicts ground water impacted by up gradient sources in the area will meet WQCC Standards (250 mg/L chloride) by about 2009.

3.6 The ET Barrier

The evapotranspiration (ET) barrier installed by ROC in December, 2006, will sequester chloride in the vadose zone, eliminating any threat to fresh water, public health or the environment. Extensive studies by the EPA, Sandia National

Laboratories, and other organizations have demonstrated that ET barriers minimize, and in some cases eliminate, percolation of precipitation and the attendant transport of constituents from the vadose zone to ground water (see Appendix D). The presence of a capillary break in the ET barrier and the thickness of the barrier prevent the upward transport of any salt to the root zone. Appendix E provides photographic documentation of the installation of the NMOCD-approved ET barrier by ROC and Hicks Consultants in conformance with the specifications. Compaction documentation for the ET barrer are also included in Appendix E. The site was seeded on April 10, 2007.

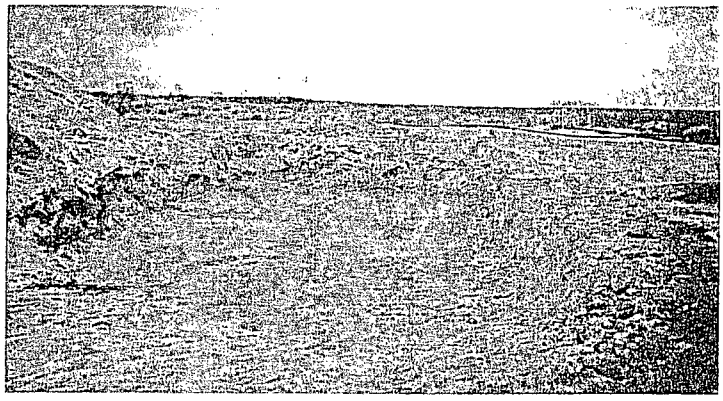


Figure 3. Installation of approved ET Barrier, December 2006.

4.0 Request for Closure

ROC investigated the E-5 Junction Box site and found no threat to public health, fresh water or the environment. A site closure plan proposing to sequester chloride in the vadose zone so that it would pose no threat to ground water was submitted to NMOCD and subsequently approved.

In accordance with the NMOCD-approved plan, ROC installed and documented (see Appendix E) the ET infiltration barrier in December, 2006. The site was seeded in April and is expected to return to natural productive capacity. ROC now respectfully requests closure of the regulatory file associated with the E-5 site.

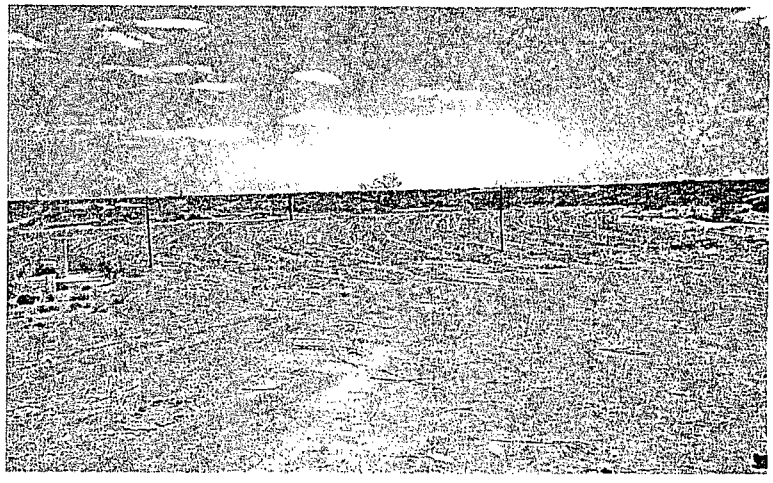


Figure 4 Site after seeding, April 2007.

Plates

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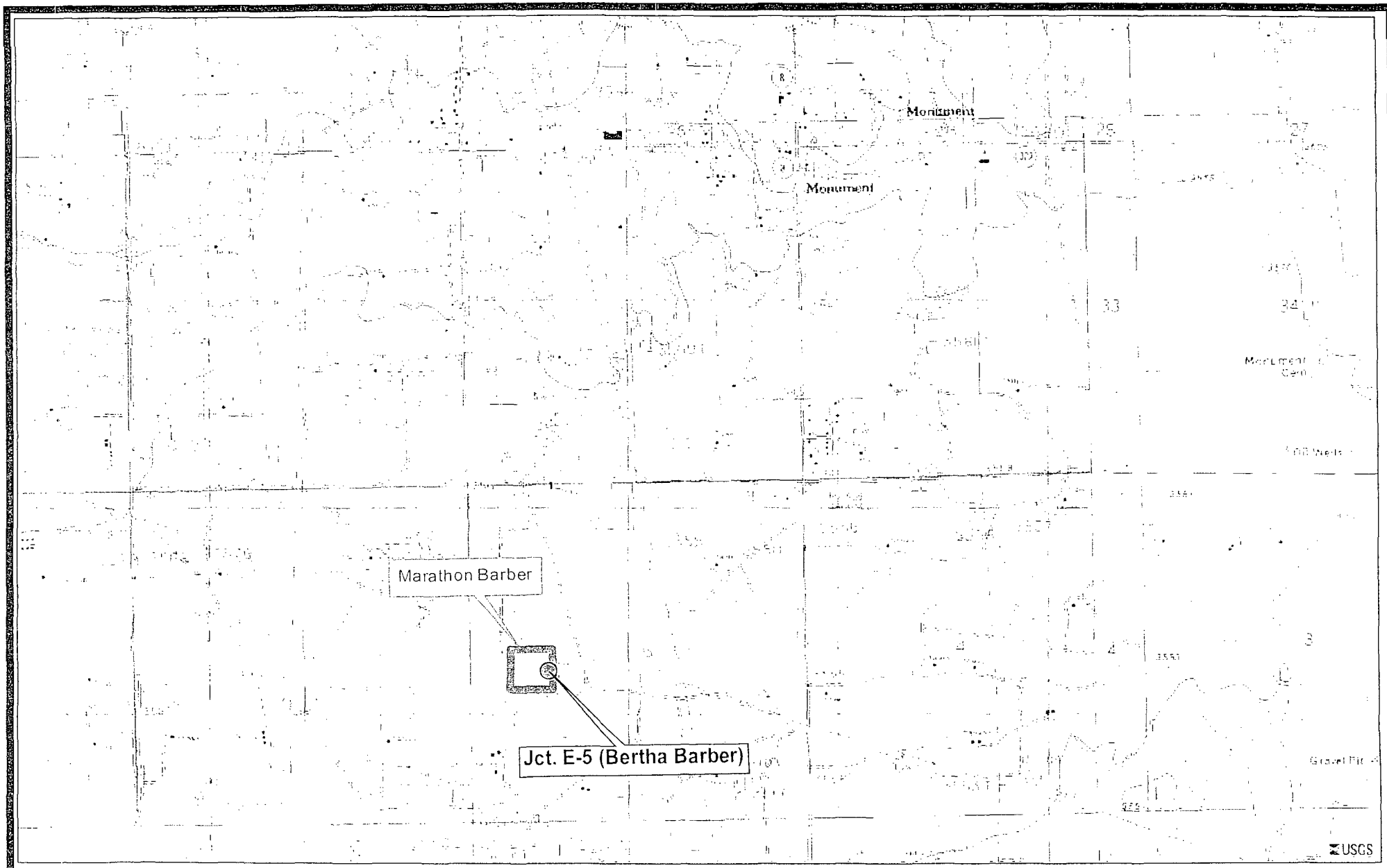

R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Location of Jct E-5 (Bertha Barber) relative to Monument, NM

Plate 1

Rice Operating Company: Jct E-5 Bertha Barber

May 2007

N
W E
S

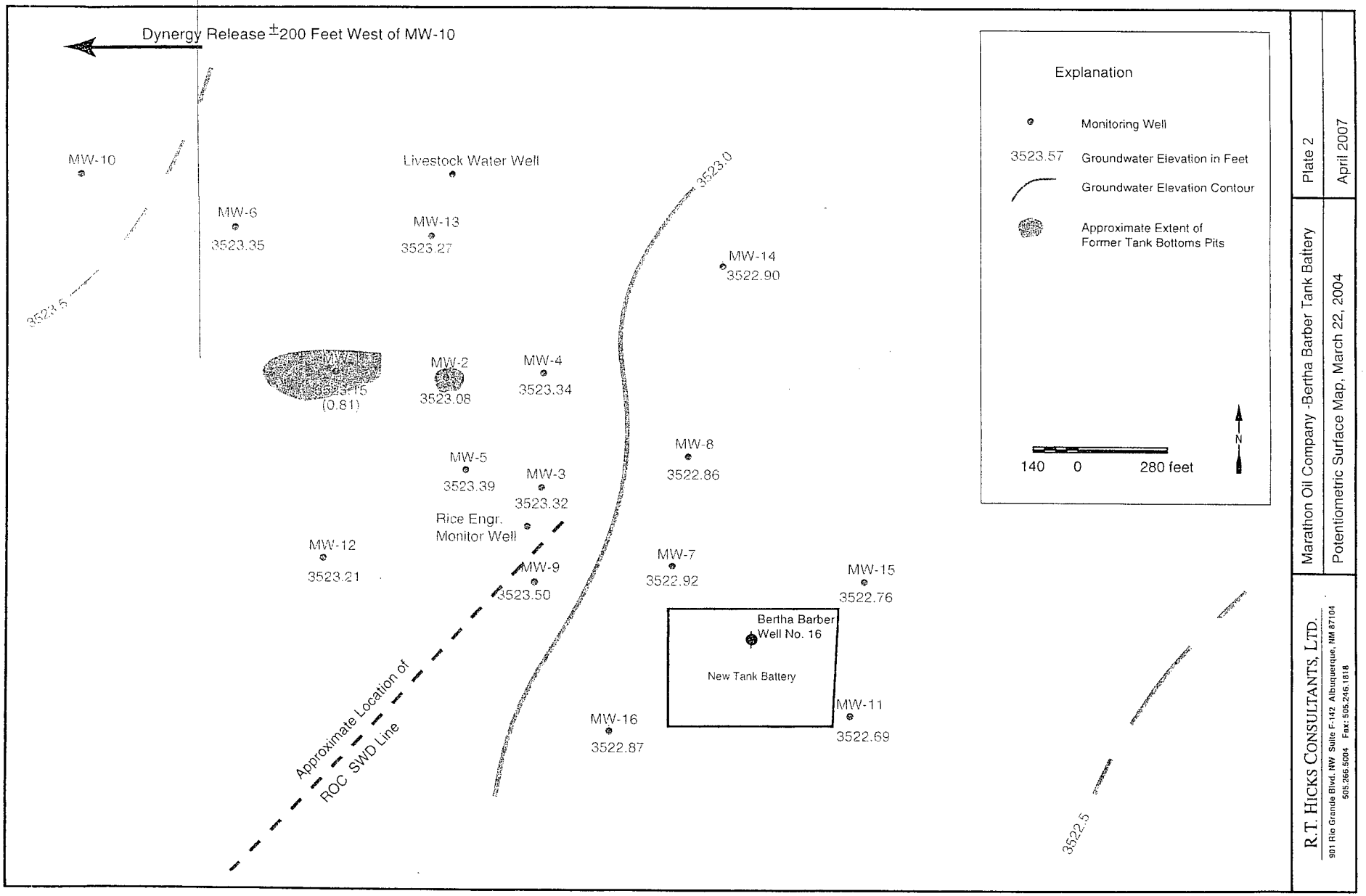

Plate 2

April 2007

Marathon Oil Company -Bertha Barber Tank Battery

Potentiometric Surface Map, March 22, 2004

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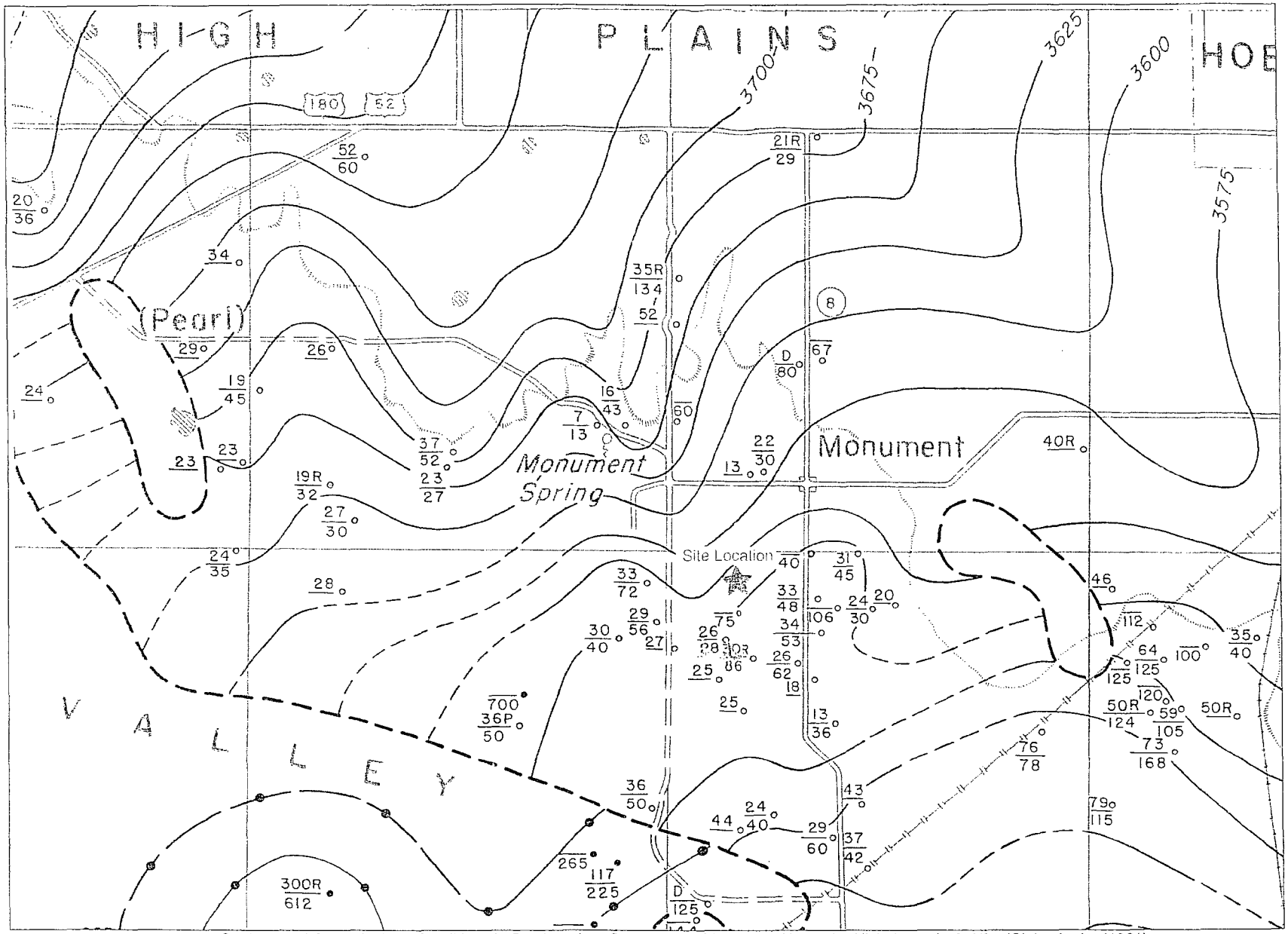
505.266.5004 Fax: 505.246.1818



map source: Geology and Ground-Water Conditions in Southern Lea County, New Mexico by Alexander Nicholson, Jr. & AlfredClebsch, Jr. (1961)

1 mile 0 2 miles

R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818

Marathon Oil Company - Bertha Barber Tank Battery	Plate 3
Regional Potentiometric Surface Map	April 2007

Plate 5

March 2004

Marathon Oil Company -Bertha Barber Tank Battery

Chloride Concentrations in Ground Water Sept. 24,2003

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Plate 5

April 2007

Marathon Oil Company -Bertha Barber Tank Battery

Chloride Concentrations in Ground Water Mar/Apr 2005

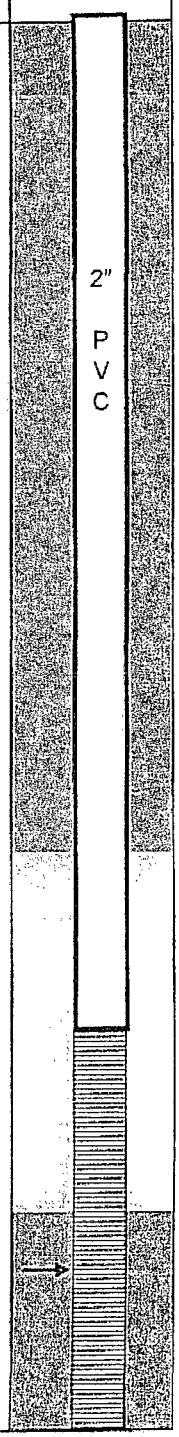
R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818

Appendix A

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

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: F. Root
RICE *Operarting Company*	E-5	Well No. SB-1/MW	Date Drilled: 9/25/02	Driller: Eades	Completion:
122 West Taylor	5-T20S-R37E	Well Depth: 42'	Boring Depth: 42'	Well Material: PVC	Installed 2" PVC
Hobbs, New Mexico 88240	EME SWD System	Casing Length: 45'	Boring Diameter: 4.75"	Casing Size: 2"	monitor well,
(505) 393-9174	Lea County, NM	Screen Length: 11'	Drilling Method: Air Rotary	Slot Size:	sand and grout.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl⁻	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
3						
5		Grab	450		grout	
6						
7						
8						
9	Caliche					
10		Grab	1375			
11						
12						
13						
14						
15		Grab	1000		bentonite	
16						
17	Sandy Clay					
18						
19						
20		Grab	1300			
21						
22						
23						
24						
25		Grab	1200			
26						
27	Sand and Clay					
28						
29						
30		Grab	1650			
31					sand	
32						
33						
34						
35						
36						
37	Sand					
38					screen	
39						
40						
41					water	
42						



RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE FORM

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	Marathon-Barber EOL	E	5	20S	37E	Lea	Box Has Not Been Built Yet		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Jimmy T. Cooper OTHER _____

Depth to Groundwater 40 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 1/11/2002 Date Completed not complete OCD Witness No

Soil Excavated 0 cubic yards Excavation Length 0 Width 0 Depth 0 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: **Sample Date** n/a **Sample Depth** n/a

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
Vadose Zone Samples Will Be Included With Final Closure Report							

General Description of Remedial Action: Site was delineated vertically and latera with a backhoe. Chloride impact was consistent vertically, while TPH was minimal at the loca The site was bored on 1/23/02 and chloride was found to impact groundwater with no indications of TPH. A cased monitor well was installed and the groundwater has been sampl and analyzed quarterly (see annual groundwater report for results). ROC has contracted a hydrologic consultant to assist ROC in developing a remediation plan for the vadose zone at groundwater-impacted sites with the ultimate objective being final closure. Marathon has several monitor wells up- and down-gradient of this site. Marathon and ROC w cooperate with respect to the vadose zone and groundwater remediation at the site, groundwater monitoring, and sharing analytical results.

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	8.00	950.00
	12.00	1300.00
	16.00	1700.00
Soil Bore	20.00	1300.00
	25.00	1200.00
	28.00	1800.00
	30.00	1650.00

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

DATE 1/21/2003 PRINTED NAME Kristin Farris

SIGNATURE _____ TITLE Project Scientist

Appendix B

Laboratory Results

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

Historic Ground Water Data for E-5

UNIT_SEC	Well_Name	sampledate	depthtowater	cl	tds	benzene	toluene	ethylbenzene	totalxylenes	sulfate
				(mg/L)						
E-5	MW #1	5/14/2002	40.72	886	2300	<0.001	<0.001	<0.001	<0.001	157
E-5	MW #1	8/12/2002	40.91	993	2440	<0.001	0.001	<0.001	<0.003	141
E-5	MW #1	11/5/2002	41.15	833	2180	<0.001	<0.001	<0.001	<0.001	116
E-5	MW #1	3/14/2003	41.03	877	2170	<0.001	<0.001	<0.001	<0.001	127
E-5	MW #1	5/29/2003	41.14	913	2270	<0.001	<0.001	<0.001	<0.001	119
E-5	MW #1	8/22/2003	41.14	833	2210	<0.001	<0.001	<0.001	<0.001	116
E-5	MW #1	11/20/2003	41.73	833	2200	<0.001	<0.001	<0.001	<0.001	100
E-5	MW #1	2/20/2004	41.70	820	2200	<0.002	<0.002	<0.002	<0.006	64
E-5	MW #1	5/26/2004	40.90	520	1657	<0.002	<0.002	<0.002	<0.006	47
E-5	MW #1	9/2/2004	40.70	514	1640	<0.001	0.00115	<0.001	0.002206	74.6
E-5	MW #1	12/21/2004	30.20	6200	13200	<0.001	<0.001	<0.001	<0.001	531
E-5	MW #1	1/26/2005	35.28	1730	3930	<0.001	0.00506	0.00193	0.00886	148
E-5	MW #1	2/8/2005	35.23	916	2280	<0.001	0.000515	<0.001	0.00439	89.2
E-5	MW #1	5/3/2005	35.44	635	1540	<0.001	0.00422	0.00171	0.00831	61.4
E-5	MW #1	8/17/2005	XXX	600	1430	<0.001	<0.001	<0.001	<0.001	55.3
E-5	MW #1	11/28/2005	35.87	582	1300	<0.001	0.00244	0.000326	0.00241	0.000873
E-5	MW #1	2/21/2006	35.86	377	1250	<0.001	0.00473	<0.001	0.01306	49
E-5	MW #1	5/17/2006	35.94	412	1290	<0.001	0.00215	<0.001	0.00451	50.6
E-5	MW #1	11/10/2006	34.80	625	1660	0.0132	0.00108	0.00331	<0.001	53.2
E-5	MW #1	3/13/2007	XXX	704	1790	<0.001	0.00129	<0.001	0.00146	90.8

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

A Xenco Laboratories Company

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME Jct. E-5

Project Number: None Given

Location: T20S-R37E-Sec 5E- Lea County, NM

Lab Order Number: 7C09027

Report Date: 03/29/07

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	7C09027-01	Water	03/06/07 14:05	03-09-2007 13:15

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

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7C09027-01) Water									
Benzene	ND	0.00100	mg/L	1	EC71307	03/13/07	03/13/07	EPA 8021B	
Toluene	**0.00129**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**J [0.000320]**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00146**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00183**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*99.4 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.2 %*	*80-120*		"	"	"	"	

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7C09027-01) Water									
Total Alkalinity	516	2.00	mg/L	1	EC71304	03/13/07	03/13/07	EPA 310.1M	
Chloride	704	12.5	"	25	EC71615	03/14/07	03/14/07	EPA 300.0	
Total Dissolved Solids	1790	10.0	"	1	EC71610	03/12/07	03/13/07	EPA 160.1	
Sulfate	90.8	12.5	"	25	EC71615	03/14/07	03/14/07	EPA 300.0	

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (7C09027-01) Water									
Calcium	**182**	0.200	mg/L	1	EC72801	03/26/07	03/26/07	EPA 6020A	
Magnesium	**58.5**	0.500	"	"	"	"	"	"	
Potassium	**9.37**	0.500	"	"	"	"	"	"	
Sodium	**512**	0.500	"	"	"	"	"	"	

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 EC71307 - EPA 5030C (GC)										
Blank (EC71307-BLK1)				Prepared & Analyzed: 03/13/07						
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	*40.0*		*ug/l*	*50.0*		*80.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*43.8*		*"*	*50.0*		*87.6*	*80-120*			
LCS (EC71307-BS1)				Prepared & Analyzed: 03/13/07						
Benzene	0.0438	0.00100	mg/L	0.0500		87.6	80-120			
Toluene	0.0413	0.00100	"	0.0500		82.6	80-120			
Ethylbenzene	0.0422	0.00100	"	0.0500		84.4	80-120			
Xylene (p/m)	0.0843	0.00100	"	0.100		84.3	80-120			
Xylene (o)	0.0406	0.00100	"	0.0500		81.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*42.5*		*ug/l*	*50.0*		*85.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*47.6*		*"*	*50.0*		*95.2*	*80-120*			
Calibration Check (EC71307-CCV1)				Prepared: 03/13/07		Analyzed: 03/14/07				
Benzene	0.0450		mg/L	0.0500		90.0	80-120			
Toluene	0.0414		"	0.0500		82.8	80-120			
Ethylbenzene	0.0401		"	0.0500		80.2	80-120			
Xylene (p/m)	0.0802		"	0.100		80.2	80-120			
Xylene (o)	0.0401		"	0.0500		80.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.5*		*ug/l*	*50.0*		*83.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*42.2*		*"*	*50.0*		*84.4*	*80-120*			
Matrix Spike (EC71307-MS1)		Source: 7C09031-03		Prepared: 03/13/07		Analyzed: 03/14/07				
Benzene	0.0423	0.00100	mg/L	0.0500	ND	84.6	80-120			
Toluene	0.0408	0.00100	"	0.0500	ND	81.6	80-120			
Ethylbenzene	0.0402	0.00100	"	0.0500	ND	80.4	80-120			
Xylene (p/m)	0.0809	0.00100	"	0.100	ND	80.9	80-120			
Xylene (o)	0.0401	0.00100	"	0.0500	ND	80.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*44.0*		*ug/l*	*50.0*		*88.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*47.5*		*"*	*50.0*		*95.0*	*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 EC71307 - EPA 5030C (GC)										
Matrix Spike Dup (EC71307-MSD1)		**Source: 7C09031-03**		Prepared: 03/13/07		Analyzed: 03/14/07				
Benzene	0.0421	0.00100	mg/L	0.0500	ND	84.2	80-120	0.474	20	
Toluene	0.0411	0.00100	"	0.0500	ND	82.2	80-120	0.733	20	
Ethylbenzene	0.0411	0.00100	"	0.0500	ND	82.2	80-120	2.21	20	
Xylene (p/m)	0.0815	0.00100	"	0.100	ND	81.5	80-120	0.739	20	
Xylene (o)	0.0403	0.00100	"	0.0500	ND	80.6	80-120	0.498	20	
Surrogate: a,a,a-Trifluorotoluene	*42.9*		*ug/l*	*50.0*		*85.8*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*43.0*		"	*50.0*		*86.0*	*80-120*			

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

Project: EME Jct. E-5
Project Number: None Given
Project Manager: Kristin Farris-Pope

Fax: (505) 397-1471

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC71304 - General Preparation (WetChem)										
Blank (EC71304-BLK1)				Prepared & Analyzed: 03/13/07						
Total Alkalinity	2.00	2.00	mg/L							
LCS (EC71304-BS1)				Prepared & Analyzed: 03/13/07						
Bicarbonate Alkalinity	174	2.00	mg/L	200		87.0	85-115			
Duplicate (EC71304-DUP1)		Source: 7C09025-01		Prepared & Analyzed: 03/13/07						
Total Alkalinity	328	2.00	mg/L		336			2.41	20	
Reference (EC71304-SRM1)				Prepared & Analyzed: 03/13/07						
Total Alkalinity	246		mg/L	250		98.4	90-110			
Batch EC71610 - General Preparation (WetChem)										
Blank (EC71610-BLK1)				Prepared: 03/12/07 Analyzed: 03/13/07						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EC71610-DUP1)		Source: 7C09022-01		Prepared: 03/12/07 Analyzed: 03/13/07						
Total Dissolved Solids	1690	10.0	mg/L		1550			8.64	20	
Duplicate (EC71610-DUP2)		Source: 7C09026-02		Prepared: 03/12/07 Analyzed: 03/13/07						
Total Dissolved Solids	11500	10.0	mg/L		10700			7.21	20	
Batch EC71615 - General Preparation (WetChem)										
Blank (EC71615-BLK1)				Prepared & Analyzed: 03/14/07						
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC71615 - General Preparation (WetChem)										
LCS (EC71615-BS1)				Prepared & Analyzed: 03/14/07						
Sulfate	9.74	0.500	mg/L	10.0		97.4	80-120			
Chloride	9.19	0.500	"	10.0		91.9	80-120			
Calibration Check (EC71615-CCV1)				Prepared & Analyzed: 03/14/07						
Chloride	8.13		mg/L	10.0		81.3	80-120			
Sulfate	11.6		"	10.0		116	80-120			
Duplicate (EC71615-DUP1)	Source: 7C09022-01			Prepared & Analyzed: 03/14/07						
Sulfate	393	10.0	mg/L		397			1.01	20	
Chloride	326	10.0	"		328			0.612	20	
Duplicate (EC71615-DUP2)	Source: 7C09027-01			Prepared & Analyzed: 03/14/07						
Sulfate	89.6	12.5	mg/L		90.8			1.33	20	
Chloride	700	12.5	"		704			0.570	20	
Matrix Spike (EC71615-MS1)	Source: 7C09022-01			Prepared & Analyzed: 03/14/07						
Sulfate	621	10.0	mg/L	200	397	112	80-120			
Chloride	553	10.0	"	200	328	112	80-120			
Matrix Spike (EC71615-MS2)	Source: 7C09027-01			Prepared & Analyzed: 03/14/07						
Sulfate	313	12.5	mg/L	250	90.8	88.9	80-120			
Chloride	961	12.5	"	250	704	103	80-120			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EC72801 - General Preparation (Metals)										
Blank (EC72801-BLK1)				Prepared & Analyzed: 03/26/07						
Calcium	ND	0.200	mg/L							
Magnesium	ND	0.500	"							
Potassium	ND	0.500	"							
Sodium	ND	0.500	"							
LCS (EC72801-BS1)				Prepared & Analyzed: 03/26/07						
Calcium	3.55		mg/L	4.00		88.8	75-125			
Magnesium	3.96		"	4.00		99.0	75-125			
Potassium	3.75		"	4.00		93.8	75-125			
Sodium	2.31		"	2.00		116	75-125			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: _____ Date: 3/29/2007

Brent Barron, Laboratory Director/Corp. Technical Director
Celey D. Keene, Org. Tech Director
Raland K. Tuttle, Laboratory Consultant

James Mathis, QA/QC Officer
Jeanne Mc Murrey, Inorg. Tech Director

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com

Company Name: RICE Operating Company

Company Address: 122 W. Taylor Street

City/State/Zip: Hobbs, New Mexico 88240

Telephone No: (505) 393-9174

Fax No: (505) 397-1471

Sampler Signature: Rozanne Johnson (505)631-9310

e-mail: rozanne@valornet.com

Project Name: EME Junction E-5

Project #:

Project Loc: T20S R37E Sec5 E ~ Lea County New Mexico

PO #:

Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only)
ORDER #: 7C09027

Preservation & # of Containers: Ice, HNO_3, HCl (2) 40 ml glass vials, H_2SO_4, NaOH, $Na_2S_2O_3$, None (1) 1 Liter HDPE, Other (Specify)

Matrix: DW=Drinking Water SL=Sludge; GW = Groundwater S=Soil/Solid; NP=Non-Potable Specify Other

Analyze For: TCLP: / TOTAL: (X marked for BTEX 8021B/5030)

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Ice	HNO_3	HCl (2) 40 ml glass vials	H_2SO_4	NaOH	$Na_2S_2O_3$	None (1) 1 Liter HDPE	Other (Specify)	Matrix	TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles (BTEX-N 8260)	Semivolatiles	BTEX 8021B/5030	RCI	N.O.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Monitor Well #1			3/6/2007	14:05		3	X		2				1		GW			X	X					X			X				X

Special Instructions:
Please email to: kpope@riceswd.com jpurvis@riceswd.com matt@riceswd.com rozanne@valornet.com

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	3/9/07	6:30	James Johnson	3/9/07	6:31
Relinquished by: James Johnson	3/9/07	13:15	Received by:		
Relinquished by			Received by ELOT:	3/9/07	13:15

Laboratory Comments:
Sample Containers Intact? (Y) N
VOCs Free of Headspace? (Y) N
Labels on container(s) (Y) N
Custody seals on container(s) (Y) N
Custody seals on cooler(s) (Y) N
Sample Hand Delivered (Y) N
by Sampler/Client Rep. ? (Y) N
by Courier? UPS DHL FedEx Lone Star
Temperature Upon Receipt: 1.0 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice

Date/ Time: 3/9/07 1315

Lab ID # : 710902

Initials: DM

Sample Receipt Checklist

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

Variance Documentation

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

Regarding: _____

Corrective Action Taken:

Check all that Apply:

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

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME Jct. E-5

Project Number: None Given

Location: Lea County

Lab Order Number: 6B23003

Report Date: 03/06/06

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	03/06/06 13:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6B23003-01	Water	02/21/06 08:45	02/23/06 09:45

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	03/06/06 13:49

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6B23003-01) Water									
Benzene	ND	0.00100	mg/L	1	EB62306	02/23/06	02/24/06	EPA 8021B	
Toluene	**0.00473**	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00838**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00468**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*97.2 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*90.2 %*	*80-120*		"	"	"	"	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	03/06/06 13:49

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6B23003-01) Water									
Total Alkalinity	**450**	2.00	mg/L	1	EB62205	02/23/06	02/23/06	EPA 310.1M	
Chloride	**377**	10.0	"	20	EB62811	02/28/06	02/28/06	EPA 300.0	
Total Dissolved Solids	**1250**	5.00	"	1	EB62405	02/23/06	02/24/06	EPA 160.1	
Sulfate	**49.0**	10.0	"	20	EB62811	02/28/06	02/28/06	EPA 300.0	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	03/06/06 13:49

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6B23003-01) Water									
Calcium	**53.8**	0.100	mg/L	10	EC60207	03/02/06	03/02/06	EPA 6010B	
Magnesium	**53.7**	0.0100	"	"	"	"	"	"	
Potassium	**9.64**	0.500	"	"	"	"	"	"	
Sodium	**273**	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 EB62306 - EPA 5030C (GC)										
Blank (EB62306-BLK1)				Prepared & Analyzed: 02/23/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*33.3*		*ug/l*	*40.0*		*83.2*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*35.5*		*"*	*40.0*		*88.8*	*80-120*			
LCS (EB62306-BS1)				Prepared: 02/23/06 Analyzed: 02/27/06						
Benzene	0.0480	0.00100	mg/L	0.0500		96.0	80-120			
Toluene	0.0524	0.00100	"	0.0500		105	80-120			
Ethylbenzene	0.0564	0.00100	"	0.0500		113	80-120			
Xylene (p/m)	0.118	0.00100	"	0.100		118	80-120			
Xylene (o)	0.0577	0.00100	"	0.0500		115	80-120			
Surrogate: a,a,a-Trifluorotoluene	*40.5*		*ug/l*	*40.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*38.4*		*"*	*40.0*		*96.0*	*80-120*			
Calibration Check (EB62306-CCV1)				Prepared: 02/23/06 Analyzed: 02/27/06						
Benzene	47.3		ug/l	50.0		94.6	80-120			
Toluene	52.9		"	50.0		106	80-120			
Ethylbenzene	59.9		"	50.0		120	80-120			
Xylene (p/m)	120		"	100		120	80-120			
Xylene (o)	59.7		"	50.0		119	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.5*		*"*	*40.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*47.5*		*"*	*40.0*		*119*	*80-120*			
Matrix Spike (EB62306-MS1)	**Source: 6B23001-01**			Prepared: 02/23/06 Analyzed: 02/27/06						
Benzene	0.0418	0.00100	mg/L	0.0500	ND	83.6	80-120			
Toluene	0.0464	0.00100	"	0.0500	ND	92.8	80-120			
Ethylbenzene	0.0521	0.00100	"	0.0500	ND	104	80-120			
Xylene (p/m)	0.109	0.00100	"	0.100	ND	109	80-120			
Xylene (o)	0.0537	0.00100	"	0.0500	ND	107	80-120			
Surrogate: a,a,a-Trifluorotoluene	*38.4*		*ug/l*	*40.0*		*96.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*41.3*		*"*	*40.0*		*103*	*80-120*			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	03/06/06 13:49

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 EB62306 - EPA 5030C (GC)										
Matrix Spike Dup (EB62306-MSD1)	**Source: 6B23001-01**			Prepared: 02/23/06 Analyzed: 02/27/06						
Benzene	0.0475	0.00100	mg/L	0.0500	ND	95.0	80-120	12.8	20	
Toluene	0.0524	0.00100	"	0.0500	ND	105	80-120	12.3	20	
Ethylbenzene	0.0577	0.00100	"	0.0500	ND	115	80-120	10.0	20	
Xylene (p/m)	0.120	0.00100	"	0.100	ND	120	80-120	9.61	20	
Xylene (o)	0.0591	0.00100	"	0.0500	ND	118	80-120	9.78	20	
Surrogate: a,a,a-Trifluorotoluene	*40.3*		*ug/l*	*40.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*41.3*		*"*	*40.0*		*103*	*80-120*			

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

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EB62205 - General Preparation (WetChem)										
Blank (EB62205-BLK1)				Prepared & Analyzed: 02/23/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EB62205-BS1)				Prepared & Analyzed: 02/23/06						
Bicarbonate Alkalinity	207	2.00	mg/L	200		104	85-115			
Duplicate (EB62205-DUP1)	**Source: 6B16004-01**			Prepared & Analyzed: 02/23/06						
Total Alkalinity	273	2.00	mg/L		278			1.81	20	
Reference (EB62205-SRM1)				Prepared & Analyzed: 02/23/06						
Total Alkalinity	97.0		mg/L	100		97.0	90-110			
Batch EB62405 - General Preparation (WetChem)										
Blank (EB62405-BLK1)				Prepared: 02/23/06 Analyzed: 02/24/06						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EB62405-DUP1)	**Source: 6B17004-01**			Prepared: 02/23/06 Analyzed: 02/24/06						
Total Dissolved Solids	178	5.00	mg/L		178			0.00	5	
Batch EB62811 - General Preparation (WetChem)										
Blank (EB62811-BLK1)				Prepared & Analyzed: 02/28/06						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EB62811-BS1)				Prepared & Analyzed: 02/28/06						
Chloride	8.76	0.500	mg/L	10.0		87.6	80-120			
Sulfate	8.40	0.500	"	10.0		84.0	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 EB62811 - General Preparation (WetChem)										
Calibration Check (EB62811-CCV1)				Prepared & Analyzed: 02/28/06						
Sulfate	9.25		mg/L	10.0		92.5	80-120			
Chloride	9.36		"	10.0		93.6	80-120			
Duplicate (EB62811-DUP1)	**Source: 6B23001-01**			Prepared & Analyzed: 02/28/06						
Chloride	7740	100	mg/L		7510			3.02	20	
Sulfate	956	100	"		889			7.26	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 EC60207 - 6010B/No Digestion										
Blank (EC60207-BLK1)				Prepared & Analyzed: 03/02/06						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EC60207-CCV1)				Prepared & Analyzed: 03/02/06						
Calcium	2.15		mg/L	2.00		108	85-115			
Magnesium	2.20		"	2.00		110	85-115			
Potassium	1.72		"	2.00		86.0	85-115			
Sodium	1.87		"	2.00		93.5	85-115			
Duplicate (EC60207-DUP1)	**Source: 6B17004-01**			Prepared & Analyzed: 03/02/06						
Calcium	106	0.500	mg/L		102			3.85	20	
Magnesium	20.6	0.0100	"		22.2			7.48	20	
Potassium	15.4	0.500	"		15.8			2.56	20	
Sodium	91.5	0.500	"		88.3			3.56	20	

12600 West I-20 East - Odessa, Texas 79765 - (432) 563-1800 - Fax (432) 563-1713

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: 3/6/2006

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

Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope 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 Jct. E-5
Project #:
Project Loc: Lea County
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl (2) 40 ml glass vials	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None (1) 1 Liter HDPE	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP:	Analyze For: 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	RCI	N.C.R.M.	Total Dissolved Solids			RUSH TAT (Pre-Scheduled)	Standard TAT
20	Monitor Well #1	2/21/2006	8:45	3	X		2			1		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: ~~Containers~~ / Cooler
Temperature Upon Receipt: -2.5
Laboratory Comments: not frozen

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	6-23-06	6:00	James Johnson	2/23/06	6:01
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
James Johnson	2/23/06	9:45		2/23/06	9:45

Environmental Lab of Texas

Variance / Corrective Action Report – Sample Log-In

Client: Rice Dp.

Date/Time: 2/23/06 9:45

Order #: 6B23003

Initials: CK

Sample Receipt Checklist

Temperature of container/cooler?	Yes	No	-2.5 C
Shipping container/cooler in good condition?	Yes	No	
Custody Seals intact on shipping container/cooler?	Yes	No	Not present
Custody Seals intact on sample bottles?	Yes	No	Not present
Chain of custody present?	Yes	No	
Sample Instructions complete on Chain of Custody?	Yes	No	
Chain of Custody signed when relinquished and received?	Yes	No	
Chain of custody agrees with sample label(s)	Yes	No	
Container labels legible and intact?	Yes	No	
Sample Matrix and properties same as on chain of custody?	Yes	No	
Samples in proper container/bottle?	Yes	No	
Samples properly preserved?	Yes	No	
Sample bottles intact?	Yes	No	
Preservations documented on Chain of Custody?	Yes	No	
Containers documented on Chain of Custody?	Yes	No	
Sufficient sample amount for indicated test?	Yes	No	
All samples received within sufficient hold time?	Yes	No	
VOC samples have zero headspace?	Yes	No	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Date/Time: Contacted by:

Regarding:

Corrective Action Taken:

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME Jct. E-5

Project Number: None Given

Location: Lea County

Lab Order Number: 6E18015

Report Date: 05/25/06

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	*Reported:*
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6E18015-01	Water	05/17/06 08:50	05/18/06 12:00

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

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:14

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18015-01) Water									
Benzene	ND	0.00100	mg/L	1	EE62101	05/21/06	05/22/06	EPA 8021B	
Toluene	**0.00215**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**1 [0.000390]**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00309**	0.00100	"	"	"	"	"	"	
Xylene (o)	**0.00142**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*119 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.0 %*	*80-120*		"	"	"	"	

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

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:14

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18015-01) Water									
Total Alkalinity	**444**	2.00	mg/L	1	EE62220	05/22/06	05/22/06	EPA 310.1M	
Chloride	**412**	10.0	"	20	EE62205	05/22/06	05/22/06	EPA 300.0	
Total Dissolved Solids	**1290**	5.00	"	1	EE61919	05/18/06	05/18/06	EPA 160.1	
Sulfate	**50.6**	10.0	"	20	EE62205	05/22/06	05/22/06	EPA 300.0	

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

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:14

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6E18015-01) Water									
Calcium	**178**	0.500	mg/L	50	EE61926	05/19/06	05/19/06	EPA 6010B	
Magnesium	**42.4**	0.0100	"	10	"	"	"	"	
Potassium	**6.37**	0.500	"	"	"	"	"	"	
Sodium	**191**	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 EE62101 - EPA 5030C (GC)										
Blank (EE62101-BLK1)				Prepared & Analyzed: 05/21/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*42.9*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*32.2*		*"*	*40.0*		*80.5*	*80-120*			
LCS (EE62101-BS1)				Prepared & Analyzed: 05/21/06						
Benzene	0.0415	0.00100	mg/L	0.0500		83.0	80-120			
Toluene	0.0421	0.00100	"	0.0500		84.2	80-120			
Ethylbenzene	0.0463	0.00100	"	0.0500		92.6	80-120			
Xylene (p/m)	0.102	0.00100	"	0.100		102	80-120			
Xylene (o)	0.0504	0.00100	"	0.0500		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	*42.7*		*ug/l*	*40.0*		*107*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.2*		*"*	*40.0*		*90.5*	*80-120*			
Calibration Check (EE62101-CCV1)				Prepared & Analyzed: 05/21/06						
Benzene	44.3		ug/l	50.0		88.6	80-120			
Toluene	44.3		"	50.0		88.6	80-120			
Ethylbenzene	55.3		"	50.0		111	80-120			
Xylene (p/m)	99.1		"	100		99.1	80-120			
Xylene (o)	49.1		"	50.0		98.2	80-120			
Surrogate: a,a,a-Trifluorotoluene	*44.6*		*"*	*40.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*34.8*		*"*	*40.0*		*87.0*	*80-120*			
Matrix Spike (EE62101-MS1)	**Source: 6E17005-01**			Prepared: 05/21/06 Analyzed: 05/22/06						
Benzene	0.0444	0.00100	mg/L	0.0500	ND	88.8	80-120			
Toluene	0.0454	0.00100	"	0.0500	ND	90.8	80-120			
Ethylbenzene	0.0488	0.00100	"	0.0500	ND	97.6	80-120			
Xylene (p/m)	0.108	0.00100	"	0.100	ND	108	80-120			
Xylene (o)	0.0531	0.00100	"	0.0500	ND	106	80-120			
Surrogate: a,a,a-Trifluorotoluene	*45.5*		*ug/l*	*40.0*		*114*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*36.9*		*"*	*40.0*		*92.2*	*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 EE62101 - EPA 5030C (GC)										
Matrix Spike Dup (EE62101-MSD1)	**Source: 6E17005-01**			Prepared: 05/21/06 Analyzed: 05/22/06						
Benzene	0.0439	0.00100	mg/L	0.0500	ND	87.8	80-120	1.13	20	
Toluene	0.0447	0.00100	"	0.0500	ND	89.4	80-120	1.55	20	
Ethylbenzene	0.0481	0.00100	"	0.0500	ND	96.2	80-120	1.44	20	
Xylene (p/m)	0.107	0.00100	"	0.100	ND	107	80-120	0.930	20	
Xylene (o)	0.0521	0.00100	"	0.0500	ND	104	80-120	1.90	20	
Surrogate: a,a,a-Trifluorotoluene	*46.4*		*ug/l*	*40.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*33.4*		*"*	*40.0*		*83.5*	*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 EE61919 - Filtration Preparation										
Blank (EE61919-BLK1)				Prepared & Analyzed: 05/18/06						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE61919-DUP1)	Source: 6E18012-01			Prepared & Analyzed: 05/18/06						
Total Dissolved Solids	1420	5.00	mg/L		1470			3.46	5	
Batch EE62205 - General Preparation (WetChem)										
Blank (EE62205-BLK1)				Prepared & Analyzed: 05/22/06						
Sulfate	ND	0.500	mg/L							
Chloride	ND	0.500	"							
LCS (EE62205-BS1)				Prepared & Analyzed: 05/22/06						
Sulfate	8.20		mg/L	10.0		82.0	80-120			
Chloride	10.1		"	10.0		101	80-120			
Calibration Check (EE62205-CCV1)				Prepared & Analyzed: 05/22/06						
Chloride	10.1		mg/L	10.0		101	80-120			
Sulfate	9.63		"	10.0		96.3	80-120			
Duplicate (EE62205-DUP1)	Source: 6E18012-01			Prepared & Analyzed: 05/22/06						
Sulfate	307	10.0	mg/L		304			0.982	20	
Chloride	343	10.0	"		344			0.291	20	
Duplicate (EE62205-DUP2)	Source: 6E18015-01			Prepared & Analyzed: 05/22/06						
Chloride	415	10.0	mg/L		412			0.726	20	
Sulfate	50.3	10.0	"		50.6			0.595	20	

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 EE62205 - General Preparation (WetChem)										
Matrix Spike (EE62205-MS1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Chloride	565	10.0	mg/L	200	344	110	80-120			
Sulfate	465	10.0	"	200	304	80.5	80-120			
Matrix Spike (EE62205-MS2)	**Source: 6E18015-01**			Prepared & Analyzed: 05/22/06						
Chloride	654	10.0	mg/L	200	412	121	80-120			S-07
Sulfate	200	10.0	"	200	50.6	74.7	80-120			S-07
Batch EE62220 - General Preparation (WetChem)										
Blank (EE62220-BLK1)				Prepared & Analyzed: 05/22/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EE62220-BS1)				Prepared & Analyzed: 05/22/06						
Bicarbonate Alkalinity	214	2.00	mg/L	200		107	85-115			
Duplicate (EE62220-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/22/06						
Total Alkalinity	279	2.00	mg/L		280			0.358	20	
Reference (EE62220-SRM1)				Prepared & Analyzed: 05/22/06						
Total Alkalinity	96.0		mg/L	100		96.0	90-110			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:14

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 EE61926 - 6010B/No Digestion										
Blank (EE61926-BLK1)				Prepared & Analyzed: 05/19/06						
Calcium	ND	0.0100	mg/L							
Magnesium	ND	0.00100	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0100	"							
Calibration Check (EE61926-CCV1)				Prepared & Analyzed: 05/19/06						
Calcium	2.30		mg/L	2.00		115	85-115			
Magnesium	2.21		"	2.00		110	85-115			
Potassium	1.80		"	2.00		90.0	85-115			
Sodium	1.81		"	2.00		90.5	85-115			
Duplicate (EE61926-DUP1)	**Source: 6E18012-01**			Prepared & Analyzed: 05/19/06						
Calcium	111	0.500	mg/L		111			0.00	20	
Magnesium	58.3	0.0100	"		56.5			3.14	20	
Potassium	12.2	0.500	"		12.9			5.58	20	
Sodium	266	0.500	"		271			1.86	20	

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	05/25/06 16:14

Notes and Definitions

S-07	Recovery outside Laboratory historical or method prescribed limits.
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: 5/25/2006

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

Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

Project Name: EME Jct. E-5
Project #:
Project Loc: Lea County
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl (2) 40 ml glass vials	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None (1) 1 Liter HDPE	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP:	Analyze For: TOTAL:	RUSH TAT (Pre-Schedule)	Standard TAT
6E18015																TPH: 418.1 8015M 1005 1006	X		
01	Monitor Well #1	5/17/2006	8:50	3	X		2			1		X				Cations (Ca, Mg, Na, K)			X
																Anions (Cl, SO4, CO3, HCO3)			X
																SAR / ESP / CEC			
																Metals: As Ag Ba Cd Cr Pb Hg Se			
																Volatiles			
																Semivolatiles			
																BTEX 8021B/5030	X		X
																RCI			
																N.O.R.M.			
																Total Dissolved Solids			X

Special Instructions:

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

Sample Containers Intact? Y N
Labels on container? Y N
Custody Seals: Containers / Cooler
Temperature Upon Receipt: 1.0 °C No Frez

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	5-18-06	6:01	Hanna Johnson	5-18-06	6:02
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
Hanna Johnson	5/18/06	12:00	Kalonda Jo	5-18-06	1200

Laboratory Comments:

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

ient: Rice Operating Co.

ate/Time: 05-18-04 @ 12:00

rder #: 6E18015

itials: JMM

Sample Receipt Checklist

mperature of container/cooler?	(Yes)	No	1.0 C
ipping container/cooler in good condition?	(Yes)	No	
stody Seals intact on shipping container/cooler?	(Yes)	No	Not present
stody Seals intact on sample bottles?	(Yes)	No	Not present
ain of custody present?	(Yes)	No	
mple Instructions complete on Chain of Custody?	(Yes)	No	
ain of Custody signed when relinquished and received?	(Yes)	No	
ain of custody agrees with sample label(s)	(Yes)	No	
ntainer labels legible and intact?	(Yes)	No	
mple Matrix and properties same as on chain of custody?	(Yes)	No	
mples in proper container/bottle?	(Yes)	No	
mples properly preserved?	(Yes)	No	
mple bottles intact?	(Yes)	No	
eservations documented on Chain of Custody?	(Yes)	No	
ntainers documented on Chain of Custody?	(Yes)	No	
fficient sample amount for indicated test?	(Yes)	No	
samples received within sufficient hold time?	(Yes)	No	
OC samples have zero headspace?	(Yes)	No	Not Applicable

ther observations:

Variance Documentation:

ontact Person: - Date/Time: Contacted by:

egarding:

orrective Action Taken:

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME Jct. E-5

Project Number: None Given

Location: T20S-R37E-Sec5E, Lea Co., NM

Lab Order Number: 6H25013

Report Date: 09/05/06

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6H25013-01	Water	08/24/06 08:00	08-25-2006 15:22

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

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H25013-01) Water									
Benzene	ND	0.00100	mg/L	1	EH62909	08/29/06	08/29/06	EPA 8021B	
Toluene	**0.00139**	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00155**	0.00100	"	"	"	"	"	"	
Xylene (o)	**J [0.000656]**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*116 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*	*80-120*		"	"	"	"	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H25013-01) Water									
Total Alkalinity	**456**	4.00	mg/L	2	EH63106	08/31/06	08/31/06	EPA 310.1M	
Chloride	**418**	10.0	"	20	EH63019	08/28/06	08/28/06	EPA 300.0	
Total Dissolved Solids	**1400**	10.0	"	1	EH62916	08/25/06	08/29/06	EPA 160.1	
Sulfate	**40.9**	10.0	"	20	EH63019	08/28/06	08/28/06	EPA 300.0	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6H25013-01) Water									
Calcium	**143**	4.05	mg/L	50	EH62802	08/28/06	08/28/06	EPA 6010B	
Magnesium	**39.1**	0.360	"	10	"	"	"	"	
Potassium	**8.08**	0.600	"	"	"	"	"	"	
Sodium	**243**	2.15	"	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 EH62909 - EPA 5030C (GC)										
Blank (EH62909-BLK1)				Prepared & Analyzed: 08/29/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: α,α,α-Trifluorotoluene	*42.1*		*ug/l*	*40.0*		*105*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*32.7*		"	*40.0*		*81.8*	*80-120*			
LCS (EH62909-BS1)				Prepared & Analyzed: 08/29/06						
Benzene	0.0499	0.00100	mg/L	0.0500		99.8	80-120			
Toluene	0.0528	0.00100	"	0.0500		106	80-120			
Ethylbenzene	0.0490	0.00100	"	0.0500		98.0	80-120			
Xylene (p/m)	0.113	0.00100	"	0.100		113	80-120			
Xylene (o)	0.0530	0.00100	"	0.0500		106	80-120			
Surrogate: α,α,α-Trifluorotoluene	*43.9*		*ug/l*	*40.0*		*110*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.1*		"	*40.0*		*115*	*80-120*			
Calibration Check (EH62909-CCV1)				Prepared & Analyzed: 08/29/06						
Benzene	52.7		ug/l	50.0		105	80-120			
Toluene	56.2		"	50.0		112	80-120			
Ethylbenzene	55.8		"	50.0		112	80-120			
Xylene (p/m)	115		"	100		115	80-120			
Xylene (o)	57.3		"	50.0		115	80-120			
Surrogate: α,α,α-Trifluorotoluene	*44.7*		"	*40.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*46.4*		"	*40.0*		*116*	*80-120*			
Matrix Spike (EH62909-MS1)	**Source: 6H25012-04**			Prepared: 08/29/06 Analyzed: 08/30/06						
Benzene	0.0489	0.00100	mg/L	0.0500	ND	97.8	80-120			
Toluene	0.0506	0.00100	"	0.0500	ND	101	80-120			
Ethylbenzene	0.0510	0.00100	"	0.0500	ND	102	80-120			
Xylene (p/m)	0.117	0.00100	"	0.100	ND	117	80-120			
Xylene (o)	0.0538	0.00100	"	0.0500	ND	108	80-120			
Surrogate: α,α,α-Trifluorotoluene	*45.7*		*ug/l*	*40.0*		*114*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*47.4*		"	*40.0*		*118*	*80-120*			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH62909 - EPA 5030C (GC)										
Matrix Spike Dup (EH62909-MSD1)	**Source: 6H25012-04**			Prepared: 08/29/06 Analyzed: 08/30/06						
Benzene	0.0472	0.00100	mg/L	0.0500	ND	94.4	80-120	3.54	20	
Toluene	0.0489	0.00100	"	0.0500	ND	97.8	80-120	3.22	20	
Ethylbenzene	0.0471	0.00100	"	0.0500	ND	94.2	80-120	7.95	20	
Xylene (p/m)	0.107	0.00100	"	0.100	ND	107	80-120	8.93	20	
Xylene (o)	0.0500	0.00100	"	0.0500	ND	100	80-120	7.69	20	
Surrogate: a,a,a-Trifluorotoluene	*41.2*		*ug/l*	*40.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*44.1*		*"*	*40.0*		*110*	*80-120*			

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH62916 - Filtration Preparation										
Blank (EH62916-BLK1)				Prepared: 08/28/06 Analyzed: 08/29/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EH62916-DUP1)		Source: 6H25010-01		Prepared: 08/28/06 Analyzed: 08/29/06						
Total Dissolved Solids	2480	10.0	mg/L		2580			3.95	5	
Duplicate (EH62916-DUP2)		Source: 6H25013-01		Prepared: 08/28/06 Analyzed: 08/29/06						
Total Dissolved Solids	1350	10.0	mg/L		1400			3.64	5	
Batch EH63019 - General Preparation (WetChem)										
Blank (EH63019-BLK1)				Prepared & Analyzed: 08/28/06						
Chloride	ND	0.500	mg/L							
Sulfate	ND	0.500	"							
LCS (EH63019-BS1)				Prepared & Analyzed: 08/28/06						
Chloride	10.2	0.500	mg/L	10.0		102	80-120			
Sulfate	10.1	0.500	"	10.0		101	80-120			
Calibration Check (EH63019-CCV1)				Prepared & Analyzed: 08/28/06						
Sulfate	12.0		mg/L	10.0		120	80-120			
Chloride	9.87		"	10.0		98.7	80-120			
Duplicate (EH63019-DUP1)		Source: 6H24003-01		Prepared & Analyzed: 08/28/06						
Sulfate	225	5.00	mg/L		227			0.885	20	
Chloride	94.7	5.00	"		102			7.42	20	
Duplicate (EH63019-DUP2)		Source: 6H25013-01		Prepared & Analyzed: 08/28/06						
Sulfate	40.5	10.0	mg/L		40.9			0.983	20	
Chloride	420	10.0	"		418			0.477	20	

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General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH63019 - General Preparation (WetChem)										
Matrix Spike (EH63019-MS1)	**Source: 6H24003-01**			Prepared & Analyzed: 08/28/06						
Chloride	204	5.00	mg/L	100	102	102	80-120			
Sulfate	338	5.00	"	100	227	111	75-125			
Matrix Spike (EH63019-MS2)	**Source: 6H25013-01**			Prepared & Analyzed: 08/28/06						
Sulfate	239	10.0	mg/L	200	40.9	99.0	75-125			
Chloride	645	10.0	"	200	418	114	80-120			
Batch EH63106 - General Preparation (WetChem)										
Blank (EH63106-BLK1)				Prepared & Analyzed: 08/31/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EH63106-BS1)				Prepared & Analyzed: 08/31/06						
Bicarbonate Alkalinity	190	2.00	mg/L	200		95.0	85-115			
Duplicate (EH63106-DUP1)	**Source: 6H24003-01**			Prepared & Analyzed: 08/31/06						
Total Alkalinity	150	2.00	mg/L		156			3.92	20	
Reference (EH63106-SRM1)				Prepared & Analyzed: 08/31/06						
Total Alkalinity	254		mg/L	250		102	90-110			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH62802 - 6010B/No Digestion										
Blank (EH62802-BLK1)				Prepared & Analyzed: 08/28/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EH62802-CCV1)				Prepared & Analyzed: 08/28/06						
Calcium	1.97		mg/L	2.00		98.5	85-115			
Magnesium	2.13		"	2.00		106	85-115			
Potassium	1.74		"	2.00		87.0	85-115			
Sodium	1.84		"	2.00		92.0	85-115			
Duplicate (EH62802-DUP1)		**Source: 6H25010-01**		Prepared & Analyzed: 08/28/06						
Calcium	267	4.05	mg/L		251			6.18	20	
Magnesium	81.9	1.80	"		77.6			5.39	20	
Potassium	7.20	0.600	"		7.76			7.49	20	
Sodium	396	2.15	"		409			3.23	20	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 9/5/2006

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

Environmental Lab of Texas

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

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris Pope kpope@riceswd.com
Company Name: RICE Operating Company
Company Address: 122 W. Taylor Street
City/State/Zip: Hobbs, New Mexico 88240
Telephone No: (505) 393-9174 Fax No: (505) 397-1471
Sampler Signature: Rozanne Johnson (505) 631-9310
Email: rozanne@valornet.com

Project Name: EME Junction E-5
Project Number:
Project Loc: T20S-R37E-Sec5E, Lea County NM
PO Number:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl (2) 40 ml glass vials	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None (1) 1 Liter HDPE	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	TCLP: Cations (Ca, Mg, Na, K)	TOTAL: Anions (Cl, SO4, CO3, HCO3)	TOTAL: SAR / ESP / CEC	TOTAL: Metals: As Ag Ba Cd Cr Pb Hg Se	TOTAL: Volatiles	TOTAL: Semivolatiles	TOTAL: BTEX 8021B/5030	TOTAL: RCI	TOTAL: N.O.R.M.	TOTAL: Total Dissolved Solids	RUSH TAT (Pre-Schedule)	Standard TAT
61+2503 -01	Monitor Well #1	8/24/2006	8:00	3	X		2			1		X					X	X					X			X		X

Special Instructions:

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

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	8-25-06	13:10	James Johnson	8-25-06	13:11
James Johnson	8-25-06	15:22	Roland K 20	8-25-06	15:22

Sample Containers Intact? Y N
Labels on container? Y N
Custody Seals: Containers / Cooler
Temperature Upon Receipt: 1.0°C
Laboratory Comments: not frozen

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Rice Operating

Date/ Time: 08-25-06 @ 1522

Lab ID # : 6H25013

Initials: JMM

Sample Receipt Checklist

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

Variance Documentation

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

Regarding: _____

Corrective Action Taken:

Check all that Apply:

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

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: EME Jct. E-5

Project Number: None Given

Location: T20S R37E Sec.5 E- Lea County, NM

Lab Order Number: 6K15003

Report Date: 12/01/06

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6K15003-01	Water	11/10/06 11:30	11-15-2006 08:10

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K15003-01) Water									
Benzene	**0.0132**	0.00100	mg/L	1	EK61614	11/16/06	11/19/06	EPA 8021B	
Toluene	**0.00108**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00331**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**1 [0.000779]**	0.00100	"	"	"	"	"	"	
Xylene (o)	**ND**	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*112 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*87.0 %*	*80-120*		"	"	"	"	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K15003-01) Water									
Total Alkalinity	**494**	2.00	mg/L	1	EK61605	11/17/06	11/17/06	EPA 310.1M	
Chloride	**625**	12.5	"	25	EK61507	11/15/06	11/15/06	EPA 300.0	
Total Dissolved Solids	**1660**	10.0	"	1	EK61611	11/15/06	11/16/06	EPA 160.1	
Sulfate	**53.2**	12.5	"	25	EK61507	11/15/06	11/15/06	EPA 300.0	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K15003-01) Water									
Calcium	**182**	4.05	mg/L	50	EK61703	11/17/06	11/17/06	EPA 6010B	
Magnesium	**56.7**	0.360	"	10	"	"	"	"	
Potassium	**14.7**	0.600	"	"	"	"	"	"	
Sodium	**447**	2.15	"	50	"	"	"	"	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61614 - EPA 5030C (GC)										
Blank (EK61614-BLK1)				Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*47.8*		*ug/l*	*40.0*		*120*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*40.5*		"	*40.0*		*101*	*80-120*			
LCS (EK61614-BS1)				Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	0.0594	0.00100	mg/L	0.0500		119	80-120			
Toluene	0.0562	0.00100	"	0.0500		112	80-120			
Ethylbenzene	0.0458	0.00100	"	0.0500		91.6	80-120			
Xylene (p/m)	0.0949	0.00100	"	0.100		94.9	80-120			
Xylene (o)	0.0499	0.00100	"	0.0500		99.8	80-120			
Surrogate: a,a,a-Trifluorotoluene	*46.1*		*ug/l*	*40.0*		*115*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*44.2*		"	*40.0*		*110*	*80-120*			
Calibration Check (EK61614-CCV1)				Prepared: 11/16/06 Analyzed: 11/20/06						
Benzene	54.7		ug/l	50.0		109	80-120			
Toluene	48.5		"	50.0		97.0	80-120			
Ethylbenzene	42.1		"	50.0		84.2	80-120			
Xylene (p/m)	83.0		"	100		83.0	80-120			
Xylene (o)	43.3		"	50.0		86.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.4*		"	*40.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*37.0*		"	*40.0*		*92.5*	*80-120*			
Matrix Spike (EK61614-MS1)		**Source: 6K13007-01**		Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	0.0551	0.00100	mg/L	0.0500		110	80-120			
Toluene	0.0498	0.00100	"	0.0500		99.6	80-120			
Ethylbenzene	0.0401	0.00100	"	0.0500		80.2	80-120			
Xylene (p/m)	0.0844	0.00100	"	0.100		84.4	80-120			
Xylene (o)	0.0442	0.00100	"	0.0500		88.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.1*		*ug/l*	*40.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*42.4*		"	*40.0*		*106*	*80-120*			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61614 - EPA 5030C (GC)										
Matrix Spike Dup (EK61614-MSD1)	**Source: 6K13007-01**			Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	0.0580	0.00100	mg/L	0.0500		116	80-120	5.31	20	
Toluene	0.0550	0.00100	"	0.0500		110	80-120	9.92	20	
Ethylbenzene	0.0421	0.00100	"	0.0500		84.2	80-120	4.87	20	
Xylene (p/m)	0.0909	0.00100	"	0.100		90.9	80-120	7.42	20	
Xylene (o)	0.0455	0.00100	"	0.0500		91.0	80-120	2.90	20	
Surrogate: a,a,a-Trifluorotoluene	*46.3*		*ug/l*	*40.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*42.0*		"	*40.0*		*105*	*80-120*			

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61507 - General Preparation (WetChem)										
Blank (EK61507-BLK1)				Prepared & Analyzed: 11/15/06						
Sulfate	0.579	0.500	mg/L							B
Chloride	ND	0.500	"							
LCS (EK61507-BS1)				Prepared & Analyzed: 11/15/06						
Sulfate	10.9	0.500	mg/L	10.0		109	80-120			
Chloride	11.1	0.500	"	10.0		111	80-120			
Calibration Check (EK61507-CCV1)				Prepared & Analyzed: 11/15/06						
Chloride	10.7		mg/L	10.0		107	80-120			
Sulfate	12.0		"	10.0		120	80-120			
Duplicate (EK61507-DUP1)		**Source: 6K15004-01**		Prepared & Analyzed: 11/15/06						
Sulfate	79.9	5.00	mg/L		79.8			0.125	20	
Chloride	232	5.00	"		234			0.858	20	
Duplicate (EK61507-DUP2)		**Source: 6K15006-07**		Prepared & Analyzed: 11/15/06						
Sulfate	78.2	5.00	mg/L		78.1			0.128	20	
Chloride	37.9	5.00	"		43.7			14.2	20	
Matrix Spike (EK61507-MS1)		**Source: 6K15004-01**		Prepared & Analyzed: 11/15/06						
Chloride	345	5.00	mg/L	100	234	111	80-120			
Sulfate	175	5.00	"	100	79.8	95.2	80-120			
Matrix Spike (EK61507-MS2)		**Source: 6K15006-07**		Prepared & Analyzed: 11/15/06						
Sulfate	175	5.00	mg/L	100	78.1	96.9	80-120			
Chloride	142	5.00	"	100	43.7	98.3	80-120			

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122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61605 - General Preparation (WetChem)										
Blank (EK61605-BLK1)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	ND	2.00	mg/L							
Blank (EK61605-BLK2)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EK61605-BS1)				Prepared & Analyzed: 11/17/06						
Bicarbonate Alkalinity	172		mg/L	200		86.0	85-115			
LCS (EK61605-BS2)				Prepared & Analyzed: 11/17/06						
Bicarbonate Alkalinity	172		mg/L	200		86.0	85-115			
Hydroxide Alkalinity	0.00	0.100	"				85-115			
Duplicate (EK61605-DUP1)	**Source: 6K15001-01**			Prepared & Analyzed: 11/17/06						
Total Alkalinity	238	2.00	mg/L		238			0.00	20	
Carbonate Alkalinity	0.00	0.100	"		0.00				20	
Bicarbonate Alkalinity	0.00	2.00	"		0.00				20	
Hydroxide Alkalinity	0.00	0.100	"		0.00				20	
Duplicate (EK61605-DUP2)	**Source: 6K16005-01**			Prepared & Analyzed: 11/17/06						
Total Alkalinity	296	2.00	mg/L		300			1.34	20	
Carbonate Alkalinity	0.00	0.100	"		0.00				20	
Bicarbonate Alkalinity	0.00	2.00	"		300				20	
Hydroxide Alkalinity	0.00	0.100	"		0.00				20	
Reference (EK61605-SRM1)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	238		mg/L	250		95.2	90-110			
Reference (EK61605-SRM2)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	238		mg/L	250		95.2	90-110			

Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61611 - Filtration Preparation										
Blank (EK61611-BLK1)				Prepared: 11/15/06 Analyzed: 11/16/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EK61611-DUP1)		**Source: 6K15001-01**		Prepared: 11/15/06 Analyzed: 11/16/06						
Total Dissolved Solids	14000	10.0	mg/L		13200			5.88	5	QR-03
Duplicate (EK61611-DUP2)		**Source: 6K15005-03**		Prepared: 11/15/06 Analyzed: 11/16/06						
Total Dissolved Solids	586	10.0	mg/L		622			5.96	5	QR-03

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61703 - 6010B/No Digestion										
Blank (EK61703-BLK1)				Prepared & Analyzed: 11/17/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EK61703-CCV1)				Prepared & Analyzed: 11/17/06						
Calcium	2.17		mg/L	2.00		108	85-115			
Magnesium	2.21		"	2.00		110	85-115			
Potassium	1.74		"	2.00		87.0	85-115			
Sodium	1.88		"	2.00		94.0	85-115			
Duplicate (EK61703-DUP1)	**Source: 6K15001-01**			Prepared & Analyzed: 11/17/06						
Calcium	1300	40.5	mg/L		1340			3.03	20	
Magnesium	461	3.60	"		461			0.00	20	
Potassium	55.7	0.600	"		53.2			4.59	20	
Sodium	2890	21.5	"		3100			7.01	20	

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Rice Operating Co.	Project: EME Jct. E-5	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
B	Analyte is found in the associated blank as well as in the sample (CLP B-flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 12/1/2006

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

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com

Company Name: RICE Operating Company

Company Address: 122 W. Taylor Street

City/State/Zip: Hobbs, New Mexico 88240

Telephone No: (505) 393-9174 Fax No: (505) 397-1471

Sampler Signature: Rozanne Johnson (505)631-9310 e-mail: rozanne@valornet.com

Project Name: EME Junction E-5

Project #:

Project Loc: T20S R37E Sec5 E ~ Lea County New Mexico

PO #:

Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only)
ORDER #: 610615003

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total # of Containers	Preservation & # of Containers: Ice	HNO_3	HCl (2) 40 ml glass vials	H_2SO_4	NaOH	$Na_2S_2O_3$	None (1) 1 Liter HDPE	Other (Specify)	Matrix: DW-Drinking Water SL-Sludge	GW - Groundwater S-Soil/Solid	NP-Non-Potable Specify Other	Analyze For: TPH: 418.1 8015M 8015B	TPH: TX 1005 TX 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles (BTEX-N 8260)	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
																		TCLP:								X					
																		TOTAL:													
-01	Monitor Well #1			11/10/2006	11:30		3	X		2				1			GW			X	X					X			X		X

Special Instructions:
Please email to : kpope@riceswd.com mfranks@riceswd.com rozanne@valornet.com

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	11/14/06	20:00	James Johnson	11/14/06	20:01
Relinquished by: James Johnson	11/15/06	8:10	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
				11/16/06	8:10

Laboratory Comments:

Sample Containers Intact?	X	N
VOCs Free of Headspace?		N
Labels on container(s)		N
Custody seals on container(s)		N
Custody seals on cooler(s)		N
Sample Hand Delivered by Sampler/Client Rep.?		N
by Courier? UPS DHL FedEx Lone Star		

Temperature Upon Receipt: 0.5 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

lient: Rice Op.

ate/ Time: 11/15/06 8:10

ab ID # : 6K15003

itials: CK

Sample Receipt Checklist

				Client Initials
Temperature of container/ cooler?	Yes	No	0.5 °C	
Shipping container in good condition?	~~Yes~~	No		
Custody Seals intact on shipping container/ cooler?	~~Yes~~	No	Not Present	
Custody Seals intact on sample bottles/ container?	~~Yes~~	No	Not Present	
Chain of Custody present?	~~Yes~~	No		
Sample instructions complete of Chain of Custody?	~~Yes~~	No		
Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
Chain of Custody agrees with sample label(s)?	~~Yes~~	No	ID written on Cont./ Lid	
Container label(s) legible and intact?	~~Yes~~	No	Not Applicable	
Sample matrix/ properties agree with Chain of Custody?	~~Yes~~	No		
Containers supplied by ELOT?	~~Yes~~	No		
Samples in proper container/ bottle?	~~Yes~~	No	See Below	
Samples properly preserved?	~~Yes~~	No	See Below	
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(s)?	~~Yes~~	No	See Below	
All samples received within sufficient hold time?	~~Yes~~	No	See Below	
Subcontract of sample(s)?	Yes	No	Not Applicable	
VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

tact: _____ Contacted by: _____ Date/ Time: _____

arding: _____

_____

ective Action Taken:

_____

_____

_____

k all that Apply:

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

Appendix C

Previous Site Reports &

Marathon Reports

R.T. Hicks Consultants, Ltd.

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

March 19, 2004

Bertha Barber Tank Battery
2003 Annual Report

Prepared for:

Marathon Oil Company
Southern Business Unit
PO Box 3487
Houston, Texas 77253-3487

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

1.0 EXECUTIVE SUMMARY

Localized ground water quality impairment was caused by past releases to disposal pits associated with the former Bertha Barber Tank Battery. Periodic releases saturated the sediments above the water table and facilitated transport of produced water (brine) and entrained hydrocarbons to the underlying alluvial aquifer. Under current conditions, measurable transport of constituents from the soil and unsaturated zone into ground water is highly unlikely.

Separate phase hydrocarbons (PSH) are entrained in pore spaces of the capillary fringe and in the saturated zone at the Bertha Barber site. As the water table rises and falls, these entrained hydrocarbons can cause a sheen on ground water or a relatively thin layer of PSH in several monitoring wells. The PSH within the matrix of the saturated zone and capillary fringe have not caused a significant area of the aquifer to display dissolved hydrocarbons above WQCC Standards. The zone of the aquifer affected by dissolved phase hydrocarbons (currently about 500 feet by 400 feet) is decreasing in extent and magnitude over time. Natural restoration will cause ground water to meet WQCC Standards for hydrocarbons in 2-5 years. The sheen or thin layer of PSH, which might be observed in ground water monitoring wells for decades, represents no material threat to human health or the environment.
A zone of saline ground water exists below the Bertha Barber site. Beneath the former evaporation pit, a layer of dense brine might exist on the clay-rich red beds (Dockum Group) which form the base of the alluvial aquifer. Natural restoration is mitigating the effect of the saline water and ground water should be at background concentrations for TDS and chloride within ten years. The zone of high TDS and chloride is about 1200 feet by 200 feet and is not expanding.

A Dynergy pipeline release has caused localized impairment of ground water quality up gradient from the Bertha Barber site.

Removal of surface soils and near-surface material that exhibits hydrocarbons or salt will cause no acceleration of the natural restoration of ground water that is on-going at the site. Simulation modeling using HYDRUS-1D would show that the flux of these constituents from the unsaturated zone to ground water is not large enough to cause a measurable difference in ground water quality, especially where natural surface restoration has re-established vegetation. In fact, removal of surface soil may cause more environmental damage without creating a commensurate environmental benefit.

We recommend plugging and abandonment of several monitoring wells that provide no material benefit to the monitoring of the natural restoration of ground water. We recommend release of certain other wells to Dynergy to assist them with their own environmental program associated with the past pipeline release. We recommend continued monitoring of natural restoration of ground water at the site because a mechanical ground water remedy is not warranted.

We recommend that Marathon negotiate a suitable surface remedy with the land owner and that Marathon withdraw the soil restoration plan which was included in the Stage II Abatement Plan submitted to NMOCD. Restoration of the ground surface is clearly an issue that involves the surface owner and Marathon Oil Company. Because HYDRUS-1D simulations would show that the constituents released to the vadose zone pose no threat to ground water, inclusion of a soil restoration plan in the Abatement Plan is outside the scope of Rule 19.

2.0 INTRODUCTION

On behalf of Marathon Oil Company, R.T. Hicks Consultants, Ltd. (Hicks Consultants) prepared this annual report that summarizes the results of required monitoring conducted during 2003. Plate 1 shows the location of the site and nearby monitoring wells, which are currently being placed into a GIS mapping system at the Petroleum Research and Recovery Center in Socorro. The Bertha Barber site is situated in Section 5, Township 20 South, Range 37 East (latitude 32° 36' 37.32" longitude 103° 17' 34.47"). Quarterly groundwater monitoring was conducted on March 5th, June 16th, September 24th, and December 22nd, 2003.

3.0 HYDROGEOLOGIC SETTING

Sixteen monitor wells are currently located at the former Bertha Barber Tank Battery facility (Plate 2). Three monitor wells (MW-14, MW-15 and MW-16) were installed in December 2002 and thirteen monitor wells were installed during the course of a site-wide assessment performed in 1998-1999 by ARCADIS (formerly AG&M). Boring logs from the wells indicate that the site is underlain by sand of varying colors, grain sizes and sorting to a depth of at least 50 feet. At most locations, the sand is mixed with some gravel, the presence of which tends to increase with depth. In the northern and eastern portions of the site, the surficial sands and gravel are underlain by caliche at depths ranging from 4 to 9 feet below land surface. The work of Nicholson and Clebsch (1961) and information from nearby water well logs show that the top of the Dockum Group is at an elevation of about 3,490 above sea level (about 70 feet below land surface) The red clay that characterizes the Dockum Group is an aquitard and establishes the base of the alluvial aquifer.

Ground water at the site is generally found between 35 and 40 feet below ground level. Plate 3 shows that the ground water in the alluvium and adjacent Ogallala aquifer flows southwest. In the area of Bertha Barber, the water table is nearly flat. Ground water flows southeast at a gradient of 0.003. The elevation of the water table at the Bertha Barber site suggests that the saturated thickness of the alluvial aquifer is about 35 feet.

4.0 FIELD METHODS

BBC International Inc. conducted quarterly ground water monitoring events on March 5th, June 16th, September 24th, and December 22nd, 2003. During each monitoring event, a site-wide gauging event was completed prior to sampling.

We understand that three wetted casing volumes of water were removed from each well prior to sample collection. The fluid was removed from each well using a submersible pump and dedicated tubing or a dedicated disposable bailer. In some cases, the wells were pumped (or bailed) dry and allowed to recover prior to sampling. When a submersible pump was utilized, it was decontaminated by washing and pumping with water and laboratory-grade detergent. The washing was followed by a clean water rinse. Only one sample was collected from any monitor well that contained measurable amounts of PSH, MW-1 showed a negligible amount of product during 2003. Because MW-10 measures the effects of the Dynergy pipeline release, BBC International did not sample this well.

During each quarterly monitoring event, ground water samples were collected and analyzed for BTEX (benzene, toluene, ethylbenzene and total xylene) using EPA Method 8021B. During the September 24th sampling event, ground water samples were collected and analyzed for chloride using EPA Method 325.2. During the September 24th event, ground water samples were also collected and analyzed for total dissolved solids (TDS) using EPA Method 160.1, three dissolved metals (iron, manganese and barium) using EPA Method 6010B, and polynuclear aromatic hydrocarbons (PAHs) using EPA Method 8310. In addition to the above samples, one rinsate sample (field blank) and one replicate sample were submitted during each sampling event, and a trip blank sample was included in each cooler utilized to transport samples for BTEX analysis to the laboratory.

Fluid levels were gauged in all monitor wells during each quarterly ground water monitoring event.

5.0 RESULTS OF 2003 FIELD PROGRAMS

Table 1 contains historical fluid level data for all monitor wells at the site. Plate 4 is a water table elevation map for the Bertha Barber wells for June 16, 2003. Our interpretation is consistent with the regional data, showing a southeast gradient of 0.0004.

In 2003, BBC International observed phase-separated hydrocarbons in MW-1. As shown in Figure 1, PSH in MW-1 is not uncommon. No other wells exhibited PSH in 2003. As Table 1 shows, before 2003 PSH occurred more than once in wells MW-2, MW-4, MW-5, MW-7, MW-9 and MW-10. Generally, the PSH thickness in these other wells was less than 0.01 foot from 2001-2003.

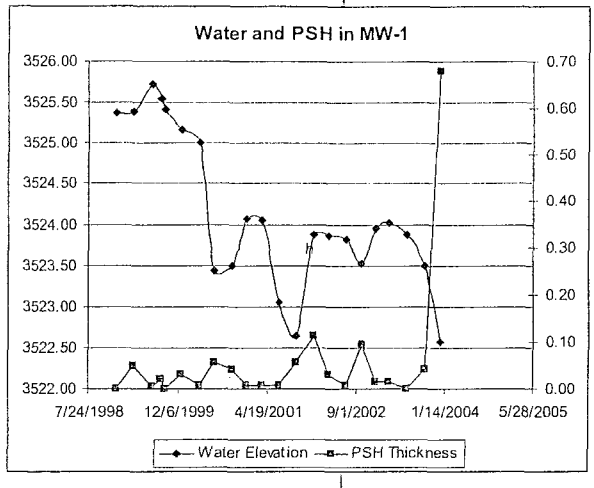


Figure 1. Water and PSH in MW-1.

Examination of the geologists' logs of MW-1 and other nearby wells show hydrocarbon stained material at depths exceeding 25 feet and some wells (e.g. MW-3)show hydrocarbon stained material within the saturated zone. We hypothesize that these hydrocarbons in the capillary fringe and in the saturated zone periodically release phase-separated hydrocarbons to ground water in the form of PSH in monitoring wells.

The chemical analyses are summarized in Tables 2, 3 and 4 along with historical results from each well. In 2003, only MW-5 exhibited benzene above laboratory detection limits. Figure 2 shows the chemical trend in this well over time. Figure 3 compares the benzene concentrations in MW-5 with those observed in MW-4. Samples from MW-4 have not detected benzene since March 5, 2003. Forecasting the benzene concentration decline suggests that MW-5 will meet WQCC standards by 2008. We hypothesize that benzene concentrations in MW-5 will now decline at a faster rate because recent benzene concentrations are relatively low. If we observe a decline similar to that observed in MW-4, we may witness MW-5 at or below 10 ppm benzene by 2006.

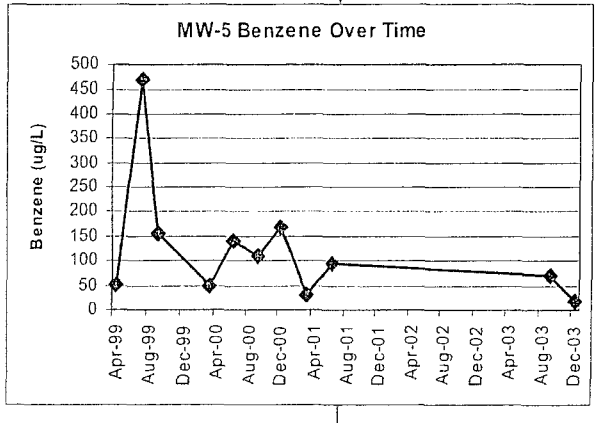


Figure 2. Benzne over time in MW-5.

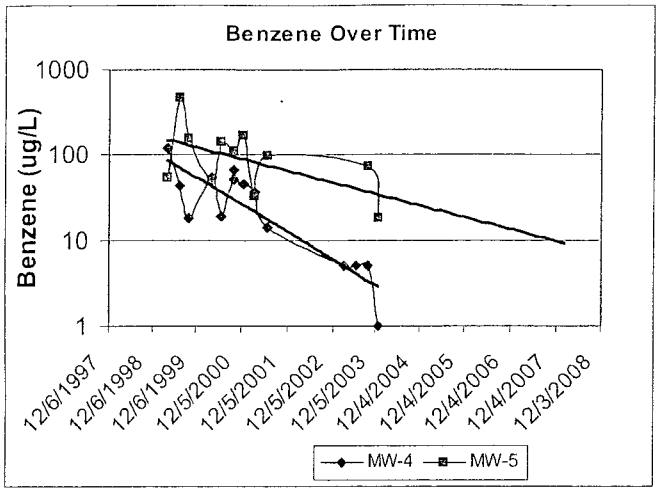


Figure 3. Benzene in MW-4 and MW-5 over time.

In 2003, all other organic constituents, such as toluene and PAH, were below laboratory detection limits.

Total Dissolved Solids (TDS) and chloride are above WQCC standards in several wells, including the up gradient livestock well. The regional background TDS concentration in the area of the Bertha Barber site appears to be about 1600 ppm (see livestock well analyses in Table 3) and background chloride is about 650 ppm. Several monitoring wells exhibit chloride concentrations materially higher than background (see Plate 5). Figure 4 shows chloride concentration over time for MW-5. Like several other wells, chloride is decreasing with time due to natural dilution and dispersion. The most recent analysis (2003) suggests that MW-5 is very close to background conditions. Some wells show chloride and TDS concentrations increasing over time.

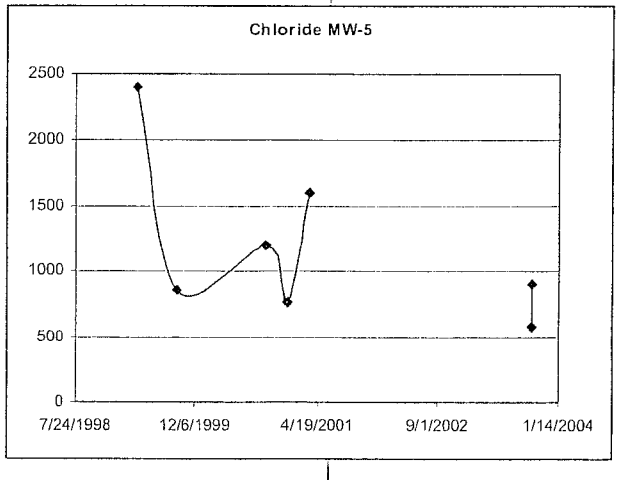


Figure 4. Chloride in MW-5 over time.

Plate 6 presents chloride versus time graphs for eight wells. Wells on the northern portion of the site are probably affected by the release from the Dynergy pipeline, as discussed in earlier reports. For example, MW-10 and MW-6 show chloride concentrations generally above 2000 ppm.

On the south side of the site, MW-12 showed the highest chloride concentration (1400 ppm on 9/22/99). MW-11, which is essentially directly

down gradient from MW-12 also shows relatively high chloride concentrations, now exceeding 1500 ppm. The recently installed MW-16 shows TDS and chloride concentrations similar to MW-12 and MW-11. These wells, which are down gradient from the former evaporation pit, show decreasing TDS and chloride concentrations over time at MW-12 and relatively stable concentrations over time at MW-11 (Plate 6). More data are required to accurately predict the concentration trend at MW-11.

We hypothesize that past discharges to the former evaporation pit caused localized impairment of ground water quality. Dilution and dispersion are mitigating the effect of these past releases and causing the TDS and chloride concentrations at MW-12 to decrease over time. Simple forecasting of the concentration decline at MW-12 suggests that this area will be at background concentrations in less than 10 years. We hypothesize that the zone of ground water impairment is not expanding but has reached a "dynamic equilibrium" and the relatively stable TDS and chloride concentrations at MW-11. Examination of the chloride and TDS data from MW-12, MW-16 and MW-11 suggest that background water quality exists about 1200 feet down gradient from MW-12 (Figure 5). Continued monitoring of MW-11 should show a decline of TDS and choride over the next 10 years. Arial photographic evidence shows that discharges to this pit have not occurred since 1975 or earlier. Therefore, an equilibrium condition as hypothesized above appears valid.

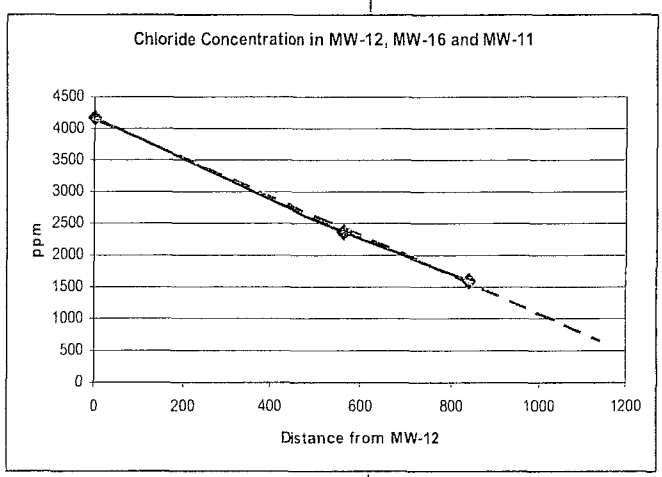


Figure 5. Chloride in MW-12, MW-16, MW-11.

In the area of the former tank bottoms pit, chloride concentrations are at background levels (MW-2, MW-3 and MW-4). Down gradient from the former release sites, TDS and chloride concentrations are rising slightly after an initial decline in MW-8 and steadily declining to background levels at MW-7. We hypothesize that MW-8, like other wells on the northern portion of the Bertha Barber site, might be affected by the Dynergy pipeline release. We cannot explain why MW-4, which is closer to the pipeline than MW-8 exhibits background TDS and chloride concentrations. More likely, however, MW-8 and MW-15 may be relict impairment from past discharges to the tank bottoms pits. With the cessation of discharges to the tank bottoms pits, wells MW-2, MW-4, MW-3 and others have been naturally restored. Over time, we hypothesize that the relict impairment will disperse and dilute to background conditions.

We anticipate that ground water beneath the tank bottoms pits, which are now at background levels, will soon become impaired from the Dynergy pipeline release.

6.0 CONCULSIONS

1. The Bertha Barber Tank Battery, which released produced water and entrained hydrocarbons in the past, created a highly localized area of ground water quality impairment.

2. Natural processes have effectively mitigated the impact caused by the Bertha Barber site's release of hydrocarbons in all wells except MW-5, which remains above WQCC Standards.

3. Natural processes will reduce benzene concentrations in MW-5 to acceptable levels within 2-5 years.

4. PSH will continue to appear in certain monitor wells for decades in the form of a sheen or very thin layer. Fluctuating water levels cause hydrocarbons that are entrained within the saturated zone matrix to appear in monitoring wells.

5. Natural processes have reduced TDS and chloride concentrations in the area where past actions released produced water to the former tank bottom pits.

6. Down gradient from Bertha Barber tank bottom pits, MW-7 also exhibits TDS and chloride concentrations approaching background. However, high TDS and chloride in MW-8 and MW-15 might represent relict impairment from past discharges. If the source of high TDS and chloride in MW-8 and MW-15 is the former tank bottoms pits, natural processes will mitigate this impairment over time.

7. MW-12, MW-16, and MW-11 are within a zone of ground water impairment caused by past discharges to an evaporation pit (closed before 1975). The extent of this localized zone is about 1200 feet by 500 feet.

8. Natural processes have limited the extent of the zone of impairment identified by MW-12, MW-16 and MW-11 and these processes will cause this zone to reach background water quality in about 10 years.

9. Residual hydrocarbons and brine in the unsaturated zone do not represent a threat to human health or the environment. [illegible]1D simulation modeling would show that the flux of these constituents to ground water is so slow that water quality would not be materially affected.

10. If modeling shows that the unsaturated zone does not pose a threat to ground water, then a soil restoration plan is not within the scope of a Rule 19 [illegible]atement Plan. Marathon should then withdraw the soil restoration plan from [illegible]OD oversight and negotiate an appropriate surface remedy with the landowner.

11. [illegible]elease associated with the Dynergy pipeline caused elevated TDS, chloride and benzene concentrations in ground water [illegible]ee MW-6 and MW-10 analyses[illegible] The effects of this release will soon impact down gradient monitoring wells.

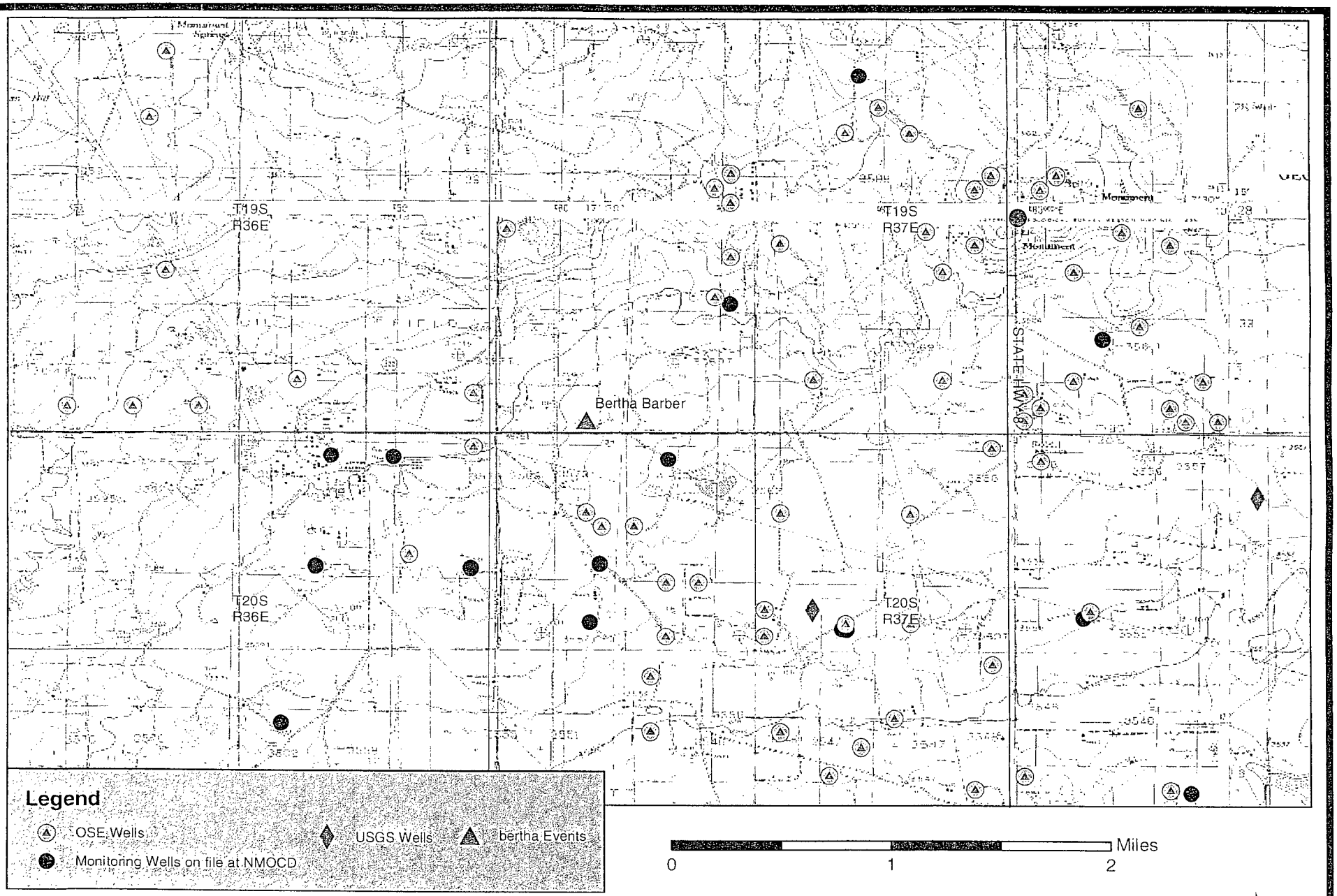
12. Defining the magnitude, extent and effects of the Dynergy pipeline release is also beyond the scope of this report and is not the responsibility of Marathon [illegible]Company.

[illegible]r recommendations for disposition of monitering wells at the Bertha Barber site follows this section.

7.0 RECOMMENDATIONS

Well Name	Proposed Action	Rationale
MW-1	Plug and abandon or relinquish to Dynergy	This well has not been sampled routinely and offers no unique data to assist in further site characterization or natural restoration monitoring
MW-2, MW-3, MW-9	Plug and abandon or relinquish to Dynergy	These wells have not exhibited dissolved hydrocarbons for several years. TDS and chloride are at background concentrations. These wells offer no unique data to assist in further site characterization or natural restoration monitoring
MW-4, MW-7, MW-8, MW-11, MW-12, MW-15, MW-16,	Sample annually using no purge methods until water quality is at background levels or until the Dynergy release affects the results	These wells exhibited constituents above standards in the past but recent samples have not detected hydrocarbons. TDS and chloride are near background concentrations at MW-4 MW-7, MW-8 and MW-15. More data from these wells would assist in the monitoring of a natural attenuation remedy for this site
MW-5	Sample semi annually using no purge methods	Benzene concentrations in this well exceed WQCC Standards. Semi annual sampling is necessary to accurately predict the benzene concentration natural decline.
MW-6, MW-10, MW-13	Relinquish wells to Dynergy	These wells are suitably located for on-going monitoring of the Dynergy pipeline release
MW-14	Plug and abandon	This well does not show concentrations above standards and is not down gradient from the former Bertha Barber Tank Battery. It offers no unique data to assist in further site characterization or remedy monitoring

PLATES



	Location Map Showing Nearby Wells	Plate 1
	Marathon Oil Company - Bertha Barber Tank Battery	March 2004

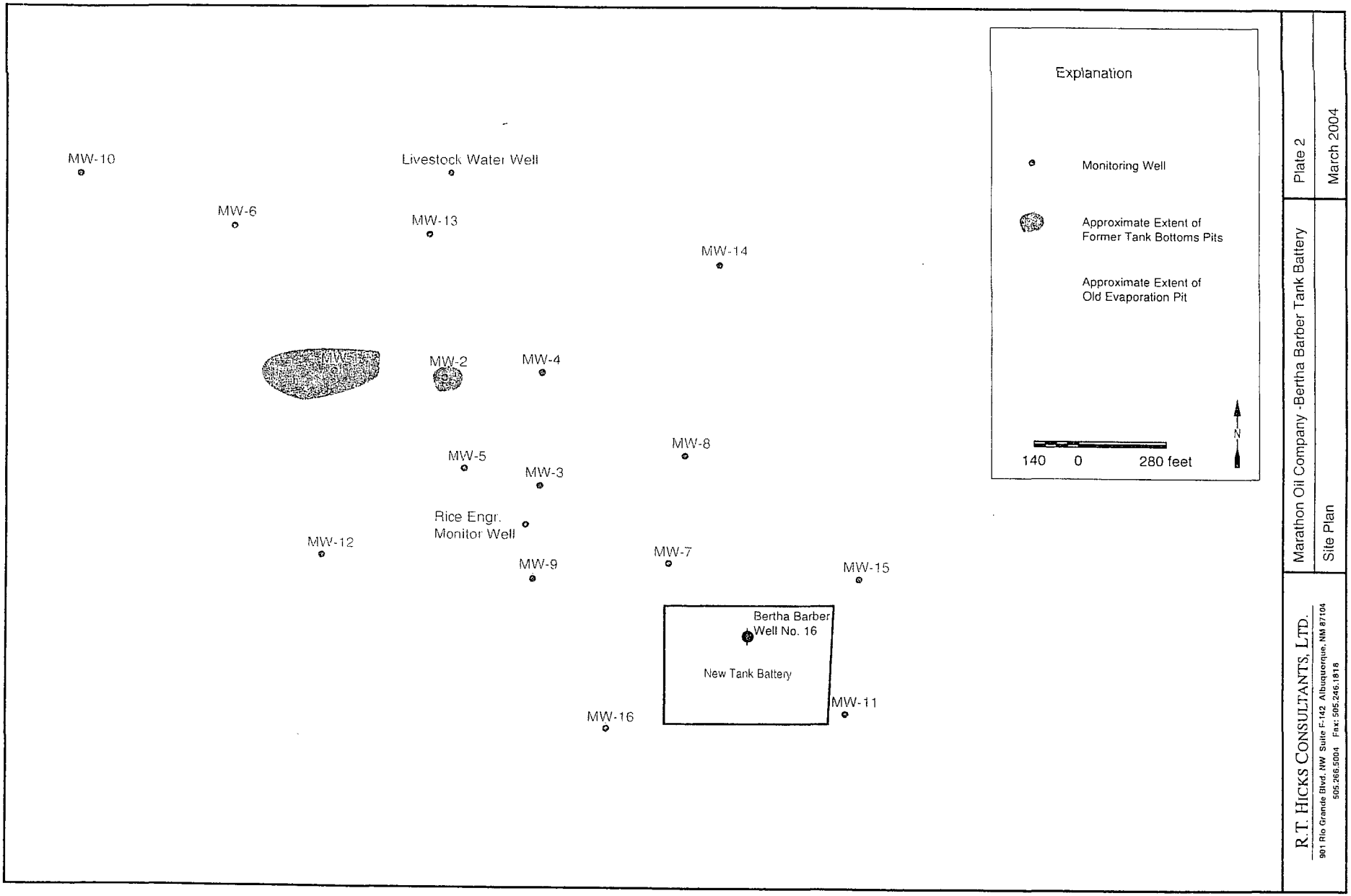


Plate 2

March 2004

Marathon Oil Company -Bertha Barber Tank Battery

Site Plan

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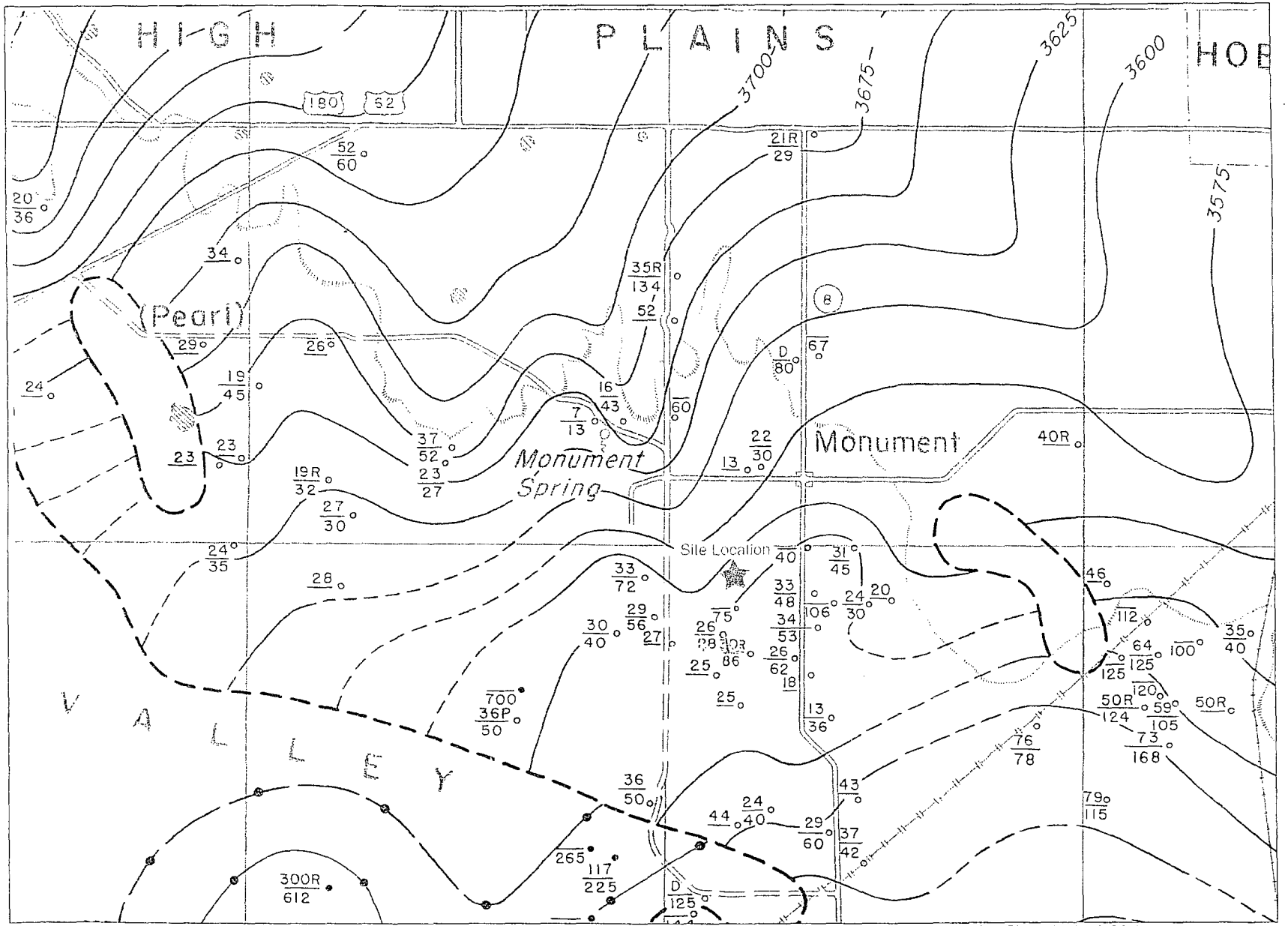

map source: Geology and Ground-Water Conditions in Southern Lea County, New Mexico by Alexander Nicholson, Jr. & AlfredClebsch, Jr. (1961)

R.T. HICKS CONSULTANTS, LTD.
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Marathon Oil Company - Bertha Barber Tank Battery

Regional Potentiometric Surface Map

Plate 3

March 2004

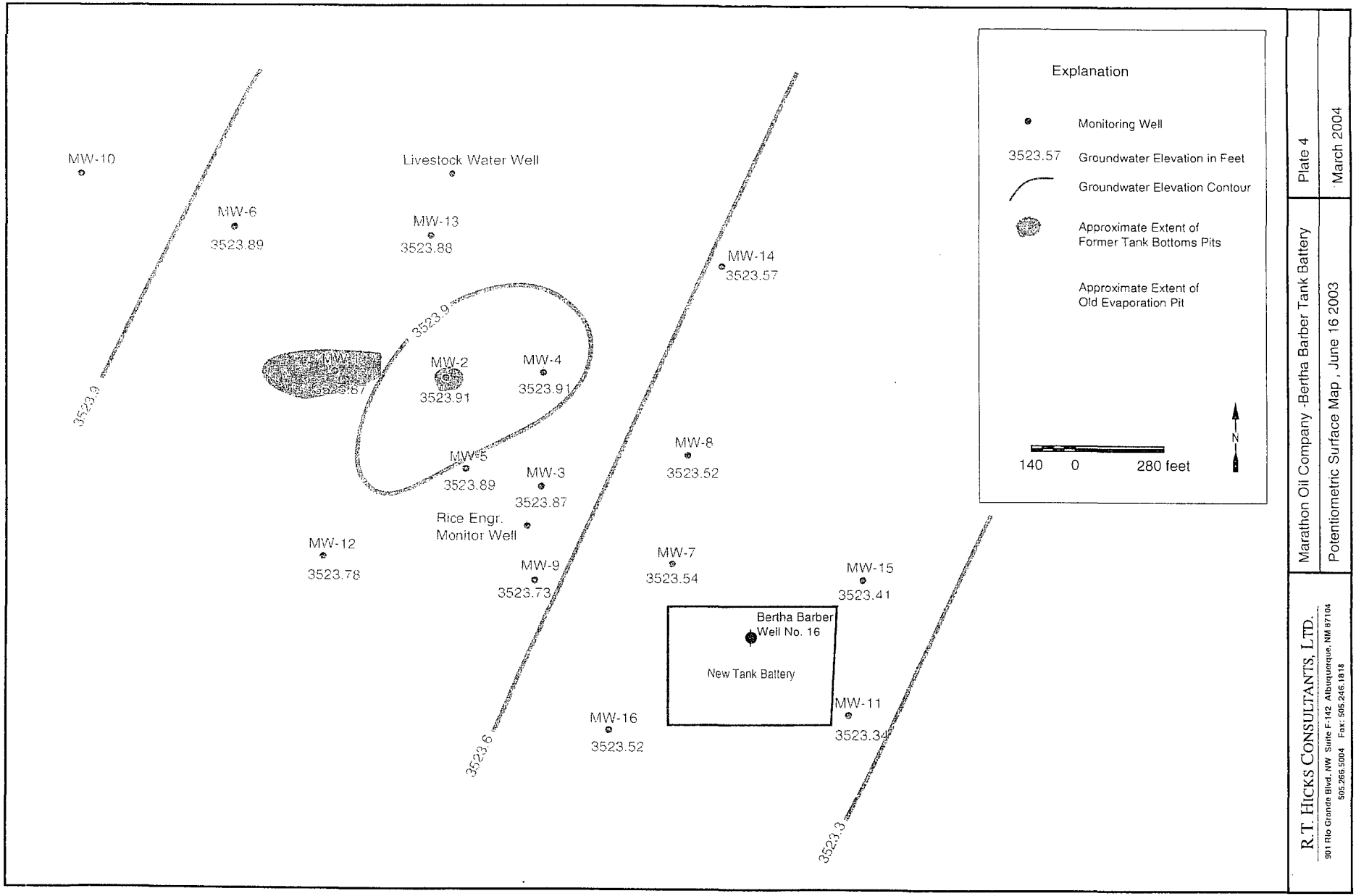

Plate 4

March 2004

Marathon Oil Company -Bertha Barber Tank Battery

Potentiometric Surface Map , June 16 2003

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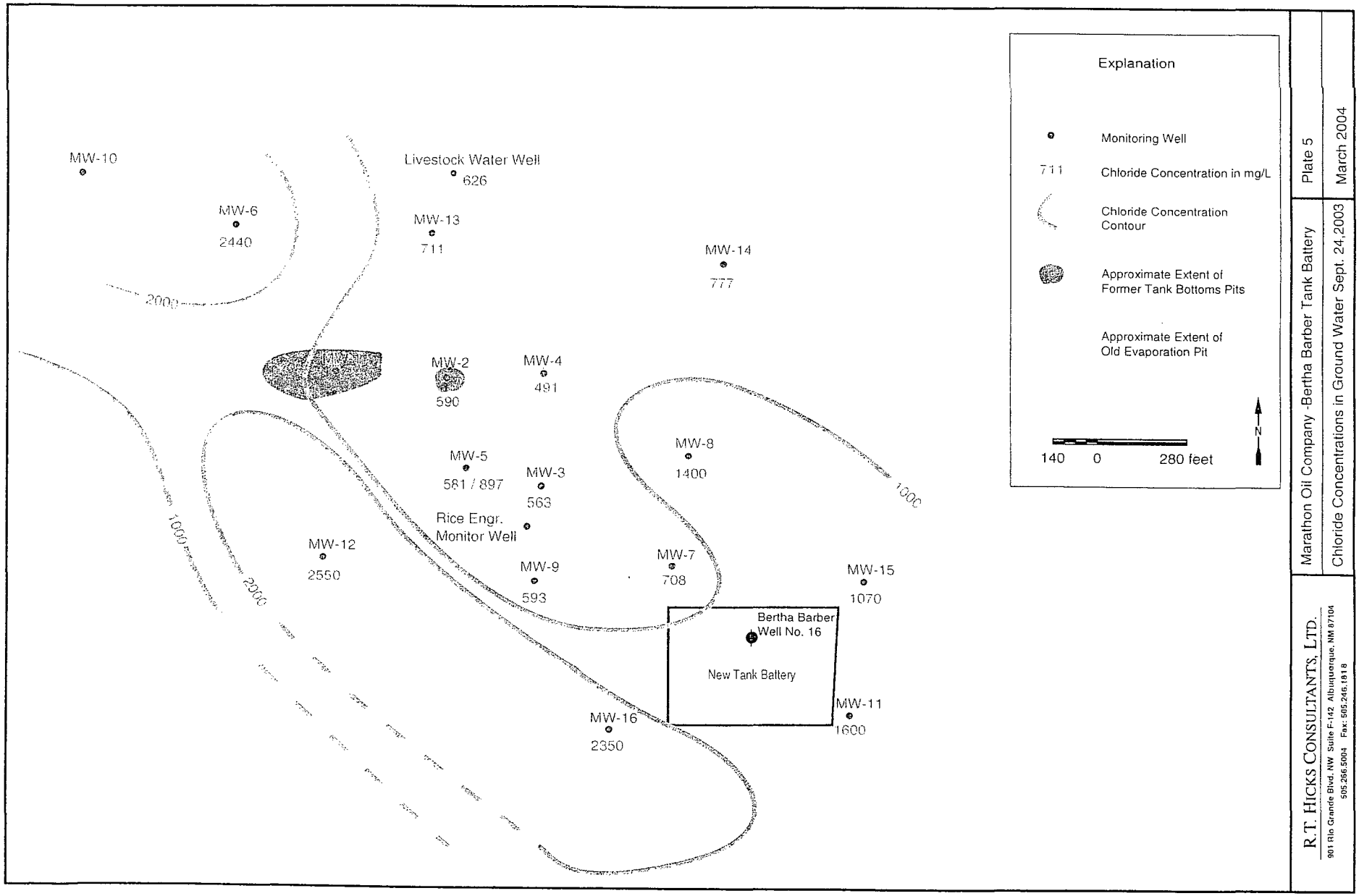

Marathon Oil Company -Bertha Barber Tank Battery

Chloride Concentrations in Ground Water Sept. 24,2003

Plate 5

March 2004

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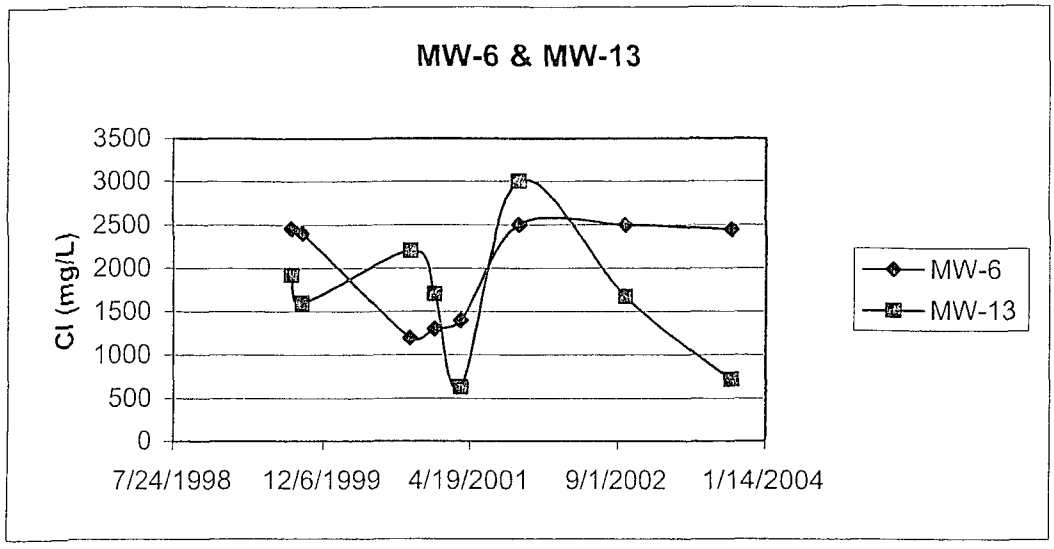
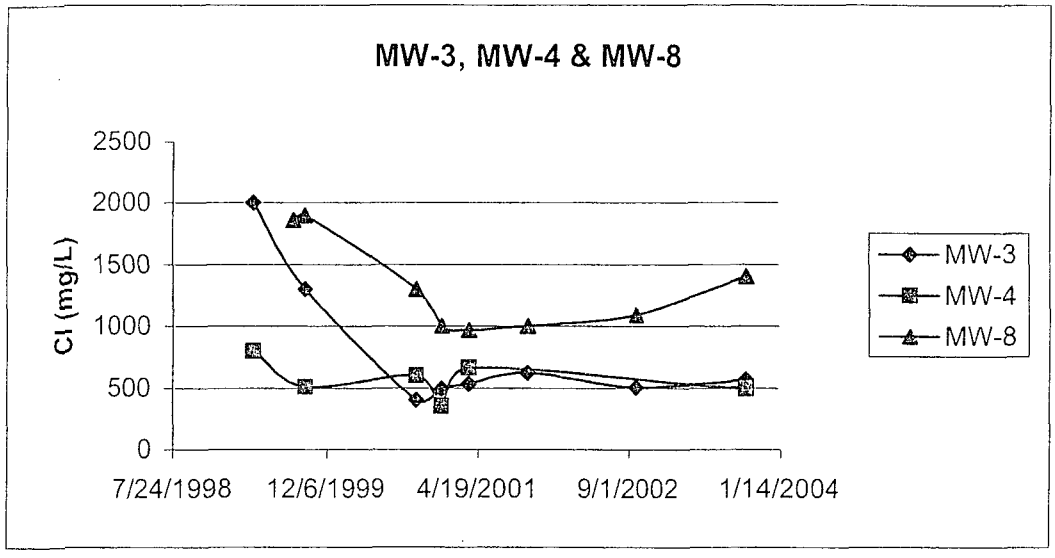
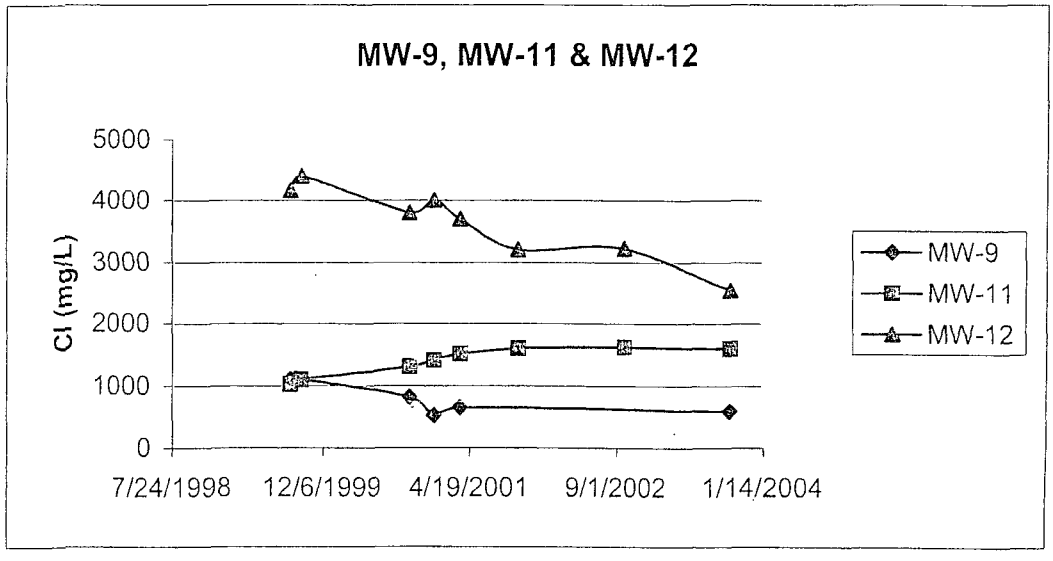
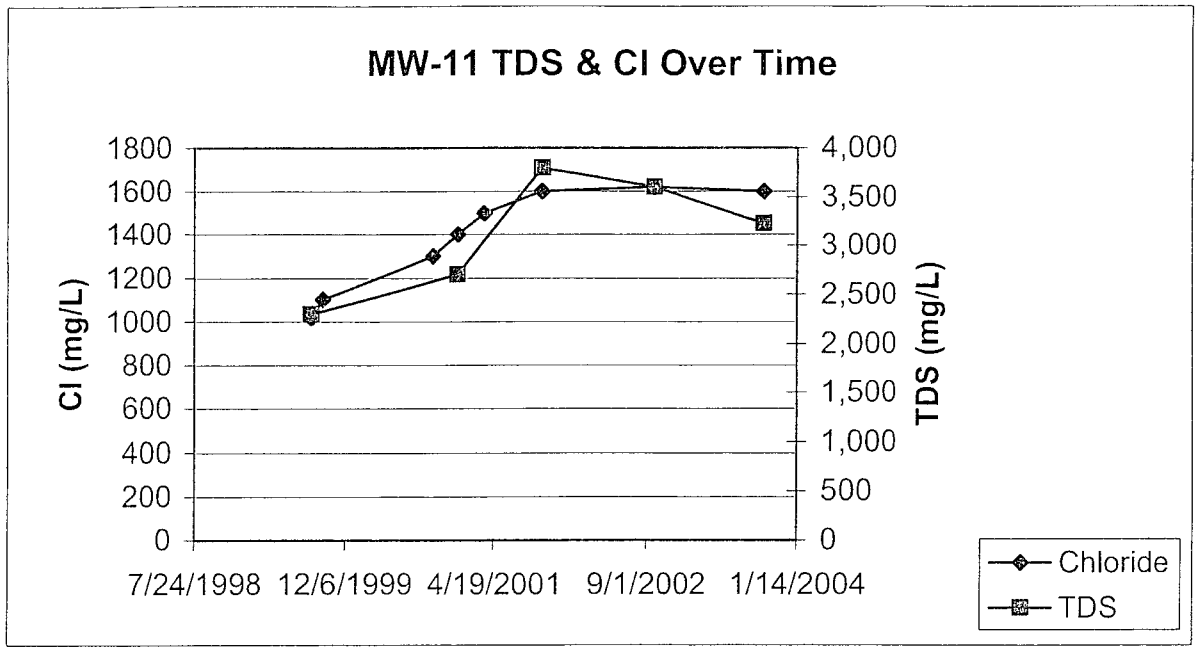
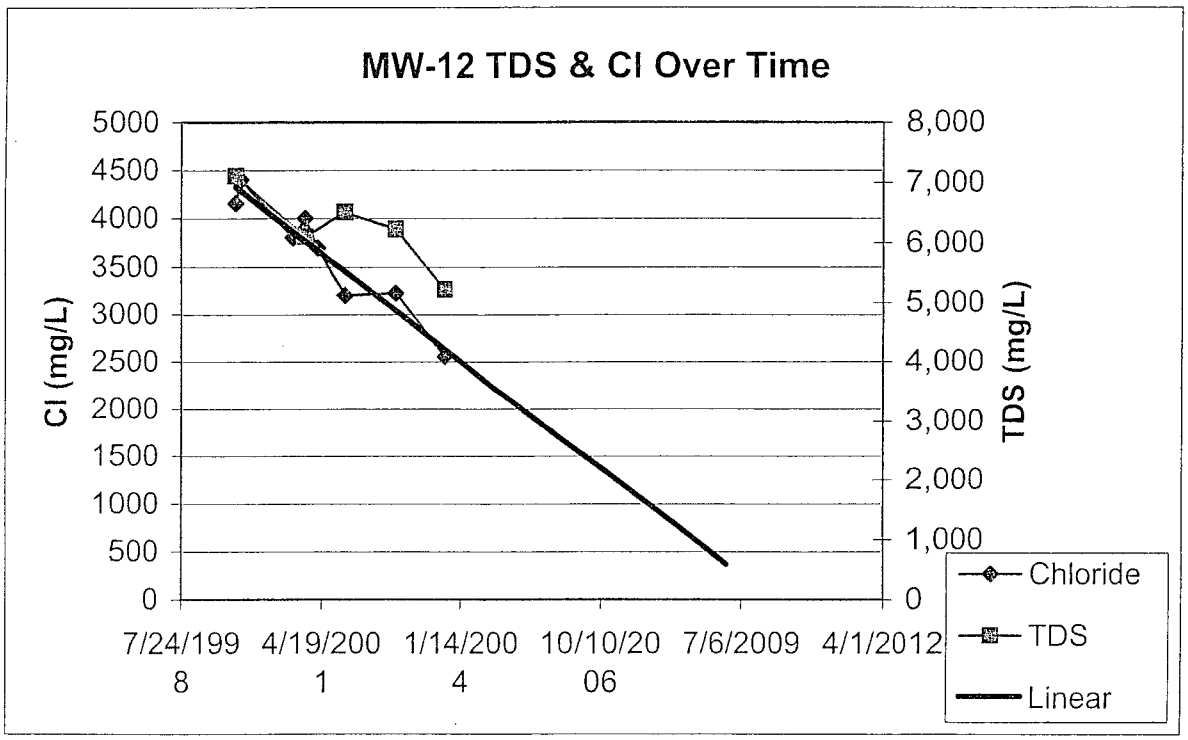






Bertha Barber	Plate 6
Chloride Over Time	March 2004





Bertha Barber	Plate 7
MW-11 and M-12, TDS and Chloride	March 2004

TABLES

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Table 1.
Historical Fluid Level Data, December 1998 - December 2003
Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-1	12/22/03	3561.57	39.00	38.15	0.68	3523.25
	09/24/03	3561.57	38.08	38.03	0.04	3523.53
	06/16/03	3561.57	37.70	Sheen	0	3523.87
	03/05/03	3561.57	37.55	37.53	0.02	3524.04
	*12/18/2002	3561.57	37.62	37.60	0.02	3523.97
	09/25/02	3561.20	37.67	37.55	0.10	3523.63
	06/28/02	3561.20	37.38	37.37	0.01	3523.83
	03/22/02	3561.20	37.34	37.30	0.03	3523.89
	12/26/01	3561.20	37.33	37.19	0.11	3523.98
	09/27/01	3561.20	38.55	38.48	0.06	3522.71
	06/28/01	3561.20	38.15	38.14	0.01	3523.06
	03/19/01	3561.20	37.15	37.14	0.01	3524.06
	12/21/00	3561.20	37.14	37.13	0.01	3524.07
	09/27/00	3561.20	37.70	37.65	0.04	3523.54
	06/20/00	3561.20	37.77	37.70	0.06	3523.49
	03/30/00	3561.20	36.20	36.19	0.01	3525.01
	12/14/99	3561.20	36.03		0.03	3525.19
	09/22/99	3561.20	35.79		sheen	3525.41
	08/27/99	3561.20	35.66		0.02	3525.55
	07/16/99	3561.20	35.48		0.005	3525.72
	03/31/99	3561.20	35.82		0.05	3525.42
	12/30/98	3561.20	35.83		0	3525.37
MW-2	12/22/03	3562.10	38.58		0	3523.52
	09/24/03	3562.10	38.36		0	3523.74
	06/16/03	3562.10	38.19		0	3523.91
	03/05/03	3562.10	38.05		0	3524.05
	*12/18/2002	3562.10	38.15	38.14	0.01	3523.96
	09/25/02	3561.69	38.10	38.06	0.03	3523.62
	06/28/02	3561.69	37.85		0	3523.84
	03/22/02	3561.69	38.78		0	3522.91
	12/26/01	3561.69	37.70	37.69	0.01	3524.00
	09/27/01	3561.69	37.49	37.48	0.01	3524.21
	06/28/01	3561.69	37.16	37.15	0.01	3524.54
	03/19/01	3561.69	37.61	37.60	0.01	3524.09
	12/21/00	3561.69	37.60	37.59	0.01	3524.10
	09/27/00	3561.69	38.12	38.11	0.01	3523.58
	06/20/00	3561.69	38.12	38.10	0.02	3523.59
	03/30/00	3561.69	36.60	36.59	0.01	3525.10
	12/14/99	3561.69	36.62		0	3525.07
	09/22/99	3561.69	36.27		0	3525.42
	08/27/99	3561.69	36.13		0.01	3525.57
	07/16/99	3561.69	35.95		0	3525.74
	03/31/99	3561.69	36.33		0	3525.36
	12/30/98	3561.69	36.34		0	3525.35

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
feet bmp=Ft below measuring point

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Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-3	12/22/03	3563.40	40.07		0	3523.33
	09/24/03	3563.40	39.88		0	3523.52
	06/16/03	3563.40	39.53		0	3523.87
	03/05/03	3563.40	39.39		0	3524.01
	*12/18/2002	3563.40	39.49		0	3523.91
	09/25/02	3563.00	39.42	39.41	0.01	3523.59
	06/28/02	3563.00	39.19		0	3523.81
	03/22/02	3563.00	39.11		0	3523.89
	12/26/01	3563.00	39.05		0	3523.95
	09/27/01	3563.00	38.95		0	3524.05
	06/28/01	3563.00	38.63		0	3524.37
	03/19/01	3563.00	38.19		0	3524.81
	12/21/00	3563.00	38.11		0	3524.89
	09/27/00	3563.00	37.88		0	3525.12
	06/20/00	3563.00	38.56		0	3524.44
	03/30/00	3563.00	38.10		0	3524.90
	12/14/99	3563.00	38.10		0	3524.90
	09/22/99	3563.00	37.59		0	3525.41
	08/27/99	3563.00	37.48		0	3525.52
	07/16/99	3563.00	37.31		0	3525.69
	03/31/99	3563.00	37.67		0	3525.33
	12/30/98	3563.00	37.65		0	3525.35
MW-4	12/22/03	3563.43	39.95		0	3523.48
	09/24/03	3563.43	39.73		0	3523.70
	06/16/03	3563.43	39.52		0	3523.91
	03/05/03	3563.43	39.39		0	3524.04
	*12/18/2002	3563.43	39.45		0	3523.98
	09/25/02	3563.01	38.65	38.61	0.03	3524.39
	06/28/02	3563.01	38.66	38.63	0.02	3524.37
	03/22/02	3563.01	39.11	39.10	0.01	3523.91
	12/26/01	3563.01	39.05	39.03	0.02	3523.98
	09/27/01	3563.01	38.92	38.82	0.08	3524.17
	06/28/01	3563.01	38.60		0	3524.41
	03/19/01	3563.01	38.16		0	3524.85
	12/21/00	3563.01	38.10		0	3524.91
	09/27/00	3563.01	37.86		0	3525.15
	06/20/00	3563.01	38.26		0	3524.75
	03/30/00	3563.01	38.10		0	3524.91
	12/14/99	3563.01	37.85		0	3525.16
	09/22/99	3563.01	37.57		0	3525.44
	08/27/99	3563.01	37.46		0	3525.55
	07/16/99	3563.01	37.28		0	3525.73
	03/31/99	3563.01	37.66		0	3525.35
	12/30/98	3563.01	37.66		0	3525.35

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
feet bmp=Ft below measuring point

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MW-5	12/22/03	3561.49	38.12		0	3523.37
	09/24/03	3561.49	37.95		0	3523.54
	06/16/03	3561.49	37.60	Sheen	0	3523.89
	03/05/03	3561.49	37.46	Sheen	0	3524.03
	*12/18/2002	3561.49	37.56	37.54	0.02	3523.95
	09/25/02	3561.10	37.52	37.48	0.03	3523.61
	06/28/02	3561.10	37.31	37.29	0.02	3523.81
	03/22/02	3561.10	37.20		0	3523.90
	12/26/01	3561.10	37.21	37.10	0.09	3523.98
	09/27/01	3561.10	36.98	36.47	0.41	3524.53
	06/28/01	3561.10	36.69		0	3524.41
	03/19/01	3561.10	36.13		0	3524.97
	12/21/00	3561.10	36.15		0	3524.95
	09/27/00	3561.10	35.98		0	3525.12
	06/20/00	3561.10	36.34		0	3524.76
	03/30/00	3561.10	36.10		0	3525.00
	12/14/99	3561.10	35.95		0	3525.15
	09/22/99	3561.10	35.68		0	3525.42
	08/27/99	3561.10	35.56		0	3525.54
	07/16/99	3561.10	35.38		0	3525.72
	03/31/99	3561.10	35.75		0	3525.35
	12/30/98	3561.10	35.73		0	3525.37
MW-6	12/22/03	3561.65	38.29		0	3523.36
	09/24/03	3561.65	38.10		0	3523.55
	06/16/03	3561.65	37.76		0	3523.89
	03/05/03	3561.65	37.61		0	3524.04
	*12/18/2002	3561.65	37.70		0	3523.95
	09/25/02	3561.25	37.63		0	3523.62
	06/28/02	3561.25	37.40		0	3523.85
	03/22/02	3561.25	37.32		0	3523.93
	12/26/01	3561.25	37.25		0	3524.00
	09/27/01	3561.25	37.02		0	3524.23
	06/28/01	3561.25	36.54		0	3524.71
	03/19/01	3561.25	36.80		0	3524.45
	12/21/00	3561.25	36.13		0	3525.12
	09/27/00	3561.25	36.06		0	3525.19
	06/20/00	3561.25	36.39		0	3524.86
	03/30/00	3561.25	36.29		0	3524.96
	12/14/99	3561.25	36.10		0	3525.15
	09/22/99	3561.25	35.75		0	3525.50
	08/27/99	3561.25	35.69		0	3525.56

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
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MW-7	12/22/03	3562.70	39.75		0	3522.95
	09/24/03	3562.70	39.60		0	3523.10
	06/16/03	3562.70	39.16		0	3523.54
	03/05/03	3562.70	38.97		0	3523.73
	*12/18/2002	3562.70	39.07		0	3523.63
	09/25/02	3562.44	39.01	38.99	0.02	3523.45
	06/28/02	3562.44	38.76		0	3523.68
	03/22/02	3562.44	38.65	38.64	0.01	3523.80
	12/26/01	3562.44	38.62	38.61	0.01	3523.83
	09/27/01	3562.44	38.43	38.42	0.01	3524.02
	06/28/01	3562.44	37.90	37.89	0.01	3524.55
	03/19/01	3562.44	37.58	37.57	0.01	3524.87
	12/21/00	3562.44	37.70	37.65	0.04	3524.79
	09/27/00	3562.44	37.76	37.75	0.01	3524.69
	06/20/00	3562.44	37.91	37.73	0.14	3524.67
	03/30/00	3562.44	37.60	37.55	0.04	3524.88
	12/14/99	3562.44	37.51		0	3524.93
	09/22/99	3562.44	38.20		0	3524.24
	08/27/99	3562.44	38.15		0	3524.29
MW-8	12/22/03	3561.82	38.92		0	3522.90
	09/24/03	3561.82	38.71		0	3523.11
	06/16/03	3561.82	38.30		0	3523.52
	03/05/03	3561.82	38.10		0	3523.72
	*12/18/2002	3561.82	38.20		0	3523.62
	09/25/02	3561.39	38.15		0	3523.24
	06/28/02	3561.39	37.87		0	3523.52
	03/22/02	3561.39	37.80		0	3523.59
	12/26/01	3561.39	37.74		0	3523.65
	09/27/01	3561.39	37.51		0	3523.88
	06/28/01	3561.39	36.98		0	3524.41
	03/19/01	3561.39	36.51		0	3524.88
	12/21/00	3561.39	36.50		0	3524.89
	09/27/00	3561.39	36.61		0	3524.78
	06/20/00	3561.39	36.88		0	3524.51
	03/30/00	3561.39	36.65		0	3524.74
	12/14/99	3561.39	36.44		0	3524.95
	09/22/99	3561.39	37.26		0	3524.13
	08/27/99	3561.39	37.21		0	3524.18
MW-9	12/22/03	3563.95	40.84		0	3523.11
	09/24/03	3563.95	40.62		0	3523.33
	06/16/03	3563.95	40.22		0	3523.73
	03/05/03	3563.95	40.04		0	3523.91
	*12/18/2002	3563.95	40.15		0	3523.80
	09/25/02	3561.59	41.11	41.09	0.02	3520.50
	06/28/02	3561.59	39.87	39.85	0.02	3521.74
	03/22/02	3563.59	39.39	39.37	0.02	3524.22
	12/26/01	3563.59	39.82	39.65	0.14	3523.91
	09/27/01	3563.59	39.62	39.40	0.18	3524.15
	06/28/01	3563.59	38.99		0	3524.60
	03/19/01	3563.59	38.65		0	3524.94
	12/21/00	3563.59	38.60		0	3524.99
	09/27/00	3563.59	38.60		0	3524.99
	06/20/00	3563.59	38.89		0	3524.70
	03/30/00	3563.59	38.70		0	3524.89
	12/14/99	3563.59	38.48		0	3525.11
	09/22/99	3563.59	36.23		0	3527.36
	08/27/99	3563.59	36.14		0	3527.45

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
feet bmp=Ft below measuring point

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Table 1.
Historical Fluid Level Data, December 1998 - December 2003
Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
**MW-10	12/22/03	3560.88				
	09/24/03	3560.88				
	06/16/03	3560.88				
	03/05/03	3560.88	36.83	36.82	0.01	3524.06
	*12/18/2002	3560.88	36.92	36.91	0.01	3523.97
	09/25/02	3560.51	36.84	36.82	0.02	3523.69
	06/28/02	3560.51	36.61	36.60	0.01	3523.91
	03/22/02	3560.51	36.55	36.53	0.01	3523.98
	12/26/01	3560.51	36.98	36.34	0.48	3524.01
	09/27/01	3560.51	36.75	36.12	0.47	3524.23
	06/28/01	3560.51	36.26	35.63	0.47	3524.72
	03/19/01	3560.51	35.52	35.48	0.03	3525.02
	12/21/00	3560.51	35.53	35.52	0.01	3524.99
	09/27/00	3560.51	35.56	35.55	0.01	3524.96
	06/20/00	3560.51	35.55	35.54	0.01	3524.97
	03/30/00	3560.51	35.50	35.49	0.01	3525.02
	12/14/99	3560.51	35.33		0	3525.18
	09/22/99	3560.51	34.96		0	3525.55
	08/27/99	3560.51	34.87		0	3525.64
MW-11	12/22/03	3565.81	43.08		0	3522.73
	09/24/03	3565.81	42.90		0	3522.91
	06/16/03	3565.81	42.47		0	3523.34
	03/05/03	3565.81	42.26		0	3523.55
	*12/18/2002	3565.81	42.34		0	3523.47
	09/25/02	3565.44	42.32		0	3523.12
	06/28/02	3565.44	42.04		0	3523.40
	03/22/02	3565.44	41.95		0	3523.49
	12/26/01	3565.44	41.91		0	3523.53
	09/27/01	3565.44	41.71		0	3523.73
	06/28/01	3565.44	41.16		0	3524.28
	03/19/01	3565.44	39.76		0	3525.68
	12/21/00	3565.44	40.01		0	3525.43
	09/27/00	3565.44	39.82		0	3525.62
	06/20/00	3565.44	40.10		0	3525.34
	03/30/00	3565.44	39.80		0	3525.64
	12/14/99	3565.44	40.61		0	3524.83
	09/22/99	3565.44	40.37		0	3525.07
	08/27/99	3565.44	40.34		0	3525.10
MW-12 (PZ-2)	12/22/03	3562.46	39.22		0	3523.24
	09/24/03	3562.46	39.03		0	3523.43
	06/16/03	3562.46	38.68		0	3523.78
	03/05/03	3562.46	38.54		0	3523.92
	*12/18/2002	3562.46	38.62		0	3523.84
	09/25/02	3562.11	38.53		0	3523.58
	06/28/02	3562.11	38.30		0	3523.81
	03/22/02	3562.11	38.22		0	3523.89
	12/26/01	3562.11	37.15		0	3524.96
	09/27/01	3562.11	37.90		0	3524.21
	06/28/01	3562.11	37.45		0	3524.66
	03/19/01	3562.11	37.26		0	3524.85
	12/21/00	3562.11	37.23		0	3524.88
	09/27/00	3562.11	37.09		0	3525.02
	06/20/00	3562.11	37.34		0	3524.77
	03/30/00	3562.11	37.23		0	3524.88
	12/14/99	3562.11	36.95		0	3525.16
	09/22/99	3562.11	36.69		0	3525.42
	08/27/99	3562.11	36.65		0	3525.46

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
feet bmp=Ft below measuring point

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Table 1.
Historical Fluid Level Data, December 1998 - December 2003
Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-13 (PZ-1)	12/22/03	3560.05	36.72		0	3523.33
	09/24/03	3560.05	36.51		0	3523.54
	06/16/03	3560.05	36.17		0	3523.88
	03/05/03	3560.05	36.03		0	3524.02
	*12/18/2002	3560.05	36.12		0	3523.93
	09/25/02	3559.67	36.05		0	3523.62
	06/28/02	3559.67	35.82		0	3523.85
	03/22/02	3559.67	35.76		0	3523.91
	12/26/01	3559.67	35.67		0	3524.00
	09/27/01	3559.67	35.52		0	3524.15
	06/28/01	3559.67	34.95		0	3524.72
	03/19/01	3559.67	34.84		0	3524.83
	12/21/00	3559.67	34.75		0	3524.92
	09/27/00	3559.67	34.49		0	3525.18
	06/20/00	3559.67	34.90		0	3524.77
	03/30/00	3559.67	34.80		0	3524.87
	12/14/99	3559.67	34.96		0	3524.71
	09/22/99	3559.67	34.20		0	3525.47
	08/27/99	3559.67	34.09		0	3525.58
MW-14	12/22/03	3562.15	39.20		0	3522.95
	09/24/03	3562.15	39.00		0	3523.15
	06/16/03	3562.15	38.58		0	3523.57
	03/05/03	3562.15	38.38		0	3523.77
	*12/18/2002	3562.15	38.47		0	3523.68
MW-15	12/22/03	3562.19	39.39		0	3522.80
	09/24/03	3562.19	39.19		0	3523.00
	06/16/03	3562.19	38.78		0	3523.41
	03/05/03	3562.19	38.55		0	3523.64
	*12/18/2002	3562.19	38.65		0	3523.54
MW-16	12/22/03	3566.51	43.58		0	3522.93
	09/24/03	3566.51	43.38		0	3523.13
	06/16/03	3566.51	42.99		0	3523.52
	03/05/03	3566.51	42.80		0	3523.71
	*12/18/2002	3566.51	42.87		0	3523.64

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl=Ft above mean sea level
feet bmp=Ft below measuring point

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**
MW-1	4/9/1999	**5**	<5	<5	NS	NS	<10
	7/15/1999	<500	<500	<500	NS	NS	<1000
MW-2	4/9/1999	<5	<5	<5	NS	NS	<10
	7/15/1999	<5	<5	<5	NS	NS	<10
	9/23/1999	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
	3/5/2003	<5	<5	<5			<5
(Duplicate)	3/5/2003	<5	<5	<5			<5
	6/16/2003	<1	<1	<1			<1
(Duplicate)	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
MW-3	4/9/1999	**100**	**14**	<5	NS	NS	<10
	7/15/1999	<5	<5	<5	NS	NS	<10
	9/23/1999	<5	<5	<5	NS	NS	<10
	3/30/2000	<5	<5	**11**	<5	<10	ND
(Duplicate)**	3/30/2000	**54**	**8.6**	<5	<5	<10	ND
	6/20/2000	<5	<5	<5	<5	<10	<10
	9/28/2000	<5	<5.0	<5	<5	<10	<10
	12/21/2000	<5	<5	<5	NS	NS	**10**
	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	<5	<5	NS	NS	<10
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
	9/25/2002	<5	<5	<5	NS	NS	<5
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<5	<5	<5			<5
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	10	750	750	-----	-----	620
MW-4	4/9/1999	121	77	43	NS	NS	60
	7/15/1999	43	28	<5	NS	NS	<10
	9/23/1999	18	12	<5	NS	NS	<10
	3/30/2000	54	7.5	8.7	<5	<10	ND
	6/20/2000	19	<5.0	<5	<5	<10	<10
	9/28/2000	66	13	<5	<5	<10	<10
(Duplicate)	9/28/2000	51	<5.0	<5	<5	<10	11
	12/21/2000	46	10	<5	NS	NS	20
	3/19/2001	37	<5	5.2	<5	<10	<10
	6/28/2001	14	<5	<5	NS	NS	<10
	3/5/2003	5	<5	<5			<5
	6/16/2003	5	<5	<5			<5
	9/24/2003	5	<5	<5			<5
	12/22/2003	1	<1	<1			<1
MW-5	4/9/1999	53	<5	<5	NS	NS	<10
	7/15/1999	470	43	<5	NS	NS	10
	9/22/1999	156	6	<5	NS	NS	<10
	3/30/2000	50	<5	9.7	<5	<10	ND
	6/20/2000	140	<5	<5	<5	<10	<10
	9/28/2000	110	<5	<5	<5	<10	<10
	12/21/2000	169	5	<5	NS	NS	20
	3/19/2001	32	<5	<5	<5	<10	<10
	6/28/2001	96	<5	<5	NS	NS	<10
	9/24/2003	71	<5	<5			<5
	12/22/2003	17.9	<5	<5			<5
(Duplicate)	12/22/2003	19.8	<5	<5			<5

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	**10**	***750***	***750***	-----	-----	**620**
MW-6	8/17/1999	<5	<5	<5	NS	NS	<10
	9/22/1999	<5	<5	<5	NS	NS	<10
	3/30/2000	<5	<5	<5	<5	<10	ND
	6/20/2000	<5	<5	<5	<5	<10	<10
	9/28/2000	**11**	<5	<5	<5	<10	<10
	12/21/2000	**14**	<5	<5	NS	NS	**10**
	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	<5	<5	NS	NS	<10
Duplicate	6/28/2001	<5	<5	<5	NS	NS	<10
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
Duplicate	6/28/2002	<5	<5	<5	NS	NS	<5
	9/25/2002	<1	<1	<1	NS	NS	<1
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<1	<1	<1			<1
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**
MW-7	8/17/1999	<5	<5	<5	NS	NS	<10
	9/22/1999	<5	<5	<5	NS	NS	<10
	12/18/2002	<1	<1	<1	NS	NS	<1
	6/28/2002	<5	<5	<5	NS	NS	<5
	3/5/2003	<5	<5	<5			<5
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
MW-8	8/17/1999	<5	<5	<5	NS	NS	<10
	9/23/1999	<5	<5	<5	NS	NS	<10
	3/30/2000	<5	<5	**11**	<5	<10	ND
	6/20/2000	<5	<5	<5	<5	<10	<10
	9/28/2000	<5	<5	<5	<5	<10	<10
	12/21/2000	<5	<5	<5	NS	NS	<10
	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	<5	<5	NS	NS	<10
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
	9/25/2002	<5	<5	<5	NS	NS	<5
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<5	<5	<5			<5
	6/16/2003	<5	<5	<5			<5
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
MW-9	8/17/1999	**20**	<5	<5	NS	NS	<10
	9/23/1999	**8**	<5	<5	NS	NS	<10
	3/30/2000	<5	<5	9.3	<5	<5	ND
	6/20/00*	<5	<5	<5	<5	<10	<10
	9/28/00*	<5	<5	<5	<5	<10	<10
	12/21/00*	<5	<5	<5	NS	NS	<10
	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	**28**	<5	NS	NS	<10
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<5	<5	<5			<5
	6/16/2003	<5	<5	<5			<5
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<5	<5	<5			<5

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**
MW-10	8/17/1999	**12100**	**160**	**1730**	NS	NS	400
	9/22/1999	**2900**	**520**	**800**	NS	NS	600
MW-11	8/17/1999	<5	<5	<5	NS	NS	<10
	9/23/1999	<5	<5	<5	<5	<10	<10
	3/30/2000	<5	<5	<5	<5	<10	ND
	6/20/2000	<5	<5	<5	<5	<10	<10
(Duplicate)	6/20/2000	<5	<5	<5	<5	<10	<10
	9/28/2000	<5	<5	<5	<5	<10	<10
	12/21/2000	<5	<5	<5	NS	NS	**20**
	3/19/2001	<5	<5	<5	<5	<10	<10
(Duplicate)	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	<5	<5	NS	NS	<10
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
	9/25/2002	<5	<5	<5	NS	NS	<5
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<1	<1	<1			<1
	6/16/2003	<5	<5	<5			<5
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
MW-12 (PZ-2)	8/17/1999	<5	<5	<5	NS	NS	<10
	9/22/1999	<5	<5	<5	NS	NS	<10
	3/30/2000	<5	<5	<5	<5	<10	ND
	6/20/2000	**7.3**	<5	<5	<5	<10	<10
	9/28/2000	<5	<5	<5	<5	<10	<10
	12/21/2000	<5	<5	<5	NS	NS	**20**
	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001^	NS	NS	NS	NS	NS	NS
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
	9/25/2002	<1	<1	<1	NS	NS	<1
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<1	<1	<1			<1
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12//22/03	<1	<1	<1			<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	10	750	750	-----	-----	620
MW-13 (PZ-1)	8/17/1999	<5	<5	<5	NS	NS	<10
	9/23/1999	<5	<5	<5	NS	NS	<10
	3/30/2000	<5	5	<5	<5	<10	ND
	6/20/2000	<5	<5	<5	<5	<10	<10
	9/28/2000	<5	<5	<5	<5	<10	<10
	12/21/2000	<5	<5	<5	NS	NS	<10
	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	<5	<5	NS	NS	<10
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<200	<200	<200	NS	NS	<200
	9/25/2002	<1	<1	<1	NS	NS	<1
Duplicate	9/25/2002	<1	<1	<1	NS	NS	<1
	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<1	<1	<1			<1
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
(Duplicate)	9/24/2003	<5	<5	<5			<5
	12//22/03	<1	<1	<1			<1
MW-14	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<1	<1	<1			<1
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
MW-15	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<1	<1	<1			<1
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
MW-16	12/18/2002	<1	<1	<1	NS	NS	<1
	3/5/2003	<5	<5	<5			<5
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<5	<5	<5			<5

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)
WQCC	-----	10	750	750	-----	-----	620
Livestock WW	3/19/2001	<5	<5	<5	<5	<10	<10
	6/28/2001	<5	<5	<5	NS	NS	<10
	9/27/2001	<5	<5	<5	NS	NS	<10
	12/26/2001	<5	<5	<5	NS	NS	<10
	3/22/2002	<5	<5	<5	NS	NS	<10
	6/28/2002	<5	<5	<5	NS	NS	<5
	9/25/2002	<1	<1	<1	NS	NS	<1
	12/18/2002	<5	<5	<5	NS	NS	<5
	3/5/2003	<5	<5	<5			<5
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1
Rinsate	3/5/2003	<1	<1	<1			<1
	6/16/2003	<1	<1	<1			<1
	9/24/2003	<5	<5	<5			<5
	12/22/2003	<1	<1	<1			<1

Footnotes:

WQCC - New Mexico Water Quality Control Commission Ground Water Standards.
BTEX - Benzene, Toluene, Ethylbenzene and Total Xylenes.
ug/L - micrograms per liter.
NS - Constituent not speciated.
ND - Constituent was not detected during laboratory testing, and laboratory reporting limits are variable.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).
** - Question data because it appears to be more representative of the sample for MW-4 for the same event.

Table 3. Historical Analytical Data for Selected Dissolved Metals, Chlorides and TDS
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Dissolved Metals			Chloride (mg/L)	TDS (mg/L)
		Iron (mg/L)	Manganese (mg/L)	Barium (mg/L)		
WQCC	-----	1.0	0.2	1.0	250	1,000
MW-1	4/9/1999	3.86	0.48	2.74	3600	6,100
MW-2	4/9/1999	1.54	0.26	0.39	2700	4,400
	9/23/1999	NS	NS	NS	2500	NS
	9/24/2003	0.62	0.084	0.164	590	1,658
MW-3	4/9/1999	4.66	0.37	0.69	2000	3,500
	9/23/1999	NS	NS	NS	1300	NS
	9/28/2000	NS	NS	NS	400	NS
	12/21/2000	0.07	0.05	0.13	490	1,300
	3/19/2001	NS	NS	NS	530	NS
	9/27/2001	0.2	0.08	0.09	620	1,600
	9/25/2002	0.196	0.0865	<.100	506	1,518
	9/24/2003	0.228	0.067	0.099	563	1,616
MW-4	4/9/1999	1.46	0.32	1.63	800	1,900
	9/23/1999	NS	NS	NS	510	NS
	9/28/2000	NS	NS	NS	600	NS
(Duplicate)	9/28/2000	NS	NS	NS	760	NS
	12/21/2000	<0.05	0.06	2.07	350	1,100
	3/19/2001	NS	NS	NS	660	NS
	9/25/2002	NS	NS	NS		NS
	9/24/2003	<0.05	0.055	0.526	491	1,348
MW-5	4/9/1999	47.2	0.97	15.3	2400	4,000
	9/22/1999	NS	NS	NS	860	NS
	9/28/2000	NS	NS	NS	1200	NS
	12/21/2000	0.27	0.06	2.84	760	1,700
	3/19/2001	NS	NS	NS	1600	NS
	9/25/2002	NS	NS	NS		NS
	9/24/2003	0.102	0.041	0.255	581	1,532
(Duplicate)	9/24/2003	0.096	0.064	0.126	897	2,104
MW-6	8/17/1999	<0.05	0.21	0.14	2460	4,700
	9/22/1999	NS	NS	NS	2400	NS
	9/28/2000	NS	NS	NS	1200	NS
	12/21/2000	0.37	0.4	0.14	1300	2,400
	3/19/2001	NS	NS	NS	1400	NS
	9/27/2001	0.16	0.08	0.13	2500	5,400
	9/25/2002	0.118	0.0581	0.153	2500	5,080
	9/24/2003	0.08	0.061	0.132	2440	4,645

Table 3. Historical Analytical Data for Selected Dissolved Metals, Chlorides and TDS
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Dissolved Metals			Chloride (mg/L)	TDS (mg/L)
		Iron (mg/L)	Manganese (mg/L)	Barium (mg/L)		
WQCC	-----	1.0	0.2	1.0	250	1,000
MW-7	8/17/1999	<0.05	0.06	0.44	1400	2,800
	9/22/1999	NS	NS	NS	1100	NS
	9/25/2002	NS	NS	NS	NS	NS
	9/24/2003	0.35	0.056	0.19	708	1,800
MW-8	8/17/1999	0.8	0.34	6.16	1860	3,300
	9/23/1999	NS	NS	NS	1900	NS
	9/28/2000	NS	NS	NS	1300	NS
	12/21/2000	0.32	0.12	0.14	1000	2,100
	3/19/2001	NS	NS	NS	970	NS
	9/27/2001	0.36	0.08	0.25	1000	2,500
	9/25/2002	0.138	0.0797	0.189	1090	2,392
	9/24/2003	0.28	0.078	0.259	1400	3,100
MW-9	8/17/1999	0.11	0.22	0.21	1100	2,300
	9/23/1999	NS	NS	NS	1100	NS
	9/28/2000	NS	NS	NS	820	NS
	12/21/2000	<0.05	0.04	0.26	520	1,400
	3/19/2001	NS	NS	NS	640	NS
	9/25/2002	NS	NS	NS	NS	NS
	9/24/2003	4.63	0.129	0.786	593	1,692
MW-10	8/17/1999	0.61	0.17	0.14	2370	4,400
	9/22/1999	NS	NS	NS	2200	NS
	9/25/2002	NS	NS	NS	NS	NS
MW-11	8/17/1999	<0.05	0.17	0.14	1020	2,300
	9/23/1999	NS	NS	NS	1100	NS
	9/28/2000	NS	NS	NS	1300	NS
	12/21/2000	<0.05	0.09	0.14	1400	2,700
	3/19/2001	NS	NS	NS	1500	NS
Duplicate	3/19/2001	NS	NS	NS	1700	NS
	9/27/2001	0.26	0.12	0.24	1600	3,800
	9/25/2002	0.255	0.141	0.271	1620	3,605
	9/24/2003	0.282	0.145	0.225	1600	3,225
MW-12 (PZ-2)	8/17/1999	0.11	0.13	0.16	4160	7,100
	9/22/1999	NS	NS	NS	4400	NS
	9/28/2000	NS	NS	NS	3800	NS
	12/21/2000	0.1	0.05	0.15	4000	6,100
	3/19/2001	NS	NS	NS	3700	NS
	9/27/2001	0.23	0.06	0.13	3200	6,500
	9/25/2002	<0.050	0.0297	0.111	3220	6,225
	9/24/2003	<0.05	<0.025	0.114	2550	5,210

Table 3. Historical Analytical Data for Selected Dissolved Metals, Chlorides and TDS
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Dissolved Metals			Chloride (mg/L)	TDS (mg/L)
		Iron (mg/L)	Manganese (mg/L)	Barium (mg/L)		
WQCC	-----	1.0	0.2	1.0	250	1,000
MW-13 (PZ-1)	8/17/1999	<0.05	0.09	0.16	1920	3,500
	9/23/1999	NS	NS	NS	1600	NS
	9/28/2000	NS	NS	NS	2200	NS
	12/21/2000	0.06	0.02	0.05	1700	2,900
	3/19/2001	NS	NS	NS	630	NS
	9/27/2001	0.79	0.17	0.14	3000	5,900
	9/25/2002	0.476	0.147	0.107	1670	3,660
	DUP-1	0.355	0.109	<.100	1130	2,625
	9/24/2003	0.221	0.05	0.11	711	1,688
MW-14	9/24/2003	<0.05	<0.025	0.124	777	1,734
MW-15	9/24/2003	0.271	0.089	0.122	1070	2,060
MW-16	9/24/2003	1.26	0.228	0.161	2350	4,740
Rinsate	9/24/2003	<0.05	<0.025	<0.01	<2.5	22
Livestock WW	3/19/2001	NS	NS	NS	660	NS
	9/27/2001	13.4	0.25	0.21	600	1,600
	9/25/2002	4.52	0.224	0.192	671	1,866
	9/24/2003	0.267	0.186	0.248	626	1,636

Footnotes:

WQCC - New Mexico Water Quality Control Commission Ground Water Standards.
TDS - Total Dissolved Solids.
mg/L - milligrams per liter.
NS - Constituent not sampled during the sampling event.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).

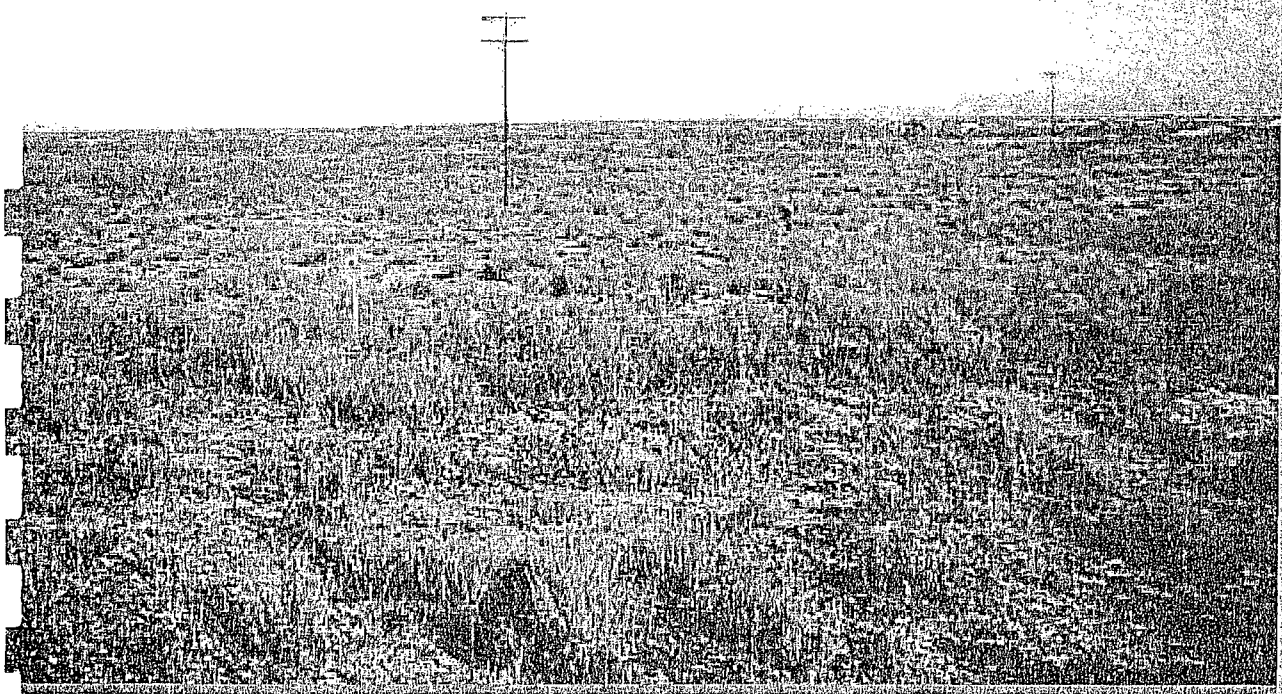
Table 4. Historical PAH Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Fluorene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Naphthalene (ug/L)	Phenanthrene (ug/L)	Pyrene (ug/L)	Anthracene (ug/L)	Benzo(b)fluoranthene (ug/L)	Fluoranthene (ug/L)	Chrysene (ug/L)	Benzo(a)anthracene (ug/L)	Benzo(a)pyrene (ug/L)	Benzo(ghi)perylene (ug/L)	Acenaphthylene (ug/L)	Acenaphthene (ug/L)	Dibenzo(a,h)anthracene (ug/L)	Benzo(k)fluoranthene (ug/L)
WQCC Standard				30								0.7					
MW-1	4/9/1999	<15	<1.5	<75	<15	<15	<15	1.6	<41	<15	6.5	<1.5	<1.5	<75	<75	<1.5	<1.5
MW-2	4/9/1999	<1.0	<0.1	<5	<1.0	<1.0	<1	<0.1	<1.0	<1.0	<0.10	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-3	4/9/1999	<1.0	<0.1	<5.0	<1.0	<1.0	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-4	4/9/1999	1.2	<0.1	18.1	1	<1.0	<1.0	<0.1	1.4	<1.0	0.12	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	1.5	<0.1	<5.0	1.8	<1	<1.0	<0.1	4.2	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-5	4/9/1999	<1.0	<0.1	<5.0	<1.0	<1.0	<1	<0.1	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5.0	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	0.24	<0.2	0.78	0.26	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
(Duplicate)	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-6	8/17/1999	<1	<0.1	<5	<1	<1.0	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1.0	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1.0	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-7	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-8	8/17/1999	<1.0	<0.1	<5	<1.0	<1.0	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-9	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/00*	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-10	8/17/1999	<1	<0.1	<5.0	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
MW-11	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<.02	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
MW-12 (FZ-2)	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-13 (FZ-1)	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Duplicate	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Livestock WW	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-14	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-15	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-16	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Rinsate	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Footnotes:
PAH - Polynuclear aromatic hydrocarbons.
ug/L - micrograms per liter.
NS - Constituent not sampled during the sampling event.
ND - Constituent was not detected during laboratory testing, and laboratory reporting limits are variable.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).

June 2005

Bertha Barber Tank Battery



Annual Report 2004-2005

R.T. Hicks Consultants, Ltd.

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

June 13, 2004

Bertha Barber Tank Battery

2004-2005 ANNUAL REPORT

Prepared for:

Marathon Oil Company
Southern Business Unit
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Houston, TX 77253-3487

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1.0 EXECUTIVE SUMMARY

We refer the reader to the 2003 Annual Report (submitted to NMOCD in March 2004) which provides important background regarding the site (Appendix A). This submission updates the 2003 Annual Report by providing data from the 2004 and 2005 sampling activities and our interpretations of the data. This submission is the 2004-05 Annual report.

In addition to the sampling programs described below, Marathon Oil Company (MOC) installed a soil vapor extraction (SVE) system in January 2005 that withdraws vapor from MW-1 and MW-2.

Pipeline releases of chloride from Rice Operating Company (located between MW-3 and MW-9) may have entered ground water in the past. Releases of chloride from up gradient sources, such as Dynergy (just northwest of MW-10), continue to impact groundwater quality. The data presented in this report demonstrate that the former Bertha Barber Tank Battery site is not a source of chloride in ground water. The data presented in this report show that the chloride currently observed in ground water is a result of a recent release or a past release from up gradient source(s).

In summary we found:

A. The ground water elevation rose about 5-10 feet in response to the relatively wet 2004-2005 fall and winter season.
B. Benzene is the only regulated hydrocarbon constituent detected in ground water at concentrations that exceed state standards and benzene occurs only in MW-4 and MW-5. However, the up gradient well MW-10, which exhibited hydrocarbons above standards in the past, was not sampled for hydrocarbons.
C. In 2005, benzene concentrations in MW-4 and MW-5 were 15.2 and 25.5 ppb respectively. In the past, benzene concentrations in MW-4 and MW-5 exceeded 50 ppb and 100 ppb respectively.
D. Phase separated hydrocarbons (PSH) exists only in MW-1 and the thickness observed in 2005 (0.1 foot) is less than 2004 (0.81 feet) but more than earlier events, such as September 2003 (0.04 feet).
E. Background chloride concentrations, as defined by the adjacent, up gradient livestock well, range between 500 and 700 ppm. The total dissolved solids concentration of the livestock well ranges between 1400 and 1900 ppm.
F. Chloride concentrations in ground water in March 2005 are generally 80-50% lower than concentrations observed in 2003. TDS concentrations have declined similarly.
G. MW-16, which exhibits the highest concentrations of TDS and chloride (2510 ppm and 1240 ppm respectively), is suitable for livestock but exceeds state ground water standards.
H. The up gradient monitoring well MW-10 (located down-gradient of Dynergy pipeline release area) continues to show relatively high concentrations of TDS and chloride (2530 ppm and 919 ppm respectively).

l. According to NMSU (http://cahe.nmsu.edu/pubs/_m/m-112.html) a TDS of 1000-2999 mg/l is "very satisfactory for all classes of livestock and poultry."

These new data allow us to conclude:

1. The former Bertha Barber Tank Battery, which released hydrocarbons in the past, created a highly localized area of benzene in ground water.
2. Past actions from up gradient, off-site sources have also caused impairment of ground water quality at the site (hydrocarbons and chloride).
3. Natural processes have effectively mitigated the impact caused by the Bertha Barber site's release of hydrocarbons in all wells except MW-5 and MW-4, which remains above WQCC Standards and MW-1, which contains separate phase hydrocarbons.
4. Natural processes will continue to reduce benzene concentrations in MW-5 and MW-4 to acceptable levels.
5. PSH will continue to appear in certain monitor wells in the form of a sheen or thin layer. Fluctuating water levels cause hydrocarbons that are entrained within the saturated zone matrix to appear in monitoring wells.
6. The precipitation events of 2004 appear to have accelerated natural processes (dilution), which have reduced TDS and chloride concentrations in the area caused by others.

We recommend that annual ground water sampling of MW-1, MW-2, MW-4 and MW-5 for hydrocarbon constituents only should continue until benzene is at or below state standard. When ground water quality meets these criteria, Marathon should perform eight quarters of monitoring of these four wells then submit a request for closure of the regulatory file associated with ground water.

2.0 2004-2005 SAMPLING FIELD METHODS

BBC International Inc. conducted annual groundwater monitoring events on March 22, 2004 and March 2-3 and April 22, 2005. During each monitoring event, a site-wide gauging event was completed prior to sampling.

Three wetted casing volumes of water were removed from each well prior to sample collection. The fluid was removed from each well using a submersible pump and dedicated tubing or a dedicated disposable bailer. In some cases, the wells were pumped (or bailed) dry and allowed to recover prior to sampling. When a submersible pump was utilized, it was decontaminated by washing and pumping with water and laboratory-grade detergent. The washing was followed by a clean water rinse.

Because MW-1 showed a measurable amount of phase-separated hydrocarbons (PSH) during both 2004 and 2005 sampling events, BBC did not collect a sample from this well. Because MW-10 measures the effects of the up-gradient sources, BBC International did not sample this well in 2004. In 2005, BBC sampled MW-10 for TDS and chloride only to establish the influence of up gradient sources of chloride on the Bertha Barber site.

During the 2004 annual monitoring event, ground water samples were collected and analyzed for BTEX (benzene, toluene, ethylbenzene and total xylene) using EPA Method 8021B. MOC did not request sampling for metals (e.g. chloride, barium, etc.) or TDS after verbal authorization from NMOCD to eliminate this sampling requirement.

For the 2005 annual monitoring event, BBC collected samples for analysis of regulated petroleum hydrocarbons (BTEX and naphthalene) as well as selected metals. For sulfate analysis of samples from MW-15, MW-9, MW-3 and MW-2, the laboratory employed EPA Method 300.0. The laboratory analyzed samples from all wells for:

- chloride (EPA Method 300.0)
- total dissolved solids (EPA Method 160.1)
- Barium, Iron and Manganese (EPA Method 6010B)

Fluid levels were gauged in all monitor wells during each groundwater monitoring event.

3.0 RESULTS AND DISCUSSION OF 2004-2005 GROUND WATER SAMPLING

Table 1 contains historical fluid level data for all monitor wells at the site. Plate 1 is a water table elevation map for the Bertha Barber wells for March 22, 2004. Plate 2 is a water table elevation map for the March-April 2005 sampling event. Our interpretation of the 2004 water level data remains consistent with the regional data, showing a southeast gradient of 0.0004.

The data from 2005 (Plate 2) reveal an unusual potentiometric surface reminiscent of a map reported to NMOCD several years ago. Perturbations in the water elevation are caused by measurements in MW-6, MW-2, and MW-9. In Plate 2, the hydraulic gradient is 0.005 to the southwest, as in Plate 1, if we employ only the data from wells MW-13, MW-14, MW-11 and MW-16. Because highly localized recharge and discharge cannot be called upon to explain the observed perturbation in the potentiometric surface, we must conclude that localized changes in the hydraulic properties of the underlying aquifer are the cause of the unusual surface. Perhaps aged hydrocarbons have filled pore spaces near MW-6 and MW-2 and reduced the hydraulic conductivity relative to other areas. Perhaps the area near MW-6 and MW-2 exhibits a lower hydraulic conductivity due to natural causes and near MW-9 the aquifer exhibits a higher hydraulic conductivity.

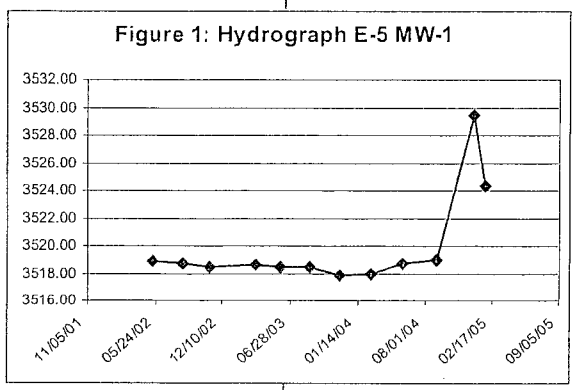


Figure 1 is a hydrograph of the E-5 monitoring well of Rice Operating Company, which is gauged quarterly. In the area of the Bertha Barber site, water levels rose more than 10 feet. Other wells in the area also showed a rise in the water table elevation, but generally less than the 10 feet observed at the E-5 Bertha Barber site.

This rise in the ground water elevation shown in Figure 1 was a stress to the hydrogeologic system, similar to a pumping or injection well. When conducting a pumping test to determine aquifer property, one applies a

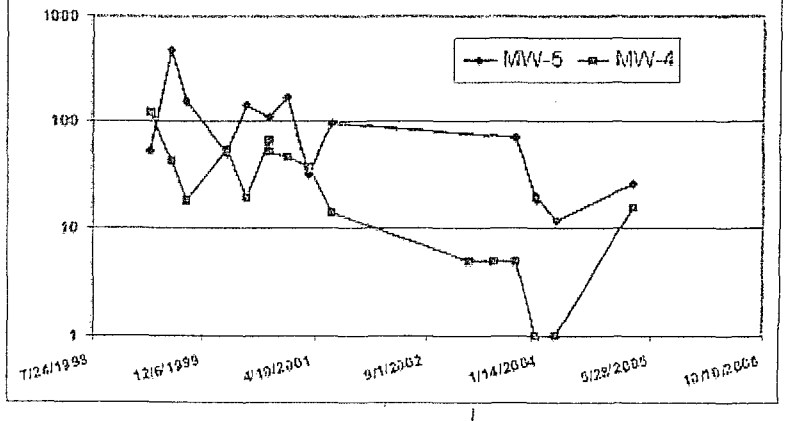
stress to an aquifer system and measures the response. At the Bertha Barber site, the potentiometric surface at MW-6 and MW-2 has not risen as quickly as other wells while the surface at MW-9 rose higher than all other wells. As stated above, one could conclude from this data that the hydraulic conductivity at MW-6 and MW-2 is less than at other wells, dampening the effect of the regionally rising water levels. Because we saw no evidence of a surface discharge event near MW-9 that would cause the ground water "mound" in Plate 2, we can conclude that the hydraulic conductivity is larger than other wells, showing a larger response to the regionally rising water levels.

In 2004 and 2005, BBC International observed phase-separated hydrocarbons in MW-1. As shown in Table 1, PSH in MW-1 is not uncommon, but the thickness of PSH has increased during the past three years before decreasing to 0.1 foot in 2005. No other wells exhibited PSH in 2004 or 2005. Before 2003 PSH occurred more than once in wells MW-2, MW-4, MW-5, MW-7, MW-9 and MW-10. However, natural processes have caused restoration of hydrocarbons (dissolved and PSH) in MW-4, MW-5, MW-7 and MW-9, which monitored by MOC. PSH was not observed in MW-10 and this we did not sample this well for hydrocarbons. As stated in the 2003 Annual Report:

> *Examination of the geologist's logs of MW-1 and other nearby wells show hydrocarbon stained material at depths exceeding 25 feet and some wells (e.g. MW-3) show hydrocarbon stained material within the saturated zone. We hypothesize that these hydrocarbons in the deep vadose zone and in the saturated zone periodically release phase-separated hydrocarbons to ground water in the form of PSH in monitoring wells.*

The chemical analyses are summarized in Tables 2, 3 and 4 along with historical results from each well. In 2003 and 2005, only MW-5 exhibited benzene above laboratory detection limits. In 2005, MW-5 and MW-4 detected hydrocarbons, both above the WQCC numerical standard. Figure 2 shows the chemical trend in these wells over time. Forecasting the benzene concentration decline using a simple "best fit" analysis to the existing data suggests that MW-5 will meet WQCC standards by 2008. Of course, this same analysis would have shown that MW-4 would not exceed standards in 2005. We cannot

Figure 2: Benzene ppb v. Time



predict the exact date of complete restoration of the site with scientific certainty. However, we can rely upon the Second Law of Thermodynamics and decades of data at other hydrocarbon sites to conclude that natural restoration of ground water will occur at the site.

Since 2003, all other organic constituents, such as toluene and PAHs, have been below laboratory detection limits or below the numerical standards.

Total Dissolved Solids (TDS) and chloride are above WQCC standards in several wells, including the livestock well and MW-10, both up gradient from the former Bertha Barber site. The regional background TDS concentration in the area of the Bertha Barber site appears to range from 1400 to 1900 ppm (see livestock well analyses in Table 4) and background chloride in the livestock well is about 650 ppm. However, the data from MW-10 demonstrate that up gradient sources are contributing to or are the principal source of the observed chloride concentrations at the Bertha Barber site.

Past hydrocarbon concentrations in ground water at MW-10 and past and current chloride values in samples from this same well suggest an off-site source of these constituents. Plate 3 shows a reinterpretation of the chloride concentration map for 2003 that shows regional sources as the principal cause of concentrations observed in MW-12 and MW-16. The fact that wells north and east of MW-10, MW-12 and MW-13 do not display the suggested effects of regional degradation could be due to a deflection in the regional flow caused by the low-permeability zone near MW-6 and MW-2.

Plate 4 shows the magnitude and extent of chloride in ground water from the most 2005 sampling event. We hypothesize that the large precipitation of 2004 accelerated the natural restoration of ground water (i.e. dilution and dispersion), resulting in the lower chloride concentrations generally observed in Plate 4 versus Plate 3. Like Plate 2, Plate 4 shows an unusual pattern caused by a relatively low chloride value in MW-12 and relatively high value at the ROC monitoring well. The pattern observed in Plate 4 suggests localized impairment of ground water near the ROC monitoring well. More importantly, the geometry of the chloride impact to ground water shown in Plate 4 further support our hypothesis that up gradient sources of chloride, not past discharges by MOC, are the principal cause of elevated chloride concentrations in MOC monitoring wells. We conclude that the former evaporation pit (see 2003 Annual Report) is not a contributor of chloride to the ground water system now observed in monitoring wells. If this former pit is a contributor to the observed ground impairment, we could not explain

the complete restoration of ground water quality (with respect to chloride and TDS) observed in MW-12, which is directly down gradient from 2003, the chloride concentrations in these wells were generally greater than 1000 ppm and less than 3000 ppm. Monitoring wells located near but down gradient from the former disposal pits (MW-3, MW-4 and MW-9) show that chloride concentrations for the past two years (560 ppm) are not dissimilar from those observed in the adjacent livestock well (average 604 ppm) during that same period. At the down gradient edge of the site, MW-8, MW-11, and MW-15 show that 2005 chloride concentrations are 450-500 ppm. Well MW-16, however, continues to show the effect of up gradient sources.

The 2005 data cause us to change our hypothesis presented in the 2003 Annual Report. In this previous report we concluded that past discharges to the former evaporation pit caused localized impairment of ground water quality. With the complete restoration of ground water quality in MW-12, we find it difficult to support a hypothesis that the former evaporation pit continues to contribute to chlorides to ground water. Obviously, the observed chloride and hydrocarbon impact to MW-10 and MW-6 and the 2005 chloride concentration in MW-10 cause us to conclude that chloride from recent sources up gradient from the Bertha Barber site materially affect the chloride concentrations observed in MW-12 and MW-16.

4.0 RECOMMENDATIONS

1. MOC continue to conduct annual monitoring of MW-1, MW-2, MW-4 and MW-5 for BTEXN.
2. Discontinue sampling monitor wells MW-6, MW-8, MW-13, MW-14, and MW-15 as they provide no value.

TABLES

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World-Wide Environmental Specialists

Phone: (505) 397-6388 * **Fax**: (505) 397-0397 * 1324 W. Marland * PO Box 805 * Hobbs, NM 88241

Table 1.
Historical Fluid Level Data, December 1998 - December 2003
Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-1	03/03/05	3561.57	31.90	31.77	0.10	3529.77
	3/22/2004	3561.57	39.23	38.22	0.81	3523.15
	12/22/2003	3561.57	39.00	38.15	0.68	3523.25
	9/24/2003	3561.57	38.08	38.03	0.04	3523.53
	6/16/2003	3561.57	37.70	37.7	0	3523.87
	3/5/2003	3561.57	37.55	37.53	0.02	3524.04
	12/18/2002	3561.57	37.62	37.60	0.02	3523.97
	9/25/2002	3561.20	37.67	37.55	0.10	3523.63
	6/28/2002	3561.20	37.38	37.37	0.01	3523.83
	3/22/2002	3561.20	37.34	37.30	0.03	3523.89
	12/26/2001	3561.20	37.33	37.19	0.11	3523.98
	9/27/2001	3561.20	38.55	38.48	0.06	3522.71
	6/28/2001	3561.20	38.15	38.14	0.01	3523.06
	3/19/2001	3561.20	37.15	37.14	0.01	3524.06
	12/21/2000	3561.20	37.14	37.13	0.01	3524.07
	9/27/2000	3561.20	37.70	37.65	0.04	3523.54
	6/20/2000	3561.20	37.77	37.70	0.06	3523.49
	3/30/2000	3561.20	36.20	36.19	0.01	3525.01
	12/14/1999	3561.20	36.03	36.06	0.03	3525.19
	9/22/1999	3561.20	35.79	35.79	0.0001	3525.41
	8/27/1999	3561.20	35.66	35.68	0.02	3525.55
	7/16/1999	3561.20	35.48	35.49	0.005	3525.72
	3/31/1999	3561.20	35.82	35.87	0.05	3525.42
	12/30/1998	3561.20	35.83	35.83	0	3525.37
MW-2	03/03/05	3562.10	35.05		0	3527.05
	03/22/04	3562.10	39.02		0	3523.08
	12/22/03	3562.10	38.58		0	3523.52
	09/24/03	3562.10	38.36		0	3523.74
	06/16/03	3562.10	38.19		0	3523.91
	03/05/03	3562.10	38.05		0	3524.05
	*12/18/2002	3562.10	38.15	38.14	0.01	3523.96
	09/25/02	3561.69	38.10	38.06	0.03	3523.62
	06/28/02	3561.69	37.85		0	3523.84
	03/22/02	3561.69	38.78		0	3522.91
	12/26/01	3561.69	37.70	37.69	0.01	3524.00
	09/27/01	3561.69	37.49	37.48	0.01	3524.21
	06/28/01	3561.69	37.16	37.15	0.01	3524.54
	03/19/01	3561.69	37.61	37.60	0.01	3524.09
	12/21/00	3561.69	37.60	37.59	0.01	3524.10
	09/27/00	3561.69	38.12	38.11	0.01	3523.58
	06/20/00	3561.69	38.12	38.10	0.02	3523.59
	03/30/00	3561.69	36.60	36.59	0.01	3525.10
	12/14/99	3561.69	36.62		0	3525.07
	09/22/99	3561.69	36.27		0	3525.42
	08/27/99	3561.69	36.13		0.01	3525.57
	07/16/99	3561.69	35.95		0	3525.74

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl Ft above mean sea level
feet bmp Ft below measuring point

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Table 1.

Historical Fluid Level Data, December 1998 - December 2003

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	03/31/99	3561.69	36.33		0	3525.36
	12/30/98	3561.69	36.34		0	3525.35
MW-3	03/03/05	3563.40	33.60		0	3529.80
	03/22/04	3563.40	40.08		0	3523.32
	12/22/03	3563.40	40.07		0	3523.33
	09/24/03	3563.40	39.88		0	3523.52
	06/16/03	3563.40	39.53		0	3523.87
	03/05/03	3563.40	39.39		0	3524.01
	*12/18/2002	3563.40	39.49		0	3523.91
	09/25/02	3563.00	39.42	39.41	0.01	3523.59
	06/28/02	3563.00	39.19		0	3523.81
	03/22/02	3563.00	39.11		0	3523.89
	12/26/01	3563.00	39.05		0	3523.95
	09/27/01	3563.00	38.95		0	3524.05
	06/28/01	3563.00	38.63		0	3524.37
	03/19/01	3563.00	38.19		0	3524.81
	12/21/00	3563.00	38.11		0	3524.89
	09/27/00	3563.00	37.88		0	3525.12
	06/20/00	3563.00	38.56		0	3524.44
	03/30/00	3563.00	38.10		0	3524.90
	12/14/99	3563.00	38.10		0	3524.90
	09/22/99	3563.00	37.59		0	3525.41
	08/27/99	3563.00	37.48		0	3525.52
	07/16/99	3563.00	37.31		0	3525.69
	03/31/99	3563.00	37.67		0	3525.33
	12/30/98	3563.00	37.65		0	3525.35
MW-4	03/03/05	3563.43	33.61		0	3529.82
	03/22/04	3563.43	40.09		0	3523.34
	12/22/03	3563.43	39.95		0	3523.48
	09/24/03	3563.43	39.73		0	3523.70
	06/16/03	3563.43	39.52		0	3523.91
	03/05/03	3563.43	39.39		0	3524.04
	*12/18/2002	3563.43	39.45		0	3523.98
	09/25/02	3563.01	38.65	38.61	0.03	3524.39
	06/28/02	3563.01	38.66	38.63	0.02	3524.37
	03/22/02	3563.01	39.11	39.10	0.01	3523.91
	12/26/01	3563.01	39.05	39.03	0.02	3523.98
	09/27/01	3563.01	38.92	38.82	0.08	3524.17
	06/28/01	3563.01	38.60		0	3524.41
	03/19/01	3563.01	38.16		0	3524.85
	12/21/00	3563.01	38.10		0	3524.91
	09/27/00	3563.01	37.86		0	3525.15
	06/20/00	3563.01	38.26		0	3524.75
	03/30/00	3563.01	38.10		0	3524.91

*New survey data

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl Ft above mean sea level

feet bmp Ft below measuring point

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	12/14/99	3563.01	37.85		0	3525.16
	09/22/99	3563.01	37.57		0	3525.44
	08/27/99	3563.01	37.46		0	3525.55
	07/16/99	3563.01	37.28		0	3525.73
	03/31/99	3563.01	37.66		0	3525.35
	12/30/98	3563.01	37.66		0	3525.35
MW-5	03/03/05	3561.49	32.73		0	3528.76
	03/22/04	3561.49	38.20		0	3523.29
	12/22/03	3561.49	38.12		0	3523.37
	09/24/03	3561.49	37.95		0	3523.54
	06/16/03	3561.49	37.60	Sheen	0	3523.89
	03/05/03	3561.49	37.46	Sheen	0	3524.03
	*12/18/2002	3561.49	37.56	37.54	0.02	3523.95
	09/25/02	3561.10	37.52	37.48	0.03	3523.61
	06/28/02	3561.10	37.31	37.29	0.02	3523.81
	03/22/02	3561.10	37.20		0	3523.90
	12/26/01	3561.10	37.21	37.10	0.09	3523.98
	09/27/01	3561.10	36.98	36.47	0.41	3524.53
	06/28/01	3561.10	36.69		0	3524.41
	03/19/01	3561.10	36.13		0	3524.97
	12/21/00	3561.10	36.15		0	3524.95
	09/27/00	3561.10	35.98		0	3525.12
	06/20/00	3561.10	36.34		0	3524.76
	03/30/00	3561.10	36.10		0	3525.00
	12/14/99	3561.10	35.95		0	3525.15
	09/22/99	3561.10	35.68		0	3525.42
	08/27/99	3561.10	35.56		0	3525.54
	07/16/99	3561.10	35.38		0	3525.72
	03/31/99	3561.10	35.75		0	3525.35
	12/30/98	3561.10	35.73		0	3525.37
MW-6	03/03/05	3561.65	34.42		0	3527.23
	03/22/04	3561.65	38.30		0	3523.35
	12/22/03	3561.65	38.29		0	3523.36
	09/24/03	3561.65	38.10		0	3523.55
	06/16/03	3561.65	37.76		0	3523.89
	03/05/03	3561.65	37.61		0	3524.04
	*12/18/2002	3561.65	37.70		0	3523.95
	09/25/02	3561.25	37.63		0	3523.62
	06/28/02	3561.25	37.40		0	3523.85
	03/22/02	3561.25	37.32		0	3523.93
	12/26/01	3561.25	37.25		0	3524.00

*New survey data

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl = Ft above mean sea level

feet bmp = Ft below measuring point

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Table 1.

Historical Fluid Level Data, December 1998 - December 2003

Marathon Oil Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
	09/27/01	3561.25	37.02		0	3524.23
	06/28/01	3561.25	36.54		0	3524.71
	03/19/01	3561.25	36.80		0	3524.45
	12/21/00	3561.25	36.13		0	3525.12
	09/27/00	3561.25	36.06		0	3525.19
	06/20/00	3561.25	36.39		0	3524.86
	03/30/00	3561.25	36.29		0	3524.96
	12/14/99	3561.25	36.10		0	3525.15
	09/22/99	3561.25	35.75		0	3525.50
	08/27/99	3561.25	35.69		0	3525.56
MW-7	03/04/05	3562.70	33.43		0	3529.27
	03/22/04	3562.70	39.78		0	3522.92
	12/22/03	3562.70	39.75		0	3522.95
	09/24/03	3562.70	39.60		0	3523.10
	06/16/03	3562.70	39.16		0	3523.54
	03/05/03	3562.70	38.97		0	3523.73
	*12/18/2002	3562.70	39.07		0	3523.63
	09/25/02	3562.44	39.01	38.99	0.02	3523.45
	06/28/02	3562.44	38.76		0	3523.68
	03/22/02	3562.44	38.65	38.64	0.01	3523.80
	12/26/01	3562.44	38.62	38.61	0.01	3523.83
	09/27/01	3562.44	38.43	38.42	0.01	3524.02
	06/28/01	3562.44	37.90	37.89	0.01	3524.55
	03/19/01	3562.44	37.58	37.57	0.01	3524.87
	12/21/00	3562.44	37.70	37.65	0.04	3524.79
	09/27/00	3562.44	37.76	37.75	0.01	3524.69
	06/20/00	3562.44	37.91	37.73	0.14	3524.67
	03/30/00	3562.44	37.60	37.55	0.04	3524.88
	12/14/99	3562.44	37.51		0	3524.93
	09/22/99	3562.44	38.20		0	3524.24
	08/27/99	3562.44	38.15		0	3524.29
MW-8	04/22/05	3561.82	32.43		0	3529.39
	03/22/04	3561.82	38.96		0	3522.86
	12/22/03	3561.82	38.92		0	3522.90
	09/24/03	3561.82	38.71		0	3523.11
	06/16/03	3561.82	38.30		0	3523.52
	03/05/03	3561.82	38.10		0	3523.72
	*12/18/2002	3561.82	38.20		0	3523.62
	09/25/02	3561.39	38.15		0	3523.24
	06/28/02	3561.39	37.87		0	3523.52
	03/22/02	3561.39	37.80		0	3523.59
	12/26/01	3561.39	37.74		0	3523.65
	09/27/01	3561.39	37.51		0	3523.88
	06/28/01	3561.39	36.98		0	3524.41
	03/19/01	3561.39	36.51		0	3524.88
	12/21/00	3561.39	36.50		0	3524.89
	09/27/00	3561.39	36.61		0	3524.78
	06/20/00	3561.39	36.88		0	3524.51
	03/30/00	3561.39	36.65		0	3524.74
	12/14/99	3561.39	36.44		0	3524.95
	09/22/99	3561.39	37.26		0	3524.13
	08/27/99	3561.39	37.21		0	3524.18
MW-9	03/03/05	3563.95	31.80		0	3532.15
	03/22/04	3563.95	40.45		0	3523.50
	12/22/03	3563.95	40.84		0	3523.11
	09/24/03	3563.95	40.62		0	3523.33
	06/16/03	3563.95	40.22		0	3523.73

*New survey data

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl Ft above mean sea level

feet bmp Ft below measuring point

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Table 1.

Historical Fluid Level Data, December 1998 - December 2003

Marathon Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
	03/05/03	3563.95	40.04		0	3523.91
	*12/18/2002	3563.95	40.15		0	3523.80
	09/25/02	3561.59	41.11	41.09	0.02	3520.50
	06/28/02	3561.59	39.87	39.85	0.02	3521.74
	03/22/02	3563.59	39.39	39.37	0.02	3524.22
	12/26/01	3563.59	39.82	39.65	0.14	3523.91
	09/27/01	3563.59	39.62	39.40	0.18	3524.15
	06/28/01	3563.59	38.99		0	3524.60
	03/19/01	3563.59	38.65		0	3524.94
	12/21/00	3563.59	38.60		0	3524.99
	09/27/00	3563.59	38.60		0	3524.99
	06/20/00	3563.59	38.89		0	3524.70
	03/30/00	3563.59	38.70		0	3524.89
	12/14/99	3563.59	38.48		0	3525.11
	09/22/99	3563.59	36.23		0	3527.36
	08/27/99	3563.59	36.14		0	3527.45
**MW-10	04/22/05	3560.88	31.22		0	3529.66
	12/22/03	3560.88				
	09/24/03	3560.88				
	06/16/03	3560.88				
	03/05/03	3560.88	36.83	36.82	0.01	3524.06
	*12/18/2002	3560.88	36.92	36.91	0.01	3523.97
	09/25/02	3560.51	36.84	36.82	0.02	3523.69
	06/28/02	3560.51	36.61	36.60	0.01	3523.91
	03/22/02	3560.51	36.55	36.53	0.01	3523.98
	12/26/01	3560.51	36.98	36.34	0.48	3524.01
	09/27/01	3560.51	36.75	36.12	0.47	3524.23
	06/28/01	3560.51	36.26	35.63	0.47	3524.72
	03/19/01	3560.51	35.52	35.48	0.03	3525.02
	12/21/00	3560.51	35.53	35.52	0.01	3524.99
	09/27/00	3560.51	35.56	35.55	0.01	3524.96
	06/20/00	3560.51	35.55	35.54	0.01	3524.97
	03/30/00	3560.51	35.50	35.49	0.01	3525.02
	12/14/99	3560.51	35.33		0	3525.18
	09/22/99	3560.51	34.96		0	3525.55
	08/27/99	3560.51	34.87		0	3525.64
MW-11	03/03/05	3565.81	36.68		0	3529.13
	03/22/04	3565.81	43.12		0	3522.69
	12/22/03	3565.81	43.08		0	3522.73
	09/24/03	3565.81	42.90		0	3522.91
	06/16/03	3565.81	42.47		0	3523.34
	03/05/03	3565.81	42.26		0	3523.55
	*12/18/2002	3565.81	42.34		0	3523.47
	09/25/02	3565.44	42.32		0	3523.12
	06/28/02	3565.44	42.04		0	3523.40
	03/22/02	3565.44	41.95		0	3523.49
	12/26/01	3565.44	41.91		0	3523.53
	09/27/01	3565.44	41.71		0	3523.73
	06/28/01	3565.44	41.16		0	3524.28
	03/19/01	3565.44	39.76		0	3525.68
	12/21/00	3565.44	40.01		0	3525.43
	09/27/00	3565.44	39.82		0	3525.62
	06/20/00	3565.44	40.10		0	3525.34
	03/30/00	3565.44	39.80		0	3525.64
	12/14/99	3565.44	40.61		0	3524.83
	09/22/99	3565.44	40.37		0	3525.07
	08/27/99	3565.44	40.34		0	3525.10

*New survey data

Water level elevations corrected for condensate using a SG of 0.80

**Water level elevations corrected for condensate using a SG of 0.75.

feet amsl Ft above mean sea level

feet bmp Ft below measuring point

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Table 1.
Historical Fluid Level Data, December 1998 - December 2003
Marathon Company, Former Bertha Barber Tank Battery, Lea County, New Mexico

Well ID	Date	Measuring Point Elevation (feet amsl)	Depth to Water (feet bmp)	Depth to Product (feet)	Product Thickness (feet)	Corrected Water-Level Elevation (feet amsl)
MW-12 (PZ-2)	04/22/05	3562.46	33.23		0	3529.23
	03/22/04	3562.46	39.25		0	3523.21
	12/22/03	3562.46	39.22		0	3523.24
	09/24/03	3562.46	39.03		0	3523.43
	06/16/03	3562.46	38.68		0	3523.78
	03/05/03	3562.46	38.54		0	3523.92
	*12/18/2002	3562.46	38.62		0	3523.84
	09/25/02	3562.11	38.53		0	3523.58
	06/28/02	3562.11	38.30		0	3523.81
	03/22/02	3562.11	38.22		0	3523.89
	12/26/01	3562.11	37.15		0	3524.96
	09/27/01	3562.11	37.90		0	3524.21
	06/28/01	3562.11	37.45		0	3524.66
	03/19/01	3562.11	37.26		0	3524.85
	12/21/00	3562.11	37.23		0	3524.88
	09/27/00	3562.11	37.09		0	3525.02
	06/20/00	3562.11	37.34		0	3524.77
	03/30/00	3562.11	37.23		0	3524.88
	12/14/99	3562.11	36.95		0	3525.16
	09/22/99	3562.11	36.69		0	3525.42
	08/27/99	3562.11	36.65		0	3525.46
MW-13 (PZ-1)	03/03/05	3560.05	30.20		0	3529.85
	03/22/04	3560.05	36.78		0	3523.27
	12/22/03	3560.05	36.72		0	3523.33
	09/24/03	3560.05	36.51		0	3523.54
	06/16/03	3560.05	36.17		0	3523.88
	03/05/03	3560.05	36.03		0	3524.02
	*12/18/2002	3560.05	36.12		0	3523.93
	09/25/02	3559.67	36.05		0	3523.62
	06/28/02	3559.67	35.82		0	3523.85
	03/22/02	3559.67	35.76		0	3523.91
	12/26/01	3559.67	35.67		0	3524.00
	09/27/01	3559.67	35.52		0	3524.15
	06/28/01	3559.67	34.95		0	3524.72
	03/19/01	3559.67	34.84		0	3524.83
	12/21/00	3559.67	34.75		0	3524.92
	09/27/00	3559.67	34.49		0	3525.18
	06/20/00	3559.67	34.90		0	3524.77
	03/30/00	3559.67	34.80		0	3524.87

*New survey data
Water level elevations corrected for condensate using a SG of 0.80
**Water level elevations corrected for condensate using a SG of 0.75.
feet amsl = Ft above mean sea level
feet bmp = Ft below measuring point

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	30
MW-1	4/9/1999	**5**	<5	<5	NS	NS	<10	
	7/15/1999	<500	<500	<500	NS	NS	<1000	
MW-2	4/9/1999	<5	<5	<5	NS	NS	<10	
	7/15/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	3/5/2003	<5	<5	<5			<5	
(Duplicate)	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
(Duplicate)	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			1.2	
(Duplicate)	3/22/2004	<1	<1	<1			1	
	3/4/2005	<1	<1	<1	<1	<1		1.37
MW-3	4/9/1999	**100**	**14**	<5	NS	NS	<10	
	7/15/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	**11**	<5	<10	ND	
(Duplicate)**	3/30/2000	**54**	**8.6**	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5.0	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	**10**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<5	<5	<5	NS	NS	<5	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	30
MW-4	4/9/1999	**121**	**77**	**43**	NS	NS	**60**	
	7/15/1999	**43**	**28**	<5	NS	NS	<10	
	9/23/1999	**18**	**12**	<5	NS	NS	<10	
	3/30/2000	**54**	**7.5**	**8.7**	<5	<10	ND	
	6/20/2000	**19**	<5.0	<5	<5	<10	<10	
	9/28/2000	**66**	**13**	<5	<5	<10	<10	
(Duplicate)	9/28/2000	**51**	<5.0	<5	<5	<10	11	
	12/21/2000	**46**	**10**	<5	NS	NS	20	
	3/19/2001	**37**	<5	**5.2**	<5	<10	<10	
	6/28/2001	**14**	<5	<5	NS	NS	<10	
	3/5/2003	5	<5	<5			<5	
	6/16/2003	5	<5	<5			<5	
	9/24/2003	5	<5	<5			<5	
	12/22/2003	1	<1	<1			<1	
	3/22/2004	<1	<1	<1			3.7	
	3/4/2005	15.2	1.71	<1	<1	<1		3.69
MW-5	4/9/1999	**53**	<5	<5	NS	NS	<10	
	7/15/1999	**470**	**43**	<5	NS	NS	10	
	9/22/1999	**156**	**6**	<5	NS	NS	<10	
	3/30/2000	**50**	<5	**9.7**	<5	<10	ND	
	6/20/2000	**140**	<5	<5	<5	<10	<10	
	9/28/2000	**110**	<5	<5	<5	<10	<10	
	12/21/2000	**169**	**5**	<5	NS	NS	**20**	
	3/19/2001	**32**	<5	<5	<5	<10	<10	
	6/28/2001	**96**	<5	<5	NS	NS	<10	
	9/24/2003	**71**	<5	<5			<5	
	12/22/2003	**17.9**	<5	<5			<5	
(Duplicate)	12/22/2003	**19.8**	<5	<5			<5	
	3/22/2004	**11.5**	<10	<10			22.2	
	3/4/2005	**25.5**	6.78	<1	<1	<1		1.52

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	30
MW-6	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/22/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	**11**	<5	<5	<5	<10	<10	
	12/21/2000	**14**	<5	<5	NS	NS	**10**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
Duplicate	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
Duplicate	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	30
MW-7	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/22/1999	<5	<5	<5	NS	NS	<10	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/4/2005	<1	<1	<1	<1	<1		<1
MW-8	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	**11**	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	<10	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<5	<5	<5	NS	NS	<5	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<5	<5	<5			<5	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	4/22/2005	<1	<1	<1	<1	<1		<1
MW-9	8/17/1999	**20**	<5	<5	NS	NS	<10	
	9/23/1999	**8**	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	9.3	<5	<5	ND	
	6/20/00*	<5	<5	<5	<5	<10	<10	
	9/28/00*	<5	<5	<5	<5	<10	<10	
	12/21/00*	<5	<5	<5	NS	NS	<10	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	**28**	<5	NS	NS	<10	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<5	<5	<5			<5	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<5	<5	<5			<5	
	3/22/2004	<5	<5	<5			<5	
	3/3/2005	<1	<1	<!	<2	<!		<!

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	30
MW-10	8/17/1999	**12100**	**160**	**1730**	NS	NS	400	
	9/22/1999	**2900**	**520**	**800**	NS	NS	600	
MW-11	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	<5	<10	<10	
	3/30/2000	<5	<5	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
(Duplicate)	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	**20**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
(Duplicate)	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<5	<5	<5	NS	NS	<5	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<5	<5	<5			<5	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
MW-12 (PZ-2)	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/22/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	<5	<5	<5	<10	ND	
	6/20/2000	**7.3**	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	**20**	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001^	NS	NS	NS	NS	NS	NS	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12//22/03	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	4/22/2005	<1	<1	<1	<1	<1		<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	10	750	750	-----	-----	620	30
MW-13 (PZ-1)	8/17/1999	<5	<5	<5	NS	NS	<10	
	9/23/1999	<5	<5	<5	NS	NS	<10	
	3/30/2000	<5	5	<5	<5	<10	ND	
	6/20/2000	<5	<5	<5	<5	<10	<10	
	9/28/2000	<5	<5	<5	<5	<10	<10	
	12/21/2000	<5	<5	<5	NS	NS	<10	
	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<200	<200	<200	NS	NS	<200	
	9/25/2002	<1	<1	<1	NS	NS	<1	
Duplicate	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
(Duplicate)	9/24/2003	<5	<5	<5			<5	
	12//22/03	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
MW-14	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
MW-15	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
MW-16	12/18/2002	<1	<1	<1	NS	NS	<1	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<5	<5	<5			<5	
	3/22/2004	<1	<1	<1			<1	
	3/22/2004	<5	<5	<5			<5	
	3/3/2005	<1	<1	<1	<1	<1		<1

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	**10**	**750**	**750**	-----	-----	**620**	30
Livestock WW	3/19/2001	<5	<5	<5	<5	<10	<10	
	6/28/2001	<5	<5	<5	NS	NS	<10	
	9/27/2001	<5	<5	<5	NS	NS	<10	
	12/26/2001	<5	<5	<5	NS	NS	<10	
	3/22/2002	<5	<5	<5	NS	NS	<10	
	6/28/2002	<5	<5	<5	NS	NS	<5	
	9/25/2002	<1	<1	<1	NS	NS	<1	
	12/18/2002	<5	<5	<5	NS	NS	<5	
	3/5/2003	<5	<5	<5			<5	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	
	3/22/2004	<1	<1	<1			<1	
	3/3/2005	<1	<1	<1	<1	<1		<1
Rinsate	3/5/2003	<1	<1	<1			<1	
	6/16/2003	<1	<1	<1			<1	
	9/24/2003	<5	<5	<5			<5	
	12/22/2003	<1	<1	<1			<1	

Table 2. Historical BTEX Analytical Data
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Benzene (ug/L)	Ethylbenzene (ug/L)	Toluene (ug/L)	o-Xylene (ug/L)	m&p-Xylenes (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
WQCC	-----	10	750	750	-----	-----	620	30

Footnotes:

WQCC - New Mexico Water Quality Control Commission Ground Water Standards.
BTEX - Benzene, Toluene, Ethylbenzene and Total Xylenes.
ug/L - micrograms per liter.
NS - Constituent not speciated.
ND - Constituent was not detected during laboratory testing, and laboratory reporting limits are variable.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).
** - Question data because it appears to be more representative of the sample for MW-4 for the same event.
^ - Sample containers were all broken.

Table 4. Historical Analytical Data for Selected Dissolved Metals, Chlorides and TDS
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Dissolved Metals			Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
		Iron (mg/L)	Manganese (mg/L)	Barium (mg/L)			
WQCC	-----	**1.0**	**0.2**	**1.0**	**250**		**1,000**
MW-1	4/9/1999	**3.86**	**0.48**	**2.74**	**3600**		**6,100**
MW-2	4/9/1999	**1.54**	**0.26**	0.39	**2700**		**4,400**
	9/23/1999	NS	NS	NS	**2500**		NS
	9/24/2003	0.62	0.084	0.164	**590**		1,658
	3/4/2005					**91.7**	
MW-3	4/9/1999	**4.66**	**0.37**	0.69	**2000**		**3,500**
	9/23/1999	NS	NS	NS	**1300**		NS
	9/28/2000	NS	NS	NS	**400**		NS
	12/21/2000	0.07	0.05	0.13	**490**		**1,300**
	3/19/2001	NS	NS	NS	**530**		NS
	9/27/2001	0.2	0.08	0.09	**620**		**1,600**
	9/25/2002	0.196	0.0865	<.100	**506**		**1,518**
	9/24/2003	0.228	0.067	0.099	**563**		**1,616**
	3/4/2005				508	109	1,270
MW-4	4/9/1999	**1.46**	**0.32**	**1.63**	**800**		**1,900**
	9/23/1999	NS	NS	NS	**510**		NS
	9/28/2000	NS	NS	NS	**600**		NS
(Duplicate)	9/28/2000	NS	NS	NS	**760**		NS
	12/21/2000	<0.05	0.06	**2.07**	**350**		**1,100**
	3/19/2001	NS	NS	NS	**660**		NS
	9/25/2002	NS	NS	NS			NS
	9/24/2003	<0.05	0.055	0.526	491		1,348
	3/4/2005				478		1,190
MW-5	4/9/1999	**47.2**	**0.97**	**15.3**	**2400**		**4,000**
	9/22/1999	NS	NS	NS	860		NS
	9/28/2000	NS	NS	NS	1200		NS
	12/21/2000	0.27	0.06	**2.84**	**760**		**1,700**
	3/19/2001	NS	NS	NS	**1600**		NS
	9/25/2002	NS	NS	NS			NS
	9/24/2003	0.102	0.041	0.255	581		1,532
(Duplicate)	9/24/2003	0.096	0.064	0.126	897		2,104
	3/4/2005				455		1,070
MW-6	8/17/1999	<0.05	**0.21**	0.14	**2460**		**4,700**
	9/22/1999	NS	NS	NS	**2400**		NS
	9/28/2000	NS	NS	NS	**1200**		NS
	12/21/2000	0.37	0.4	0.14	**1300**		**2,400**
	3/19/2001	NS	NS	NS	**1400**		NS
	9/27/2001	0.16	0.08	0.13	**2500**		**5,400**
	9/25/2002	0.118	0.0581	0.153	**2500**		**5,080**
	9/24/2003	0.08	0.061	0.132	**2440**		**4,645**
	3/4/2005				500		1,180

Table 4. Historical Analytical Data for Selected Dissolved Metals, Chlorides and TDS
Former Bertha Barber Tank Battery, Lea County, New Mexico

WELL ID	Sample Date	Dissolved Metals			Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
		Iron (mg/L)	Manganese (mg/L)	Barium (mg/L)			
WQCC	-----	**1.0**	**0.2**	**1.0**	**250**		**1,000**
MW-7	8/17/1999	<0.05	0.06	0.44	**1400**		**2,800**
	9/22/1999	NS	NS	NS	**1100**		NS
	9/25/2002	NS	NS	NS	NS		NS
	9/24/2003	0.35	0.056	0.19	708		1,800
	3/4/2005				794		2,380
MW-8	8/17/1999	0.8	**0.34**	**6.16**	**1860**		**3,300**
	9/23/1999	NS	NS	NS	**1900**		NS
	9/28/2000	NS	NS	NS	**1300**		NS
	12/21/2000	0.32	0.12	0.14	**1000**		**2,100**
	3/19/2001	NS	NS	NS	**970**		NS
	9/27/2001	0.36	0.08	0.25	**1000**		**2,500**
	9/25/2002	0.138	0.0797	0.189	**1090**		**2,392**
	9/24/2003	0.28	0.078	0.259	**1400**		**3,100**
	4/22/2005	4.8	0.157	0.38	**446**		**1,480**
MW-9	8/17/1999	0.11	**0.22**	0.21	**1100**		**2,300**
	9/23/1999	NS	NS	NS	**1100**		NS
	9/28/2000	NS	NS	NS	**820**		NS
	12/21/2000	<0.05	0.04	0.26	**520**		**1,400**
	3/19/2001	NS	NS	NS	**640**		NS
	9/25/2002	NS	NS	NS	NS		NS
	9/24/2003	**4.63**	0.129	0.786	593		1,692
	3/4/2005				741	117	1,720
MW-10	8/17/1999	0.61	0.17	0.14	**2370**		**4,400**
	9/22/1999	NS	NS	NS	**2200**		NS
	9/25/2002	NS	NS	NS	NS		NS
	4/22/2005				919		2,530
MW-11	8/17/1999	<0.05	0.17	0.14	**1020**		**2,300**
	9/23/1999	NS	NS	NS	**1100**		NS
	9/28/2000	NS	NS	NS	**1300**		NS
	12/21/2000	<0.05	0.09	0.14	**1400**		**2,700**
	3/19/2001	NS	NS	NS	**1500**		NS
Duplicate	3/19/2001	NS	NS	NS	**1700**		NS
	9/27/2001	0.26	0.12	0.24	**1600**		**3,800**
	9/25/2002	0.255	0.141	0.271	**1620**		**3,605**
	9/24/2003	0.282	0.145	0.225	**1600**		3,225
	3/4/2005				407		
MW-12 (PZ-2)	8/17/1999	0.11	0.13	0.16	**4160**		**7,100**
	9/22/1999	NS	NS	NS	**4400**		NS
	9/28/2000	NS	NS	NS	**3800**		NS
	12/21/2000	0.1	0.05	0.15	**4000**		**6,100**
	3/19/2001	NS	NS	NS	**3700**		NS
	9/27/2001	0.23	0.06	0.13	**3200**		**6,500**
	9/25/2002	<0.050	0.0297	0.111	**3220**		**6,225**
	9/24/2003	<0.05	<0.025	0.114	**2550**		**5,210**
	4/22/2005	2.62	0.174	0.178	502		1,700
MW-13 (PZ-1)	8/17/1999	<0.05	0.09	0.16	**1920**		**3,500**

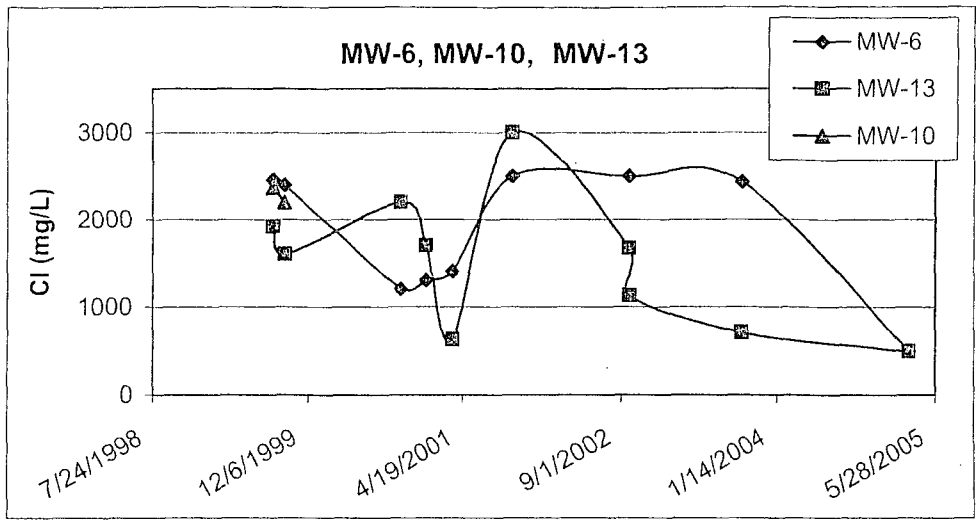
Table 4. Historical Analytical Data for Selected Dissolved Metals, Chlorides and TDS
Former Bertha Barber Tank Battery, Lea County, New Mexico

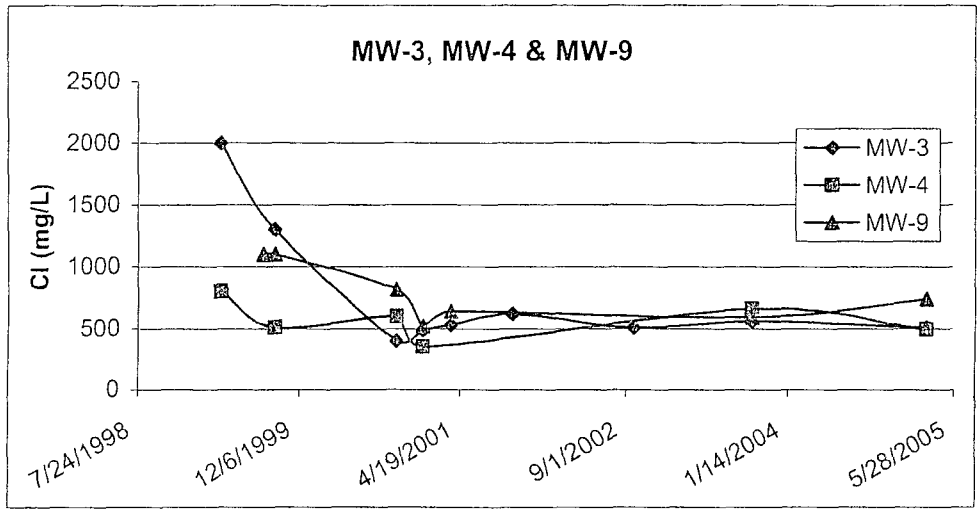
WELL ID	Sample Date	Dissolved Metals			Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
		Iron (mg/L)	Manganese (mg/L)	Barium (mg/L)			
WQCC	-----	**1.0**	**0.2**	**1.0**	**250**		**1,000**
	9/23/1999	NS	NS	NS	**1600**		NS
	9/28/2000	NS	NS	NS	**2200**		NS
	12/21/2000	0.06	0.02	0.05	**1700**		**2,900**
	3/19/2001	NS	NS	NS	**630**		NS
	9/27/2001	0.79	0.17	0.14	**3000**		**5,900**
	9/25/2002	0.476	0.147	0.107	**1670**		**3,660**
	9/26/2002	0.355	0.109	<.100	**1130**		**2,625**
	9/24/2003	0.221	0.05	0.11	**711**		**1,688**
	3/4/2005				**498**		**1,170**
MW-14	9/24/2003	<0.05	<0.025	0.124	**777**		**1,734**
MW-15	9/24/2003	0.271	0.089	0.122	**1070**		**2,060**
	3/4/2005				**451**	**153**	**1,120**
MW-16	9/24/2003	1.26	0.228	0.161	**2350**		**4,740**
	3/4/2005				**1240**		**2,510**
Rinsate	9/24/2003	<0.05	<0.025	<0.01	**<2.5**		**22**
Livestock WW	3/19/2001	NS	NS	NS	**660**		NS
	9/27/2001	**13.4**	**0.25**	0.21	**600**		**1,600**
	9/25/2002	**4.52**	**0.224**	0.192	**671**		**1,866**
	9/24/2003	**0.267**	**0.186**	0.248	**626**		**1,636**
	3/4/2005				583		1450
Background (550 ppm)	1/1/1999				550		
	12/31/2015				550		

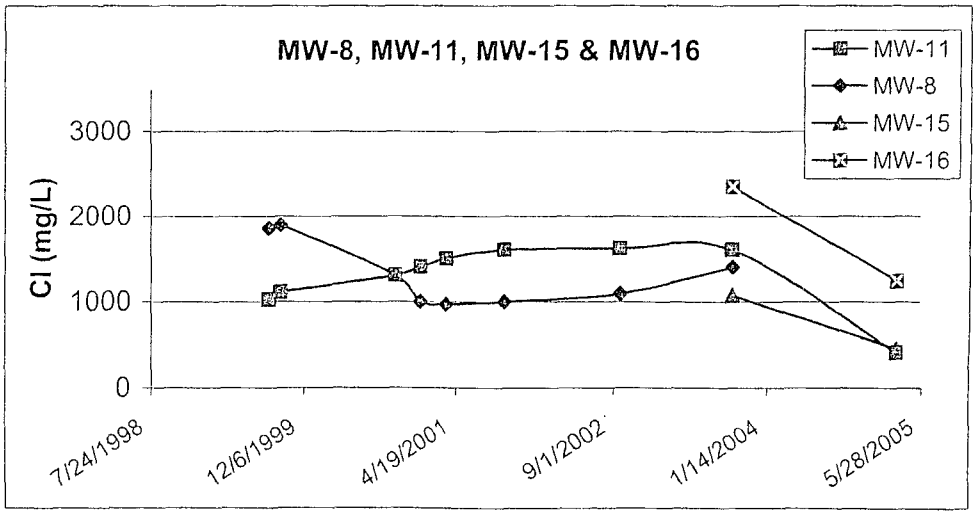
Footnotes:

WQCC - New Mexico Water Quality Control Commission Ground Water Standards.
TDS - Total Dissolved Solids.
mg/L - milligrams per liter.
NS - Constituent not sampled during the sampling event.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).

PLATES







Bertha Barber	Plate 5
Chloride Over Time	May 2005

Appendix D

Correspondence

From: Gil Van Deventer [mailto:gilbertvandeventer@cox.net]
Sent: Thursday, December 14, 2006 8:04 AM
To: Wayne Price
Cc: Randy Hicks; Carolyn Haynes; Pat Caperton; Hansen, Edward J., EMNRD; Kristin Pope
Subject: EME E-5 (Bertha Barber) Junction Box Site (1R0429-91) - notice of activities

Wayne

This purpose of this email is to serve as 48-hr notification of activities to the OCD for the following site:

EME E-5 (Bertha Barber) Junction Box Site
NMOCD Case No.: 1R0429-91
Location: Section 5, unt letter E in T20S, R37E
On site Supervisor: Gil Van Deventer (Trident Environmental)
Date of Activity: December 19, 2006

In accordance with the NMOCD-approved Corrective Action Plan, ROC has arranged for the backfilling of the excavated area at this site with a monolithic evapotranspirative cover. We anticipate performing the work on December 19 however the exact starting time is dependent on the availability of backhoe equipment after it has completed excavation activities at another site on Dec 18 (P-6). It is possible that the backhoe will be available at a different time in which case the on site supervisor will notify the Hobbs District office.

If you have any questions please feel free to contact me or Kristin Pope at 505-393-9174.

Thanks,

Gil Van Deventer

432-638-8740

Subject: RE: E-5 Corrective Action Plan--verbal approval (1R0427-91)
From: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
Date: Thu, 21 Dec 2006 13:45:55 -0700
To: <kpope@riceswd.com>
CC: "Price, Wayne, EMNRD" <wayne.price@state.nm.us>, "Caperton, Patricia, EMNRD" <Patricia.Caperton@state.nm.us>, <chaynes@riceswd.com>, <r@rthicksconsult.com>, <gilbertvandeventer@cox.net>

Kristin,

The OCD is hereby verifying the verbal approval of the CAP submitted on January 15, 2006, by R.T. Hicks Consultants for the Rice EME jct. E-5 site (case # 1R0427-91). However, the approval is conditioned in that the clay layer must be compacted to at least 90% Standard Proctor density and that the upper layer must comprise of at least 2 feet of clean topsoil (i.e., not blended with contaminated soil). The OCD concurs with the CAP regarding the upper two feet of clean soil in that it should only be "slightly" compacted (i.e., 75% to 85% Standard Proctor density).

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

From: Kristin Pope [mailto:
Sent: Tuesday, December 12, 2006 7:28 PM
To: Price, Wayne, EMNRD
Cc: Carolyn Haynes; Randall Hicks
Subject: E-5 Corrective Action Plan--verbal approval

Wayne,

At our last meeting in Santa Fe on October 11, we reviewed the Corrective Action Plan (CAP) submitted by R. T. Hicks Consultants for the EME jct. E-5 (Marathon Barber) site (case #1R0427). At this meeting you approved the CAP with the condition to continue with regular sampling of the on-site monitoring well.

We have excavating equipment available to perform this work on December 18. Will you confirm the 10/11/06 conditional approval? The CAP is attached to this message for your reference.

Thank you very much for your attention to this site and all of our others.

Kristin Farris Pope
Project Scientist
RICE Operating Company
Hobbs, New Mexico
(505) 393-9174

----- Original Message -----
From: Randall Hicks
To: 'Price, Wayne, EMNRD'
Cc: 'Kristin Farris Pope'
Sent: Monday, January 16, 2006 4:50 PM
Subject: E-5 Corrective Action Plan

Wayne

We are using some concepts presented at the surface waste meeting last week. Take a look at the WORD version of the attachment as the pdf figures did not translate well from the original.

Hard copy will come via regular mail tomorrow.

Randy Hicks

RE: E-5 Corrective Action Plan--verbal approval (1R0427-91)

cell: 505-238-9515

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

January 15, 2006

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

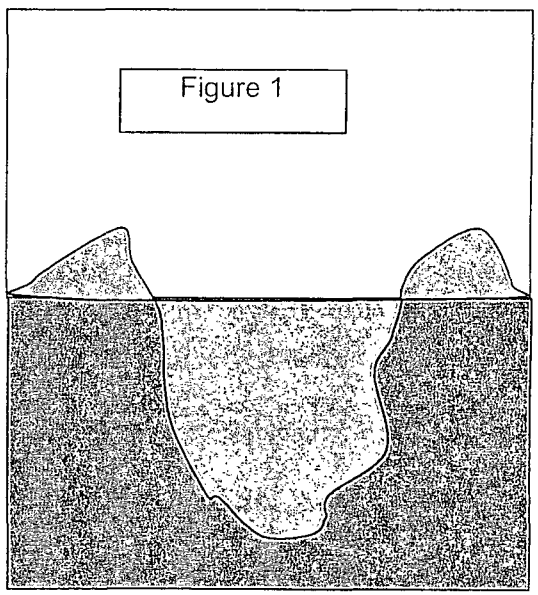
RE: Corrective Action Plan
EME E-5 Junction Box Site
T20S-R37E-Section 5, Unit Letter E
NMOCD Case No. 1R0427-91

Dear Wayne:

RICE Operating Company (ROC) has retained R.T. Hicks Consultants, Ltd. (Hicks Consultants) to submit this corrective action plan (CAP) for the above-referenced site. The majority of the information regarding this site was submitted to NMOCD in our July 13, 2005 submission. In direct response to your November 22, 2005 letter (attached), we propose the following actions to complete the Corrective Action Plan.

Proposed Remedy to Prevent Migration of Residual Constituents in the Vadose Zone

We propose a monolithic evapotranspiration (ET) cover as the closure method for the E-5 Junction Box site. As you may remember, Mr. Mark Miller discussed this type of landfill cover at last week's stakeholder's meeting for the Surface Waste Management Rules. An ET cover minimizes infiltration by providing temporary water storage capacity within the cover and eventual water removal by evaporation and transpiration. ET cover configurations vary depending on local conditions, but typically consist of a relatively porous soil layer capped with a 1-2 foot thick topsoil layer. The fine-grained soil layer provides the necessary water storage capacity and then the native species planted on the topsoil cause evapotranspiration and reduce infiltration into underlying soil horizons. The attached EPA Fact Sheet describes in more detail how this cover operates.



The closure plan is quite simple. Currently the site appears similar to Figure 1 where dirt piles remain around the excavation. Consistent with EPA design criteria for a monolithic evaportranspiration barrier, ROC will

1. Enlarge the excavation to a depth of about 3 feet, creating a 2-foot wide

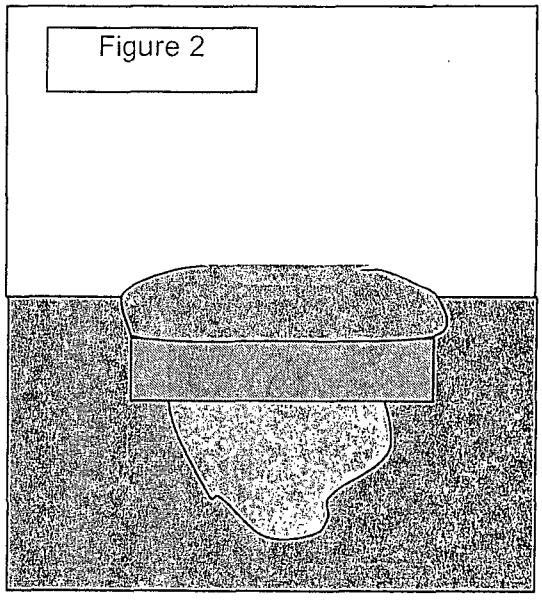
bench around the existing excavation.

2. Place a 2-foot layer of clay in the excavation and compact this material only slightly. This clay layer is the "fine grained layer" shown in Figure 2 of the EPA Fact Sheet. The attached EPA fact sheet states the following on page 5 in reference to soil layers, including the fine grained layer shown in Figure 2 of the Fact Sheet:

> *Compaction impacts bulk density, which in turn affects the storage capacity of the soil and the growth of roots. One key aspect of construction is minimizing the amount of compaction during placement. Higher bulk densities may reduce the storage capacity of the soil and inhibit growth of roots (Chadwick and others 1999; Hauser, Weand,* and Gill 2001).

3. Over the clay layer is about 2 feet of topsoil, which will be "patch seeded" with native species of grass. In a separate communication to Hicks Consultants, Dr. Kerry Sublette of the University of Tulsa stated that creating small patches (1-3 feet in diameter) of a grass community can be a more effective method of re-vegetation than broadcast seeding simply because it is easier to encourage growth of small patches through the addition of mulch and extra water. Once the 3-4 patch communities are established on the site, they spread rapidly.

Our Figure 2 shows the final design of the E-5 ET cover. The yellow diagonal striped material is the loosely compacted clay layer that will serve to hold infiltrated precipitation. The brown material overlying the clay is the topsoil, which will be seeded as proposed. The topsoil layer will be graded to shed excess precipitation. However, extending 1-2 feet away from each area of the patch seeding the topsoil will be "dimpled" to direct excess rainfall to the grass community. This dimpling is grossly exaggerated in Figure 2 in order to display our intent.

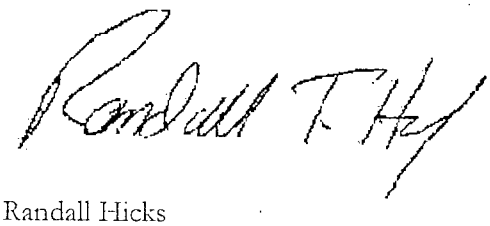


Groundwater Monitoring Plan

Continued monitoring of major ions and total dissolved solids (TDS) is recommended at a annual frequency as monitoring of these constituents at the E-5 site are also part of the groundwater monitoring activities for nearby ROC sites (P-6, M-5, and N-5). Analysis for BTEX concentrations should be suspended, as there has been no indication of dissolved hydrocarbons since the groundwater monitoring program began in May 2002 (15 consecutive quarters).

Because we plan on employing the same ET cover design for many other sites, including the Lovington Abo-1G site that is currently undergoing surface restoration, we ask that you review this design concept quickly. Thank you for your attention to this matter.

Sincerely,
R.T. Hicks Consultants, Ltd.



Randall Hicks
Principal

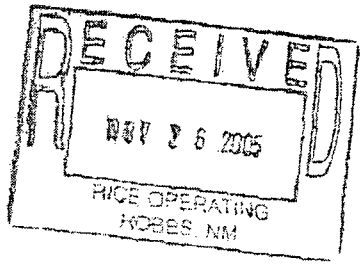
Copy: Kristin Farris Pope

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

November 22, 2005



Carolyn Doran Haynes
Rice Operating Company
122 West Taylor
Hobbs, New Mexico 88240

Re: Marathon Barber EOL
OCD Case #1R0427-91
Unit Letter E, Sec. 5, T20S, R37E
Lea County, NM

Dear Ms. Haynes:

The New Mexico Oil Conservation Division (NMOCD) is in receipt of Rice Operating Company's (ROC) Letter dated July 13, 2005 submitted by R.T. Hicks Consultant Ltd. on behalf of ROC requesting OCD re-consider the abatement plan requirement for this site. After an extensive review of the data presented by Dynegy, Marathon and ROC, OCD agrees that the up-gradient groundwater has been impacted above standards. Therefore, OCD hereby approves of your request with the following conditions:

1. Provide a corrective action plan to address the residual constituents in the vadose zone and groundwater-monitoring plan for OCD approval by January 15, 2005.

2. NMOCD approval of this plan does not relieve ROC of liability should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve ROC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

3. All documents pertaining to this case shall be identified with the OCD Case # 1R0427-91.

Sincerely;

Daniel Sanchez- Compliance and Enforcement Manager
cc: OCD Hobbs Office

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

July 13, 2005

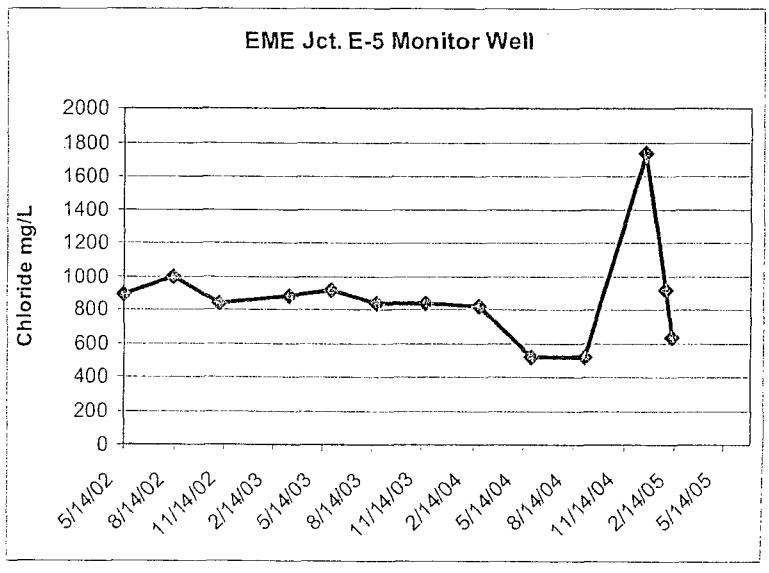
Mr. Daniel Sanchez
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Marathon Barber EOL UL E Sec 5, T20S, R37E
1R0427-91

Dear Mr. Sanchez

In your letter of May 5, 2005, NMOCD required Rice Operating Company (ROC) to submit an abatement plan for the above-referenced site on or before July 15, 2005. We respectfully request NMOCD carefully review the attached data and the discussion below then re-consider the need for an Abatement Plan for this site. Our rationale for this request is based findings presented in the submission by Marathon Oil Company (MOC) on their activities at the Bertha Barber site (see attached disc) and the recent data from the ROC monitoring well.

The data from the ROC monitoring well shows that hydrocarbons are present in ground water, but well below state standards. If one eliminates the spurious result for December 2004, which depth to water and total depth data clearly show the result is from a different well, the data suggest that chloride and TDS concentrations are generally decreasing with time until September 2004 (figure). Unlike the sampling event of December 2004, we cannot explain the high values of chloride (and TDS) observed in the following two months of January (1730 ppm chloride) and February 2005 (916 ppm). Because the precipitous rise then decline in salt concentrations over this three month period is not consistent with nature, we suspect man-made influences associated with the sampling or laboratory protocols. Regardless of the cause, the elevated chloride and TDS concentrations at the E-5 monitor in the winter of 2004/05 were transitory. Evaluation of these data in the context of the data from the MOC Bertha Barber report is critical to understanding



our request for NMOCD to re-evaluate the need for a Rule 19 Abatement Plan at this site.

The attached MOC report concludes that:

1. Up gradient sources of chloride and TDS have impaired the water quality at the site.
2. The recent wet winter of 2004-2005 have caused ground water levels to rise as much as 10 feet and caused the TDS and chloride to decrease by 50-80% in monitoring wells.
3. The 2005 ground water monitoring event shows that ground water at the site is suitable for livestock (with respect to chloride and TDS) but exceeds the New Mexico numerical standards.
4. Background chloride concentrations, as defined by the adjacent, up gradient livestock well, range between 500 and 700 ppm. The total dissolved solids concentration of the livestock well ranges between 1400 and 1900 ppm.
5. The up gradient monitoring well MW-10 (located down-gradient of Dynegy pipeline release area) continues to show relatively high concentrations of TDS and chloride (2530 ppm and 919 ppm respectively).

We ask NMOCD to closely examine the six years of data collected by MOC and the attached ROC data to confirm that ROC meets the definition of a "responsible person" under NMOCD Rules for the documented impairment of ground water quality at the site. ROC does not dispute that the E-5 EOL Junction Box at the site released produced water (i.e. chloride) to the subsurface and will put forward a Corrective Action Plan to address the residual constituents in the vadose zone. However, ROC does not desire to enter the Rule 19 process to address ground water contamination caused by up gradient, non-ROC sources. We have not examined the NMOCD file regarding the up gradient Dynegy release nor have we sampled the Dynegy monitoring wells. Perhaps a review of the file can enlighten us on how this documented release may have affected the E-5 site. None of our field data nor the data from the MOC report suggests that ROC contributed to the observed benzene in ground water at the site.

We ask NMOCD set aside the mid-July date for our submission of a Rule 19 Abatement Plan. We ask NMOCD to carefully review the attached MOC 2004-05 Annual Report in concert with the data in your files on the up gradient Dynegy release. We believe your analysis will conclude that:

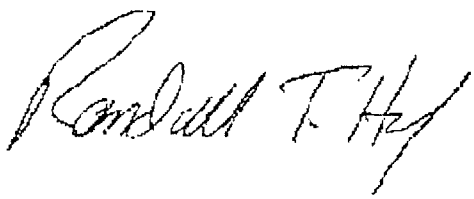
- the magnitude and extent of elevated TDS and chloride near the ROC E-5 site is well-defined
- natural restoration has effectively reduced chloride and TDS concentrations to regional background

- up gradient sources of chloride and TDS continue to affect the water quality near the E-5 site
- ground water beneath the E-5 site is suitable for livestock

We recommend that ROC continue with quarterly monitoring of the E-5 site and submit an annual report in 2006 after evaluation of the 2006 MOC sampling event for the Bertha Barber site. Our annual report will also consider and respond to any data and conclusions derived from NMOCD's evaluation of the Dynegy file.

Thank you for consideration of this request.

Sincerely,
R.T. Hicks Consultants, Ltd.



Randall Hicks
Principal

Copy:

Kristin Pope, Rice Operating Company
Vijay Kurki, Marathon Oil Company

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

February 25, 2005

Mr. Wayne Price
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Marathon Oil Company Bertha Barber Site
Rice Operating Company, E-5 Site, 1R0427-91

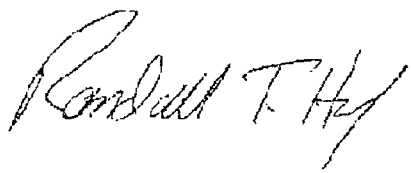
Dear Wayne:

Marathon Oil Company has retained R.T. Hicks Consultants, Ltd. (Hicks Consultants) to prepare the 2004 Annual Ground Water Monitoring Report. Simultaneously, Rice Operating Company (ROC) retained us to prepare an Investigation/Characterization Plan for the E-5 junction box, which is located within Marathon's Bertha Barber Site. NMOCD requested that ROC submit their plan on or before March 15 and the annual report for the Bertha Barber Site is due to NMOCD on or before March 30. We respectfully request that NMOCD extend the deadlines for submission of both reports to May 15, 2005. The justification for this request is:

1. Last month, Marathon installed a vapor extraction system to remove regulated hydrocarbon constituents that may reside in the vadose zone. We would like to observe the response of the vadose zone to the system operation and include our findings in the annual report.
2. Marathon plans to sample monitoring wells at the site in March. We would like to include the March ground water results for chloride and TDS in the proposed 2004-05 Report.
3. Marathon plans to collect representative samples of surface and subsurface asphaltic material for analysis of the regulated components BTEXN. Marathon plans to employ the SPLP method and "totals" method for the laboratory analysis. We would like to include the results of this sampling program in the 2004-05 report.
4. NMOCD requested that ROC submit a plan to characterize the magnitude and extent of any ground water impact from the E-5 junction box site. As the attached map shows, the ROC E-5 monitoring well lies within the network of Marathon wells for their Bertha Barber site. We plan to employ the data from Marathon in the required submission to NMOCD and waiting for the data from items 1-3 above will create a more complete plan.

On behalf of ROC and Marathon, we appreciate your consideration of this request.

Sincerely,
R.T. Hicks Consultants, Ltd.



Randall Hicks
Principal

Copy: Kristin Farris Pope
Vijay Kurki

Appendix E

Photo-Documentation

& Density Tests

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142

Albuquerque, NM 87104

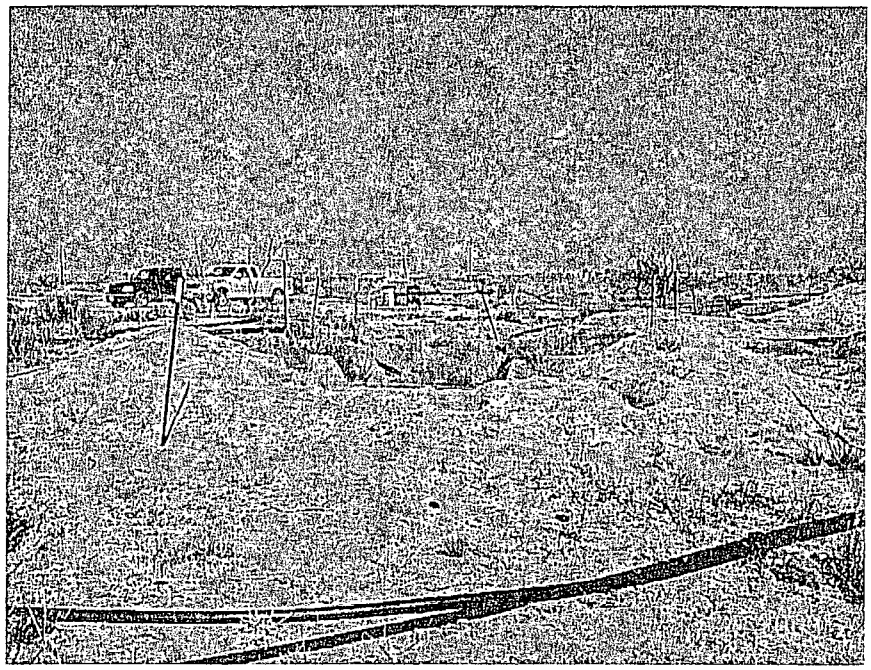


Figure 1: E-5 site prior to installation of ET Barrier

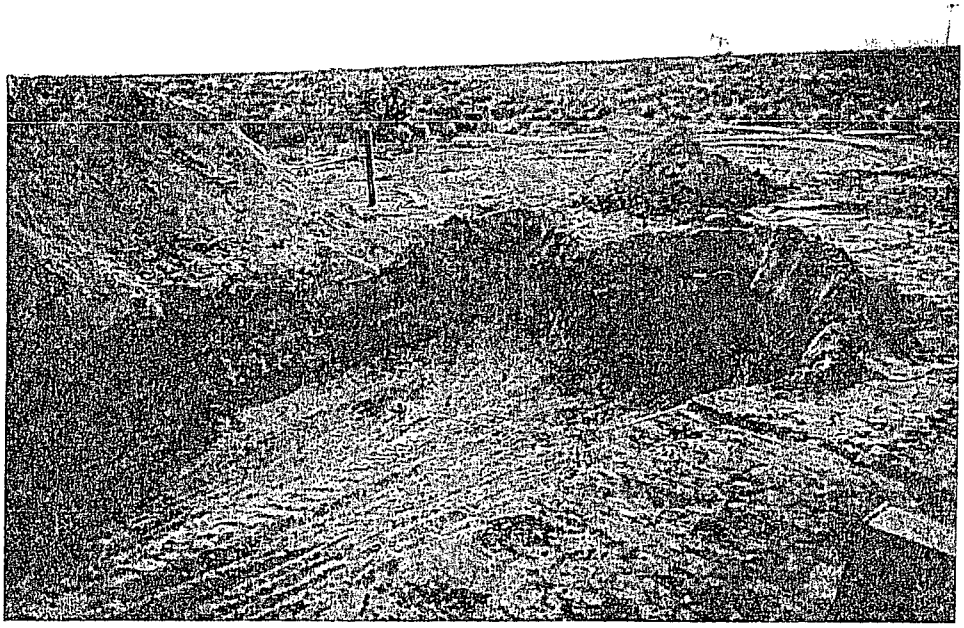


Figure 2: Excavation of site in preparation for ET Barrier, December 2006

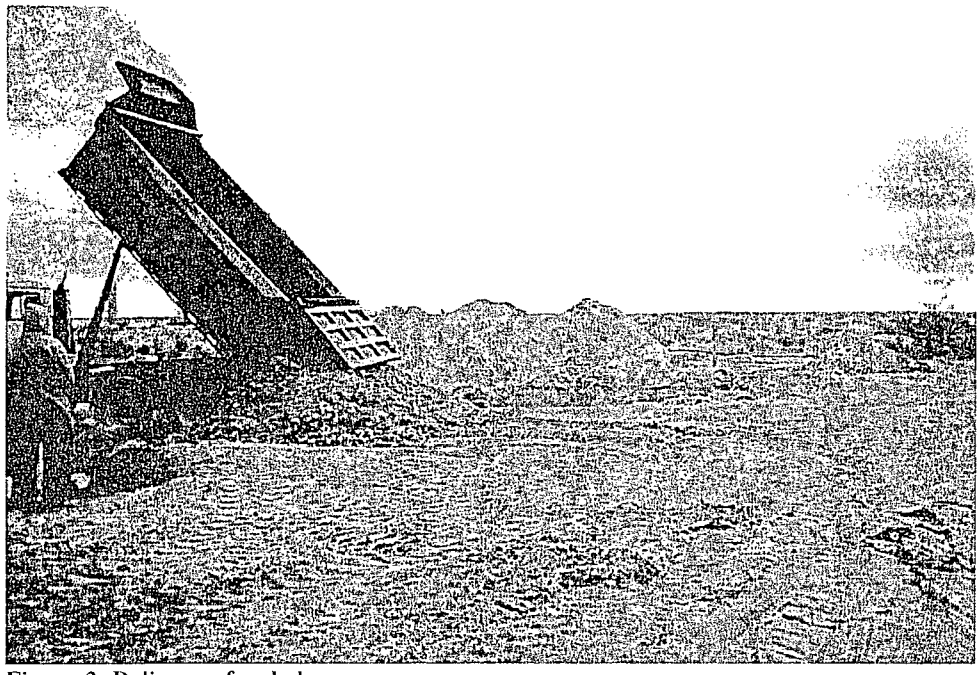


Figure 3: Delivery of red clay

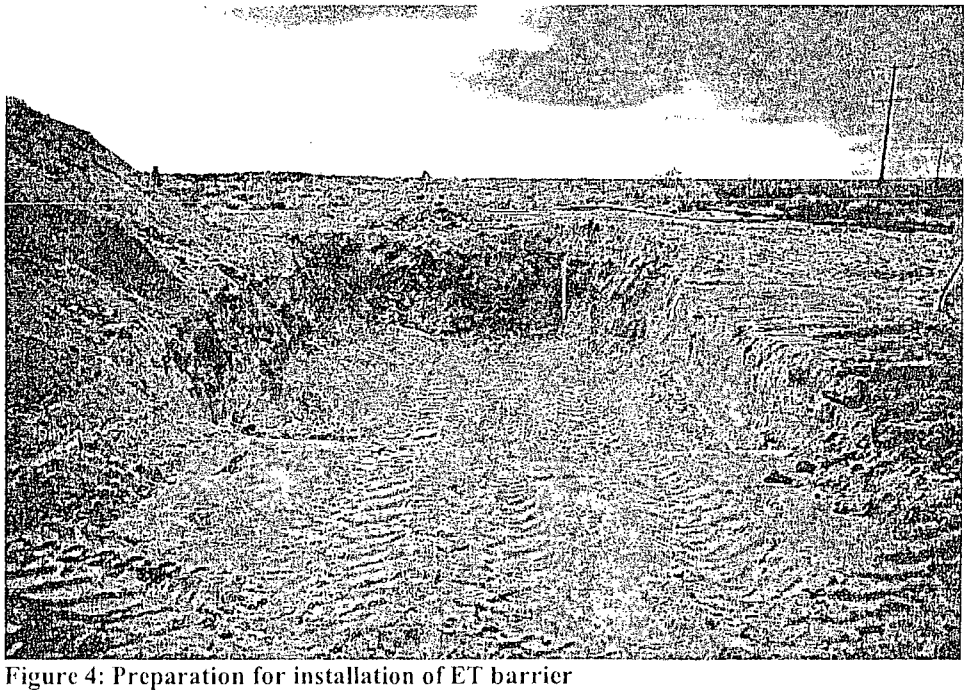


Figure 4: Preparation for installation of ET barrier

Figure 5: Placement of first clay lift on prepared surface

Figure 6: Delivery of clay for second lift

Figure 7: Compaction of clay layer

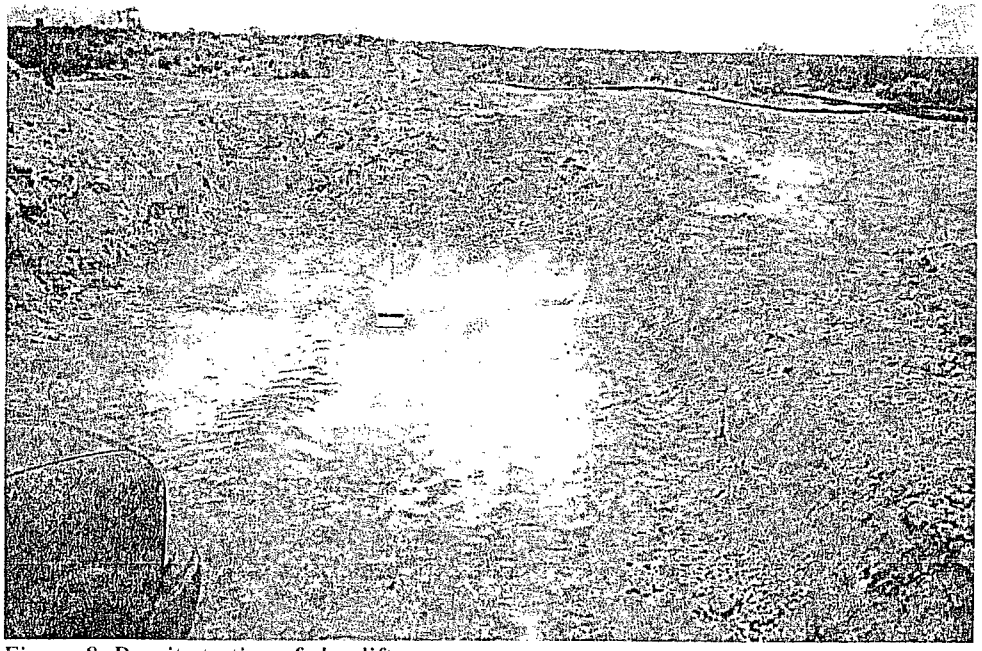


Figure 8: Density testing of clay lift

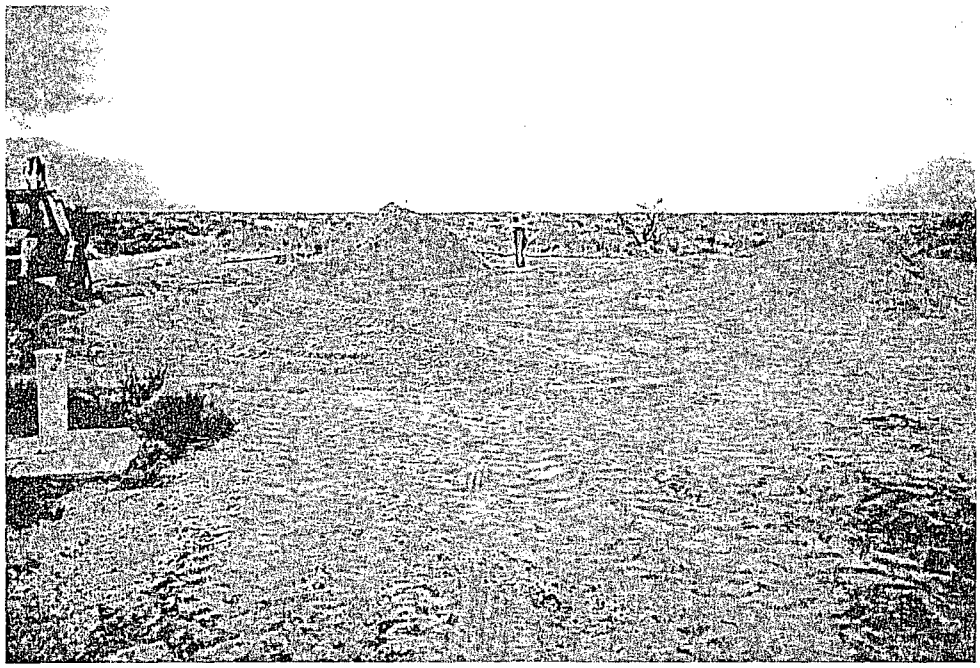


Figure 9: Placing topsoil over compacted clay

Figure 10: Final grade of topsoil, December 2006

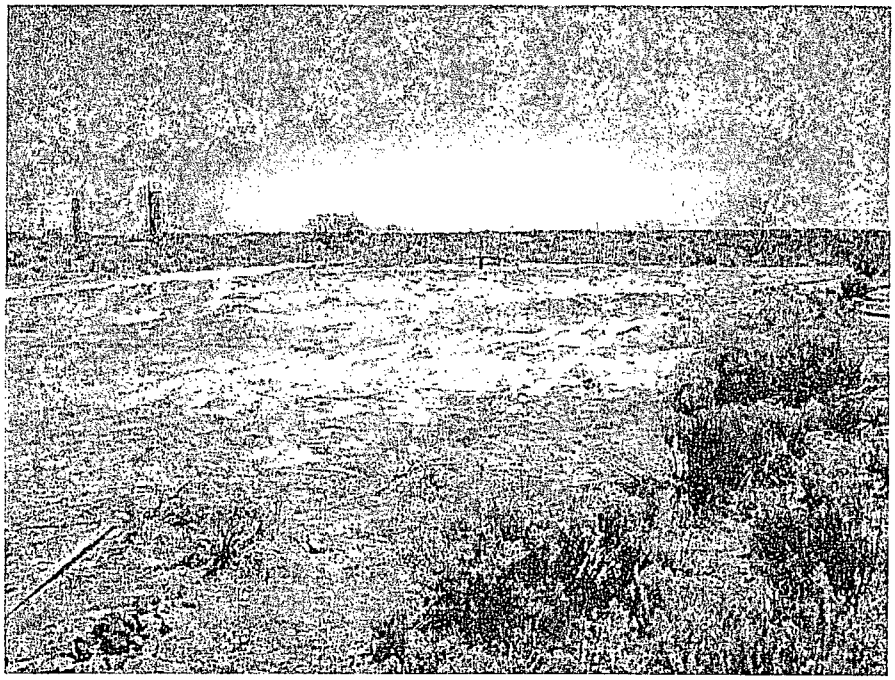


Figure 11. Site prior to seeding, April 10, 2007

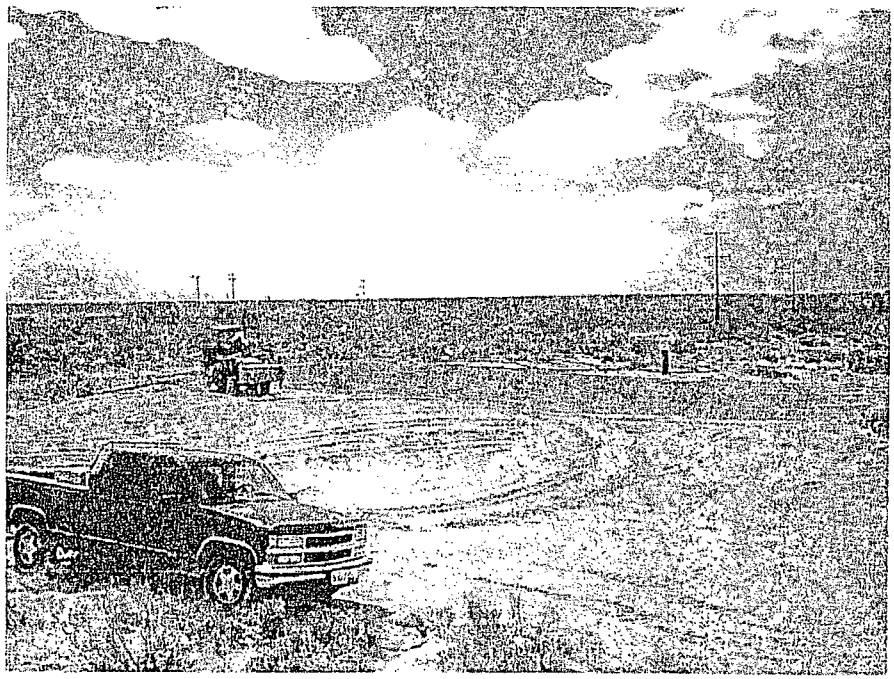


Figure 12. Seeding Site

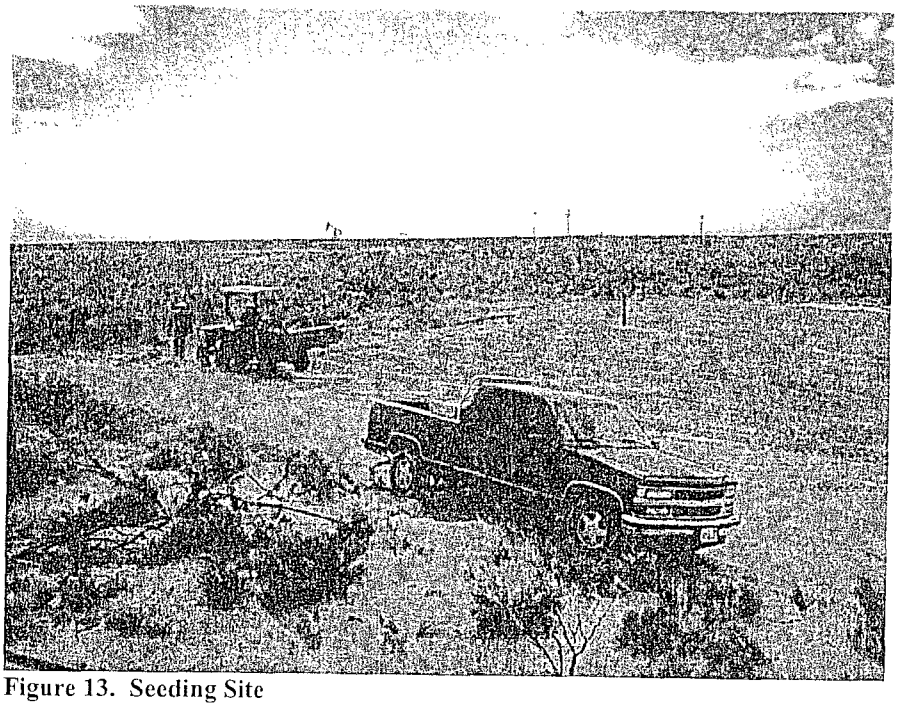


Figure 13. Seeding Site

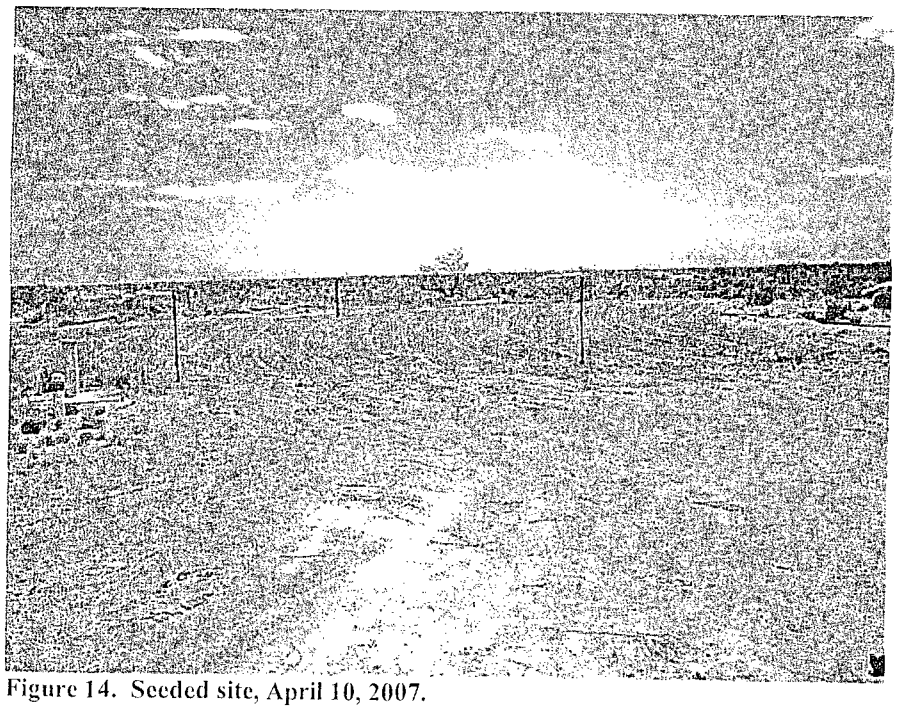


Figure 14. Seeded site, April 10, 2007.

LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS. III, P.E./P.S.

To:	Rice Operating Attn: Carolyn Haynes 122 W. Taylor Hobbs, NM 88240	Material:	Red Clay
		Test Method:	ASTM: D 2922
Project:	General Information Project No. 2007.1007		
Date of Test:	December 28, 2006	Depth:	2' Below Finished Subgrade
		Depth of Probe:	12"

Test No.	Location	Dry Density % Maximum	% Moisture	Depth
SG 1	EME Marathon Bertha Barber Junction E-5	100.4	19.9	

Control Density: 102.0
ASTM: D 698

Optimum Moisture: 20.0

Required Compaction: 90%

Densometer ID: 5071

Lab No.: 07 1259-1260

Copies To: Rice

PETTIGREW & ASSOCIATES

BY: Brian Hunt

BY: Debra P. Hicks P.E.

LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

AASHTO R18
DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS, III, P.E./P.S.

To:	Rice Operating Attn: Carolyn Haynes 122 W. Taylor Hobbs, NM 88240	Material:	Red Clay
		Test Method:	ASTM: D 2922
Project:	General Information Project No. 2007.1007		
Date of Test:	January 16, 2007	Depth:	2' Below Finished Subgrade
		Depth of Probe:	12"

Test No.	Location	Dry Density % Maximum	% Moisture	Depth
SG 2	EME Marathon Bertha Barber Junction Box	91.5	20.1	

Control Density: 102.0
ASTM: D 698

Optimum Moisture: 20.0

Required Compaction: 90%

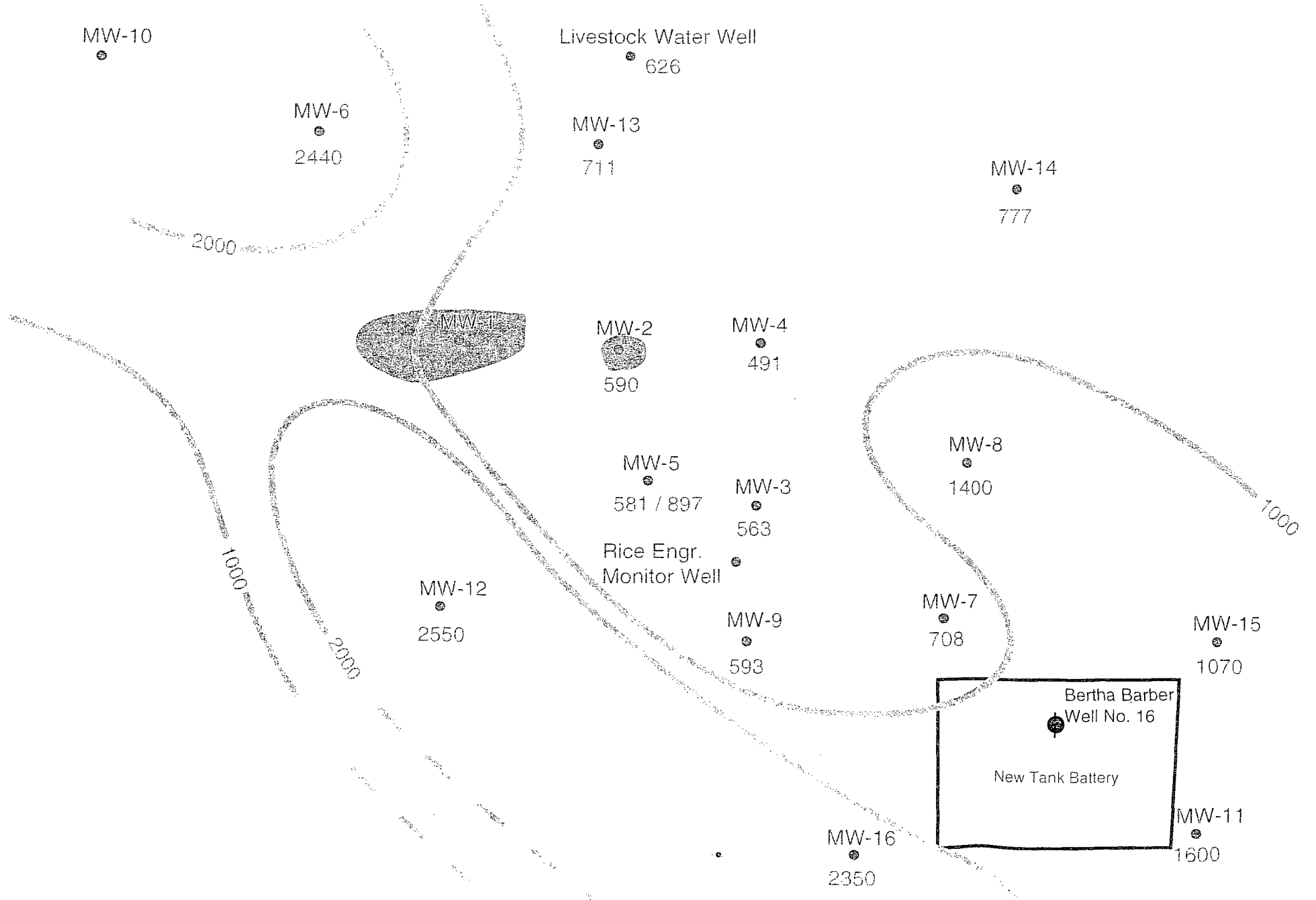
Lab No.: 07 1261-1262

Copies To: Rice

PETTIGREW & ASSOCIATES

BY: Erica M Hunt

BY: Debra P. Hicks P.E.



Explanation

- Monitoring Well
- 711 — Chloride Concentration in mg/L
- Chloride Concentration Contour
- Approximate Extent of Former Tank Bottoms Pits
- Approximate Extent of Old Evaporation Pit

140 0 280 feet

N

Plate 5

Marathon Oil Company -Bertha Barber Tank Battery

Chloride Concentrations in Ground Water Sept. 24,2003

March 2004

R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818

Dynergy Release ±200 Feet West of MW-10

MW-10 *
3529.66

3529

3528

Livestock Water Well

MW-6
3527.23

MW-13
3529.85

MW-14
3529.62

MW-1
3529.72
(0.10')

MW-2
3527.05

MW-4
3529.82

MW-8 *
3529.39

MW-5
3528.76

MW-3
3529.80

Rice Engr.
Monitor Well

MW-12 *
3529.23

MW-9
3532.15

MW-7
3529.27

MW-15
3529.26

3530

3529.25

Bertha Barber
Well No. 16

New Tank Battery

MW-11
3529.13

MW-16
3529.11

Approximate Location of
ROC SWD Line

Explanation

- Monitoring Well
- 3523.57 Groundwater Elevation in Feet (3/4/05)
- Groundwater Elevation Contour
- Approximate Extent of Former Tank Bottoms Pits
- MW-10 * Ground Water Elevation (4/22/05)

140 0 280 feet

N

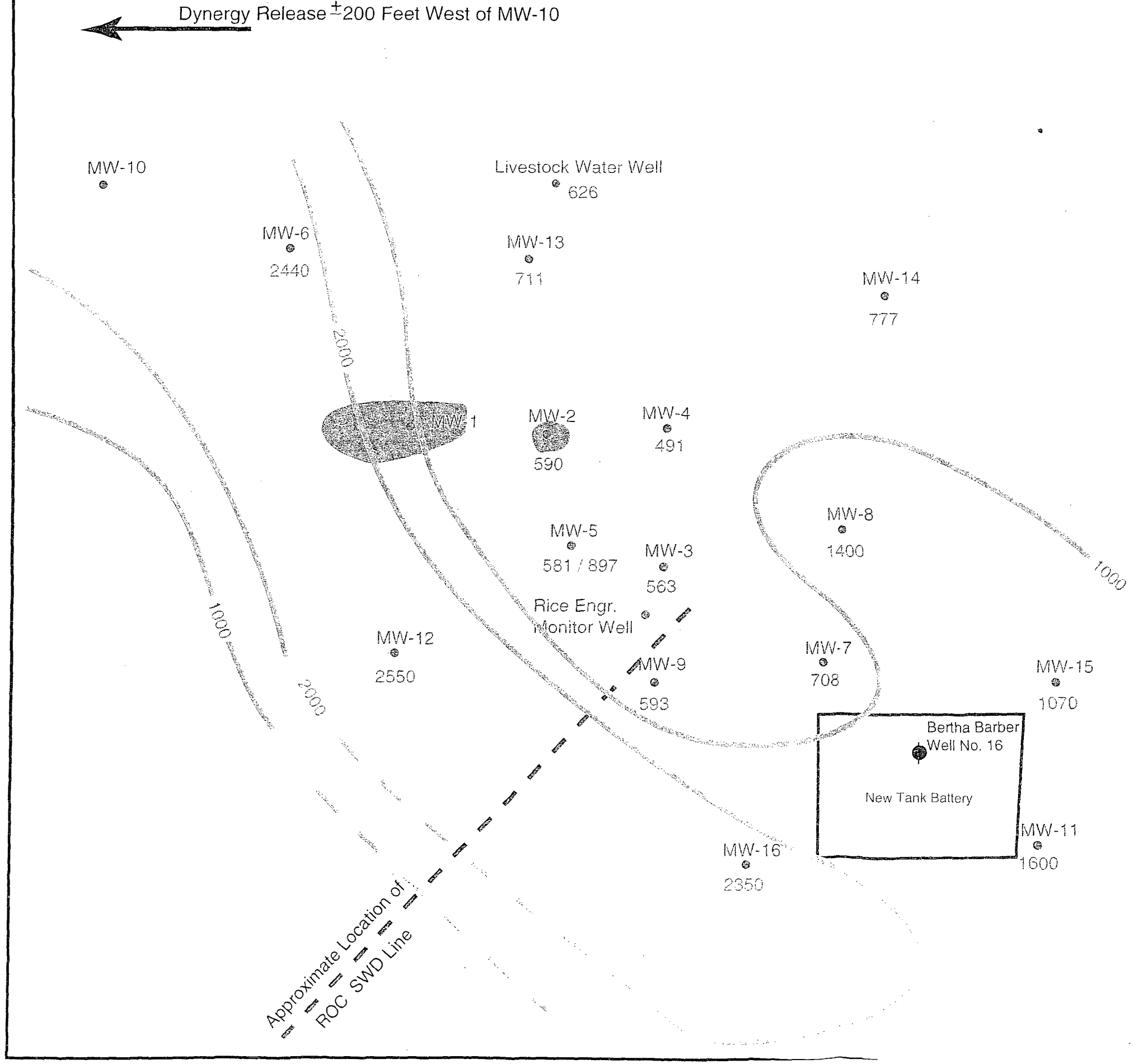
Plate 2

May 2005

Marathon Oil Company -Bertha Barber Tank Battery

Potentiometric Surface Map , March 22,2005

R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818



Explanation

- Monitoring Well
- 711 — Chloride Concentration in mg/L
- Chloride Concentration Contour
- Approximate Extent of Former Tank Bottoms Pits

140 0 280 feet

N

Plate 3

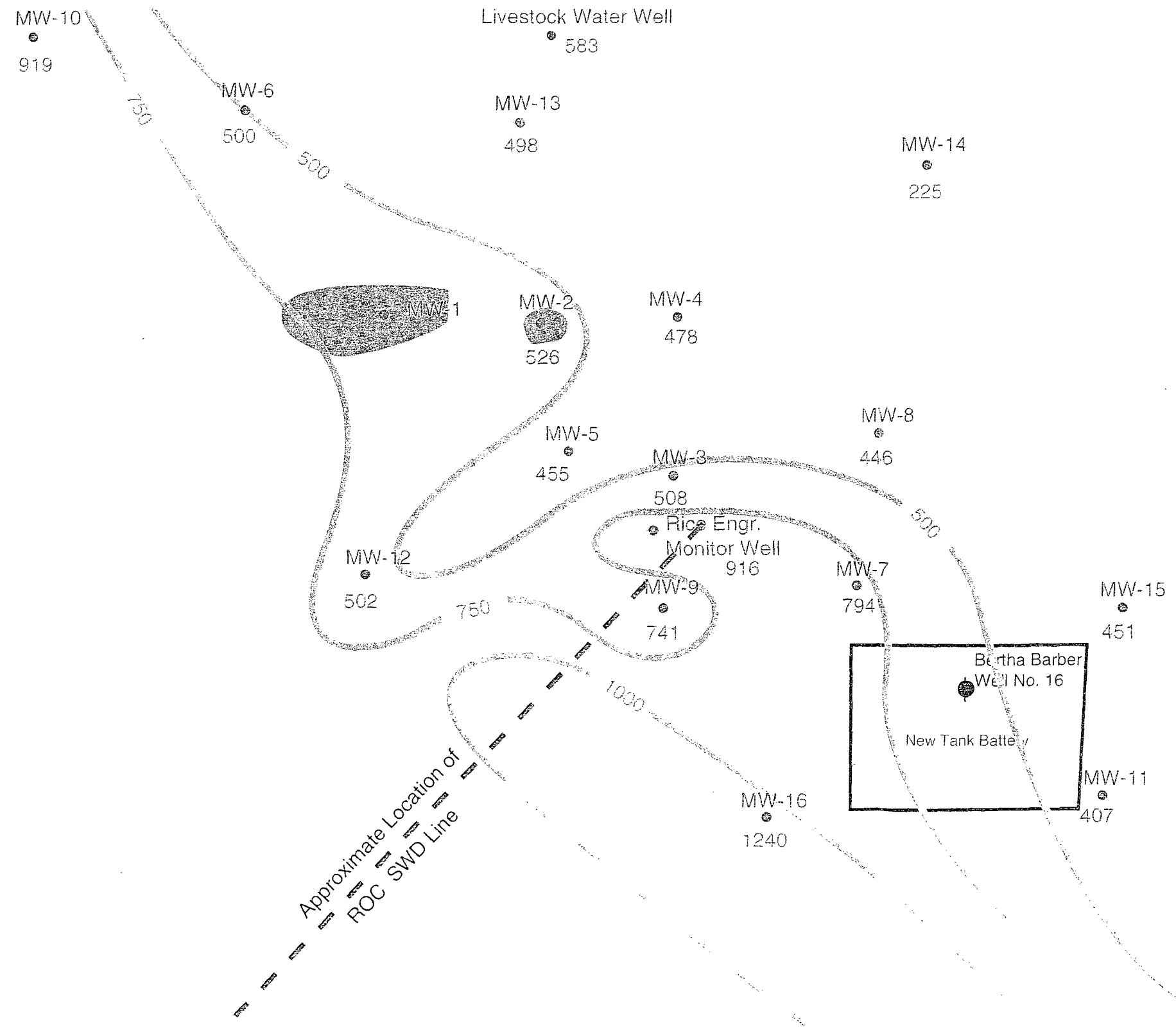
April 2005

Marathon Oil Company -Bertha Barber Tank Battery

Chloride Concentrations in Ground Water Sept. 24,2003

R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818

Dynergy Release ±200 Feet West of MW-10



Explanation

- Monitoring Well
- 711 — Chloride Concentration in mg/L
- Chloride Concentration Contour
- Approximate Extent of Former Tank Bottoms Pits

140 0 280 feet

N

Plate 4

Marathon Oil Company -Bertha Barber Tank Battery

Chloride Concentrations in Ground Water Mar./Apr. 2005

May 2005

R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818

Dynergy Release ±200 Feet West of MW-10

MW-10

Livestock Water Well

MW-6
3523.35

MW-13
3523.27

3523.5

3523.0

MW-14
3522.90

MW-1
3523.15
(0.81)

MW-2
3523.08

MW-4
3523.34

MW-8
3522.86

MW-5
3523.39

MW-3
3523.32

Rice Engr.
Monitor Well

MW-12
3523.21

MW-9
3523.50

MW-7
3522.92

MW-15
3522.76

Bertha Barber
Well No. 16

New Tank Battery

MW-11
3522.69

MW-16
3522.87

Approximate Location of
ROC SWD Line

3522.5

Explanation

- Monitoring Well
- 3523.57 Groundwater Elevation in Feet
- Groundwater Elevation Contour
- Approximate Extent of Former Tank Bottoms Pits

140 0 280 feet

N

Plate 1

April 2005

Marathon Oil Company -Bertha Barber Tank Battery

Potentiometric Surface Map , March 22.2004

R.T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104
505.266.5004 Fax: 505.246.1818

WELL ID	Sample Date	Fluorene (ug/L)	Indeno(1,2,3-cd)pyrene (ug/L)	Naphthalene (ug/L)	Phenanthrene (ug/L)	Pyrene (ug/L)	Anthracene (ug/L)	Benzo(b)fluoranthene (ug/L)	Benzo(a)pyrene (ug/L)	Benzo(ghi)perylene (ug/L)	Acenaphthylene (ug/L)	Acenaphthene (ug/L)	Dibenzo(a,h)anthracene (ug/L)	Benzo(k)fluoranthene (ug/L)
WQCC Standard				30					0.7					
MW-1	4/9/1999	<15	<1.5	<75	<15	<15	<15	1.6	<1.5	<1.5	<75	<75	<1.5	<1.5
MW-2	4/9/1999	<1.0	<0.1	<5	<1.0	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-3	4/9/1999	<1.0	<0.1	<5.0	<1.0	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-4	4/9/1999	1.2	<0.1	18.1	1	<1.0	<1.0	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	1.5	<0.1	<5.0	1.6	<1	<1.0	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-5	4/9/1999	<1.0	<0.1	<5.0	<1.0	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5.0	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	0.24	<0.2	0.79	0.26	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
(Duplicate)	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-6	8/17/1999	<1	<0.1	<5	<1	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-7	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-8	8/17/1999	<1.0	<0.1	<5	<1.0	<1.0	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-9	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/00*	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-10	8/17/1999	<1	<0.1	<5.0	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
MW-11	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
MW-12 (PZ-2)	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-13 (PZ-1)	8/17/1999	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	12/21/2000	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Duplicate	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Livestock WW	9/27/2001	<1	<0.1	<5	<1	<1	<1	<0.1	<0.1	<0.1	<5	<5	<0.1	<0.1
	9/25/2002	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-14	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-15	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
MW-16	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Rinsate	9/24/2003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Footnotes:

PAH - Polynuclear aromatic hydrocarbons.
ug/L - micrograms per liter.
NS - Constituent not sampled during the sampling event.
ND - Constituent was not detected during laboratory testing, and laboratory reporting limits are variable.
* - Data was originally labeled as MW-7, but is actually MW-9.
MW-7 was not sampled in 2000 due to the presence of phase separate hydrocarbon (PSH).