1R - 427-177

REPORTS

DATE:

9-6-12

Hansen, Edward J., EMNRD

From: Katie Jones <kjones@riceswd.com>
Sent: Monday, September 17, 2012 3:54 PM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder; Laura Pena; Kindley, Jeff
Subject: ROC - EME Jct. A-2-1 Further Information Required
Attachments: EME Jct. A-2-1 (1R427-177) lab.pdf

Mr. Hansen,

Attached is the most recent lab result for the 3rd quarter of 2012 for EME Jct. A-2-1 (1R427-177). This sample represents eight (8) quarters of BTEX concentrations below WQCC standards. If you have any questions or require any additional information, please contact me or Hack Conder.

Thank you.

Katie Jones
Environmental Project Manager
RICE *Operating Company*

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Monday, September 17, 2012 2:12 PM
To: Hack Conder
Cc: Leking, Geoffrey R, EMNRD; Laura Pena; Katie Jones; Jeff.Kindley@tetratech.com
Subject: Further Information Required (1R427-177) - ROC EME Jct A-2-1 Site

RE: "Groundwater Chloride Remediation Report and Termination Request"
for the Rice Operating Company's (ROC)
EME Jct A-2-1 Site (1R427-177)
Unit Letter A, Section 2, T20S, R36E, NMPM, Lea County, New Mexico
Further Information Required

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the above-referenced report for the EME Jct A-2-1 Site, dated September 6, 2012, and has conducted a review of the report. The report indicates that further information is required. Therefore, please submit to the OCD the groundwater monitoring results for BTEX for at least one additional quarterly sampling event within 30 days.

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

Edward J. Hansen
Hydrologist
Environmental Bureau

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

September 04, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION A-2-1

Enclosed are the results of analyses for samples received by the laboratory on 08/28/12 12:31.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	08/28/2012	Sampling Date:	08/22/2012
Reported:	09/04/2012	Sampling Type:	Water
Project Name:	EME JUNCTION A-2-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R36E-SEC2 A - LEA CTY., NM		

Sample ID: MONITOR WELL #1 (H202068-01)

BTEX 8260B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.004**	0.001	08/30/2012	ND	0.020	99.3	0.0200	0.505	
Toluene*	<0.001	0.001	08/30/2012	ND	0.020	102	0.0200	0.927	
Ethylbenzene*	<0.001	0.001	08/30/2012	ND	0.022	109	0.0200	1.32	
Total Xylenes*	<0.003	0.003	08/30/2012	ND	0.060	100	0.0600	1.06	

Surrogate: Dibromofluoromethane	*102 %*	*59.8-161*
Surrogate: Toluene-d8	*96.1 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*90.3 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**6500**	4.00	08/30/2012	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**6090**	10.0	08/30/2012	ND	22.6	113	20.0	14.7	

TDS 160.1 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**19500**	5.00	08/28/2012	ND	219	91.2	240	1.93	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	08/28/2012	Sampling Date:	08/22/2012
Reported:	09/04/2012	Sampling Type:	Water
Project Name:	EME JUNCTION A-2-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R36E-SEC2 A - LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H202068-02)

BTEX 8260B mg/L **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.004**	0.001	08/30/2012	ND	0.020	99.3	0.0200	0.505	
Toluene*	<0.001	0.001	08/30/2012	ND	0.020	102	0.0200	0.927	
Ethylbenzene*	<0.001	0.001	08/30/2012	ND	0.022	109	0.0200	1.32	
Total Xylenes*	<0.003	0.003	08/30/2012	ND	0.060	100	0.0600	1.06	

Surrogate: Dibromofluoromethane	*105 %*	*59.8-161*
Surrogate: Toluene-d8	*89.9 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*84.8 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**7200**	4.00	08/30/2012	ND	100	100	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**6030**	10.0	08/30/2012	ND	22.6	113	20.0	14.7	

TDS 160.1 mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**21300**	5.00	08/28/2012	ND	219	91.2	240	1.93	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	08/28/2012	Sampling Date:	08/22/2012
Reported:	09/04/2012	Sampling Type:	Water
Project Name:	EME JUNCTION A-2-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R36E-SEC2 A - LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H202068-03)

BTEX 8260B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	08/30/2012	ND	0.020	99.3	0.0200	0.505	
Toluene*	<0.001	0.001	08/30/2012	ND	0.020	102	0.0200	0.927	
Ethylbenzene*	<0.001	0.001	08/30/2012	ND	0.022	109	0.0200	1.32	
Total Xylenes*	<0.003	0.003	08/30/2012	ND	0.060	100	0.0600	1.06	

Surrogate: Dibromofluoromethane	*117 %*	*59.8-161*
Surrogate: Toluene-d8	*101 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*81.5 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**6000**	4.00	08/30/2012	ND	100	100	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**4540**	10.0	08/30/2012	ND	22.6	113	20.0	14.7	

TDS 160.1 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**17700**	5.00	08/28/2012	ND	219	91.2	240	1.93	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Hack Conder	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575)397-1471
Project #:	Project Name: EME Junction A-2-1
Project Location: T20S-R36E-Sec2 A ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2012)	TIME
H20 20628															
1	Monitor Well #1	G	3	X				2				1		8-22	14:10
2	Monitor Well #2	G	3	X				2				1		8-22	13:00
3	Monitor Well #3	G	3	X				2				1		8-22	11:55

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 8-28-2012	Time: 9:17	Received by: James Johnson	Date: 8.28.2012	Time: 9:18
Relinquished by: James Johnson 8-28-12	Date:	Time: 12:30	Received By: (Laboratory Staff) Jodi Henson	Date: 8/28/12	Time: 12:31

Phone Results	Yes	No
Fax Results	Yes	No Additional Fax Number:

Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: Yes / Intact: Yes	CHECKED BY: (Initials)

REMARKS:

Email Results: hconder@riceswd.com
bweinheimer@rice-ecs.com
klones@riceswd.com
rozanne@valornet.com

#26

TETRA TECH

RECEIVED OCD

2012 SEP 13 P 12: 38

CERTIFIED MAIL
RETURN RECEIPT NO. 7008 3230 0001 9310 9185

September 6, 2012

Mr. Ed Hansen
New Mexico Energy, Minerals, & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: Groundwater Chloride Remediation Report and Termination Request, Rice Operating Company, Eunice Monument Eumont (EME) Saltwater Disposal System (SWD) A-2-1 Junction Box, Unit "A", Sec. 2, T20S, R36E, Lea County, New Mexico, NMOCD CASE # 1R427-177

Mr. Hansen:

On behalf of Rice Operating Company (ROC), Tetra Tech Inc. (Tetra Tech) submits the following report and Request for Termination for the Eunice Monument Eumont (EME) Saltwater Disposal System (SWD) A-2-1 Junction Box. ROC is the service provider (agent) for the EME SWD System and has no ownership of any portion of the pipeline, well or facility. The EME SWD system is owned by a consortium of oil producers, Systems Parties, who provide all operating capital on a percentage ownership/usage basis.

BACKGROUND & PREVIOUS WORK

As part of the ROC Junction Box Upgrade Work plan, starting on February 26, 2004, the junction box was moved 85 feet to the west. See Figure 1 and 2 for site location. The former junction box site was investigated vertically and horizontally with a backhoe to form a 20 ft. x 20 ft. x 12 ft. deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The four walls and bottom composite laboratory samples were found to be impacted with both hydrocarbons and chlorides. Upon completion of the sampling, the excavated soils were blended and backfilled into the excavation to a depth of 6 feet below ground surface (bgs). A compacted clay barrier was installed at that depth, backfilled with remaining soils and contoured to the surrounding surface. On June 2, 2004, a soil boring was installed to a depth of 30 feet and was impacted to that depth with both chlorides and total petroleum hydrocarbons (TPH)

Between October 11 and October 12, 2006, ROC installed five additional soil borings in order to delineate both the vertical and horizontal extent of impact to the soils. Analytical results indicated the clay barrier would need to be extended to dimensions of 45 feet by 75

Tetra Tech
1910 North Big Spring, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

feet in order to encompass the remaining impacted soils. The soil boring logs and analysis were previously submitted in the CAP dated May 22, 2007 and approved on July 18, 2007.

As part of the implementation of the CAP, ROC was onsite between October 16 and October 31, 2007, to oversee the extension of the clay liner. During the excavation, an area measuring 25 feet by 25 feet by 7 feet deep was excavated with approximately 84 cubic yards of soils transported offsite for disposal at an NMOCD approved facility. The clay liner was then enlarged to dimensions of 45 feet by 75 feet at 6 feet below ground surface and backfilled with clean soils. Afterwards, the site was contoured and reseeded.

Between October 11 and October 13, 2005 three monitor wells (MW-1, MW-2, and MW-3) were installed at the site to approximate depths of 50 to 53 feet below ground surface (bgs). Groundwater was encountered at an approximate depth of 43 feet bgs. Since November 2006, the wells have been sampled on a quarterly basis for BTEX by EPA Method 8021B and chlorides by EPA Method 4500 Cl-B. The results of the groundwater gauging/sampling are presented in Appendix A.

Referring to the groundwater tables in Appendix A, benzene has been detected at levels above the Water Quality Control Commission Standard (WQCC) of 0.01 mg/L in monitor well MW-1 periodically since November 2006. Since August 2010, the benzene level has decreased exponentially at the site with the most recent quarter (May 18, 2012) having a result of 0.006 milligrams per liter (mg/L). Benzene concentrations have remained below the WQCC standard for the past 7 consecutive quarters (since May 2010). In addition, the chlorides at the site have steadily declined since the installation of the monitor wells in November 2006 with an average decrease of approximately 1,870 mg/L in all three wells (average of 8,370 mg/L in November 2006 to 6,500 mg/L in May 2012.

In comparing the chloride concentration analysis data from EME Jct. A-2-1 with other water quality in the area, specifically the ROC EME D-1 and A-2, it appears the chloride concentration at the site are consistent with regional impaired groundwater in the area. The EME D-1 data indicates Total Dissolved Solids (TDS) ranging from 7,910 mg/L to 12,900 mg/L in areas located outside the initial release area. Chloride concentrations in the up-gradient well (MW-3) at this site have ranged from 9,820 mg/L to 4,700 mg/L. As such, the regional groundwater appears to have been historically impaired.

On June 28, 2012, ROC submitted a report entitled, *Update Report and Proposed Groundwater Chloride Remediation*, to the NMOCD. The report, which was approved by the NMOCD on July 12, 2012, proposed a chloride mass calculation removal of 469 kilograms (kg) at the site. Since there is a relatively negligible impact to the monitor wells at the site, the water was to be pumped from the existing recovery system located at EME L-6.

GROUNDWATER CHLORIDE REMEDIATION AND COMPLETION

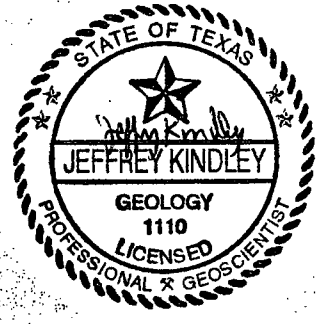
As per the approved groundwater chloride remediation plan, ROC was onsite between July 16 and July 27, 2012 to extract chloride impacted groundwater from the EME L-6 monitor

TETRA TECH

well RW-1. During that time, a total of 449 barrels were removed. Given that EME L-6 RW-1 had a chloride concentration of 10,200 mg/L, the removal of 449 barrels equates to approximately 728 kilograms of chloride impacted groundwater. See Appendix B for analytical results from recovery well and groundwater withdrawal log sheet.

Based on the completion activities performed at the site, ROC acknowledges they have met the requirements of 19.15.30 NMAC and respectfully requests termination of this regulatory file. Upon NMOCD approval of this Termination Request, MW-1, the near source well, and MW-2, the down gradient well, will be plugged using a cement grout with 1% to 3% bentonite and a 3-foot cap of cement to the surface. MW-3, the up gradient well, will remain in place to monitor the regional impact and will be sampled on a yearly basis. Upon completion of these activities, a Monitor Well Plugging Report will be submitted to the NMOCD.

If you have any questions or comments regarding the above Termination Request, please do not hesitate to contact us at (432) 682-4559 or Hack Conder of ROC at (575) 393-9174.



Tetra Tech, Inc.

Jeffrey Kindley, P.G.
Senior Environmental Geologist

cc: ROC – Hack Conder

FIGURES

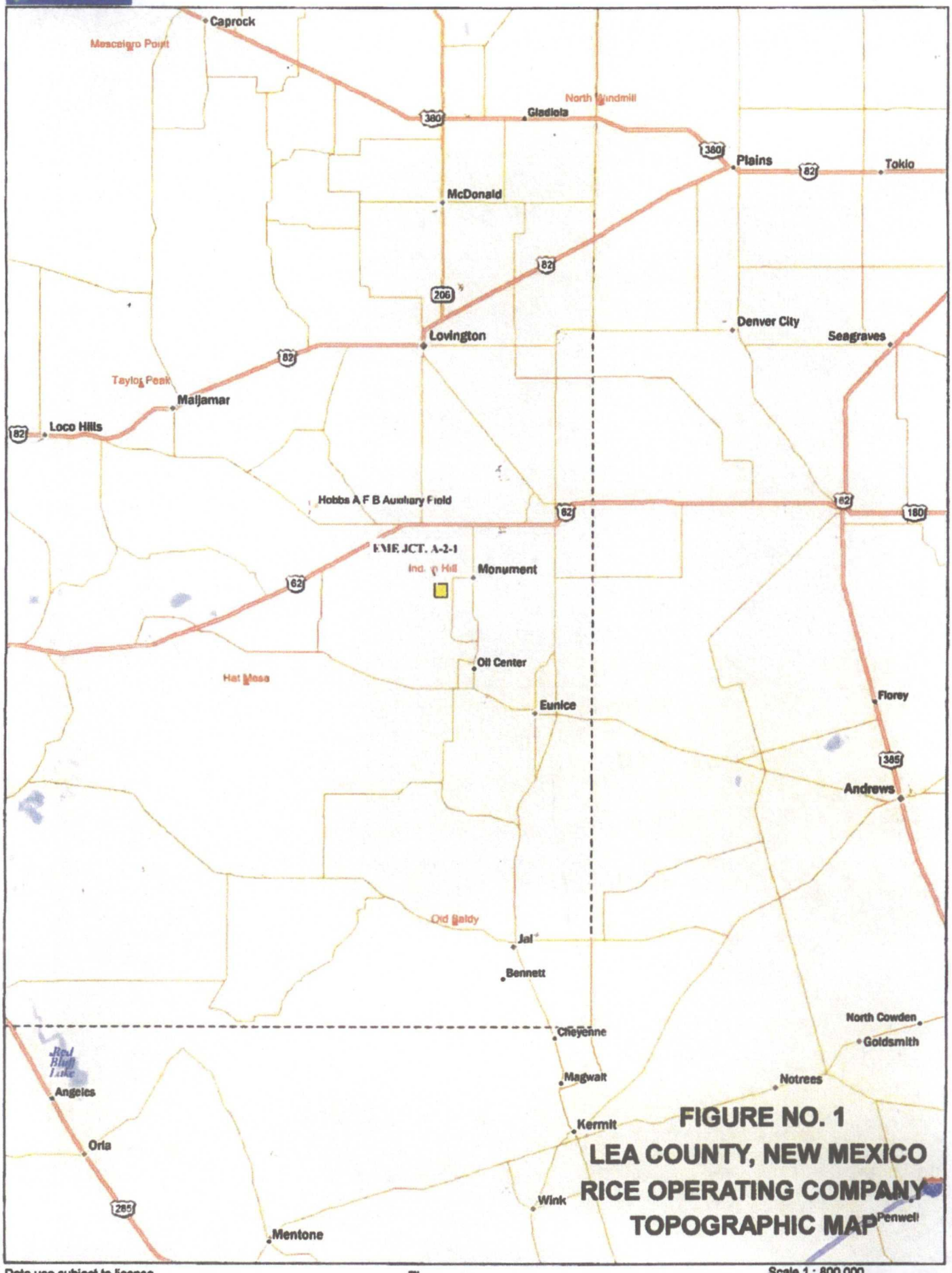


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

TN
MN (7.3°E)

Scale 1 : 800,000
1" = 12.63 mi
Data Zoom 8-0

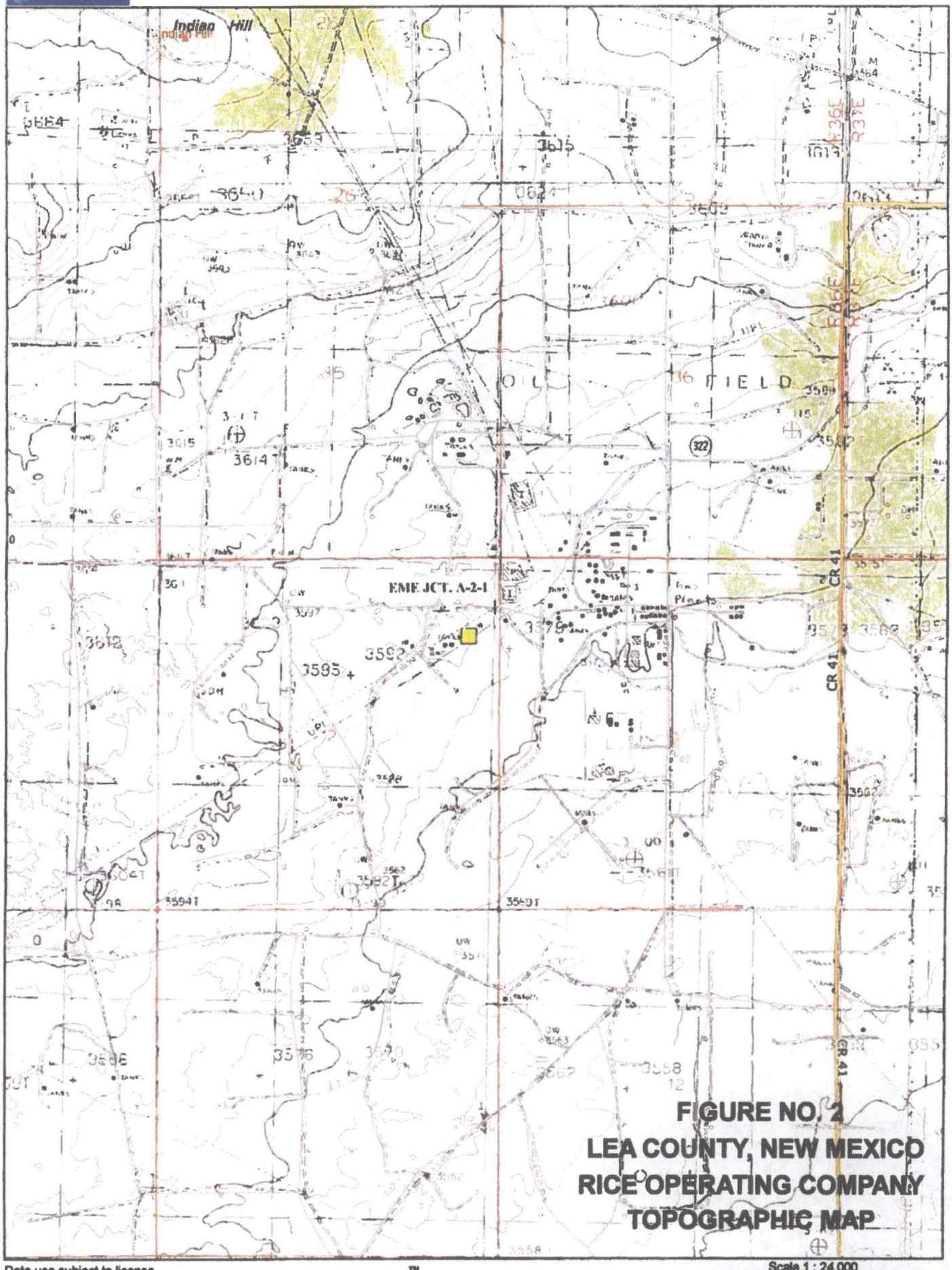


FIGURE NO. 2
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

TN

MN (7.4°E)

Scale 1 : 24,000

1" = 2,000.0 ft

Data Zoom 12-7

APPENDIX A
GAUGING/SAMPLING RESULTS

Table 1
Rice Operating Company
EME Jct. A-2-1
Lea County, New Mexico

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl mg/L	TDS mg/L	Benzene mg/L	Toluene mg/L	Ethyl Benzene mg/L	Total Xylenes mg/L	Sulfate mg/L	Comments
1	38.13	53.76	2.50	10	11/06/06	8,460	22,800	0.00331	0.00158	0.00337	0.003418	6,780	hydrocar. odr
1	38.30	53.76	2.50	8	02/13/07	10,100	17,900	0.0692	0.00526	0.0313	0.0404	8,190	hydrocar. odr
1	38.50	53.76	2.40	8	06/08/07	8,500	23,900	0.0220	0.00147	0.00799	0.00768	6,760	hydrocar. odr
1	38.71	53.76	2.40	8	08/21/07	8,197	23,775	0.0340	0.004	0.012	0.022	6,611	hydrocar. odr
1	38.47	53.78	2.40	8	12/04/07	8,800	23,481	0.0880	<0.001	0.021	0.01	5,870	hydrocar. odr
1	39.32	53.78	2.30	8	02/13/08	8,500	22,900	0.0340	<0.002	0.017	<0.006	4,710	hydrocar. odr
1	39.50	53.78	2.30	8	05/23/08	8,000	22,400	0.0040	<0.002	<0.002	<0.006	6,340	hydrocar. odr
1	39.85	53.78	2.20	8	08/22/08	7,000	20,200	0.0590	<0.001	0.011	0.008	6,260	hydrocar. odr
1	40.05	53.78	2.20	8	11/21/08	6,800	21,800	0.0110	0.001	0.002	0.004	6,230	hydrocar. odr
1	40.22	53.81	2.20	8	02/19/09	7,000	20,800	0.0020	<0.001	0.001	<0.003	5,900	Clear, light sheen, strong hydrocar. odor
1	40.44	53.81	2.10	8	06/03/09	6,700	20,500	0.0150	<0.001	0.002	0.003	5,530	Clear, light sheen, strong hydrocar. odor
1	40.59	53.81	2.10	8	09/02/09	6,200	18,700	0.0770	<0.001	0.015	0.011	5,130	Clear, light sheen, strong hydrocar. odor
1	40.79	53.81	2.10	8	11/13/09	6,000	17,900	0.0140	<0.001	0.003	0.016	4,380	Clear, light sheen, strong hydrocar. odor
1	41.01	53.81	2.00	8	03/02/10	6,000	18,300	0.1320	0.002	0.019	0.021	6,010	Clear, light sheen, strong hydrocar. odor
1	41.12	53.81	2.00	8	05/27/10	6,000	18,700	0.0640	<0.001	0.014	0.008	5,250	Clear, light sheen, strong hydrocar. odor
1	41.10	53.81	2.00	8	08/19/10	6,600	19,700	0.0210	<0.001	0.004	0.003	5,410	Clear, light sheen, strong hydrocar. odor
1	40.91	53.81	2.10	8	11/15/10	6,700	19,400	0.0010	<0.001	<0.001	<0.003	7,380	Clear, light sheen, strong hydrocar. odor
1	40.80	53.82	2.10	8	03/03/11	6,500	19,500	<0.001	<0.001	<0.001	<0.003	5,470	Clear, light sheen, strong hydrocar. odor
1	41.00	53.82	2.10	8	05/26/11	6,100	18,100	<0.001	<0.001	<0.001	<0.003	5,090	Clear, light sheen, strong hydrocar. odor
1	41.29	53.82	2.00	8	08/25/11	6,700	19,200	0.0060	<0.001	<0.001	<0.003	5,920	Clear, light sheen, strong hydrocar. odor
1	41.56	53.82	2.00	8	11/23/11	6,600	19,700	0.0030	<0.001	<0.001	<0.003	5,650	Clear, light sheen, strong hydrocar. odor
1	41.77	53.82	1.90	8	02/16/12	6,100	19,400	<0.001	0.001	<0.001	<0.003	5,260	Clear, light sheen, strong hydrocar. odor
1	41.95	53.82	1.90	8	05/18/12	6,500	19,000	0.0060	<0.001	<0.001	<0.003	6,200	Clear, light sheen, strong hydrocar. odor

Graph 1
Rice Operating Company
MW-1
EME Jct A-2-1
Lea County, New Mexico

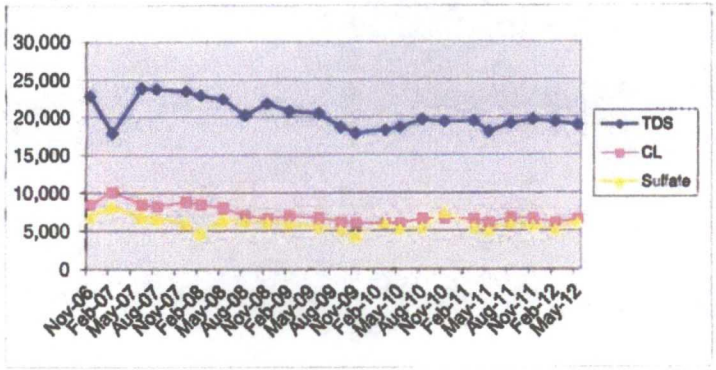


Table 2
Rice Operating Company
EME Jct. A-2-1
Lea County, New Mexico

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl mg/L	TDS mg/L	Benzene mg/L	Toluene mg/L	Ethyl Benzene mg/L	Total Xylenes mg/L	Sulfate mg/L	Comments
2	36.45	48.65	2.00	8	11/08/06	8,680	23,600	<0.001	<0.001	<0.001	<0.001	6,960	Silt/sand to clear, no odor
2	36.62	48.65	1.90	8	02/13/07	10,100	20,300	<0.001	<0.001	<0.001	<0.001	7,990	Silt/sand to clear, no odor
2	36.83	48.65	1.90	8	06/08/07	9,300	25,000	<0.001	<0.001	<0.001	<0.001	7,280	Silt/sand to clear, no odor
2	37.04	48.65	1.90	8	08/21/07	8,797	26,155	<0.004	<0.004	<0.004	<0.012	7,005	Silt/sand to clear, no odor
2	36.79	48.65	1.90	8	12/04/07	8,800	25,329	<0.001	<0.001	<0.001	<0.003	6,570	Silt/sand to clear, no odor
2	37.59	48.65	1.80	8	02/13/08	8,500	24,700	<0.002	<0.002	<0.002	<0.006	6,940	Silt/sand to clear, no odor
2	37.81	48.65	1.70	8	05/23/08	8,400	24,200	<0.002	<0.002	<0.002	<0.006	6,990	Silt/sand to clear, no odor
2	38.15	48.65	1.70	8	08/22/08	8,000	23,900	<0.001	<0.001	<0.001	<0.003	7,250	Silt/sand to clear, no odor
2	38.41	48.65	1.60	6	11/21/08	7,300	23,600	<0.001	<0.001	<0.001	<0.003	6,970	Silt/sand to clear, no odor
2	38.55	48.69	1.60	6	02/19/09	7,800	23,300	<0.001	<0.001	<0.001	<0.003	6,760	Silt/sand to clear, no odor
2	38.79	48.69	1.60	6	06/03/09	7,500	22,600	<0.001	<0.001	<0.001	<0.003	6,360	Silt/sand to clear, no odor
2	39.12	48.69	1.50	6	09/02/09	5,800	18,300	<0.001	<0.001	<0.0001	0.005	4,980	Silt/sand to clear, no odor
2	39.13	48.69	1.50	6	11/13/09	7,500	21,200	<0.001	<0.001	<0.001	<0.003	4,490	Silt/sand to clear, no odor
2	39.38	48.65	1.50	6	03/02/10	7,300	22,200	<0.001	<0.001	<0.001	<0.003	6,520	Silt/sand to clear, no odor
2	39.52	48.65	1.50	6	05/27/10	7,300	21,900	0.001	<0.001	<0.001	<0.003	5,690	Silt/sand to clear, no odor
2	39.50	48.65	1.50	6	08/19/10	7,600	21,800	<0.001	<0.001	<0.001	<0.003	5,850	Silt/sand to clear, no odor
2	39.27	48.65	1.50	6	11/15/10	7,300	21,000	<0.001	<0.001	<0.001	<0.003	7,960	Silt/sand to clear, no odor
2	39.15	48.68	1.50	6	03/03/11	7,200	21,100	<0.001	<0.001	<0.001	<0.003	6,000	Silt/sand to clear, no odor
2	39.34	48.68	1.50	6	05/26/11	7,400	21,100	<0.001	<0.001	<0.001	<0.003	6,070	Silt/sand to clear, no odor
2	39.66	48.68	1.40	6	08/25/11	7,400	20,900	<0.001	<0.001	<0.001	<0.003	6,380	Silt/sand to clear, no odor
2	39.94	48.68	1.40	6	11/23/11	7,400	21,400	<0.001	<0.001	<0.001	<0.003	5,480	Silt/sand to clear, no odor
2	40.12	48.68	1.40	6	02/16/12	6,900	21,200	<0.001	<0.001	<0.001	<0.003	5,030	Silt/sand to clear, no odor
2	40.33	48.68	1.30	6	05/18/12	7,100	20,900	<0.001	<0.001	<0.001	<0.003	6,980	Silt/sand to clear, no odor

Graph 2
Rice Operating Company
MW-2
EME Jct. A-2-1
Lea County, New Mexico

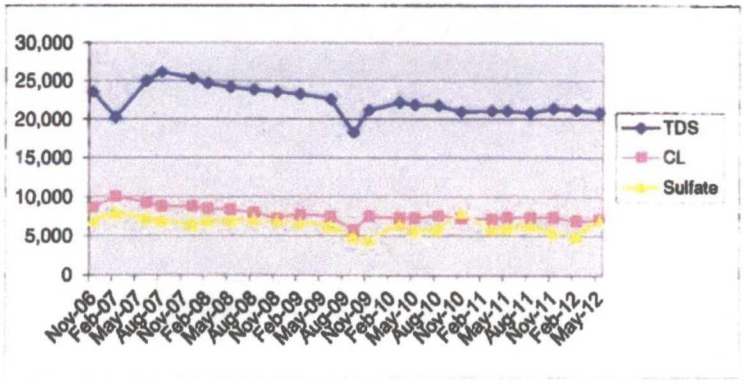
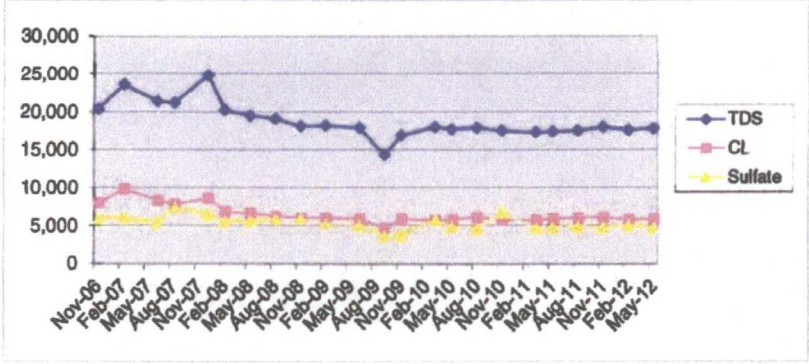


Table 3
Rice Operating Company
EME Jct. A-2-1
Lea County, New Mexico

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl mg/L	TDS mg/L	Benzene mg/L	Toluene mg/L	Ethyl Benzene mg/L	Total Xylenes mg/L	Sulfate mg/L	Comments
3	37.12	47.38	1.60	6	11/06/06	7,970	20,400	<0.001	<0.001	<0.001	<0.001	5,950	Clear no odor
3	37.29	47.38	1.60	6	02/13/07	9,820	23,600	<0.001	<0.001	<0.001	<0.001	6,050	Clear no odor
3	37.50	47.38	1.60	6	06/08/07	8,300	21,400	<0.001	<0.001	<0.001	<0.001	5,350	Clear no odor
3	37.64	47.38	1.60	6	08/21/07	7,798	21,200	<0.004	<0.004	<0.004	<0.012	7,381	Clear no odor
3	37.39	47.38	1.60	6	12/04/07	8,600	24,814	<0.001	<0.001	<0.001	<0.003	6,480	Clear no odor
3	38.22	47.38	1.50	6	02/13/08	6,800	20,200	<0.002	<0.002	<0.002	<0.006	5,560	Clear no odor
3	38.44	47.38	1.40	6	05/20/08	6,600	19,500	<0.002	<0.002	<0.002	<0.006	5,720	Clear no odor
3	38.80	47.38	1.40	6	08/22/08	6,200	19,100	<0.001	<0.001	<0.001	<0.003	5,860	Clear no odor
3	39.06	47.38	1.30	6	11/21/08	6,000	18,100	<0.001	<0.001	<0.001	<0.003	5,860	Clear no odor
3	39.23	47.41	1.30	6	02/19/09	6,000	18,200	<0.001	<0.001	<0.001	<0.003	5,270	Clear no odor
3	39.33	47.41	1.30	6	06/03/09	5,900	17,900	<0.001	<0.001	<0.001	<0.003	5,150	Clear no odor
3	39.64	47.41	1.20	6	09/02/09	4,700	14,300	<0.001	<0.001	<0.001	<0.003	3,720	Clear no odor
3	39.79	47.41	1.20	6	11/13/09	5,900	16,900	<0.001	<0.001	<0.001	<0.003	3,800	Clear no odor
3	40.06	47.39	1.20	6	03/02/10	5,700	18,000	<0.001	<0.001	<0.001	<0.003	5,770	Clear no odor
3	40.18	47.39	1.20	6	05/27/10	5,800	17,700	<0.001	<0.001	<0.001	<0.003	4,900	Clear no odor
3	40.15	47.39	1.20	6	08/19/10	6,100	17,900	<0.001	<0.001	<0.001	<0.003	4,630	Clear no odor
3	39.94	47.39	1.20	6	11/15/10	5,800	17,500	<0.001	<0.001	<0.001	<0.003	6,620	Clear no odor
3	39.86	47.40	1.20	6	03/03/11	5,700	17,300	<0.001	<0.001	<0.001	<0.003	4,690	Clear no odor
3	40.06	47.40	1.20	6	05/26/11	5,900	17,400	<0.001	<0.001	<0.001	<0.003	4,780	Clear no odor
3	40.36	47.40	1.10	6	08/25/11	6,000	17,500	<0.001	<0.001	<0.001	<0.003	4,910	Clear no odor
3	40.63	47.40	1.10	6	11/23/11	6,100	18,000	<0.001	<0.001	<0.001	<0.003	4,800	Clear no odor
3	40.82	47.40	1.10	6	02/16/12	5,800	17,600	<0.001	<0.001	<0.001	<0.003	5,090	Clear no odor
3	40.96	47.40	1.00	6	05/18/12	5,900	17,800	<0.001	<0.001	<0.001	<0.003	4,780	Clear no odor

Graph 3
Rice Operating Company
MW-3
EME Jct. A-2-1
Lea County, New Mexico



APPENDIX B
LABORATORY ANALYTICAL RESULTS AND GROUNDWATER WITHDRAWAL LOG SHEET

CARDINAL Laboratories

PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

July 23, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME L-6

Enclosed are the results of analyses for samples received by the laboratory on 07/19/12 15:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/19/2012	Sampling Date:	07/19/2012
Reported:	07/23/2012	Sampling Type:	Water
Project Name:	EME L-6	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME L-6		

Sample ID: RW-1 (H201659-01)

Chloride, SM4500Cl-B mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**10200**	4.00	07/23/2012	ND	100	100	100	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: Rice		**BILL TO**	
Project Manager: Hack Conder		P.O. #:	
Address:		Company:	
City: Hobbs	State: NM Zip: 88240	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location: Eunice 2-6		Phone #:	
Sampler Name: Kyle Norman		Fax #:	

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS						
H201659																										
1	RW-1	G	1	✓									7-19-12	1130	✓											

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 7-19-12	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 3:30		Fax Result: ☐ Yes ☑ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		email results: zconder@rice-ecs.com Knorman@rice-ecs.com; lpena@riceswd.com Kjones@riceswd.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☐ Yes ☑ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

Record of Groundwater Withdrawal
Site Name: EME Jct. A-2-1 (1R427-177)

Date	Fluid Hauled (bbls)	Lab	Comments
7/16/2012			Started Pumping
7/17/2012	130		
7/19/2012	85	10200	
7/23/2012	130		
7/25/2012	71		
7/27/2012	33		
Total For June	449 bbls	Total kg of Cl-	728.1300133 kg
	18858 gals	Removed	
Total for Project	449 bbls		
	18858 gals		