1R - 459

Annual GW Mon. REPORTS

DATE:

2008

TETRA TECH

CERTIFIED MAIL
RETURN RECEIPT NO. 7005 1160 0005 3780 6467

March 13, 2009

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

Re: 2008 Annual Groundwater Summary Report & Project Status Report, Rice Operating Company, K-4 Release, BD SWD System, Unit K, Section 4, T-22-S, R-37-E, Lea County, New Mexico, NMOCD CASE #1R0459

Dear Mr. Jones:

Tetra Tech Inc. (Tetra Tech) submits the following 2008 Annual Groundwater Summary Report for the Rice Operating Company (ROC), K-4 Release, located in the BD Salt Water Disposal System. ROC is the service provider (agent) for the BD Salt Water Disposal System and has no ownership of any portion of the pipeline, well or facility. The BD SWD system is owned by a consortium of oil producers, system partners, who provide all operating capital on a percentage ownership/usage basis.

Background

On February 25, 2004, a leak was discovered 34 feet east of the K-4 junction box. According to the form C-141 (Initial) filed with the NMOCD, the spill was due to the rupture of a 4-inch PVC line. An estimated 1,040 barrels of produced water was discharged with 1,000 barrels of fluid recovered. Regional groundwater information indicates that the depth to groundwater is approximately 90 to 100 feet below ground surface (bgs).

Initial soil sampling performed in April 2004 indicated a residual subsurface chloride impact. On July 14, 2004, a hollow-stem auger unit was utilized to install one soil boring at the release source area at the site. The soil boring was advanced to a depth of 80 feet bgs. Field chloride analysis was performed on soil samples at five foot

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increments. Results of field chloride testing and laboratory analysis indicated that chloride impacts extend to a depth of greater than 80 feet bgs. The soil boring was backfilled with bentonite and drill cuttings. Between October 12 and October 19, 2006, Highlander personnel were onsite to oversee the installation of three monitor wells (MW-1 through MW-3) within, up and down gradient of the release source area. The wells were drilled to a maximum depth ranging from 92 to 95 feet bgs. The wells were completed with 0.020 slotted 2 inch PVC screen placed 15 feet below and 5 feet above the water table to EPA and industry standards. The wells were completed with monument style risers.

During drilling activities, soil samples were collected every 10 feet for monitor well MW-1 and 5 feet for monitor wells MW-2 and MW-3. Soil samples were field screened for chlorides with a field sampling kit. Specific samples were collected and submitted for laboratory analysis of chlorides utilizing EPA Method 300.0. Laboratory analytical results indicated the entire soil column for MW-1 was impacted with chlorides greater than 250 mg/Kg. Monitor well MW-2 and MW-3 had soil concentrations of less than 250 mg/kg at the vadose zone located at approximately 80 feet bgs. Groundwater was found to be impacted with chlorides only in monitor well MW-1.

On April 23, 2007, Highlander submitted a Corrective Action Plan (CAP) for the site. The CAP addressed elevated levels of chlorides within the soils and included placement of a barrier approximately 68 feet by 120 feet wide at three feet below ground surface (bgs). Upon completion of the barrier, the excavation will be backfilled with soils that will support vegetation. The disturbed area will be reseeded with a blend of native vegetation and monitored for growth. As of this report, the CAP has not been approved by the NMOCD.

During a meeting between Rice, Highlander, and the NMOCD on July 18, 2007, it was decided to replace the 2 inch monitor well at MW-1 with a 4 inch monitor well in order to increase volume of recovery of chlorides within that well. Also, it was discussed that the soils barrier would be placed at four feet bgs instead of three feet bgs. On August 7, 2007, monitor well MW-1was redrilled and reinstalled as a 4 inch well.

A pump test was performed on monitor well MW-1 on November 29, 2007. Results indicate the well was able to pump 3 gallons per minute (gpm) for 40 minutes without pumping dry. Groundwater analytical results show the concentrations of chlorides dropped by approximately 300 mg/L (from 1,040 mg/L on November 13, 2006 to 736 mg/L on October 31, 2007). With the decrease in chlorides, it was decided that instead of installing a pump and running it for 24 hours, 7 days a week, that periodically, the well will be pumped off for several hours to enhance recovery.

Monitor Well Sampling

The site monitor wells were sampled on February 15, May 5, August 11, and November 13, 2008. Prior to sampling, the monitor wells were gauged and approximately three casing volumes of water were purged from the wells. The pump and associated tubing were decontaminated with a laboratory grade detergent and rinsed with deionized water. Cumulative water level measurements and purge volumes for the monitor wells are included in the Tables Section of this report.

The wells were also inspected for the presence of phase-separated hydrocarbons (PSH). Groundwater samples were collected as soon as possible after the groundwater returned to its static level. Groundwater samples were collected using clean disposable polyethylene bailers and disposable line. The samples were transferred into labeled and preserved containers provided by the laboratory. The samples were delivered under proper chain-of-custody control to Cardinal Lab of Hobbs, New Mexico. The groundwater samples were analyzed for major anions by methods 310.1, 9253 and 375.4, cations by method 6010B, Total Dissolved Solids (TDS) by method 160.1 and Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B. Copies of the laboratory reports are enclosed in Appendix A.

Monitor Well Sample Results

The analysis of monitor well, MW-1, has shown a decrease in chloride concentration from 1,040 mg/L in the fourth quarter of 2006 to 570 mg/L in the fourth quarter of 2008. TDS concentrations have declined from 2,120 mg/L in the fourth quarter of 2006 to 1,470 mg/L in the fourth quarter of 2008. The chloride and TDS concentrations in monitor wells MW-2 and MW-3 were relatively stable throughout the year and chloride concentrations remained below the 250 mg/L WQCC standard. All monitor wells were sampled on a quarterly basis. The most recent sampling was performed on all three monitor wells on November 13, 2008. No traces of BTEX have ever been found in any of the monitor wells since they were initially drilled in 2006. Cumulative analytical data is summarized in the Table Section of this report.

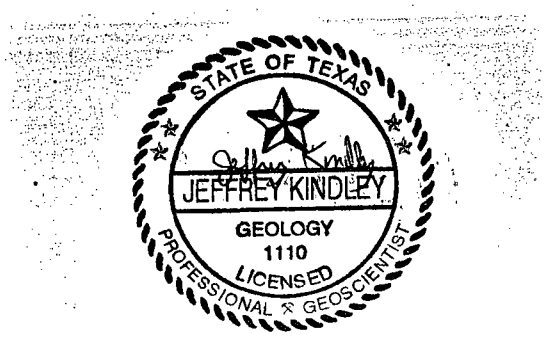
Conclusions

1. In 2008, there were no BTEX constituents at or above the New Mexico Water Quality Control Commission (WQCC) standards.

2. Chloride and total dissolved solid (TDS) concentrations have decreased throughout the year in monitor well MW-1.

3. Chloride and TDS concentrations have remained stable in monitor wells MW-2 and MW-3 throughout the year and chloride concentrations remained below the 250 mg/L WQCC standard. This also indicates that the limited plume of impact is relatively stable.

TETRA TECH



Respectfully Submitted,
Tetra Tech, Inc.

Jeffrey Kindley, P.G.
Senior Project Manager

cc: Hack Conder –ROC, Edward Hansen – NMOCD
Enclosures: Figures, Tables, Laboratory Analysis

FIGURES

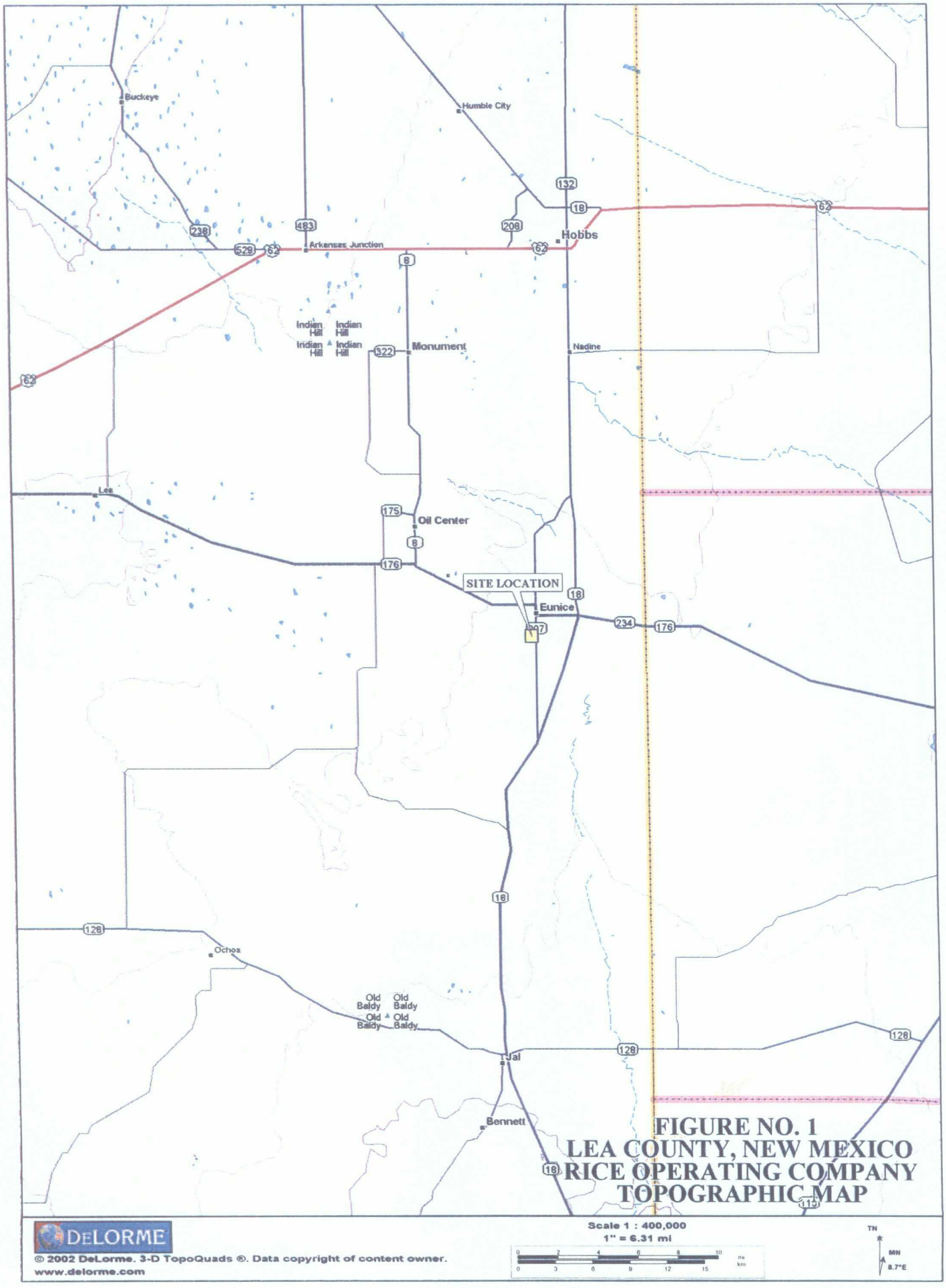


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

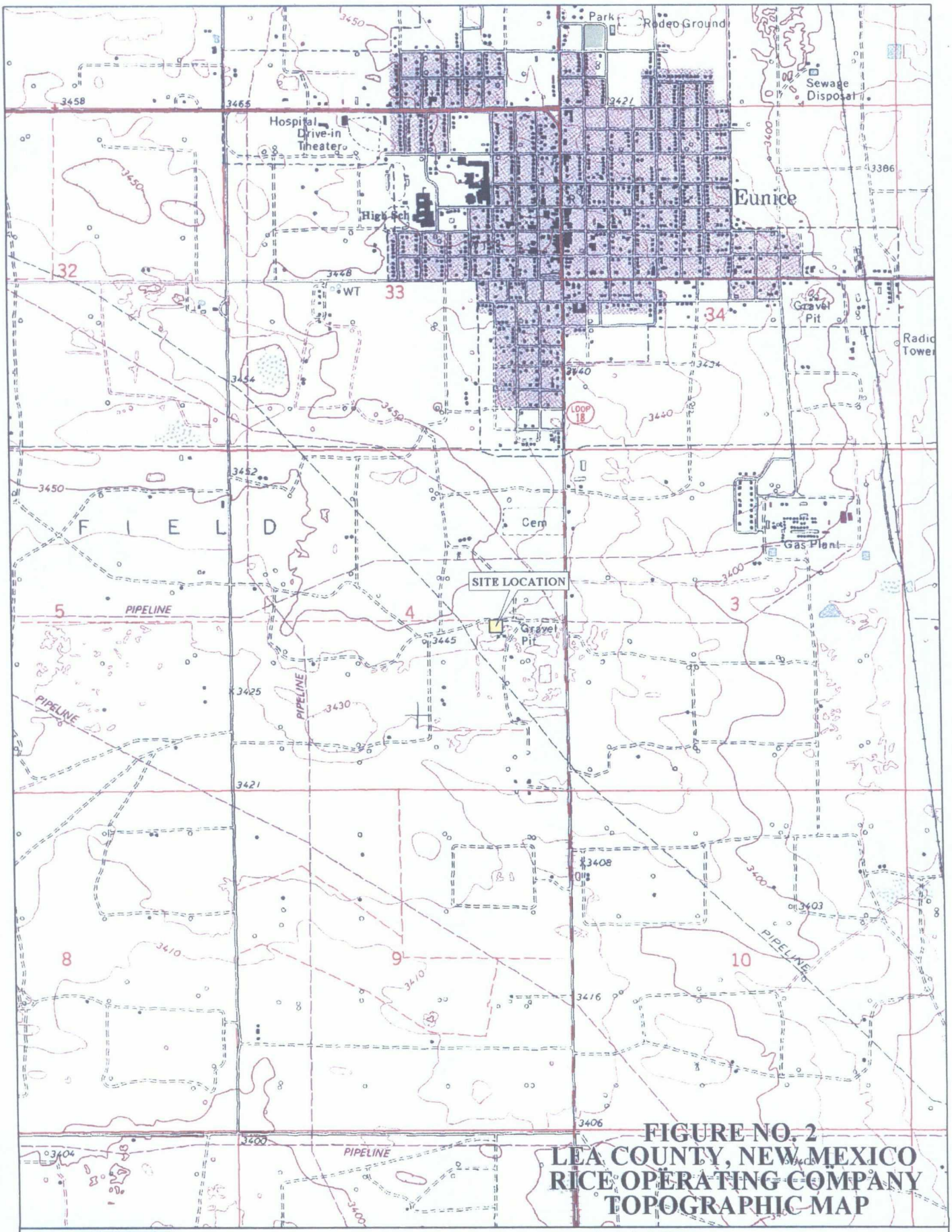


FIGURE NO. 2
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

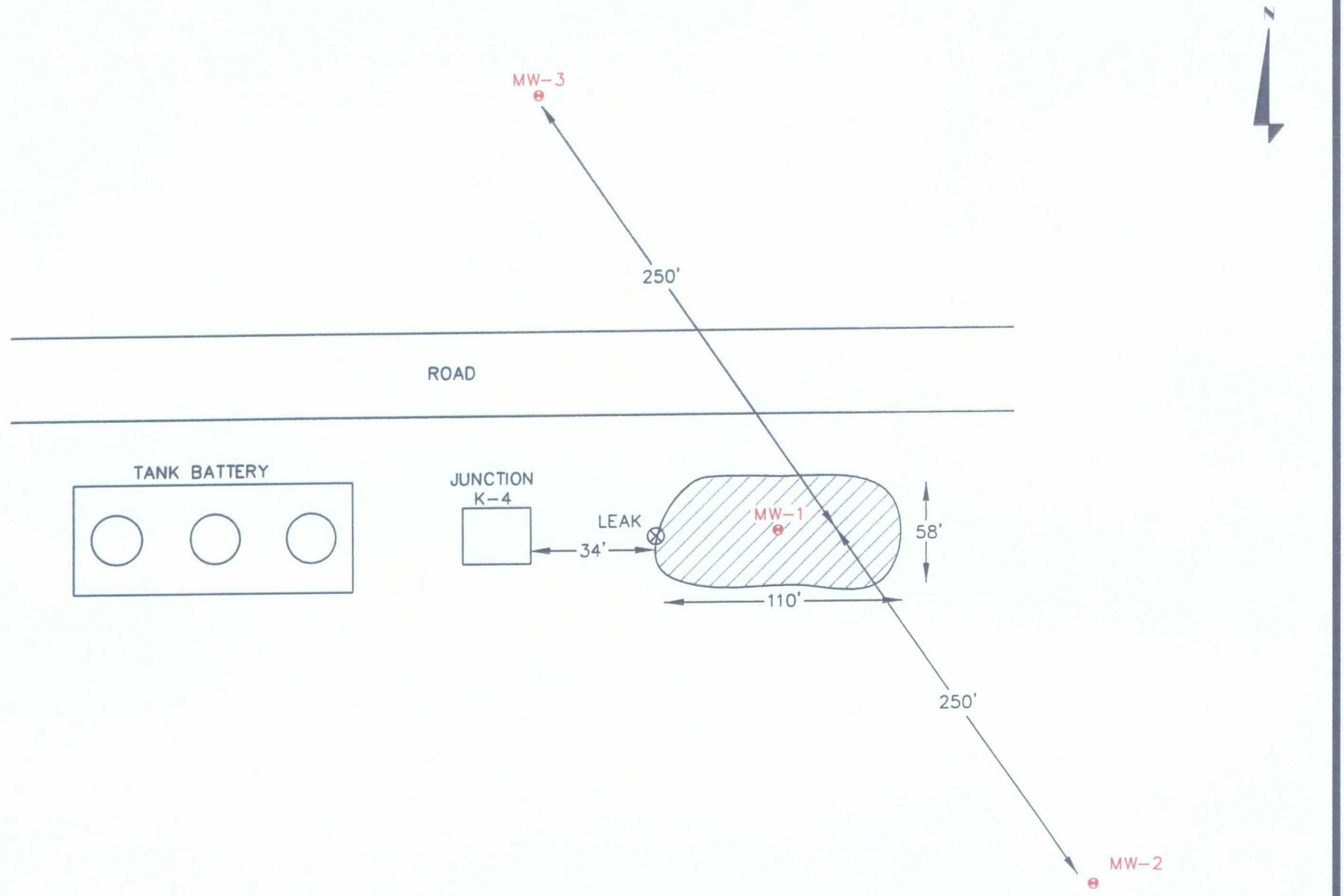


FIGURE NO. 3

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

BD K-4 JUNCTION

TETRA TECH, INC.
MIDLAND, TEXAS

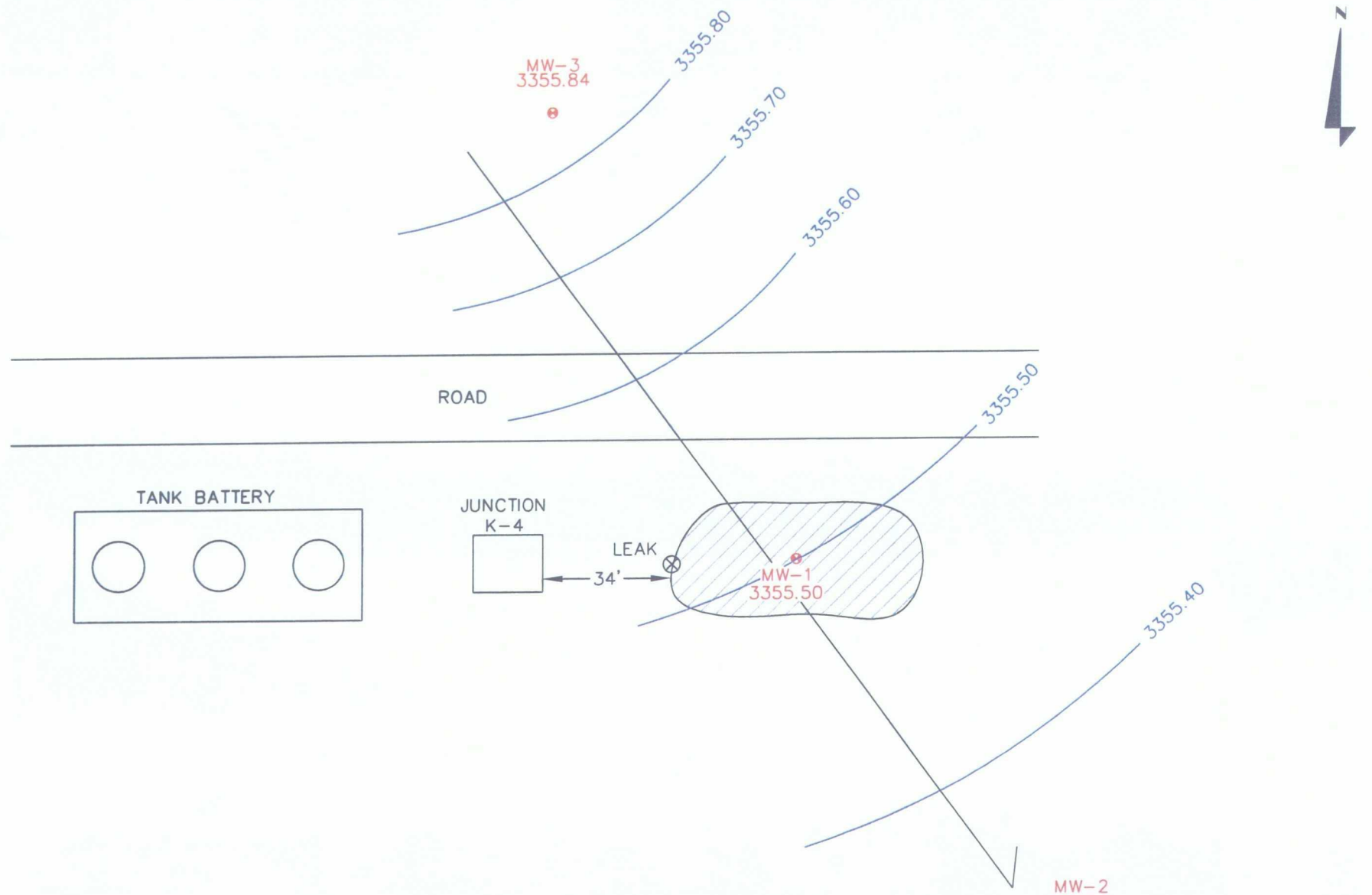


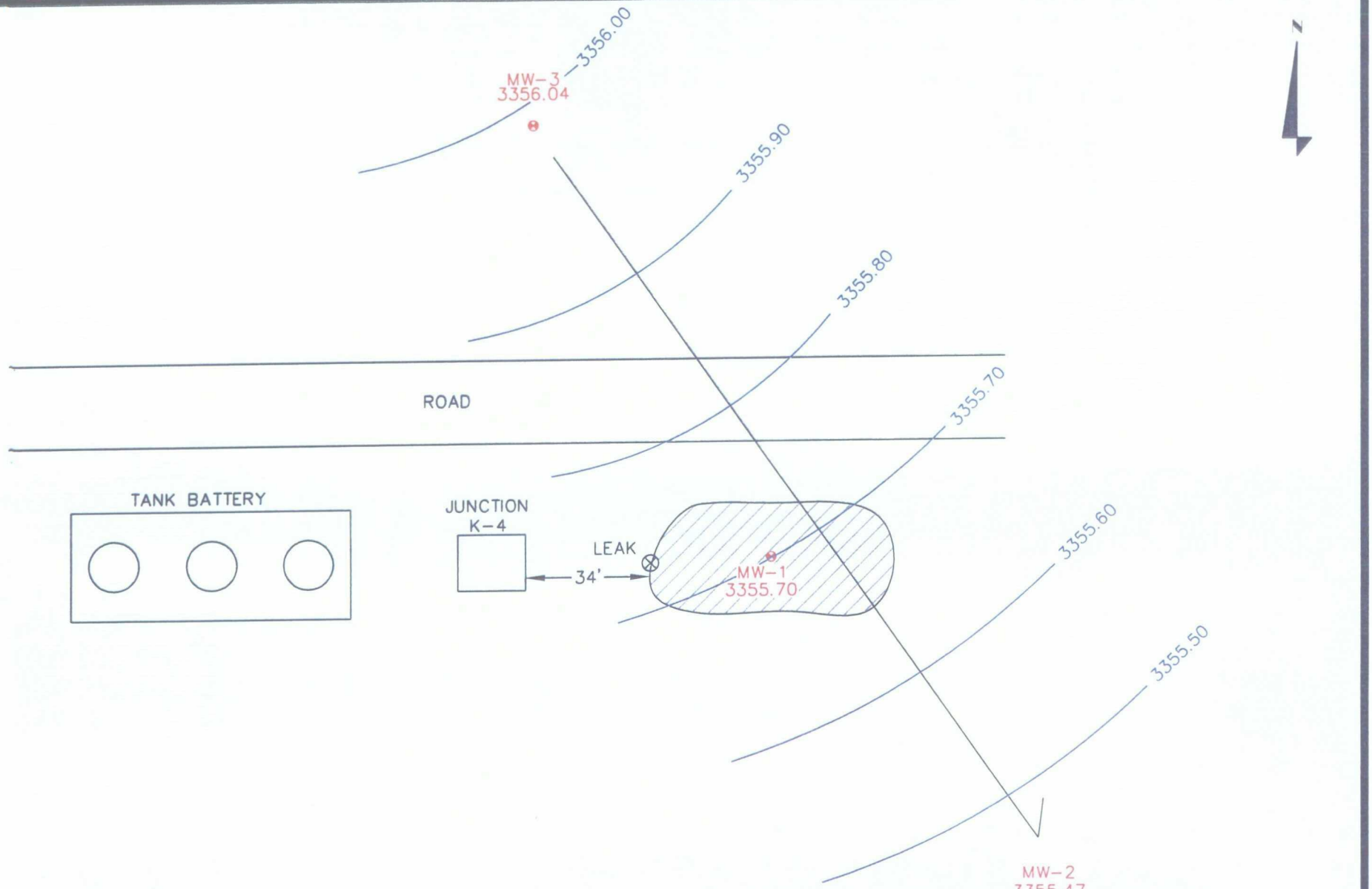
FIGURE NO. 4

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

BD K-4 JUNCTION
GROUNDWATER GRADIENT MAP
GAUGED ON 2/15/08

TETRA TECH, INC.
MIDLAND, TEXAS



CONTOUR INTERVAL = 0.10'

MONITOR WELL LOCATIONS

SPILL AREA

SCALE: 1" = 30'

0 30'

DWN. BY: JJ

FILE: C:\RICE\2306 SITE MAP

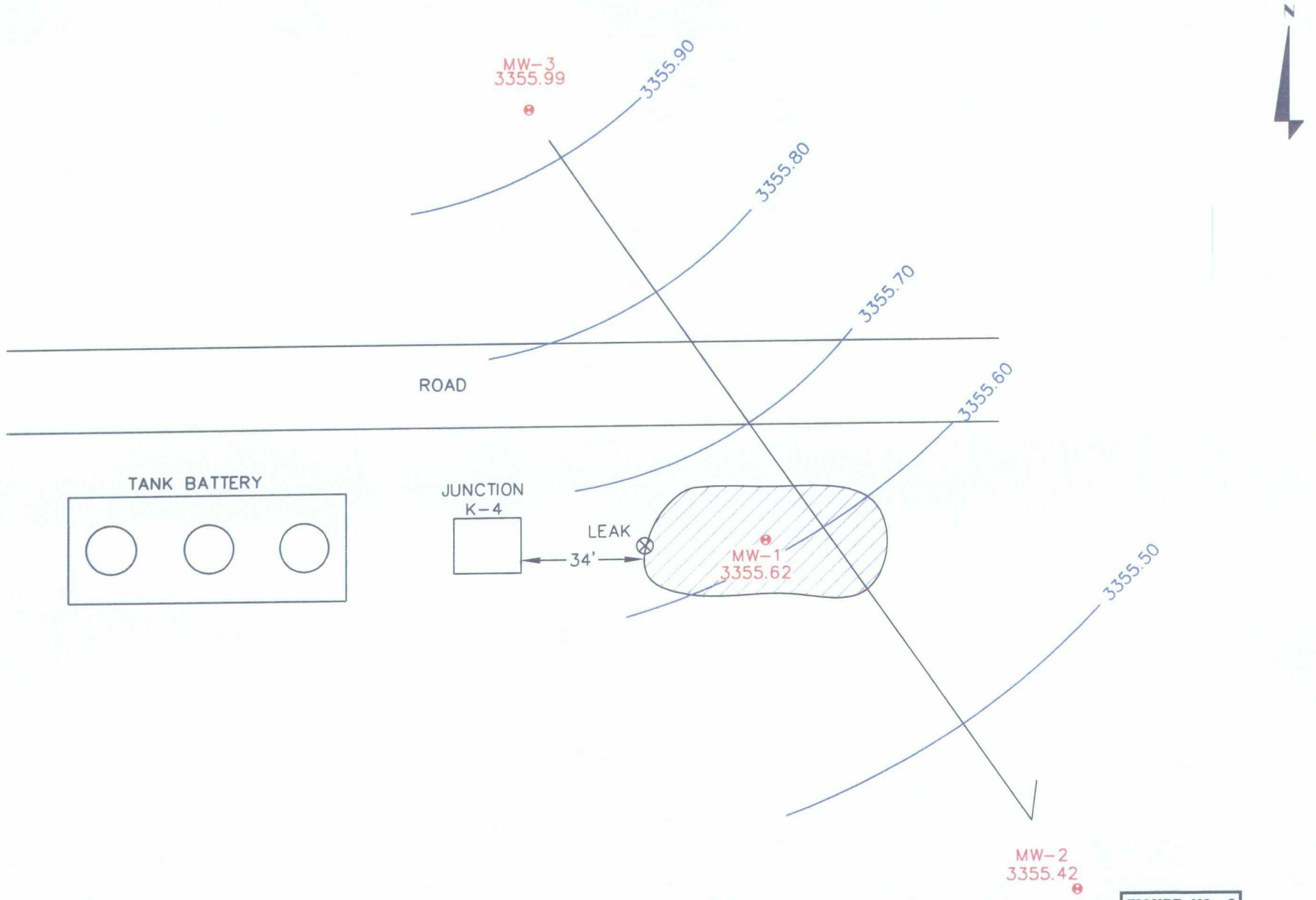
FIGURE NO. 5

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

BD K-4 JUNCTION
GROUNDWATER GRADIENT MAP
GAUGED ON 5/5/08

TETRA TECH, INC.
MIDLAND, TEXAS



CONTOUR INTERVAL = 0.10'

MONITOR WELL LOCATIONS

SPILL AREA

SCALE: 1" = 30'

0 30'

DWN. BY: JJ

FILE: C:\RICE\2306 SITE MAP

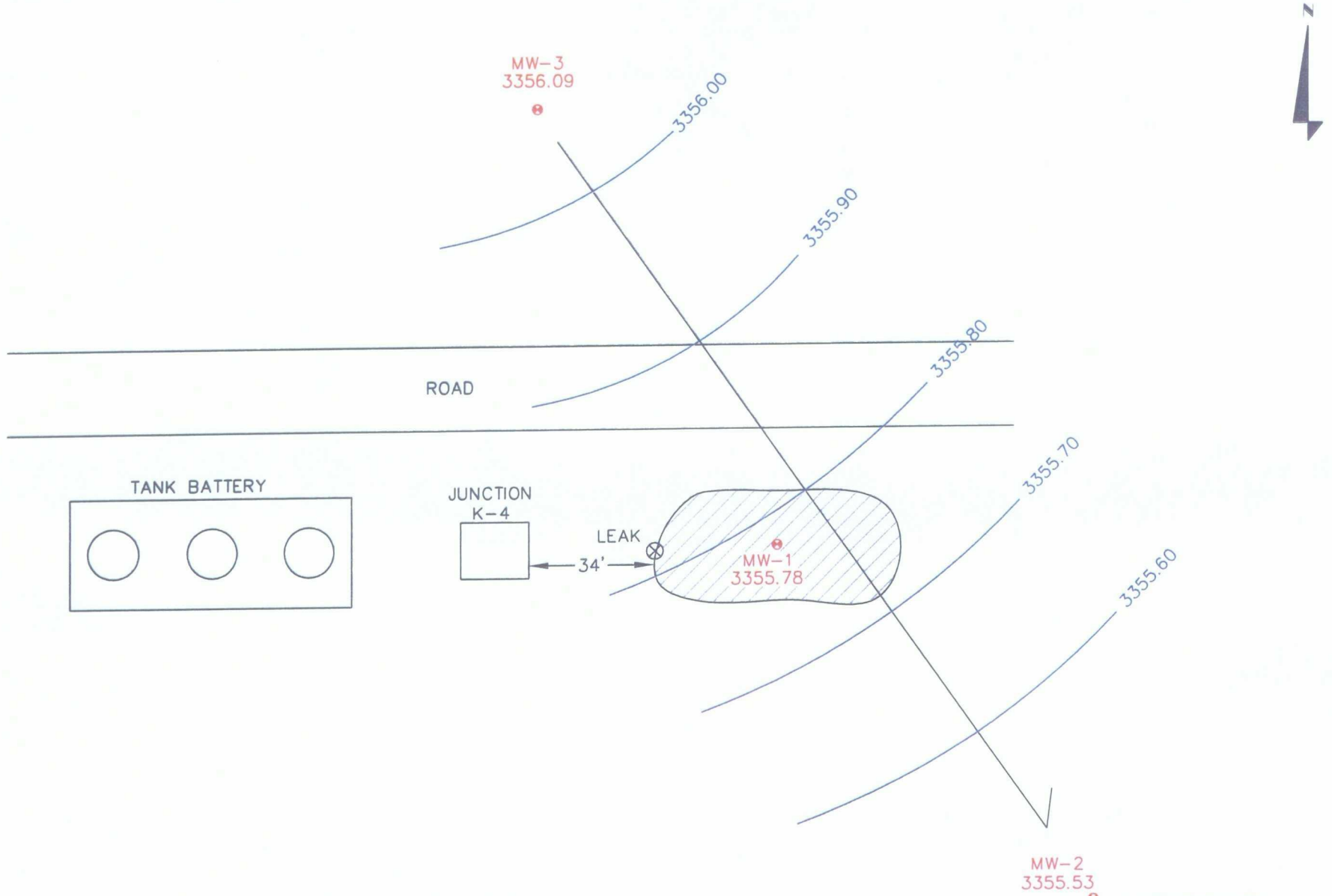
FIGURE NO. 6

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

BD K-4 JUNCTION
GROUNDWATER GRADIENT MAP
GAUGED ON 8/11/08

TETRA TECH, INC.
MIDLAND, TEXAS



CONTOUR INTERVAL = 0.10'

MONITOR WELL LOCATIONS

SPILL AREA

SCALE: 1" = 30'

0 30'

DWN. BY: JJ

FILE: C:\RICE\2306 SITE MAP

FIGURE NO. 7

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

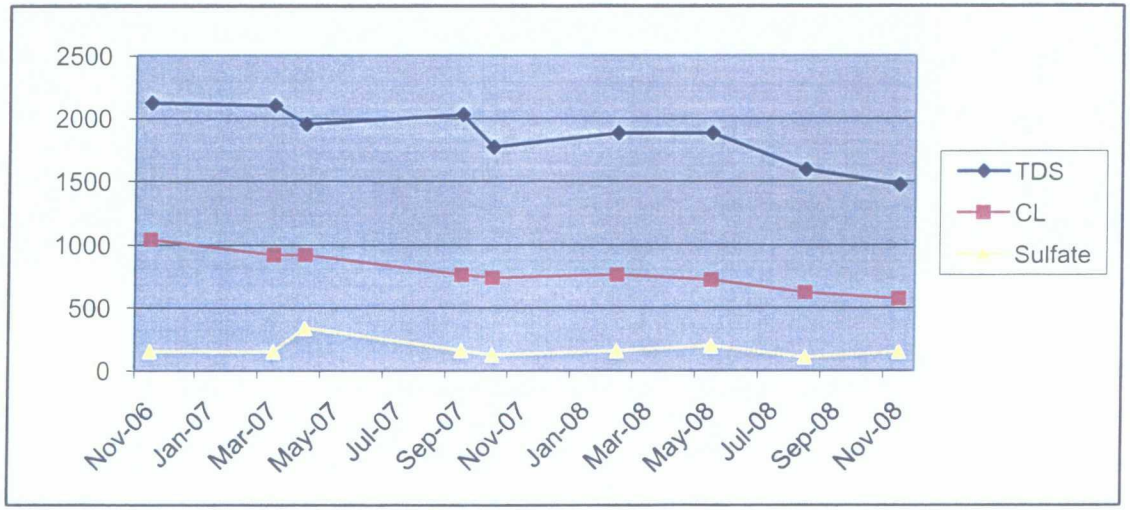
BD K-4 JUNCTION
GROUNDWATER GRADIENT MAP
GAUGED ON 11/13/08

TETRA TECH, INC.
MIDLAND, TEXAS

TABLES

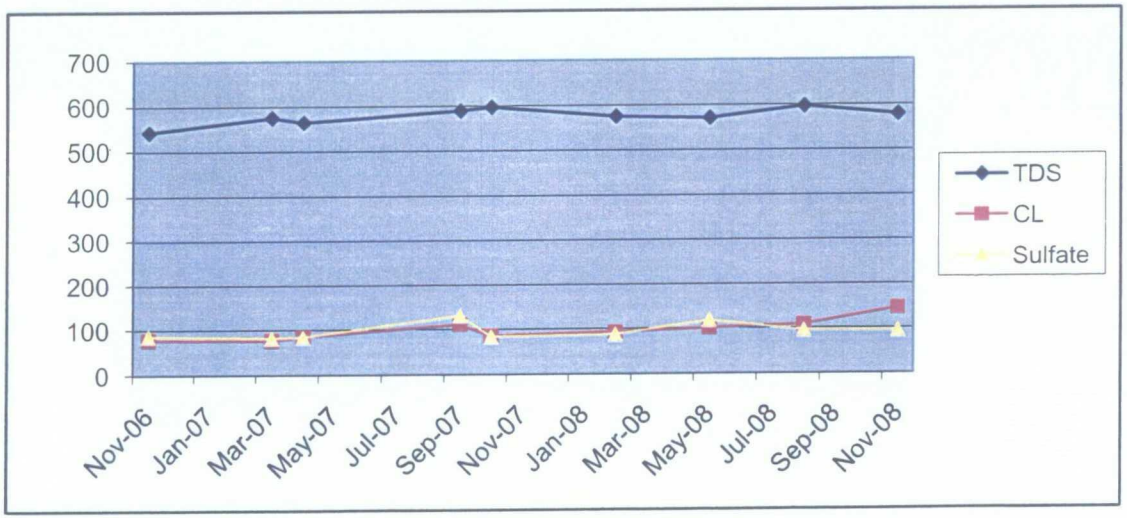
Rice Operating Company
BD K-4
Lea County, New Mexico

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	85.02	93.63	1.40	5	11/13/06	1040	2120	<0.001	<0.001	<0.001	<0.001	152	Clear no odor
1	84.99	93.62	1.40	6	03/08/07	916	2100	<0.001	<0.001	<0.001	<0.001	148	Clear no odor
1	84.96	93.62	1.40	6	04/23/07	917	1950	<0.001	<0.001	<0.001	<0.001	339	Clear no odor
1	86.06	97.70	7.60	6	09/14/07	760	2028	<0.001	<0.001	<0.001	<0.003	159	Clear no odor
1	86.06	97.70	7.60	20	10/31/07	736	1770	<0.002	<0.002	<0.002	<0.006	124	Clear no odor
1	85.93	98.60	8.20	30	02/15/08	760	1880	<0.002	<0.002	<0.002	<0.006	157	Clear no odor
1	85.73	98.60	8.40	30	05/05/08	720	1880	<0.002	<0.002	<0.002	<0.006	195	Clear no odor
1	85.81	98.60	8.30	30	08/11/08	620	1590	<0.001	<0.001	<0.001	<0.003	106	Clear no odor
1	85.65	98.60	8.40	30	11/13/08	570	1470	<0.001	<0.001	<0.001	<0.003	148	Clear no odor



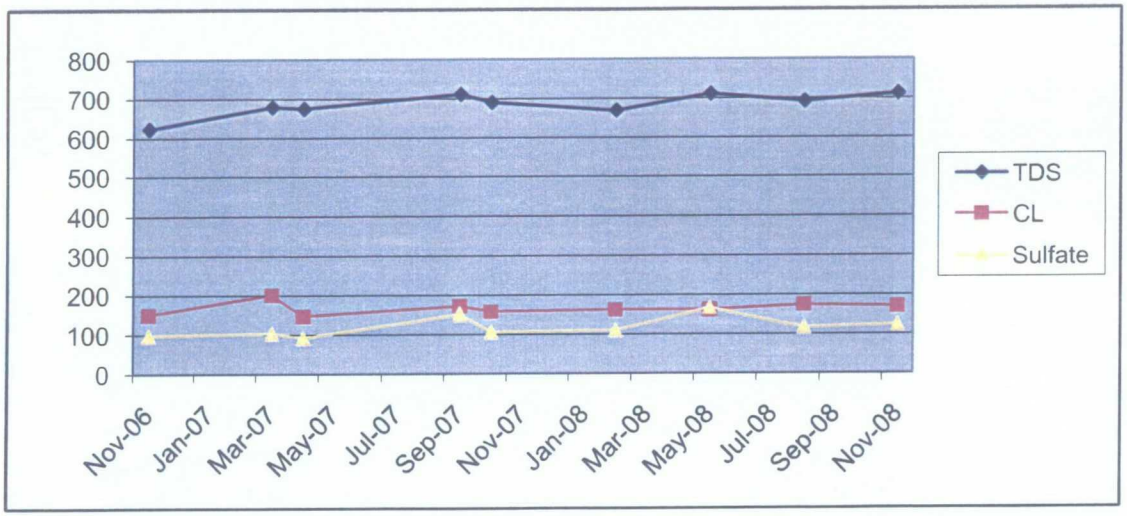
Rice Operating Company
BD K-4
Lea County, New Mexico

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	83.35	94.10	1.70	7	11/13/06	77	542	<0.001	<0.001	<0.001	<0.001	85	Clear no odor
2	83.28	94.08	1.70	7	03/08/07	75.3	574	<0.001	<0.001	<0.001	<0.001	80.8	Clear no odor
2	83.25	94.08	1.70	7	04/23/07	83.5	564	<0.001	<0.001	<0.001	<0.001	83	Clear no odor
2	83.12	94.08	1.80	7	09/14/07	110	588	<0.001	<0.001	<0.001	<0.003	130	Clear no odor
2	83.11	94.08	1.80	6	10/31/07	84	596	<0.002	<0.002	<0.002	<0.006	82.7	Clear no odor
2	82.97	94.05	1.80	6	02/15/08	92	574	<0.002	<0.002	<0.002	<0.006	86.6	Clear no odor
2	82.81	94.05	1.80	6	05/05/08	100	570	<0.002	<0.002	<0.002	<0.006	117	Clear no odor
2	82.86	94.05	1.80	6	08/11/08	108	596	<0.001	<0.001	<0.001	<0.003	94	Clear no odor
2	82.75	94.05	1.80	6	11/13/08	144	578	<0.001	<0.001	<0.001	<0.003	93.7	Clear no odor



Rice Operating Company
BD K-4
Lea County, New Mexico

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	86.45	94.60	1.30	5	11/13/06	148	622	<0.001	<0.001	<0.001	<0.001	97.6	Clear no odor
3	86.41	94.50	1.30	5	03/08/07	199	678	<0.001	<0.001	<0.001	<0.001	103	Clear no odor
3	86.35	94.50	1.30	6	04/23/07	145	674	<0.001	<0.001	<0.001	<0.001	92.1	Clear no odor
3	86.23	94.50	1.30	6	09/14/07	170	710	<0.001	<0.001	<0.001	<0.003	151	Clear no odor
3	86.19	94.50	1.30	6	10/31/07	156	689	<0.002	<0.002	<0.002	<0.006	106	Clear no odor
3	86.09	94.35	1.30	6	02/15/08	160	668	<0.002	<0.002	<0.002	<0.006	110	Clear no odor
3	85.89	94.35	1.40	6	05/05/08	160	710	<0.002	<0.002	<0.002	<0.006	166	Clear no odor
3	85.94	94.35	1.30	6	08/11/08	172	691	<0.001	<0.001	<0.001	<0.003	117	Clear no odor
3	85.84	94.35	1.40	6	11/13/08	168	711	<0.001	<0.001	<0.001	<0.003	124	Clear no odor



APPENDIX A
LABORATORY ANALYTICAL

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 02/19/08
Reporting Date: 02/21/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S R37E SEC4 K ~ LEA COUNTY, NM

Sampling Date: 02/15/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: KS
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		02/20/08	02/20/08	02/20/08	02/20/08
H14279-1	MONITOR WELL #1	<0.002	<0.002	<0.002	<0.006
H14279-2	MONITOR WELL #2	<0.002	<0.002	<0.002	<0.006
H14279-3	MONITOR WELL #3	<0.002	<0.002	<0.002	<0.006
Quality Control		0.089	0.096	0.093	0.256
True Value QC		0.100	0.100	0.100	0.300
% Recovery		89.4	95.9	93.1	85.3
Relative Percent Difference		3.2	3.6	4.6	1.9

METHOD: EPA SW-846 8260

Chemist

2/21/08
Date

H14279RICE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 02/19/08
Reporting Date: 02/22/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S R37E SEC4 K~LEA COUNTY, NM

Sampling Date: 02/15/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: KS
Analyzed By: HM/KS

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (uS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:		02/21/08	02/21/08	02/21/08	02/21/08	02/20/08	02/20/08
H14279-1	MONITOR WELL #1	368	174	50.0	4.98	2,910	212
H14279-2	MONITOR WELL #2	101	55.9	27.4	5.32	902	260
H14279-3	MONITOR WELL #3	121	65.2	28.2	5.42	1,070	208
Quality Control		NR	50.6	51.6	3.11	1,417	NR
True Value QC		NR	50.0	50.0	3.00	1,413	NR
% Recovery		NR	101	103	104	100	NR
Relative Percent Difference		NR	2.8	< 0.1	4.6	0.1	NR
METHODS:			SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		02/21/08	02/21/08	02/20/08	02/20/08	02/20/08	02/20/08
H14279-1	MONITOR WELL #1	760	157	0	259	7.25	1,880
H14279-2	MONITOR WELL #2	92.0	86.6	0	317	7.56	574
H14279-3	MONITOR WELL #3	160	110	0	254	7.56	668
Quality Control		490	27.0	NR	1000	7.06	NR
True Value QC		500	25.0	NR	1000	7.00	NR
% Recovery		98.0	108	NR	100	101	NR
Relative Percent Difference		2.0	3.0	NR	1.2	0.1	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

02/22/08
Date

H14279 RICE

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: Kristin Farris-Pope, Project Scientist	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: BD K-4 Release
Project Location: T22S R37E Sec4 K ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

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 (2008)	TIME
H14279-1	Monitor Well #1	G	3	X				2				1		2-15	16:15
-2	Monitor Well #2	G	3	X				2				1		2-15	14:20
-3	Monitor Well #3	G	3	X				2				1		2-15	13:25

ANALYSIS REQUEST
(Circle or Specify Method No.)

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)	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: 2-19-08	Time: 1:00	Received by: Kristin Farris-Pope
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)

Date: 2/19/08 Time: 1:00

Date: Time:

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

REMARKS:

Email Results to: kpope@riceswd.com
lweinheimer@riceswd.com
rozanne@valornet.com

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool — Yes ✓ / No ; Intact — Yes ✓ / No

CHECKED BY: (Initials) KS

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 05/08/08
Reporting Date: 05/13/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S R37E SEC4 K ~ LEA COUNTY, NM

Sampling Date: 05/05/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: BC

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		05/12/08	05/12/08	05/12/08	05/12/08
H14775-1	MONITOR WELL #1	<0.002	<0.002	<0.002	<0.006
H14775-2	MONITOR WELL #2	<0.002	<0.002	<0.002	<0.006
H14775-3	MONITOR WELL #3	<0.002	<0.002	<0.002	<0.006
Quality Control		0.088	0.097	0.100	0.277
True Value QC		0.100	0.100	0.100	0.300
% Recovery		87.8	97.4	99.6	92.4
Relative Percent Difference		1.0	1.3	2.5	1.4

METHOD: EPA SW-846 8260

Chemist

5/15/08
Date

H14775 RICE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: KRISTIN FARRIS-POPE
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 05/08/08
Reporting Date: 05/13/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S R37E SEC4 K~LEA COUNTY, NM

Sampling Date: 05/05/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM/KS

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (uS/cm)	T-Alkalinity ($mgCaCO_3$/L)
ANALYSIS DATE:		05/13/08	05/09/08	05/09/08	05/12/08	05/09/08	05/09/08
H14775-1	MONITOR WELL #1	359	176	46	8.55	2,820	204
H14775-2	MONITOR WELL #2	117	58	25	8.97	894	252
H14775-3	MONITOR WELL #3	141	67	31	9.86	1,060	216
Quality Control		NR	51.3	50.5	3.10	1,412	NR
True Value QC		NR	50.0	50.0	3.00	1,413	NR
% Recovery		NR	103	101	103	99.9	NR
Relative Percent Difference		NR	3.1	3.8	18.7	0.1	NR
METHODS:			SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		05/09/08	05/13/08	05/09/08	05/09/08	05/09/08	05/09/08
H14775-1	MONITOR WELL #1	720	195	0	249	7.33	1,880
H14775-2	MONITOR WELL #2	100	117	0	307	7.54	570
H14775-3	MONITOR WELL #3	160	166	0	264	7.53	710
Quality Control		500	42.6	NR	988	7.04	NR
True Value QC		500	40.0	NR	1000	7.00	NR
% Recovery		100	106	NR	98.8	100	NR
Relative Percent Difference		< 0.1	5.2	NR	1.2	0.1	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Kristin Dufnobo
Chemist

05/15/08
Date

H14775 RICE

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: Kristin Farris-Pope, Project Scientist	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: BD K-4 Release	
Project Location: T22S R37E Sec4 K ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

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 (2008)	TIME	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)	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
H14775-1	Monitor Well #1	G	3	X				2				1		5-5	16:30		X																X	X	X		
-2	Monitor Well #2	G	3	X				2				1		5-5	15:15		X																X	X	X		
-3	Monitor Well #3	G	3	X				2				1		5-5	14:25		X																X	X	X		

Relinquished by: Rozanne Johnson	Date: 5/8/08	Time: 12:20	Received by: [signature]
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)

Date: 5/8/08 Time: 12:20p

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

REMARKS:

Email Results to: kpope@riceswd.com
lweinheimer@riceswd.com
rozanne@valornet.com

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool — Yes [✓] No [ ]; Intact — Yes [✓] No [ ]

CHECKED BY: (Initials) MC RB

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 08/14/08
Reporting Date: 08/19/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S-R37E-SEC4 K ~ LEA COUNTY, NM

Sampling Date: 08/11/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM/TR

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (u S/cm)	T-Alkalinity (mgCaCO3/L)
ANALYSIS DATE:		08/18/08	08/18/08	08/18/08	08/18/08	08/15/08	08/15/08
H15738-1	MONITOR WELL #1	317	131	41.8	6.4	2,250	212
H15738-2	MONITOR WELL #2	129	38.5	26.2	4.5	846	240
H15738-3	MONITOR WELL #3	145	49.7	31.1	6.2	996	212
Quality Control		NR	52.1	51.0	2.80	1,410	NR
True Value QC		NR	50.0	50.0	3.00	1,413	NR
% Recovery		NR	104	102	92.8	99.8	NR
Relative Percent Difference		NR	< 0.1	4.8	13.0	0.7	NR
METHODS:			SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		08/15/08	08/15/08	08/15/08	08/15/08	08/15/08	08/17/08
H15738-1	MONITOR WELL #1	620	106	0	259	7.18	1,590
H15738-2	MONITOR WELL #2	108	94	0	293	7.31	596
H15738-3	MONITOR WELL #3	172	117	0	259	7.43	691
Quality Control		500	45.1	NR	1000	7.00	NR
True Value QC		500	40.0	NR	1000	7.00	NR
% Recovery		100	113	NR	100	100	NR
Relative Percent Difference		2.0	2.4	NR	1.2	0.1	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

08-21-08
Date

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 08/14/08
Reporting Date: 08/19/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S R37E SEC4 K ~ LEA CO., NM

Sampling Date: 08/11/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: ZL

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		08/15/08	08/15/08	08/15/08	08/15/08
H15738-1	MONITOR WELL #1	<0.001	<0.001	<0.001	<0.003
H15738-2	MONITOR WELL #2	<0.001	<0.001	<0.001	<0.003
H15738-3	MONITOR WELL #3	<0.001	<0.001	<0.001	<0.003
Quality Control		0.055	0.047	0.049	0.161
True Value QC		0.050	0.050	0.050	0.150
% Recovery		109	94.7	98.1	107
Relative Percent Difference		3.8	2.2	2.2	<0.1

METHOD: EPA SW-846 8021

TEXAS NELAP CERTIFICATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

08/21/08
Date

H15738MB.RICE

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2478

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: BD K-4 Release
Project Location: T22S R37E Sec4 K ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

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 (2008)	TIME
H15738-1	Monitor Well #1	G	3	X				2				1		8-11	14:50
-2	Monitor Well #2	G	3	X				2				1		8-11	15:10
-3	Monitor Well #3	G	3	X				2				1		8-11	14:20

ANALYSIS REQUEST
(Circle or Specify Method No.)

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)	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: 8/14/08	Time: 8:00	Received by: Cathy Watkins	Date: 8/14/08	Time: 8:05
Relinquished by: Cathy Watkins	Date: 8/14/08	Time: 14:00	Received By (Laboratory Staff): Misty LeBeau	Date: 8/14/08	Time: 2:00

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

REMARKS:

Email Results to: hconder@riceswd.com
lweinheimer@riceswd.com
rozanne@valornet.com

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ☑ No ☐ Intact: Yes ☑ No ☐

CHECKED BY: (Initials) MCLB

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/17/08
Reporting Date: 11/21/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S-R37E-SEC4 K~ LEA CO., NM

Sampling Date: 11/13/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: ZL

LAB NUMBER	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		11/20/08	11/20/08	11/20/08	11/20/08
H16347-1	MONITOR WELL #1	<0.001	<0.001	<0.001	<0.003
H16347-2	MONITOR WELL #2	<0.001	<0.001	<0.001	<0.003
H16347-3	MONITOR WELL #3	<0.001	<0.001	<0.001	<0.003
Quality Control		0.060	0.051	0.055	0.154
True Value QC		0.050	0.050	0.050	0.150
% Recovery		120	102	110	103
Relative Percent Difference		1.7	10.1	5.2	3.3

METHOD: EPA SW-846 8260B

TEXAS NELAP CERTIFICATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

11/21/08
Date

H16347/WERICE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR STREET
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/17/08
Reporting Date: 11/20/08
Project Number: NOT GIVEN
Project Name: BD K-4 RELEASE
Project Location: T22S-R37E-SEC4 K ~ LEA CO., NM

Sampling Date: 11/13/08
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: TR

LAB NUMBE SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (uS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	11/19/08	11/19/08	11/19/08	11/19/08	11/18/08	11/18/08
H16347-1 MONITOR WELL #1	302	128	41.3	8.1	2,190	200
H16347-2 MONITOR WELL #2	100	56.1	26.2	6.0	883	172
H16347-3 MONITOR WELL #3	125	67.3	29.2	8.4	1,030	204
Quality Control	NR	48.1	48.6	3.07	1,429	NR
True Value QC	NR	50.0	50.0	3.00	1,413	NR
% Recovery	NR	96.2	97.2	102	101	NR
Relative Percent Difference	NR	8.0	<0.1	5.7	0.4	NR
METHODS:		SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBE SAMPLE ID	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:	11/18/08	11/19/08	11/18/08	11/18/08	11/18/08	11/19/08
H16347-1 MONITOR WELL #1	570	148	0	244	7.32	1,470
H16347-2 MONITOR WELL #2	144	93.7	0	210	7.50	578
H16347-3 MONITOR WELL #3	168	124	0	249	7.56	711
Quality Control	500	44.8	NR	1000	7.02	NR
True Value QC	500	40.0	NR	1000	7.00	NR
% Recovery	100	112	NR	100	100	NR
Relative Percent Difference	<0.1	0.7	NR	<0.1	0.1	NR
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

11-20-08
Date

H16347 RICE

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: BD K-4 Release
Project Location: T22S R37E Sec4 K ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

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 (2008)	TIME
H16347-1	Monitor Well #1	G	3	X				2				1		11-13	15:20
-2	Monitor Well #2	G	3	X				2				1		11-13	15:40
-3	Monitor Well #3	G	3	X				2				1		11-13	12:45

ANALYSIS REQUEST
(Circle or Specify Method No.)

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)	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: 11-17-08	Time: 9:00	Received by:	Date: 11-17-08	Time: 9:07
Relinquished by:	Date: 11-17-08	Time: 16:10	Received By: (Laboratory Staff)	Date: 11-17-08	Time: 4:10

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

Delivered By: (Circle One) Sampler - UPS - Bus - Other

Sample Condition: Cool: Yes ✓ / No; Intact: Yes ✓ / No

CHECKED BY: (Initials) MC BB

REMARKS:

Email Results to: hconder@riceswd.com
lweinheimer@riceswd.com
rozanne@valornet.com