1R - 426-214

WORKPLANS

DATE:
10-1-09

TETRA TECH

INVESTIGATION & CHARACTERIZATION WORK PLAN FOR RICE OPERATING COMPANY BD F-26 VENT

LOCATED AT UNIT "F", SEC. 26, T21S, R37E LEA COUNTY, NEW MEXICO

1R426-214

Prepared for:

RICE OPERATING COMPANY
12 W. Taylor Street
Hobbs, NM 88240

Prepared by:

Tetra Tech
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559
Fax (432) 682-3946

Tetra Tech Project No. 114-6400255
October 1, 2009

complex world CLEAR SOLUTIONS™

TETRA TECH

CERTIFIED MAIL
RETURN RECIEPT NO. 7002 3150 0005 0508 7638

October 1, 2009

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: **INVESTIGATION & CHARACTERIZATION WORK PLAN**
BD F-26 VENT
UNIT "F", SEC. 26, T21S, R37E
LEA COUNTY, NEW MEXICO

Mr. Hansen:

RICE Operating Company (ROC) has retained Tetra Tech, Inc. (Tetra Tech) to address potential environmental concerns at the Blinebry-Drinkard (BD) SWD System F-26 vent site. ROC is the service provider (agent) for the BD SWD 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 Parties, who provide all operating capital on a percentage ownership/usage basis. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is requested.

For all environmental projects, ROC will choose a path forward that:

- protects public health,
- provides the greatest net environmental benefit,
- complies with NMOCD Rules, and
- is supported by good science.

Each site shall have three submissions or a combination of:

1. This **Investigation and Characterization Plan** (ICP) is a proposal for data gathering and site characterization and assessment.

2. Upon evaluating the data and results from the ICP, a recommended remedy will be submitted in a **Corrective Action Plan** (CAP).

3. Finally, after implementing the remedy, a **Closure Report** with final documentation will be submitted.

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

BACKGROUND & PREVIOUS WORK

As part of the ROC Junction Box Upgrade Workplan, starting on January 22, 2008, the junction box was eliminated during the pipeline replacement/upgrade program. The former junction box site was excavated to dimensions of 30 feet by 15 feet by 12 feet deep with a backhoe. PID readings and chloride field tests were conducted at regular intervals. Based on the field PID readings, TPH did not exhibit a decrease with depth. Chloride concentrations increased with depth and ranged from 1,431 milligrams per kilograms (mg/kg) at 4 feet below ground surface (bgs) to 3,149 mg/kg at 12 feet bgs. A four point composite sample for the walls was collected and submitted for analysis of TPH and chlorides. Analytical results showed a TPH total GRO/DRO of 963 mg/kg, while the chloride concentration was 768 mg/kg. A five point bottom composite sample was collected and submitted for analysis of BTEX, TPH, and chlorides. Analytical results showed a benzene concentration of <0.020 mg/kg while the total BTEX was 3.002 mg/kg. The TPH concentration was 807.9 mg/kg, while chlorides were 368 mg/kg. No water wells were located within Section 26 which contains the site. However, one water well, located in adjacent Section 27, has groundwater at approximately 76 feet bgs.

Upon completion of the excavation, the soils were blended and placed back into the excavation. The excavation was then brought up to surface grade. On February 1, 2008, the site was seeded with a blend of native vegetation. On August 18, 2008, an email was submitted to the NMOCD informing of a potential groundwater impact to the site. In March 2009, ROC submitted a Junction Box Disclosure Report to the NMOCD with all the 2008 junction box closure and disclosure reports. A copy of the laboratory analysis is presented in Appendix B.

INVESTIGATION & CHARACTERIZATION PLAN

As discussed above, existing site data suggest a potential for impairment of groundwater quality. Therefore the work elements described below are designed to assist ROC in selecting an appropriate vadose zone remedy and, if necessary, a groundwater remedy.

Task 1 Collect Regional Hydrogeologic Data

A water well inventory will be performed to encompass a ½ mile radius around the former junction box site. The inventory will include a review of water well records on the New Mexico Office of the State Engineer W.A.T.E.R.S. database and United States Geologic Survey (USGS) website. Any water wells denoted on the USGS 7.5 minute topographic quadrangle map within the search radius will be inspected. If viable wells are located, they will be evaluated for the possible incorporation of water level measurements and groundwater monitoring.

TETRA TECH

Task 2 Evaluate Concentrations of Constituents of Concern in Soil (and Ground Water)

Tetra Tech proposes to conduct soil borings at the former junction box site for further evaluation. The soil borings will be placed appropriately to evaluate subsurface chloride/TPH impacts for vertical and horizontal delineation. The soil boring samples will be field screened for chloride and TPH concentrations. If warranted, a monitoring well will be installed to provide a direct measurement of potential groundwater impact.

If a monitoring well is installed, it will be constructed according to EPA and industry standards and developed either by bailing with a rig or hand bailer, or pumping with an electric submersible pump to remove fine grained sediment disturbed during drilling and to ensure collection of representative groundwater samples.

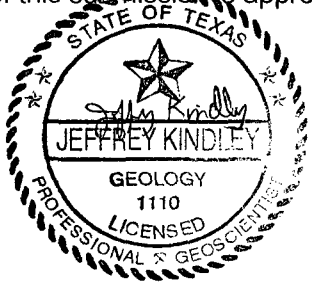
If a monitoring well is completed, it will be properly purged and sampled with a clean, dedicated, polyethylene bailer and disposable line. Groundwater samples will be submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 4500-Cl-B.

Task 3 Evaluate Flux from the Vadose Zone to Ground Water

As part of the ICP, the residual impact to vadose zone soils will be evaluated to determine what, if any, remediation/isolation techniques will be required at the site.

The information gathered from tasks 1-3 will be evaluated and utilized to design a groundwater remedy, if needed. The groundwater remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. If the evaluation demonstrates that residual constituents pose no threat to groundwater quality, only a vadose zone remedy will be proposed. Such recommendations and findings will be presented to NMOCD in a subsequent Corrective Action Plan (CAP). When evaluating any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

Should you have any questions, please contact me at (432) 682-4559. Your prompt review of this submission is appreciated. Thank you for your attention to this matter.



Tetra Tech, Inc.

Jeffrey Kindley, P.G.
Senior Environmental Geologist

cc: ROC – Hack Conder
NMOCD – Larry Johnson

enclosures: photos, disclosure report, laboratory analysis

FIGURES

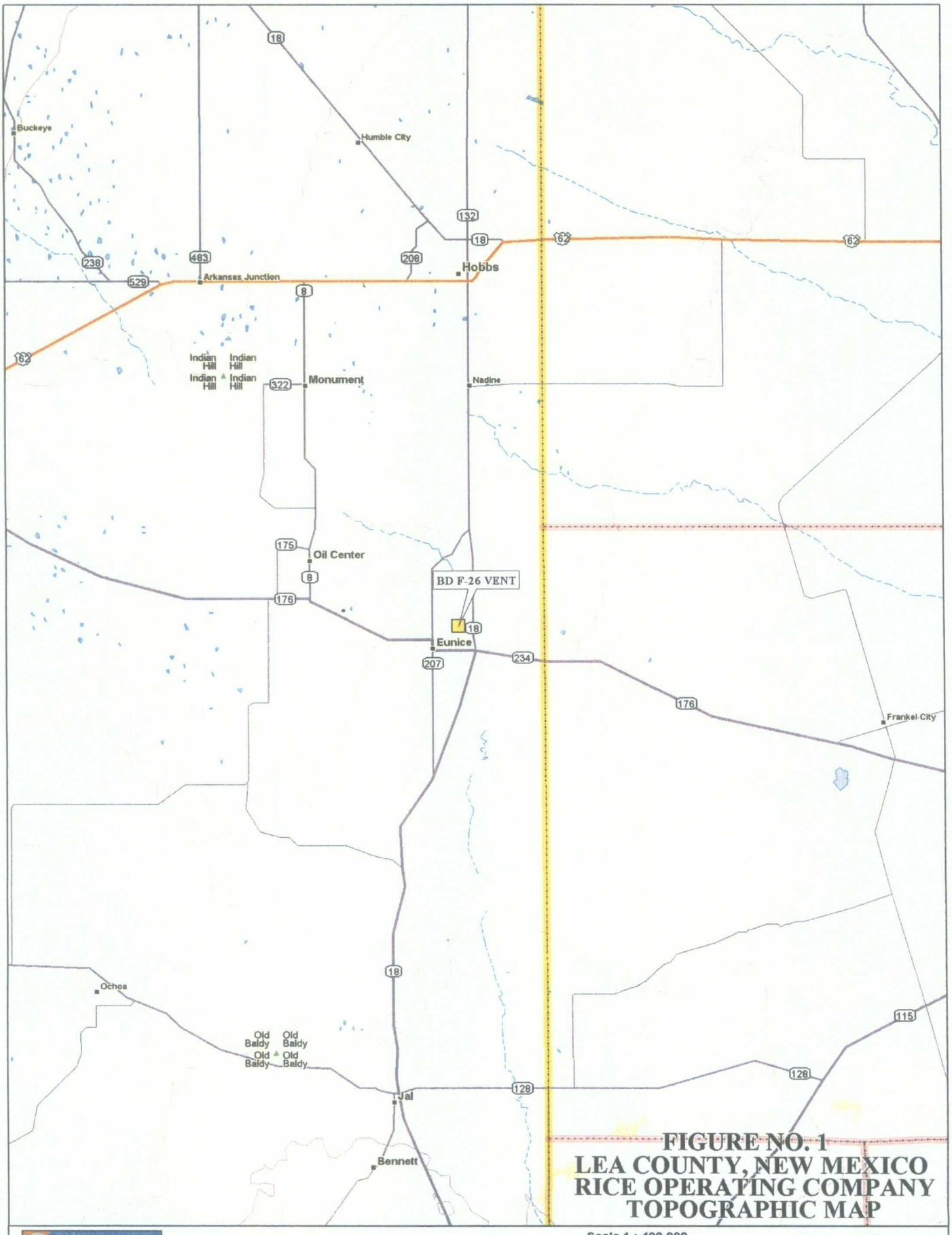


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

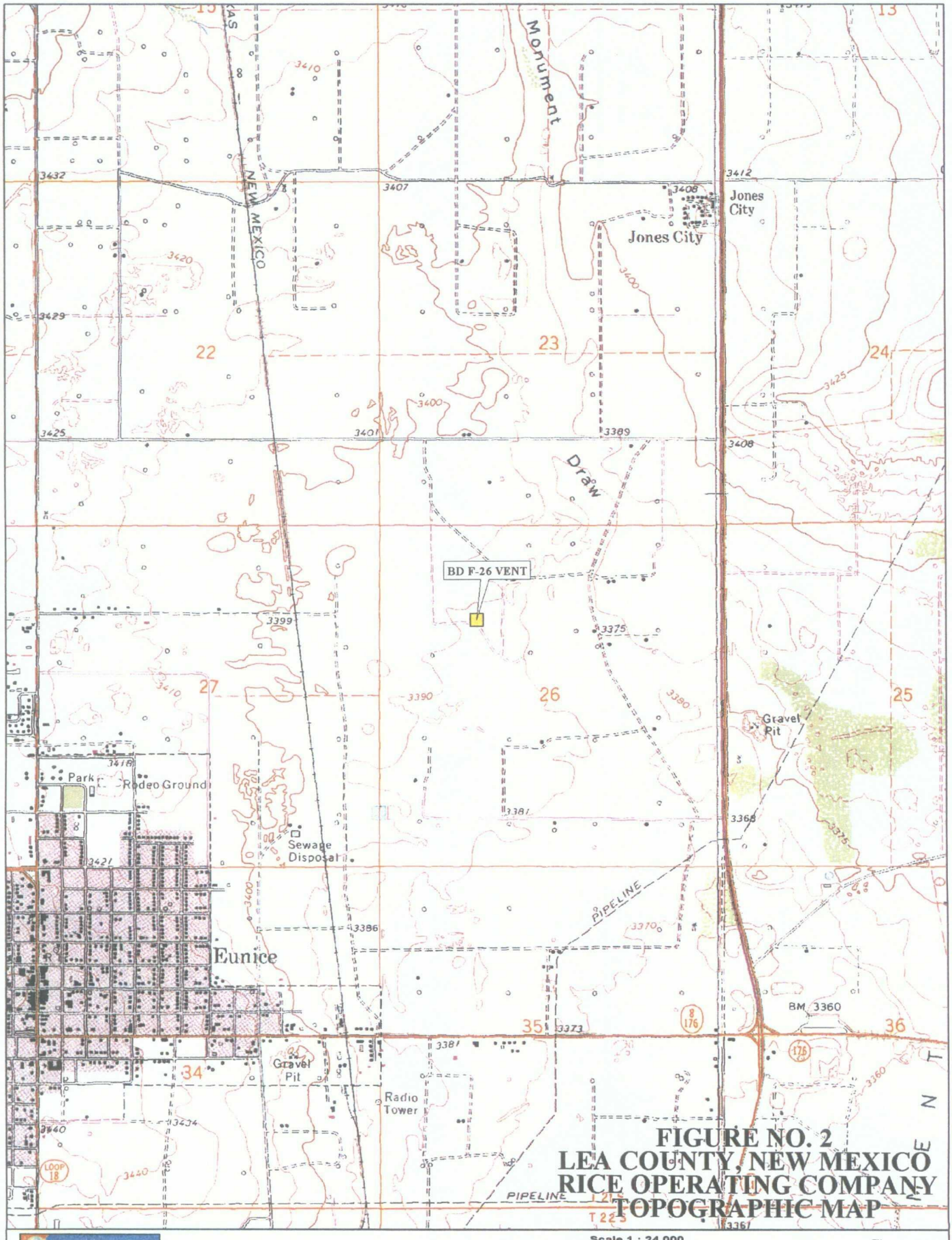
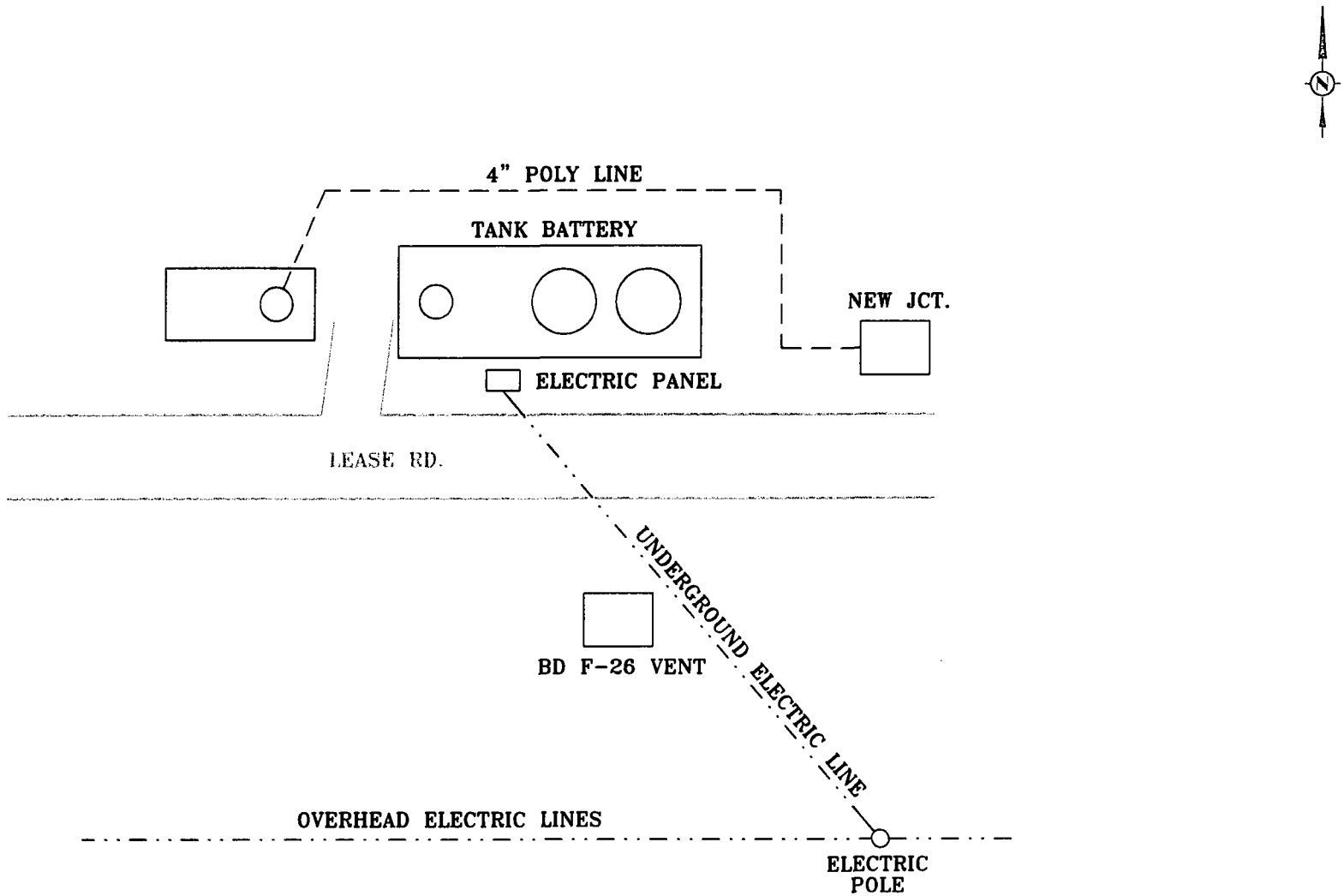


FIGURE NO. 2
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

DeLORME

Scale 1 : 24,000
1" = 2000 ft



NOT TO SCALE

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
BD F-26 VENT
SITE MAP

DATE: 8/27/09
DWN. BY: JJ
FILE: H:\RICE\6400255 SITE MAP

TETRA TECH, INC.
MIDLAND, TEXAS

PHOTOGRAPHS

BD F-26 vent

Unit F, Section 26, T21S, R37E

taking a sample of delineation trench 5 ft north of source 1/22/2008

excavation and blending backfill, facing northeast 1/24/2008

backfilling excavation, facing north 1/31/2008

seeding backfilled site, facing north 2/1/2008

site marker 2/1/2008

site complete, facing east 2/1/2008

APPENDIX A
JUNCTION BOX DISCLOSURE REPORT

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Blinebry-Drinkard (BD)	F-26 vent	F	26	21S	37E	Lea	eliminated		

LAND TYPE: BLM ___ STATE ___ FEE LANDOWNER Delrose Scott OTHER ___

Depth to Groundwater 50 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 1/22/2008 Date Completed 2/1/2008 OCD Witness no

Soil Excavated 200.0 cubic yards Excavation Length 30 Width 15 Depth 12 feet

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

FINAL ANALYTICAL RESULTS: **Sample Date** 1/25/2008 **Sample Depth** 12 ft

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
4-WALL COMP.	PID = 48.9 (field)				<10.0	963	768
BOTTOM COMP.	<0.020	0.126	0.706	2.17	43.9	764	368
BACKFILL	PID = 83.3 (field)				12.9	872	784

General Description of Remedial Action: This junction box was eliminated during the pipeline replacement/upgrade program. After the former box was removed, an investigation was conducted using a backhoe to collect soil samples at regular intervals, producing a 30x15x12-ft-deep hole. Each sample was field tested for chloride and organic vapors. The excavated soil was blended on-site and returned to the excavation to ground surface and contoured to the surrounding area. On 2/1/2008, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. An identification plate was placed on the surface of the backfilled site to mark the location of the former junction for future environmental consideration. NMOCD was notified of potential groundwater impact on 8/18/2008.

ADDITIONAL EVALUATION IS HIGH PRIORITY

enclosures: photos, lab results, PID screenings, BTEX comparison study, chloride curve

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
4-wall comp.	n/a	637
bottom comp.	12	334
backfill comp.	n/a	751
vertical delineation trench 15 ft west of junction (source)	2'	1756
	4'	1431
	6'	1625
	8'	1972
	10'	2628
	12	3149

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

REPORT ASSEMBLED BY Katie Jones INITIAL KJ COMPANY RICE OPERATING COMPANY

SITE SUPERVISOR Larry Bruce Baker Jr. SIGNATURE Larry Bruce Baker Jr.

DATE 8-20-08 TITLE PROJECT LEADER

*This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.

APPENDIX B
LABORATORY ANALYTICAL

CARDINAL LABORATORIES

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

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

COPY

Receiving Date: 01/25/08
Reporting Date: 01/28/08
Project Owner: NOT GIVEN
Project Name: BD JCT F-26 VENT
Project Location: BD JCT F-26 VENT

Sampling Date: 01/25/08
Sample Type: SOIL
Sample Condition: INTACT
Sample Received By: ML
Analyzed By: BC/HM

LAB NO	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		01/25/08	01/25/08	01/28/08
H14163-1	5PT. BTTM COMP @ 12'	43.9	764	368
H14163-3	4 WALL COMP	<10.0	963	768
H14163-4	BLENDED BACKFILL	12.9	872	784
Quality Control		749	766	500
True Value QC		800	800	500
% Recovery		93.7	95.8	100
Relative Percent Difference		1.0	6.1	2.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M. Cl: Std. Methods 4500-ClB
*Analyses performed on 1:4 w:v aqueous extracts.

Chemist

1/28/08
Date

H14163A RICE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: BRUCE BAKER
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

COPY

Receiving Date: 01/25/08
Reporting Date: 01/28/08
Project Owner: NOT GIVEN
Project Name: BD JCT F-26 VENT
Project Location: BD JCT F-26 VENT

Sampling Date: 01/25/08
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: AB

LAB NUMBER	SAMPLE ID	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE		01/28/08	01/28/08	01/28/08	01/28/08
H14163-1	5 PT BTTM COMP @ 12'	<0.020	0.126	0.706	2.17
H14163-2	5 PT. BTTM SAMPLE PT.1, 2, 3, 4, 5 COMP.	<0.020	0.139	0.753	2.17
Quality Control		0.098	0.086	0.092	0.277
True Value QC		0.100	0.100	0.100	0.300
% Recovery		97.6	86.3	92.3	92.3
Relative Percent Difference		0.3	1.2	1.3	1.8

METHOD: EPA SW-846 8021B

Chemist

1/28/08
Date

CARDINAL LABORATORIES

COPY

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 Operating Co.
Project Manager:	Bruce Baker
Address:	122 W. Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	393-9174 Fax #: 397-1471
Project #:	Project Owner:
Project Name:	BD Jct F-26 Vent
Project Location:	BD Jct F-26 Vent
Sampler Name:	Bruce Baker

BILL TO

P.O. #:	
Company:	
Attn:	
Address:	
City:	
State: Zip:	
Phone #:	
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	Cl⁻	TPH 8015 M	BTEX	
H14163-1	Spt. Bttm Comp @ 12'	C	1			✓					✓		1-25-08	9:40am	✓	✓	✓	
-2	Spt Bttm Sample Pt. 1	G	1			✓					✓		1-25-08	9:20am				
-3	Spt Bttm Sample Pt. 2	G	1			✓					✓		1-25-08	9:25am				
-4	Spt Bttm Sample Pt. 3	G	1			✓					✓		1-25-08	9:30am				Comp. in LAB
-5	Spt Bttm Sample Pt. 4	G	1			✓					✓		1-25-08	9:33am				Run BTEX Only
-6	Spt Bttm Sample Pt. 5	G	1			✓					✓		1-25-08	9:37am				
-7	4 Wall Comp	C	1			✓					✓		1-25-08	10:00am	✓	✓		
-8	Blended Backfill	C	1			✓					✓		1-25-08	12:47pm	✓	✓		

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: 1-25-08 Time: 4:15	Received By: Misty LeBert
Relinquished By:	Date: Time:	Received By:

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

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

CHECKED BY: (Initials) MLB

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:
Email Results to bbaker@riceswd.com
& cc to spurvis@riceswd.com

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

2008 BTEX Study

Revised Junction Box Upgrade Plan (2003)

System: BD
Site: F-26 vent

Date: 1/25/2008
Sampler: Bruce Baker

Laboratory: Cardinal Laboratories

Location	Component	PID reading (ppm)	FIELD COMPOSITE (mg/kg)			
			Benzene	Toluene	Ethyl Benzene	Total Xylenes
bottom composite at 12 ft BGS	1	19.5	<0.020	0.126	0.706	2.17
	2	8.7				
	3	304.0				
	4	72.1				
	5	28.1				
			LAB COMPOSITE (mg/kg)			
			<0.020	0.139	0.753	2.17

Field PID tests <100 ppm are considered final for BTEX. If PID is >100 ppm, the components of the BTEX composite sample will be collected individually and will be composited under laboratory conditions to prevent excessive volatilization. A 15-box, 30-sample study will be made to compare field-compositing with lab-compositing BTEX samples. Composite components are collected in a skewed 'W' pattern.

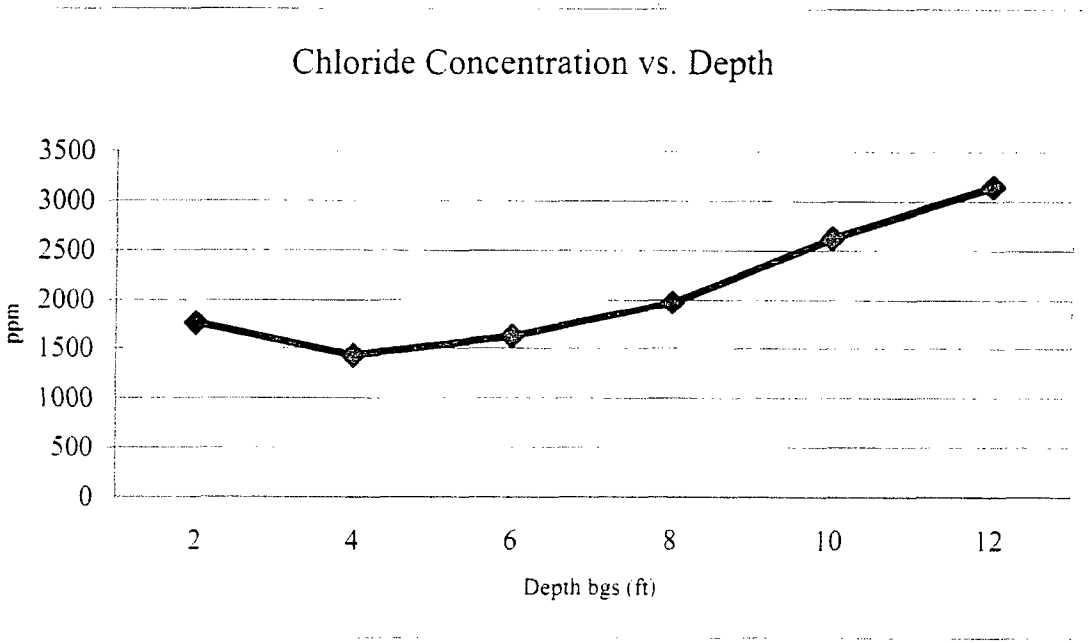
Revised Junction Box Upgrade Work Plan (July 16, 2003)

BD F-26 vent

unit 'F', Sec. 26, T21S, R37E

Backhoe samples at 15 ft west of junction (source)

Depth bgs (ft)	[Cl⁻] ppm
2	1756
4	1431
6	1625
8	1972
10	2628
12	3149



Groundwater = 50 ft