1R – 426-105

WORK PLAN

DATE:
02/13/08

Hansen, Edward J., EMNRD

From: Kindley, Jeff [Jeff.Kindley@tetratech.com]
Sent: Thursday, February 04, 2010 12:26 PM
To: Hansen, Edward J., EMNRD; hconder@riceswd.com; Katie Jones
Subject: ROC Jct. C-4-3 Junction Box CAP Implementation

Ed,

Based on the verbal approval of the above referenced CAP, ROC will be onsite the week of February 8, 2010 to begin the installation of a 20-mil polyethylene liner. ROC will remove the overburden and place the liner at 4 feet below ground surface. The liner dimensions will measure approximately 22 feet by 28 feet. Upon completion of the installation of the liner, the overburden soils will be field screened for chlorides and if the soils test less than 500 mg/kg, they will be placed over the liner and the site brought up to surface grade. If the soils are greater than 500 mg/kg, clean soils will be brought in and utilized as the backfill material. Upon completion of the backfilling, the site will be reseeded with native vegetation.

If you have any questions or comments, please feel free to contact either myself at (432) 682-4559 or Hack Conder of ROC at (575) 393-9174.

Jeffrey Kindley, PG | Senior Environmental Geologist
Cell: 432.634.2263 | Main: 432.682.4559 | Fax: 432.682.3946
Jeff.Kindley@tetratech.com

Tetra Tech | Complex World, Clear Solutions™
1910 North Big Springs | Midland, TX 79705 | www.tetratech.com

1R426-105

Highlander Environmental Corp.

Midland, Texas

RECEIVED 2008 FEB 19 PM 2 01

Corrective Action Plan Work

2-13-08

CERTIFIED MAIL
RETURN RECIEPT NO. 7004 2510 0001 1869 0521

February 13, 2008

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: **CORRECTIVE ACTION PLAN (CAP)**
C-4-3 JUNCTION BOX, BD SWD SYSTEM
UNIT "C", SEC. 4, T22S, R37E
LEA COUNTY, NEW MEXICO
NMOCD #1R426-105

Mr. Hansen:

RICE Operating Company (ROC) has retained Highlander Environmental Corp. (Highlander) to address potential environmental concerns at the above-referenced site. ROC is the service provider (agent) for the Blinebry Drinkard (BD) SWD System (System) and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner AFE approval and work begins as funds are received. 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. An **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 is submitted in this **Corrective Action Plan** (CAP).

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

1.0 BACKGROUND & PREVIOUS WORK

As part of the ROC Junction Box Upgrade Workplan, the junction box was moved 25' to the south. Starting on June 16, 2004, the former junction box site was investigated vertically and horizontally with a backhoe. See site location as shown on Figure 1 and Figure 2. The Site was excavated to the approximate dimensions of 22' x 28' x 12'. TPH impact was noted to a depth of at least 12' below ground surface (bgs) at the bottom of the excavation along with on the east and north walls. To further delineate the vertical extent of the TPH impact, a trench in the center of the excavation was extended to a depth of 17' bgs. A vertical grab sample was collected at 17' bgs with analytical results exceeding the NMOCD guidelines of 1,000 mg/kg TPH. Chloride concentrations decline with depth from 617 mg/kg at a depth of 5 feet bgs on the south wall to 64 mg/kg at a depth of 17 feet bgs. No water wells were located within Section 4 which contains the site. However, according to the New Mexico State Engineers Well Reports, one water well is located in adjacent Section 3 with a depth to groundwater of 85 feet bgs. The reported well is located approximately 1,200 feet from the site.

The excavated soil was blended onsite and replaced into the excavation to a depth of 12' below ground surface (bgs). On September 15, 2004, ROC submitted a Junction Box Disclosure Report to the NMOCD. A copy of the Junction Box Disclosure Report is included in Appendix A.

On August 3, 2007, ROC submitted the ICP to Mr. Wayne Price of the NMOCD-Santa Fe office for review. Mr. Price granted approval of the ICP in a letter dated August 13, 2007.

On October 3, 2007, Highlander personnel were onsite to oversee the installation of one soil boring (SB-1) within the former junction box location. Soil samples were collected every 5' beginning at a depth of 13 feet bgs within the excavated area. Samples were collected utilizing a split spoon sampler, and placed into laboratory supplied containers with select samples delivered to the laboratory under chain-of-custody control for chloride analysis by EPA method 300.0, for TPH analysis by EPA method 8015 modified, and for BTEX analysis by EPA method 8021B. The collected samples were field screened for TPH utilizing a photoionization detector (PID) and for chlorides with a field sampling kit. The split spoons were decontaminated between samples utilizing an alconox and deionization water wash followed by a deionization water rinse. Copies of laboratory analyses and chain-of-custody documentation are included in Appendix B. The soil boring location is shown on Figure 3. The soil boring log is included in Appendix C. The results of the sampling are summarized in Table 1.

Referring to Table 1, the TPH and BTEX concentrations were below the NMOCD guidelines in all samples collected and submitted for analysis. Chloride concentrations in the soil were negligible.

2.0 COLLECTED REGIONAL HYDROGEOLOGIC DATA

Since groundwater was not encountered during drilling of the site, it was not deemed necessary to perform a water well inventory within a ½-mile radius of the site. However, the New Mexico State Engineers Well Reports was reviewed and one water well was found located in adjacent Section 3. This well has a reported groundwater depth of 85 feet bgs and was located approximately 1,200 feet from the site.

3.0 EVALUATION

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. In evaluating the documented levels of chlorides within the soil, it was determined that a clay liner be utilized to prevent further vertical migration of the chlorides into the surrounding underlying soils.

4.0 PROPOSED REMEDY

Groundwater is 85' bgs and the TPH and BTEX are below NMOCD guidelines. Chloride concentrations in the soil were negligible. As such, ROC proposes removing the current overburden and placing a clay liner at approximately 4 feet below ground surface. The clay liner will have dimensions of approximately 22 feet by 28 feet. See Figure 4 for proposed clay liner dimensions. Upon completion of the clay liner, the excavated soils will be field screened for chlorides, and if results are below 1,000 mg/kg, the soils will be placed over the clay liner and reseeded with native vegetation.

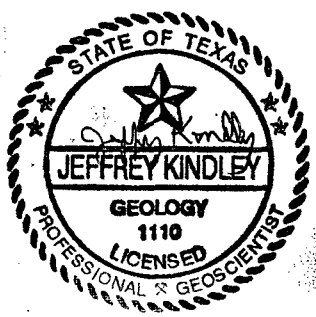
If you require any additional information or have any questions or comments, please call.

Highlander Environmental Corp.

Jeffrey Kindley, P.G.
Senior Environmental Geologist

cc: ROC

enclosures: site maps, data tables, lab results, figures, photos



FIGURES

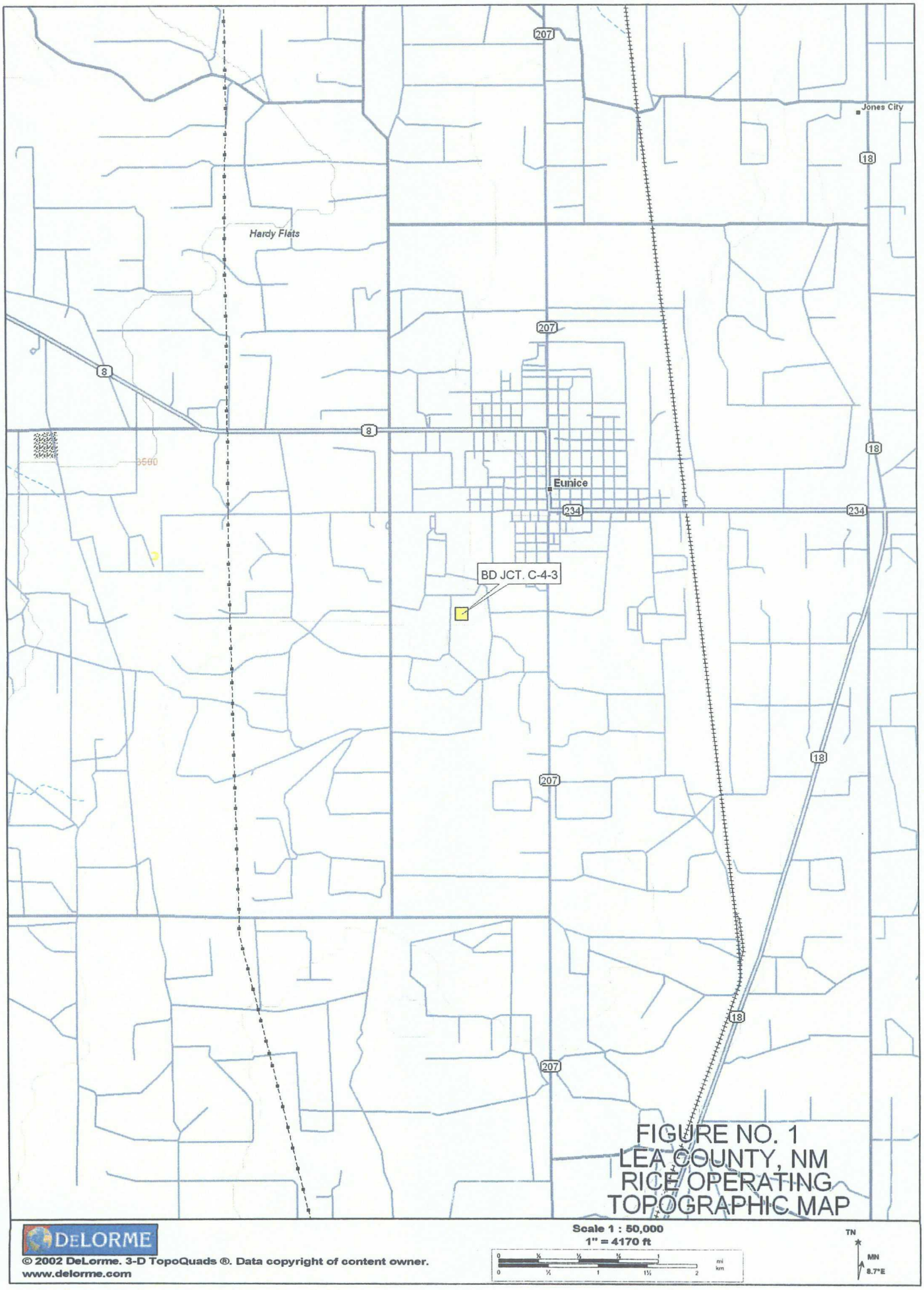


FIGURE NO. 1
LEA COUNTY, NM
RICE OPERATING
TOPOGRAPHIC MAP

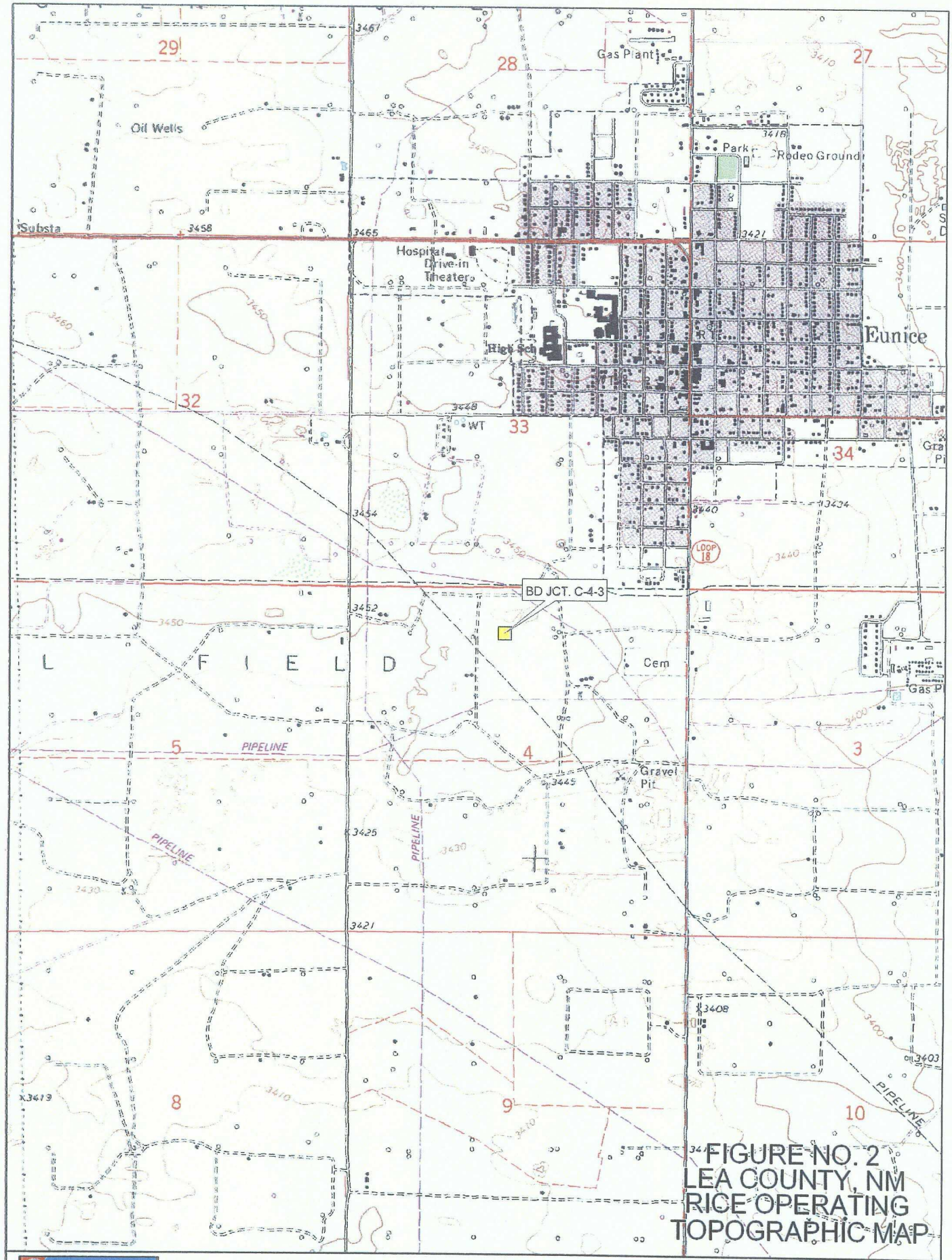


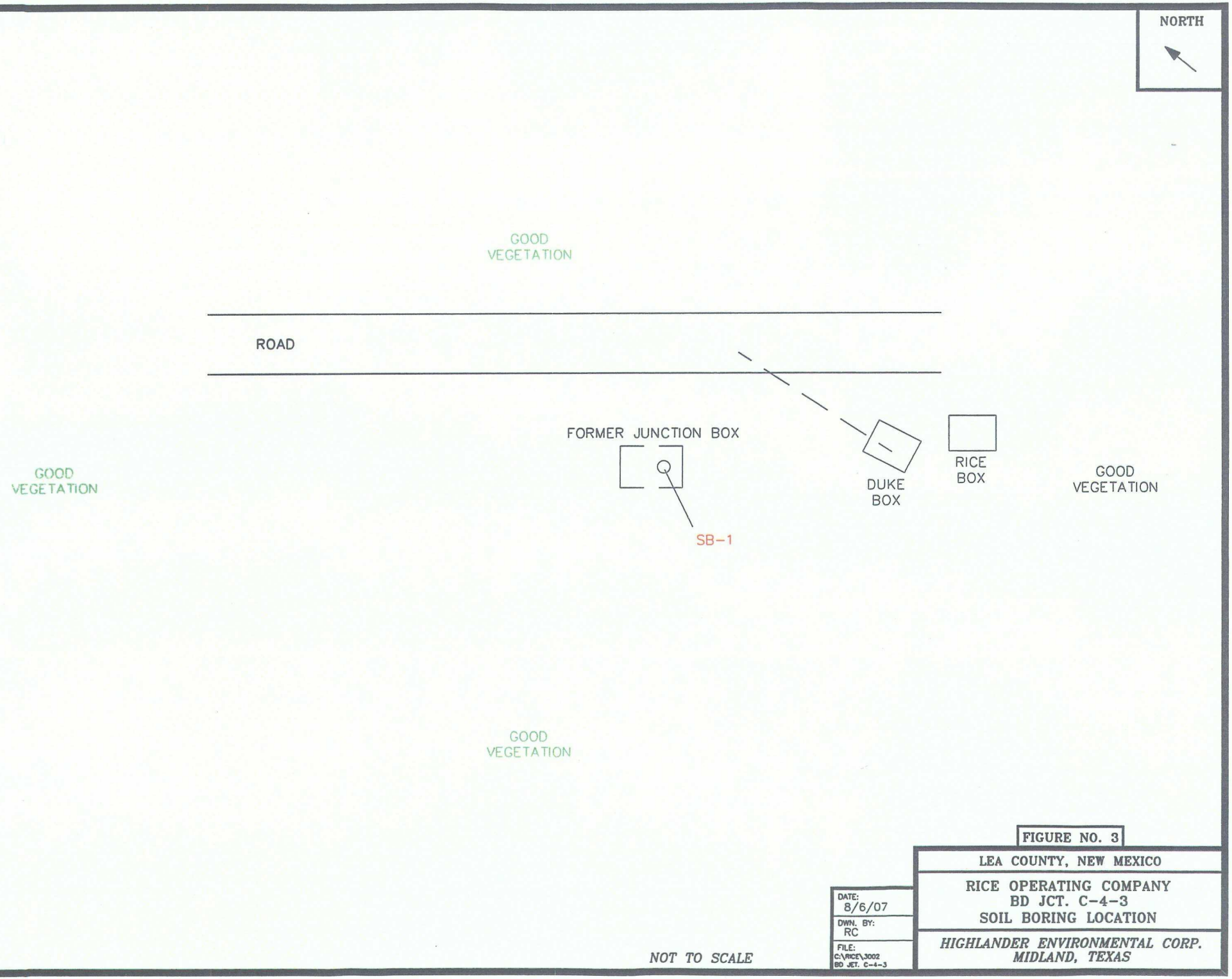
FIGURE NO. 2
LEA COUNTY, NM
RICE OPERATING
TOPOGRAPHIC MAP

DeLORME

Scale 1 : 24,000
1" = 2000 ft

0 600 1200 1800 2400 3000 ft
0 200 400 600 800 1000 m

TN
MN
8.7°E



NOT TO SCALE

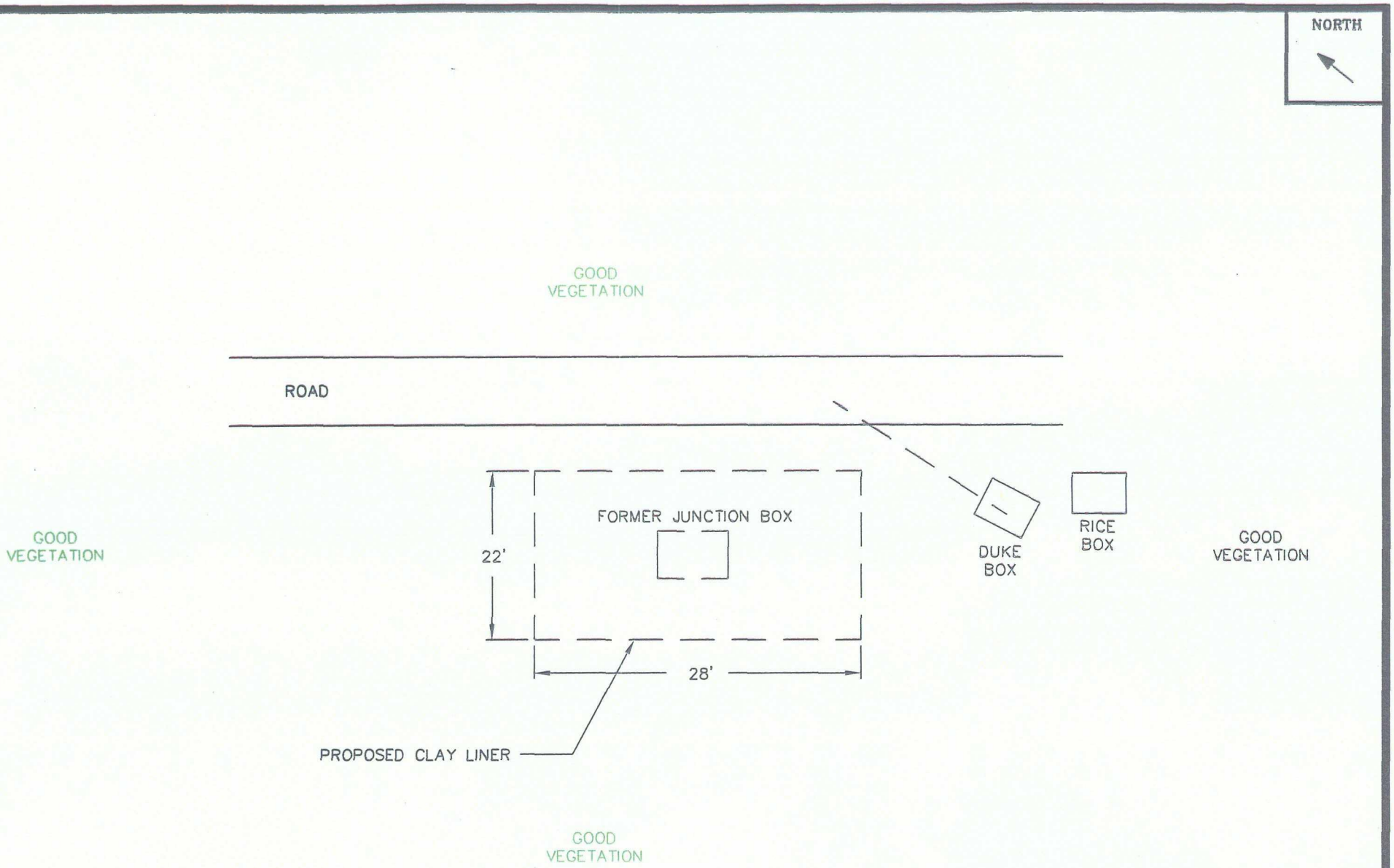
FIGURE NO. 3

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
BD JCT. C-4-3
SOIL BORING LOCATION

DATE: 8/6/07
DWN. BY: RC
FILE: C:\RICE\3002 BD JCT. C-4-3

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



NOT TO SCALE

FIGURE NO. 4

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
BD JCT. C-4-3
PROPOSED CLAY LINER

DATE: 8/6/07
DWN. BY: RC
FILE: C:\RICE\3002 BD JCT. C-4-3

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

TABLES

Table 1

Rice Operating

C-4-3 Junction Box, BD SWD System

Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	Chlorides Field (mg/kg)	Chlorides (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH (mg/kg)			
										C6-C12	C12-C28	C-28-C35	Total
SB-1	10/03/07	13-15'	260	64	**0.008**	**0.012**	**0.027**	**0.076**	**0.123**	**11.7**	**34.4**	NA	**46.1**
SB-1	10/03/07	18-20'	148	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-1	10/03/07	23-25'	225	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-1	10/03/07	28-30'	172	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SB-1	10/03/07	33-35'	166	32	<0.001	<0.001	<0.001	<0.003	<0.003	<10.0	<10.0	NA	<10.0

PHOTOGRAPHS

PHOTOGRAPHIC DOCUMENTATION
Rice Operating Company
BD Jct. C-4-3, Lea County, New Mexico

1. Drilling of soil boring SB-1.

APPENDIX A

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
BD	C-4-3	C	4	22S	37E	Lea	moved 25 ft South		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Priscilla Brunson Moody OTHER _____

Depth to Groundwater 93 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10

Date Started 6/16/2004 Date Completed 7/6/2004 OCD Witness No

Soil Excavated 274 cubic yards Excavation Length 22 Width 28 Depth 12 feet

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

FINAL ANALYTICAL RESULTS: Sample Date 6/17/2004, 6/22/2004, 7/1/2004 Sample Depth 12, 17 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
VERTICAL GRAB @ 17 ft	0.298	0.065	4.78	5.71	21.7	2640	84
BOTTOM COMPOSITE @ 12 ft	See enclosed laboratory analytical report and BTEX Study tables				156	984	372
NORTH WALL COMPOSITE					141	911	436
SOUTH WALL COMPOSITE					19	183	617
EAST WALL COMPOSITE					183	1070	383
WEST WALL COMPOSITE					8.82	27.9	585
REMEDIATED BACKFILL COMPOSITE	<0.005	<0.005	<0.005	<0.015	<10.0	414	289

General Description of Remedial Action: This junction box site was delineated using a backhoe while chloride field tests and PID screenings were conducted at regular intervals. Within the 22 x 28 x 12-ft-deep excavation, chloride concentrations were very low and similar to the background level (87 ppm). Some of the samples collected within the excavation yielded elevated PID readings. The bottom and wall samples were analyzed for BTEX after being composited under laboratory conditions. Comparative tables showing these results are enclosed. NMOCD BTEX guidelines were met. NMOCD TPH guidelines were not met on the following samples: vertical grab at 17 ft, bottom composite, at 12 ft, north wall composite, and the east wall composite. The excavated soils were blended on site and then backfilled into the hole. An identification plate was placed on the surface to mark the site of the former junction box for future considerations. A new watertight junction box was built 25 ft south of this location.

ADDITIONAL EVALUATION IS *HIGH* PRIORITY

enclosures: chloride graph, photos, lab results, BTEX study

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	8	84
at jct.	9	83
	10	84
	11	140
	12	87
	17	81
north wall comp.	0-12	495
south wall comp.	0-12	857
east wall comp.	0-12	464
west wall comp.	0-12	590
bottom comp.	12	393

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

SITE SUPERVISOR Joe Gatis SIGNATURE Joe Gatis COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

DATE 9/15/2004 TITLE Project Scientist

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

APPENDIX B

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS. NM 88240

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL
ATTN: TIM REED
1910 BIG SPRING ST.
MIDLAND, TX 79705

Receiving Date: 10/03/07
Reporting Date: 10/08/07
Project Owner: RICE ENGINEERING
Project Name: C-4-3
Project Location: LEA COUNTY, NM

Sampling Date: 10/03/07
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: CK/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{12}) (mg/Kg)	DRO (>C_{12}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		10/08/07	10/08/07	10/04/07
H13430-1	C-4-3 SB-1 (13-15')	11.7	34.4	64
H13430-2	C-4-3 SB-1 (33-35')	<10.0	<10.0	32
Quality Control		459	461	500
True Value QC		500	500	500
% Recovery		91.8	92.2	100
Relative Percent Difference		5.1	2.0	<0.1

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

Chemist

10/08/07
Date

H13430TCL HIGH

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS. NM 88240

ANALYTICAL RESULTS FOR
HIGHLANDER ENVIRONMENTAL
ATTN: TIM REED
1910 BIG SPRING ST.
MIDLAND, TX 79705

Receiving Date: 10/03/07
Reporting Date: 10/08/07
Project Owner: RICE ENGINEERING
Project Name: C-4-3
Project Location: LEA COUNTY, NM

Sampling Date: 10/03/07
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: CK

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		10/06/07	10/06/07	10/06/07	10/06/07
H13430-1	C-4-3 SB-1 (13-15')	0.008	0.012	0.027	0.076
H13430-2	C-4-3 SB-1 (33-35')	<0.001	<0.001	<0.001	<0.003
Quality Control		0.104	0.095	0.094	0.285
True Value QC		0.100	0.100	0.100	0.300
% Recovery		104	94.7	94.2	94.9
Relative Percent Difference		8.5	8.6	8.5	7.6

METHOD: EPA SW-846 8021B

Chemist

10/08/07
Date

H13430b HIGH

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:	Highlander Environmental	**BILL TO**	
Project Manager:	Tim Reed	P.O. #:	
Address:	1910 Big Spring St.	Company:	Rice Engineering
City:	Midland State: TX Zip: 79705	Attn:	Kristin Page
Phone #:	432-634-2263 Fax #:	Address:	
Project #:	Project Owner: Rice Engineering	City:	Hobbs
Project Name:	C-4-3	State: NM Zip:	
Project Location:	Lea Co. NM	Phone #:	
Sampler Name:	Jeffrey Kindley	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	TPH 8015 M DRO/GRO	BTEX	Chlorides											
H13431-1	C-4-3 SB-1 (13-15)	G	1			✓							10/03/07	1045	✓	✓	✓											
-2	C-4-3 SB-1 (33-35)	G	1			✓							10/03/07	1120	✓	✓	✓											

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: October 3 2007 Time: 1135	Received By:	
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)

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:
Email results to ~~JKINDLEY@HEC-enviro.com~~ JKINDLEY@HEC-enviro.com † Kristin at Rice

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

APPENDIX C

SAMPLE LOG

Boring/Well: SB-1
Project Number: 3002
Client: Rice Engineering
Site Location: C-4-3
Location: Lea County, New Mexico
Total Depth 35
Date Installed: 10/02/07

DEPTH (in feet)	OVM	CHLORIDES (Field) (in mg/Kg)	SAMPLE DESCRIPTION
13.0 - 15	742.0	260	Gray/black hydrocarbon stained clayey sand
15.0 - 20	23.2	148	Brown fine grain sand with hydrocarbon odor
20.0 - 25	17.9	225	Brown fine grain sand with hydrocarbon odor
25.0 - 30	16.2	172	Brown fine grain sand
30.0 - 35	44.1	166	Brown fine grain sand

Boring completed at 35 feet bgs