1R - 428-55

WORKPLANS

Date:
11-18-10

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266.0745

November 18, 2010

Mr. Edward J. Hansen
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Rice Operating Company, Hobbs SWD System Junction F-31-1 Site:**
T-18-S, R-38-E, Section 31, Unit F, Lea County, New Mexico
NMOCD CASE # 1R428-55
Corrective Action Plan

Mr. Hansen:

On behalf of Rice Operating Company (ROC), R.T. Hicks Consultants, Ltd. is submitting this Corrective Active Plan for the Hobbs Junction F-31-1 site. The investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate ground water or surface water in excess of the standards in Subsections B and C of 19.15.30.9 NMAC through leaching, percolation or other transport mechanisms, or as the water table elevation fluctuates. Revegetation of the site, our recommended corrective action, meets the mandate of NMOCD Rules for protection of surface water and the environment.

Background

Hobbs Junction F-31-1 is located west of the city of Hobbs, New Mexico at T-18-S, R-38-E, Section 31, in Unit F. An initial 5-foot deep excavation was installed on November 13, 2002, which identified hydrocarbon-impacted soil. The NMOCD-approved Investigation Characterization Plan (ICP), dated January 20, 2010 (Attachment A) was prepared to address the further delineation of the site. It includes background information, a site vicinity map, and a regional ground water gradient map.

Field Programs

As a part of the approved ICP, ROC planned to install and sample at least five 12-foot deep backhoe trenches. However, attempts to excavate a trench at an adjacent site verified that the near surface rock was too hard to penetrate with a backhoe.

Hicks Consultants supervised a deep soil sampling program to delineate the extent and magnitude of media impact. On April 22, 2010, a single 55-foot deep soil boring (SB-1) was drilled 2 feet west of the original junction box location. ROC conducted field analysis of soil samples for chloride and volatile hydrocarbon vapors for the trench and boring program. Plate 1 is a summary map that includes results of the field chloride analyses and hydrocarbon

screening data as well as a laboratory results for the soil samples used to verify the ROC field data. Attachment B provides the soil lithology log for SB-1, which includes the field chloride and hydrocarbon screening data and laboratory results. Attachment C provides the laboratory reports and chain of custody documents for all of the soil verification samples.

Results: Chlorides and Hydrocarbons

The initial source area excavation, conducted in 2002, encountered no chloride concentrations above 171 mg/kg as well as visible indications of hydrocarbon-impacted soil with "slight" odors. The area around the excavation was fenced.

SB-1 was installed in April 2010 to delineate the chloride- and/or hydrocarbon-impacted soil. The maximum chloride concentration encountered in SB-1, by field methods, was 151 mg/kg at 5 feet below ground surface. Observed chloride concentrations remained below this value to the total depth of 55 feet below ground surface. Field screening of hydrocarbon vapors were measured from drill cutting samples because the soil was too hard to recover material with a split spoon sampler. The highest vapor reading was encountered at 10 feet below the surface (315 ppm) and the readings generally decrease with depth. A summary of the laboratory results from SB-1 relative to the regulatory screening guidelines is presented on Table 1 below.

Table 1
Rice Operating Hobbs Jct. F-31-1 Site
Laboratory Data - Soil Samples

Sample Location	Depth (feet)	Sample Date	PID (ppm)	Chloride (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	BTEX (mg/kg)	GRO (mg/kg)	DRO (mg/kg)
SB-1	10	4/22/10	315	<16	<0.05	0.796	1.10	1.92	<3.87	163	2,050
	55	4/22/10	5.8	<16	--	--	--	--	--	<10	46.0
NMOCD Guideline Remediation Levels				250	10	--	--	--	50	No regulatory standards have been established	
2006 NMED Soil Com./Indus. Vapor Exposure Risk Screening Guidelines					25.8	252	128	82	--		
					0.0201	21.7	20.2	2.06	--		
Site Specific GW Protective Levels (DAF_{954})					0.959	1035	964	98.3	--		

Conclusions

The site data documents a small residual mass of chloride and hydrocarbons in the vadose zone and permits a conclusion that these constituents in the vadose zone will not with reasonable probability contaminate ground water or surface water in excess of the standards in Subsection B and C of the 19.15.30.9 NMAC through leaching, percolation or other transport mechanisms, or as the water table elevation fluctuates. Based on regional data and conservative assumptions, the estimated depth to water at this site is 60-63 feet below ground surface. The laboratory analysis for chloride at the deepest point of the soil boring, 55 feet below ground surface, was below detection limits. Observed hydrocarbons decline with depth. Field measurements showed a PID reading below 10 at 55 feet bgs.

Recommendations

Our recommended corrective action for the site is re-vegetation to create a natural "infiltration barrier". Establishing vegetation at the site may include:

- Removal of rocks and asphaltene
- Preparation of the surface for top soil
- Importing top soil and adding amendments
- Seeding as needed

Re-vegetation of the ground surface will limit infiltration of precipitation and the subsequent migration of constituents of concern to ground water. Plants capture water through their roots, thereby reducing the volume of water infiltrating below the root zone. This natural "infiltration barrier" helps protect ground water as the decreased flux of water through the subsurface slows the transportation rate of residual chloride and soluble hydrocarbons in the subsurface. Upon documentation of re-seeding with an appropriate mix of native grasses we will submit a Termination Request for this site's regulatory file.

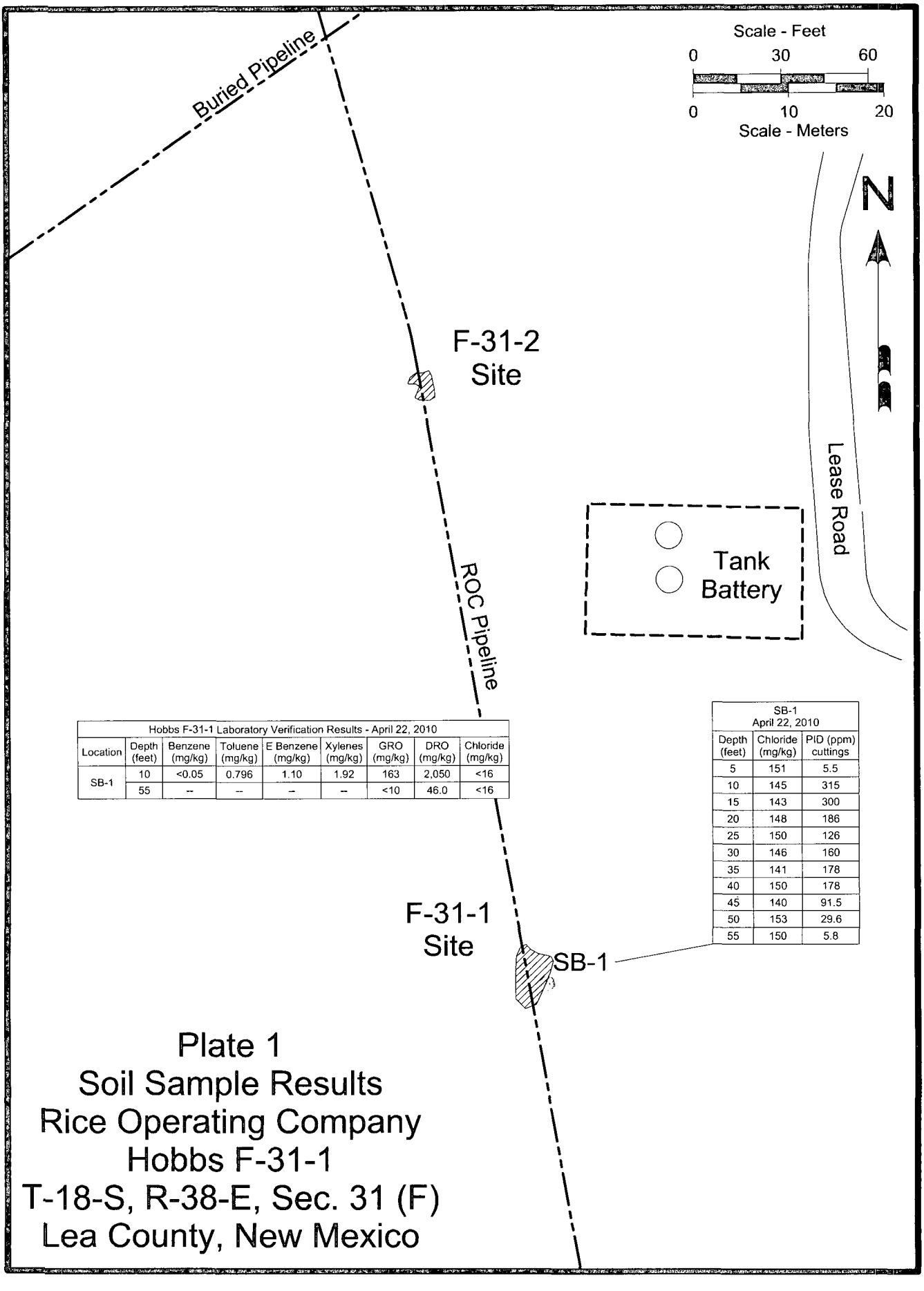
ROC is the service provider (agent) for the Hobbs Salt Water Disposal System and has no ownership of any portion of pipeline, well or facility. The Hobbs SWD System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Please contact Hack Conder of ROC at 575-393-9174 if you have any questions concerning this submission. Thank you for your time and consideration.

Sincerely,
R.T Hicks Consultants, Ltd.

Dale T Littlejohn
Geologist

Copy: Hack Conder, ROC



Hobbs F-31-1 Laboratory Verification Results - April 22, 2010								
Location	Depth (feet)	Benzene (mg/kg)	Toluene (mg/kg)	E Benzene (mg/kg)	Xylenes (mg/kg)	GRO (mg/kg)	DRO (mg/kg)	Chloride (mg/kg)
SB-1	10	<0.05	0.796	1.10	1.92	163	2,050	<16
	55	--	--	--	--	<10	46.0	<16

SB-1 April 22, 2010		
Depth (feet)	Chloride (mg/kg)	PID (ppm) cuttings
5	151	5.5
10	145	315
15	143	300
20	148	186
25	150	126
30	146	160
35	141	178
40	150	178
45	140	91.5
50	153	29.6
55	150	5.8

Plate 1
Soil Sample Results
Rice Operating Company
Hobbs F-31-1
T-18-S, R-38-E, Sec. 31 (F)
Lea County, New Mexico

Attachment A

Previous Submissions

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

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266.0745

January 20, 2010

Mr. Edward J. Hansen
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Investigation & Characterization Plan**
Hobbs Jct. F-31-1, NMOCD Case # 1R428-55
Township 18S, Range 38E, Section 31, Unit F

Dear Mr. Hansen:

On behalf of Rice Operating Company (ROC), R.T. Hicks Consultants, Ltd. is pleased to submit this Investigation & Characterization Plan (ICP) for the Hobbs Jct. F-31-1 site. Plate 1 is a map showing the site relative to major roads in the area. Plate 2 shows the site, nearby USGS monitoring wells, and a regional potentiometric surface map.

The work elements proposed below will allow us to characterize this site and develop an appropriate corrective action plan.

1. ROC will identify and document the location of all current and historic equipment and pipelines associated with the site.
2. ROC will use a backhoe with a 12-foot vertical reach to install a series of sampling trenches in order to recover soil samples and delineate the lateral extent (and potentially the vertical extent) of impacted soil.
3. If characterization by the backhoe is insufficient to define the extent and magnitude of past releases, ROC and Hicks Consultants will use a drilling rig to drill one soil boring at the center of the source area to delineate the vertical extent of chloride in the soil.
4. Soil samples obtained by the backhoe or drilling rig will be obtained from regular intervals below ground surface.
5. Representative soil samples will be sent to a laboratory to allow for verification of the field chloride and PID results.
6. General soil texture descriptions will be provided for each sample trench or boring.
7. The criteria to delineate the extent of impact during trenching as well as in a soil boring is 5 point chloride decline vs. depth, or:
    a. After three consecutive samples demonstrate <250 ppm chloride using field analyses and <100ppm total hydrocarbon vapors using the headspace method, or
    b. After five consecutive samples show a decreasing trend of chloride and hydrocarbons and the last sample shows chloride < 250 ppm and total hydrocarbon vapors <100ppm.
    c. Soil boring to capillary fringe should neither (a) or (b) apply.
8. If the boring penetrates the capillary fringe, a monitoring well will be considered for completion with a 2 or 4" diameter casing down gradient from confirmed impact for use during possible corrective actions. Plate 2 presents a potentiometric surface map for the site area.

9. If field analysis of hydrocarbon vapors and observations of staining show that hydrocarbon impact is unlikely at the site or below 20-feet, collection of samples from cuttings may be substituted for split spoon sampling (chloride only).

The ROC trench characterization will be employed to identify the lateral extent of chloride at the site, if possible. If trenching does not fully characterize the lateral extent of chloride at the site, boreholes will be advanced 20 feet beyond the furthest trenches where the soil data has an average chloride concentration greater than 1,000 mg/kg. The total depth of borings drilled to characterize lateral extent shall be 20 feet below ground surface with soil samples for delineation taken at 5 foot intervals.

Rice Operating Company (ROC) is the service provider (agent) for the Hobbs Saltwater Disposal System and has no ownership of any portion of pipeline, well, or facility. A consortium of oil producers who own the Hobbs System (System Parties) provide all operating capital on a percentage ownership/usage basis. Major projects require System Parties' authorization for expenditures (AFE) approval and work begins as funds are received. We will implement the work outlined herein after NMOCD approval and subsequent authorization from the System Parties. The Hobbs SWD system is in abandonment.

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

1. Protects public health,
2. Provides the greatest net environmental benefit,
3. Complies with NMOCD Rules,
4. Is supported by good science.

Following the site characterization described above, a Corrective Action Plan with the data and analysis supportive of a procedure for site file termination, or a termination request will be submitted, depending on characterization findings.

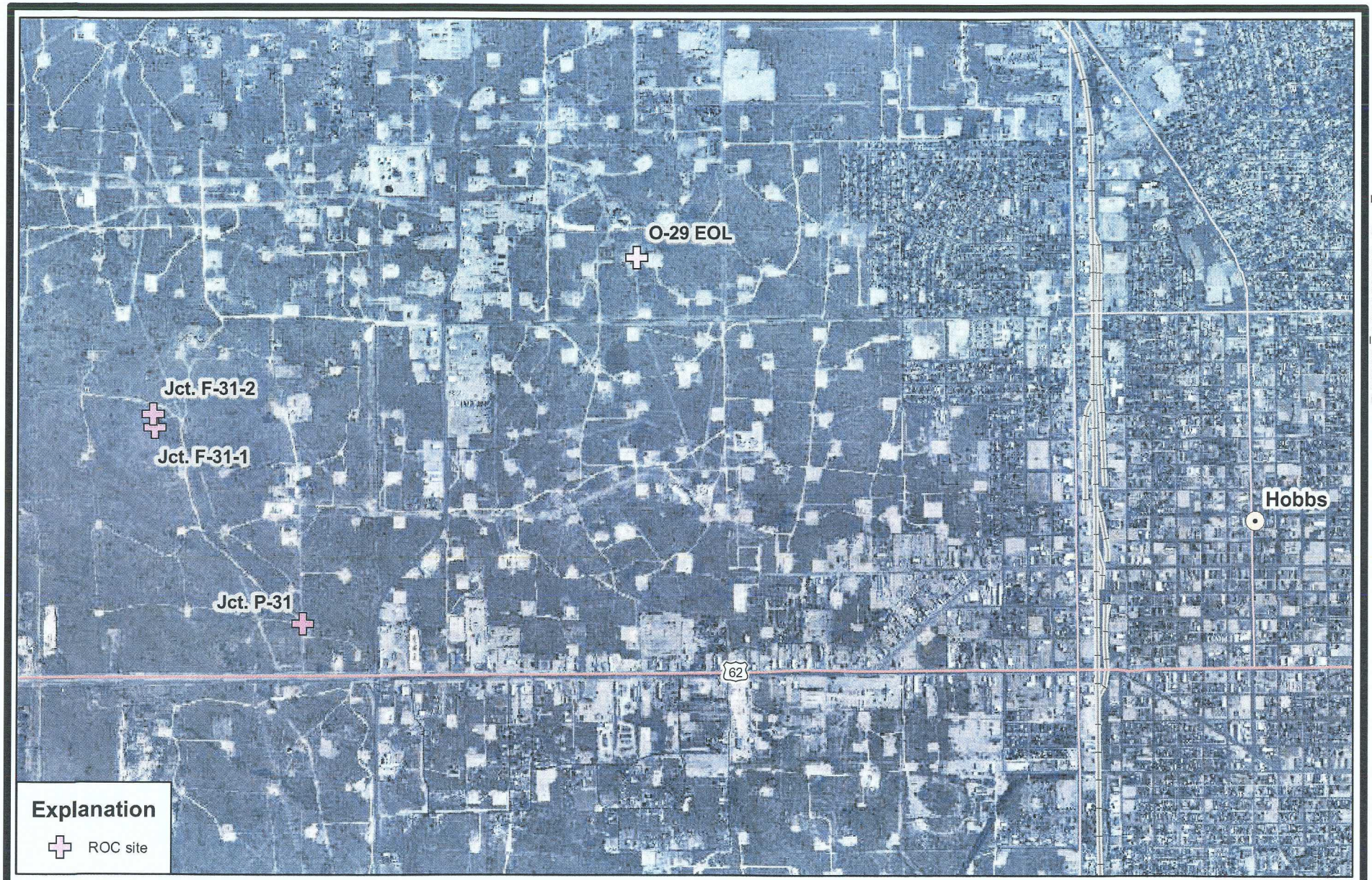
Please contact Hack Conder of ROC at 575-393-9174 if you have any questions concerning this submission. Thank you for your time and consideration.

Sincerely,
R.T Hicks Consultants, Ltd.

Katie Lee

Katie Lee
Project Scientist

Copy: Hack Conder, ROC



S:/PROJECTS/ROC/NOV2009_ICPS/PLATES/AERIAL_2005.MXD

11/19/2009

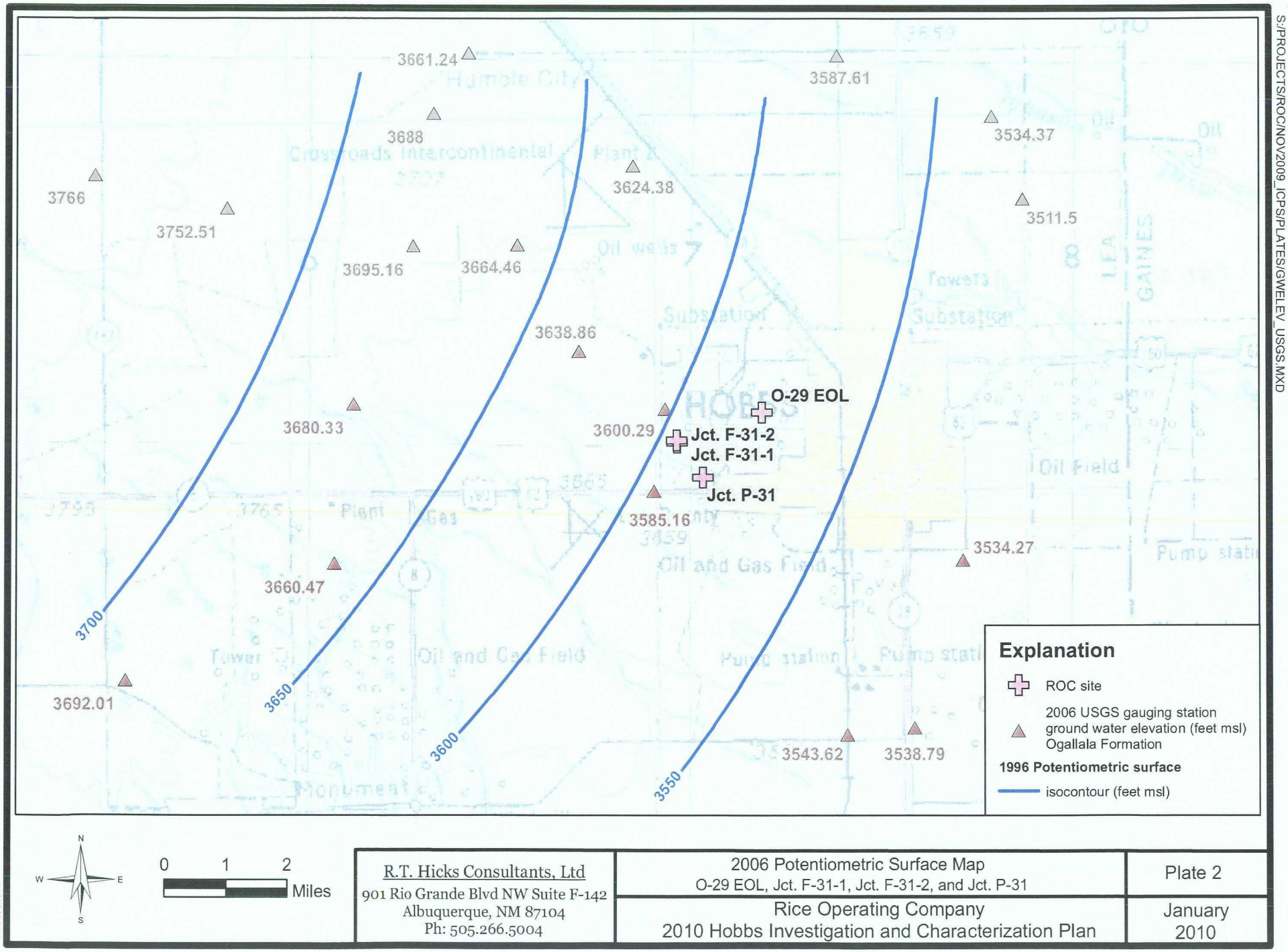
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Site Map - 2005 Aerial Photo (RGIS)
O-29 EOL, Jct. F-31-1, Jct. F-31-2, and Jct. P-31

Plate 1

Rice Operating Company
2010 Hobbs Investigation and Characterization Plan

January 2010



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

2006 Potentiometric Surface Map
O-29 EOL, Jct. F-31-1, Jct. F-31-2, and Jct. P-31

Plate 2

Rice Operating Company
2010 Hobbs Investigation and Characterization Plan

January 2010

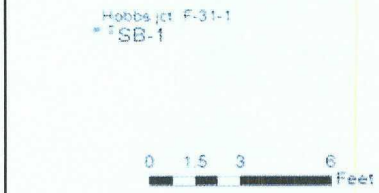
11/19/2009

S:/PROJECTS/ROC/NOV2009_ICPS/PLATES/GWELEV_USGS.MXD

Attachment B

Soil Lithology

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

Logger:	Dale Littlejohn		RICE OPERATING COMPANY ROC SINCE 1955
Driller:	Harrison & Cooper, Inc. Drilling		
Consultant:	R.T. Hicks		
Drilling Method:	Air rotary		
Start Date:	4/22/2010		
End Date:	4/22/2010		

Comments: All samples from cuttings. Located at the source of the former junction box site.

Drafted by: Lara Weinheimer

TD = 55 ft GW = 63 ft

Project Name: Hobbs jct. F-31-1 **Well ID:** SB-1

Location: UL/F sec. 31 T18S R38E

Lat: 32°42'24.82" W **County:** Lea

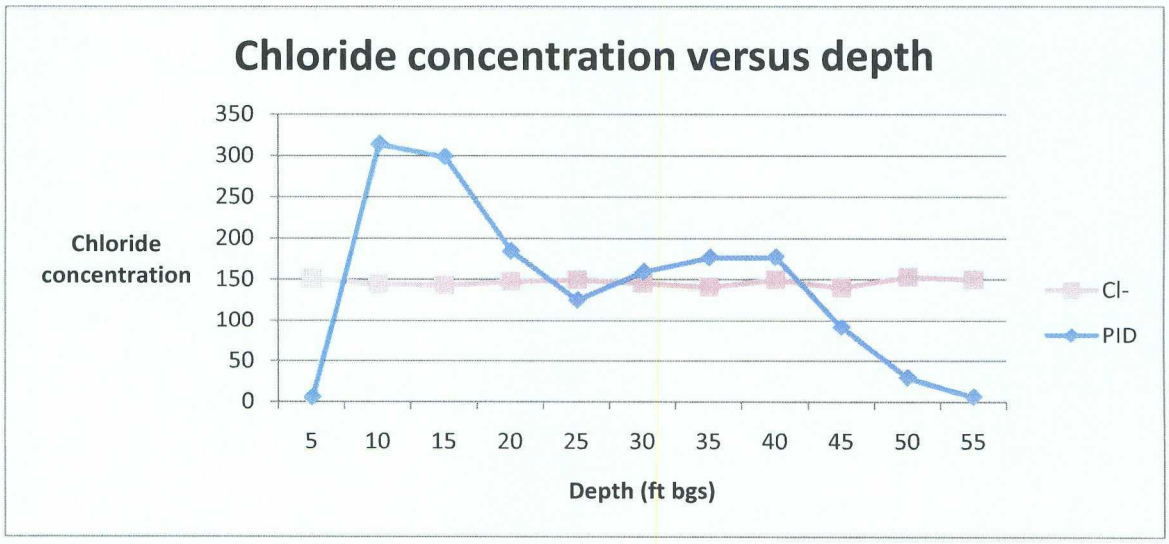
Long: 103°16'31.933" W **State:** NM

Depth (feet)	chloride field tests (ppm)	LAB	PID	Description
				0 - 0.5 ft SILTY CLAY dark brown (top soil)
5	151		5.5	0.5 - 12 CALICHE; SILT white to gray (hard drilling), with interbedded light brown silt and increasing with depth and becoming discolored (gray) at 10 ft, hydrocarbon odor
10	145		314.8	
15	143		299.5	12 - 19 ft SAND gray (discolored), fine grained, poorly sorted, rounded, hydrocarbon odor
20	148		185.5	19 - 22 ft SAND light grayish brown (possibly discolored), very fine grained, well sorted, angular
25	150		125.8	22 - 30 ft SAND; SANDSTONE brown, fine grained, poorly sorted, angular, with interbedded (thin) sandstone
30	146		160.2	
35	141		177.6	

Lithology

Bore Construction: bentonite seal

Depth (feet)	chloride field tests (ppm)	LAB	PID	Description	Lithology	Bore Construction
				30 - 42 ft SAND; SANDSTONE light brown, very fine grained, moderately sorted, angular, with interbedded this sandstone		
40	150		178.0			
45	140		91.5	42 - 55 ft SAND brown, fine grained, well sorted, sub-rounded		
50	153		29.6			
55	150		5.8			



Attachment C

Laboratory Reports

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

CARDINAL LABORATORIES

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

May 3, 2010

Hack Conder
Rice Operating Company
112 West Taylor
Hobbs, NM 88240

Re: Hobbs Jct. F-31-1

Enclosed are the results of analyses for sample number H19751, received by the laboratory on 04/26/10 at 8:25 am.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited though 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 524.2	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 4 (includes Chain of Custody)

Sincerely,

Celey D. Keene
Laboratory Director

This report conforms with NELAP requirements.

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
112 W. TAYLOR
HOBBS, NM 88240

Receiving Date: 04/26/10
Reporting Date: 04/29/10
Project Number: NOT GIVEN
Project Name: HOBBS JCT. F-31-1
Project Location: HOBBS JCT. F-31-1

Sampling Date: 04/22/10
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: AB/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		04/28/10	04/28/10	04//28/10
H19751-1	SB-1 @ 10'	163	2,050	< 16
H19751-2	SB-1 @ 55'	<10.0	46.0	< 16
Quality Control		595	598	500
True Value QC		500	500	500
% Recovery		119	120	100
Relative Percent Difference		0.2	1.6	2.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-Cl B
*Analyses performed on 1:4 w:v aqueous extracts.
Reported on wet weight. Not accredited for GRO/DRO and Chloride.

Chemist

05/03/10
Date

H19751 TCL RICE

CARDINAL LABORATORIES

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

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

Receiving Date: 04/26/10
Reporting Date: 04/29/10
Project Number: NOT GIVEN
Project Name: HOBBS JCT. F-31-1
Project Location: HOBBS JCT. F-31-1

Sampling Date: 04/22/10
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: JH
Analyzed By: ZL

LAB NUMBE SAMPLE ID	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE	04/29/10	04/29/10	04/29/10	04/29/10
H19751-1 SB-1 @ 10'	<0.050	0.796	1.10	1.92
Quality Control	0.051	0.045	0.047	0.145
True Value QC	0.050	0.050	0.050	0.150
% Recovery	102	90.0	94.0	96.7
Relative Percent Difference	6.0	5.9	12.4	11.3

METHOD: EPA SW-846 8021B

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

Chemist

05/03/10
Date

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 Operating Company	**BILL TO**
Project Manager: Hack Conder	P.O. #:
Address: 122 West Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 393-9174 Fax #: 397-1471	Address:
Project #: Project Owner:	City:
Project Name: Hobbs jct. F-31-1	State: Zip:
Project Location: Hobbs jct. F-31-1	Phone #:
Sampler Name: L. Weinheimer	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							
H9751-1	SB-1 @ 10'		1			✓					✓		4/22/10	12:43	✓	✓	✓								
2	SB-1 @ 55'		1			✓					✓		4/22/10	01:06	✓	✓									

Relinquished By: L. Weinheimer	Date: 4-26-10 Time: 8:45	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By: Jodie Henson	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☑ Yes ☐ No Intact: ☐ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Hconder@riceswd.com; jpurvis@riceswd.com; Lweinheimer@riceswd.com

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

#26