1R - 425-93

REPORTS

DATE:

6-3-13

Hansen, Edward J., EMNRD

From: L Peter Galusky <lpg@texerra.com>
Sent: Monday, June 03, 2013 10:50 AM
To: Hansen, Edward J., EMNRD
Cc: Laura Pena; Katie Jones
Subject: Rice Operating Company Vacuum J-32 EOL NMOCD Case No 1R425-93
Attachments: Vacuum J-32 EOL ICP report submitted 06.03.2013.pdf

Edward,

Please find attached an ICP report for Rice Operating Company's Vacuum J-32 EOL project.

I will follow this with a hard copy in the mail.

Thank you for your consideration.

Sincerely,

Pete G.

--
L. Peter (Pete) Galusky, Jr. Ph.D., P.E.
Principal Environmental Engineer
Texerra LLC
Cell: 719-339-6791
E-mail: lpg@texerra.com
Web: www.texerra.com

L. Peter Galusky, Jr. Ph.D., P.G.
Texerra LLC

20055 Laredo Ln
Monument, CO 80132
E-mail: lpg@texerra.com, Tel: 719-339-6791

June 3rd, 2013

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

RE: **INVESTIGATION & CHARACTERIZATION PLAN (ICP) REPORT**
Rice Operating Company – Vacuum SWD System
Vacuum J-32 EOL: UL J, Sec. 32, T17S, R35E
NMOCD Case Number: 1R425-93

Sent via Certified U.S. Mail w/ Return Receipt No. 7011 0110 0002 5197 1495

Mr. Hansen:

RICE Operating Company (ROC) has retained Texerra to address potential environmental concerns at the above-referenced site in the Abandoned Vacuum Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the Vacuum SWD 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 Parties, who provide all operating capital on a percentage/usage basis. Environmental projects of this nature require System Party AFE approval prior to work commencing at the site. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is greatly appreciated.

Background and Previous Work

This site is located approximately 1 ¼ mile SE of Buckeye, New Mexico in UL J, Sec. 32, T17S, R35E as shown on the Site Location Map (Appendix). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 74 +/- feet.

In 2010, ROC initiated work on the former J-32 EOL junction box as part of the system abandonment. The former junction box and surrounding soil was removed from an excavation of approximately 30 ft long by 30 ft wide by 12 ft deep. Soils were tested using field and laboratory methods for residual hydrocarbons and chlorides from a 4-wall composite sample, a bottom composite sample and in vertical delineation samples taken 15 ft west of the former junction box at two-foot intervals to the bottom depth. Residual soil hydrocarbons were negligible (< 50 mg/kg) in all samples. Residual chlorides were high (> 1,000 mg/kg) from the 4-wall and bottom composite samples and moderately high (between 500 and 1,100 mg/kg) throughout the vertical delineate sample.

The excavated soil was mixed (testing 29.4 mg/kg TPH and 1,380 mg/kg chloride) and returned to the excavation. A synthetic impermeable liner was installed at 4 ft bgs. Clean imported soil was installed above the liner and the surface was returned to the natural contour and seeded. NMOCD was notified of this work on February 21, 2011 via a Junction Box Disclosure Report (Appendix).

Rice Operating Company (ROC) has initiated soil sampling and analysis indicated in our Investigation and Characterization Plan (ICP) of February 25th, 2013. As part of the ICP, RECS personnel were on site May 6th to conduct soil bore installations. Six soil bores were installed and as the bores were advanced, samples were field tested for chlorides and hydrocarbons (Appendix). Representative samples from each bore were taken to a commercial laboratory for analysis of chlorides and hydrocarbons. SB-1 returned laboratory chloride readings of 1,090 mg/kg at 45 ft bgs and decreased to 992 mg/kg at 60 ft bgs. In SB-2, chloride readings returned results of 880 mg/kg at 20 ft bgs and decreased to 288 mg/kg at 40 ft bgs. In SB-3, the chloride readings returned results of 960 mg/kg at the surface and decreased to 112 mg/kg at 10 ft bgs. In SB-4, chloride readings returned results of 4,280 mg/kg at the surface and decreased to 48 mg/kg at 10 ft bgs. In SB-5, chloride readings returned results of 2,000 mg/kg at 25 ft bgs and decreased to 192 mg/kg at 60 ft bgs. GRO and DRO results were non detect throughout the all of the bores, except for the surface sample in SB-4 where the DRO returned a result of 14.7 mg/kg. A surface sample was collected 25 ft east of the source and returned a field chloride reading of 3,129 mg/kg.

Request for Further Delineation

Soil bores completed so far resulted in elevated chloride concentration, and the lateral extent of the contamination in the vadose zone has yet to be determined. Therefore, RECS recommends that ROC continue to investigate the site to determine the lateral extent of the chloride contamination. ROC will also review historical photos and, if warranted, install a near-source monitoring well. Additional monitoring wells may be required to fully delineate groundwater quality. All monitoring wells will be installed and sampled according to NMOCD and industry standards.

We thus respectfully request your review of this report and consideration of our recommendation for additional soil sampling. Upon completion of this work we will prepare and submit a Corrective Action Plan (CAP) to your office for your consideration.

Thank you for your consideration of this report. Please call Hack Conder at (575) 393-9174 or myself if you have any questions or wish to discuss this project.

Sincerely,

L. Peter Galusky, Jr. Ph.D., P.G.

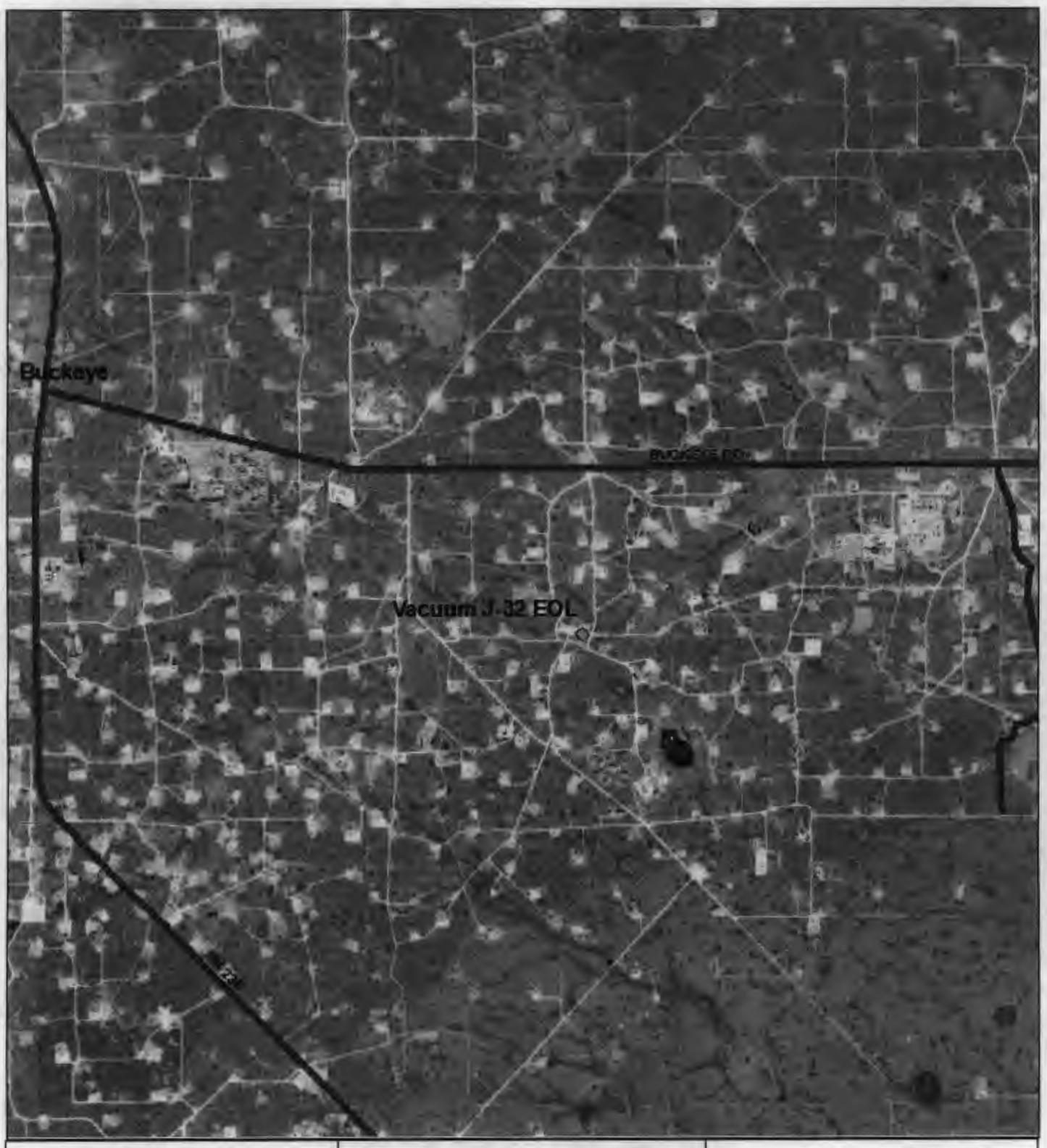
Copy: Rice Operating Company
Attachments: Appendix

APPENDIX

- ✓ **Site Location Map**

- ✓ **ICP Field Work**

  - **Soil Bore Installation** (map and results summary)
  - **Photographs**
  - **Soil Bore Logs**
  - **Laboratory Reports**



RICE ENVIRONMENTAL
RECS
CONSULTING & SAFETY, LLC

Vacuum J-32 EOL

Unit J, Section 32, T17S, R35E
LEA COUNTY, NM

NMOCD Case #: 1R425-93

N
W E
S

0 0.15 0.3 0.6
Miles

Drawing date: 7-25-12
Drafted by: L. Weinheimer

Soil Bore Installation

SB-1

Depth	Cl-	PID	LAB Cl-	GRO	DRO
15'	641	5.1			
20'	948	3.3			
25'	864	2.6			
30'	845	2.8			
35'	729	7.7			
40'	805	4.3			
45'	1187	3.4	1090	<10	<10
50'	965	4.6			
55'	894	5.1			
60'	954	5.0	992	<10	<10

SB-2

Depth	Cl-	PID	LAB Cl-	GRO	DRO
SS	415	0.8			
5'	500	1.3			
10'	552	1.1			
15'	445	1.0			
20'	616	1.1	880	<10	<10
25'	354	1.6			
30'	405	1.4			
35'	369	1.4			
40'	287	1.5	288	<10	<10

SB-3

Depth	Cl-	PID	LAB Cl-	GRO	DRO
SS	787	0.6	960	<10	<10
5'	374	2.7			
10'	147	2.7	112	<10	<10

SB-4

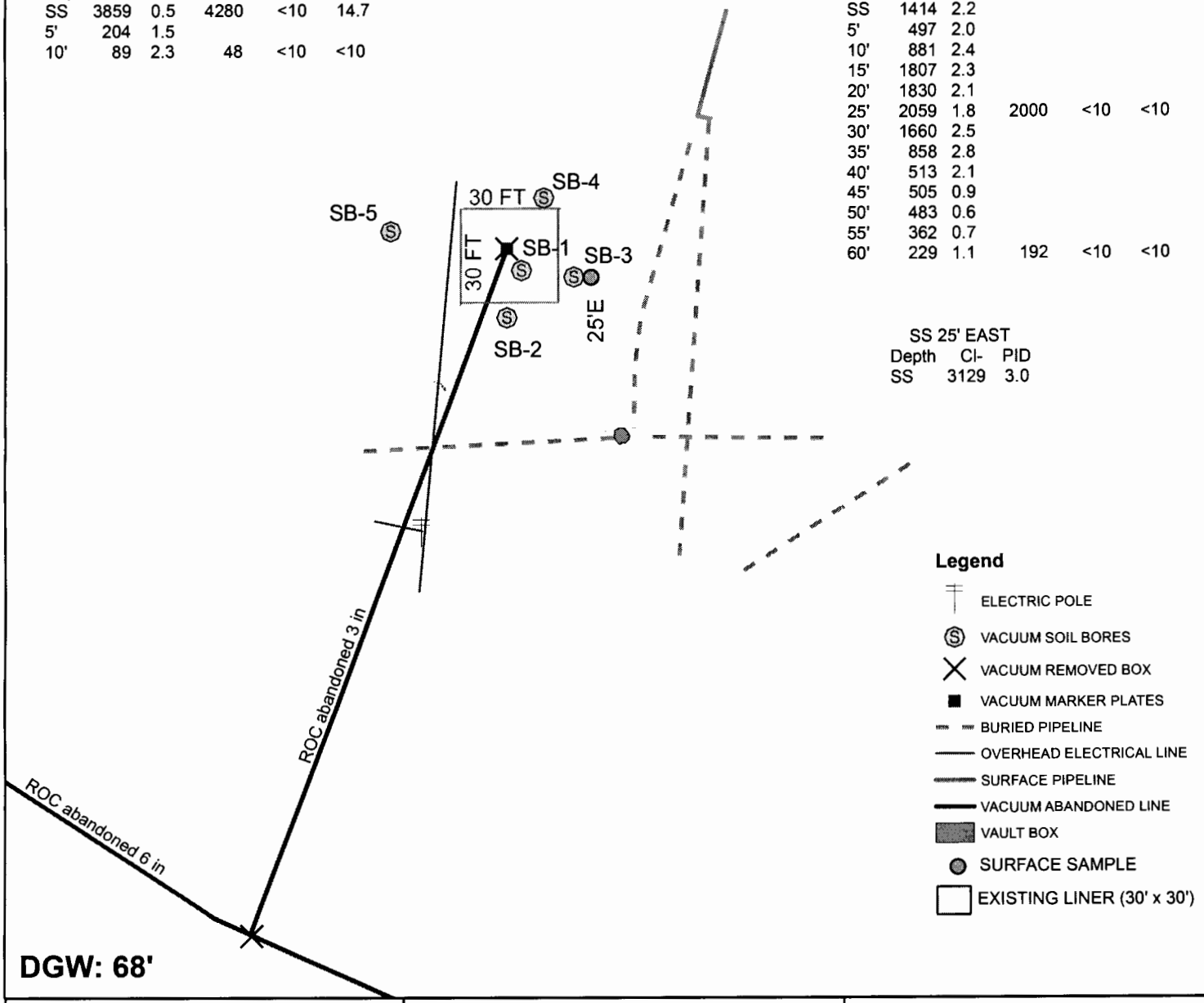
Depth	Cl-	PID	LAB Cl-	GRO	DRO
SS	3859	0.5	4280	<10	14.7
5'	204	1.5			
10'	89	2.3	48	<10	<10

SB-5

Depth	Cl-	PID	LAB Cl-	GRO	DRO
SS	1414	2.2			
5'	497	2.0			
10'	881	2.4			
15'	1807	2.3			
20'	1830	2.1			
25'	2059	1.8	2000	<10	<10
30'	1660	2.5			
35'	858	2.8			
40'	513	2.1			
45'	505	0.9			
50'	483	0.6			
55'	362	0.7			
60'	229	1.1	192	<10	<10

SS 25' EAST

Depth	Cl-	PID
SS	3129	3.0



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Vacuum J-32 EOL

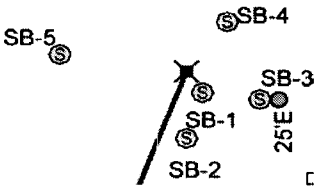
Unit J, Section 32, T17S, R35E

NMOCD Case #: 1R425-93

N W E S

0 25 50 100 Feet

Drawing date: 5-17-13
Drawn by: LS

Logger:	Kyle Norman		RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS
Driller:	Harrison & Cooper, Inc.		**Project Name:** Vacuum J-32 EOL **Well ID:** SB-1
Drilling Method:	Air Rotary		**Project Consultant:** Texerra
Start Date:	5/6/2013		
End Date:	5/6/2013		

Comments: SB-1 is located 5 ft southeast of the former junction box site. All samples were from cuttings.
DRAFTED BY: L. Peña
TD = 60 ft GW = 68 ft

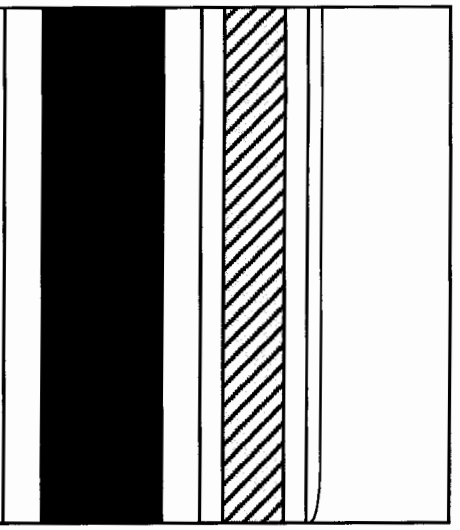
Location:UL/J, Sec. 32, T17S, R35E
Lat: 32°47'28.384"N **Long: 103°28'34.539"W**
County:Lea **State**:NM

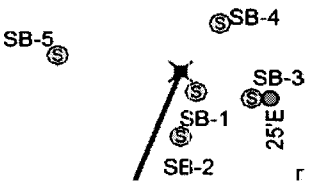
Depth	Field Cl^- (mg/kg)	LAB Cl^- (mg/kg)	LAB TPH (mg/kg)	PID (ppm)	Description
SS					Regolith Brown Sand
5 ft					
10 ft					
15 ft	641			5.1	Caliche/Sandstone Mix
20 ft	948			3.3	Caliche With Some Sandstone
25 ft	864			2.6	Red/Tan Sand
30 ft	845			2.8	
35 ft	729			7.7	
40 ft	805			4.3	Red/Tan Sand With Some Sandstone

Lithology

Well Construction

bentonite seal

45 ft	1,187	1,090	GRO <10 DRO <10	3.4	Red/Tan Sand	
50 ft	965			4.6		
55 ft	894			5.1		
60 ft	954	992	GRO <10 DRO <10	5.0		

Logger:	Kyle Norman		RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS
Driller:	Harrison & Cooper, Inc.		**Project Name:** Vacuum J-32 EOL **Well ID:** SB-2
Drilling	Air Rotary		**Project Consultant:** Texerra
Start Date:	5/6/2013		
End Date:	5/6/2013		

Comments: SB-2 is located 20 ft southeast of the former junction box site. All samples were from cuttings.

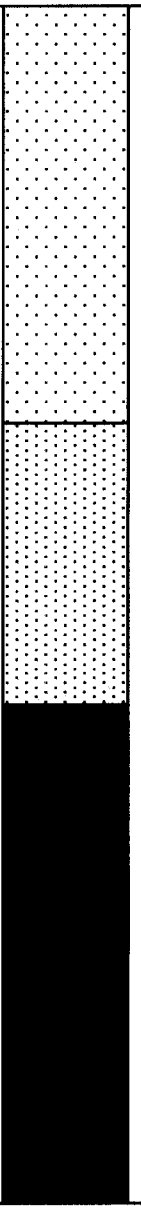
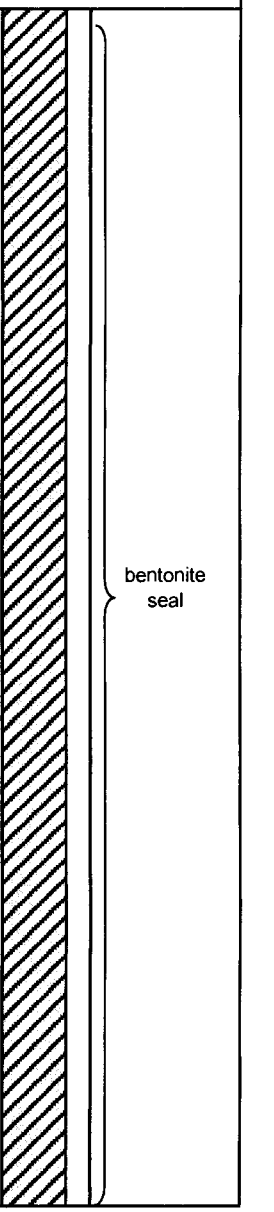
DRAFTED BY: L. Peña

TD = 40 ft GW = 68 ft

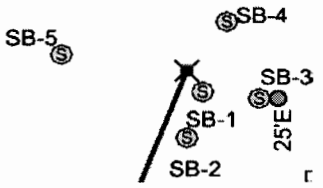
Location:UL/J, Sec. 32, T17S, R35E

Lat: 32°47'28.245"N **County**:Lea

Long: 103°28'34.565"W **State**:NM

Depth	Field Cl⁻ (mg/kg)	LAB Cl⁻ (mg/kg)	LAB TPH (mg/kg)	PID (ppm)	Description	Lithology	Well Construction
SS	415			0.8	Caliche		
5 ft	500			1.3			
10 ft	552			1.1			
15 ft	445			1.0	Caliche With Some Sandstone		
20 ft	616	880	GRO <10 DRO <10	1.1			
25 ft	354			1.6	Red/Tan Sand With Some Caliche		
30 ft	405			1.4			
35 ft	369			1.4	Red Sand		
40 ft	287	288	GRO <10 DRO <10	1.5			

bentonite seal

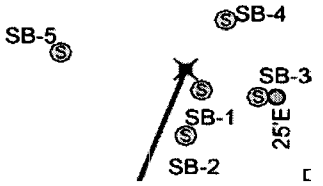
Logger:	Kyle Norman		**Project Name:** Vacuum J-32 EOL **Well ID:** SB-3
Driller:	Harrison & Cooper, Inc.		**Project Consultant:** Texerra
Drilling Method:	Air Rotary		**Location:UL/J, Sec. 32, T17S, R35E**
Start Date:	5/6/2013		**Lat: 32°47'28.352"N** **County**:Lea
End Date:	5/6/2013		**Long: 103°28'34.3"W** **State**:NM

Comments: SB-3 is located 20 ft east of the former junction box site. All samples were from cuttings.

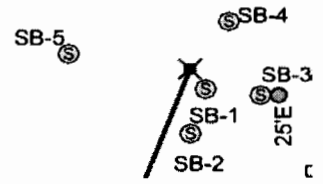
DRAFTED BY: L. Peña

TD = 10 ft GW = 68 ft

Depth	Field Cl^- (mg/kg)	LAB Cl^- (mg/kg)	LAB TPH (mg/kg)	PID (ppm)	Description	Lithology	Well Construction
SS	787	960	GRO <10 DRO <10	0.6	Caliche		bentonite seal
5 ft	374			2.7			
10 ft	147	112	GRO <10 DRO <10	2.7			

Logger:	Kyle Norman		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		**Project Name:** Vacuum J-32 EOL **Well ID:** SB-4
Start Date:	5/6/2013		
End Date:	5/6/2013		**Project Consultant:** Texerra
Comments: SB-4 is located 25 ft southeast of the former junction box site. All samples were from cuttings. **DRAFTED BY: L. Peña**			**Location:UL/J, Sec. 32, T17S, R35E**
TD = 10 ft	GW = 68 ft		**Lat: 32°47'28.601"N** **County**:Lea **Long: 103°28'34.402"W** **State**:NM

Depth	Field Cl⁻ (mg/kg)	LAB Cl⁻ (mg/kg)	LAB TPH (mg/kg)	PID (ppm)	Description	Lithology	Well Construction
SS	3,859	4,280	GRO <10 DRO 14.7	0.5	Caliche		bentonite seal
5 ft	204			1.5			
10 ft	89	48	GRO <10 DRO <10	2.3	Caliche With Sandstone		

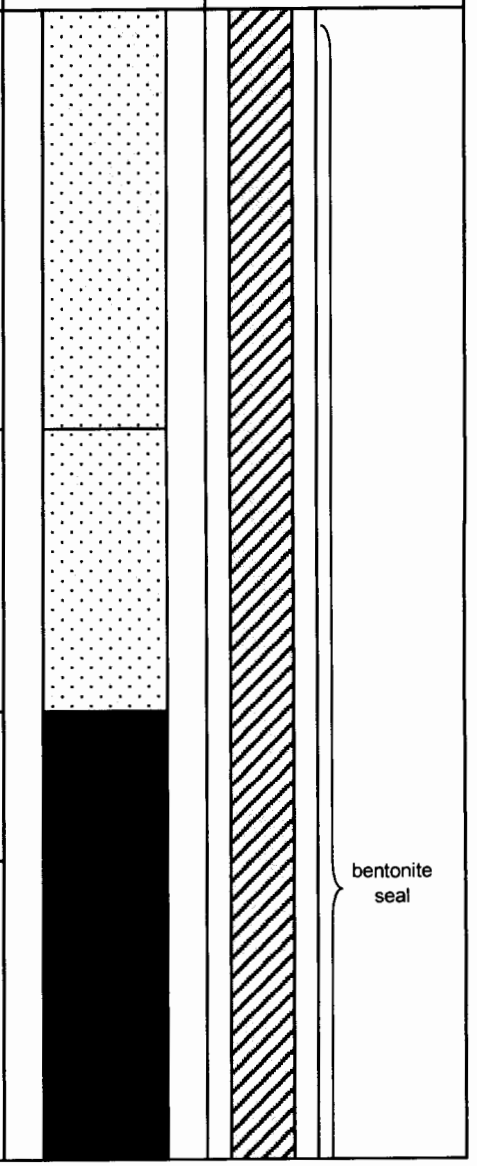
Logger:	Kyle Norman		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** Vacuum J-32 EOL **Well ID:** SB-5
Drilling Method:	Air Rotary		**Project Consultant:** Texerra
Start Date:	5/7/2013		**Location:UL/J, Sec. 32, T17S, R35E**
End Date:	5/7/2013		**Lat: 32°47'28.527"N** **County**:Lea **Long: 103°28'34.997"W** **State**:NM

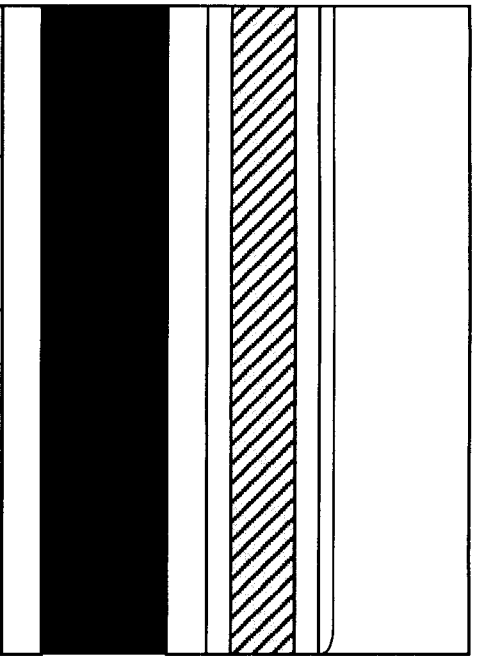
Comments: SB-5 is located 40 ft west of the former junction box site. All samples were from cuttings.

DRAFTED BY: L. Peña

TD = 60 ft GW = 68 ft

Depth	Field Cl^- (mg/kg)	LAB Cl^- (mg/kg)	LAB TPH (mg/kg)	PID (ppm)	Description
SS	1,414			2.2	Caliche
5 ft	497			2.0	
10 ft	881			2.4	
15 ft	1,807			2.3	Caliche With Sandstone
20 ft	1,830			2.1	
25 ft	2,059	2,000	GRO <10 DRO <10	1.8	Red Sand With Some Caliche
30 ft	1,660			2.5	Red Sand
35 ft	858			2.8	



40 ft	513			2.1	Red Sand	
45 ft	505			0.9	Red Sand With Some Caliche	
50 ft	483			0.6	Red Sand	
55 ft	362			0.7		
60 ft	229	192	GRO <10 DRO <10	1.1		

CARDINAL Laboratories

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

May 09, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM J-32 EOL (17/35)

Enclosed are the results of analyses for samples received by the laboratory on 05/06/13 16:15.

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:	05/06/2013	Sampling Date:	05/06/2013
Reported:	05/09/2013	Sampling Type:	Soil
Project Name:	VACUUM J-32 EOL (17/35)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VACUUM J-32 EOL (17/35)		

Sample ID: SB-1 @ 45' (H301072-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1090**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*95.2 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*100 %*	*63.6-154*

Sample ID: SB-1 @ 60' (H301072-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**992**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*99.3 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*106 %*	*63.6-154*

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:	05/06/2013	Sampling Date:	05/06/2013
Reported:	05/09/2013	Sampling Type:	Soil
Project Name:	VACUUM J-32 EOL (17/35)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VACUUM J-32 EOL (17/35)		

Sample ID: SB-2 @ 20' (H301072-03)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**880**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*94.6 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*98.0 %*	*63.6-154*

Sample ID: SB-2 @ 40' (H301072-04)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*83.3 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*85.9 %*	*63.6-154*

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:	05/06/2013	Sampling Date:	05/06/2013
Reported:	05/09/2013	Sampling Type:	Soil
Project Name:	VACUUM J-32 EOL (17/35)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VACUUM J-32 EOL (17/35)		

Sample ID: SB-3 @ SURFACE (H301072-05)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**960**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*79.0 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*78.2 %*	*63.6-154*

Sample ID: SB-3 @ 10' (H301072-06)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*90.3 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*95.2 %*	*63.6-154*

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:	05/06/2013	Sampling Date:	05/06/2013
Reported:	05/09/2013	Sampling Type:	Soil
Project Name:	VACUUM J-32 EOL (17/35)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VACUUM J-32 EOL (17/35)		

Sample ID: SB-4 @ SURFACE (H301072-07)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4280**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	**14.7**	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*89.2 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*92.2 %*	*63.6-154*

Sample ID: SB-4 @ 10' (H301072-08)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*96.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*93.7 %*	*63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
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: Vacuum J-32 EOL 17S-35E	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				
H301072																								
1	SB-1 @ 45'	G	1			✓					✓		5-6-13	8:30	✓	✓								
2	SB-1 @ 60'	G	1			✓					✓		"	9:00	✓	✓								
3	SB2 @ 20'	G	1			✓					✓		"	9:15	✓	✓								
4	SB2 @ 40'	G	1			✓					✓		"	9:45	✓	✓								
5	SB3 @ Surface	G	1			✓					✓		"	11:50	✓	✓								
6	SB3 @ 10'	G	1			✓					✓		"	12:30	✓	✓								
7	SB4 @ Surface	G	1			✓					✓		"	2:00	✓	✓								
8	SB4 @ 10'	G	1			✓					✓		"	2:30	✓	✓								

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Relinquished By: Kyle N	Date: 5-6-13 Time: 4:15	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	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) CW	REMARKS: 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

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

#54

CARDINAL Laboratories

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

May 09, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM J-32 EOL (17/35)

Enclosed are the results of analyses for samples received by the laboratory on 05/07/13 16:15.

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:	05/07/2013	Sampling Date:	05/07/2013
Reported:	05/09/2013	Sampling Type:	Soil
Project Name:	VACUUM J-32 EOL (17/35)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VACUUM J-32 EOL (17/35)		

Sample ID: SB 5 @ 25' (H301086-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2000**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*89.4 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*95.6 %*	*63.6-154*

Sample ID: SB 5 @ 60' (H301086-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	05/08/2013	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	

Surrogate: 1-Chlorooctane	*87.3 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*91.0 %*	*63.6-154*

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

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
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

		BILL TO	
Company Name:	Rice	P.O. #:	
Project Manager:	Hack Conder	Company:	
Address:		Attn:	
City:	Hobbs	State: NM Zip: 88240	Address:
Phone #:		Fax #:	City:
Project #:		Project Owner:	State: Zip:
Project Name:			Phone #:
Project Location:	Vacuum J-32 EOL 17S-35E		Fax #:
Sampler Name:	Kyle Norman		

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					
H301085																									
1	SB5 @ 25'	G	1			✓					✓		5-7-13	9:30	✓	✓									
2	SB5 @ 60'	G	1			✓					✓		"	11:00	✓	✓									

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Relinquished By:	Date: 5-7-13	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 9:15		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)

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#54