

1R - 425-81

REPORTS

DATE:

5-31-13

Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

RECEIVED OCD

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0003 0320 5556

2013 JUN -5 P 2: 14

May 31st, 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 and Characterization Plan (ICP) Report and Request for
Further Investigation
Rice Operating Company – Vacuum SWD System
Vacuum Jct. D-31 (1R425-81): UL/D sec. 31 T17S R35E**

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) 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 ownership/usage basis.

Background and Previous Work

The site is located approximately 0.3 miles south of Buckeye, New Mexico in Unit D, Section 31, T17S, R35E as shown on the Site Location Map (Figure 1). Soil bore installation at the site indicates that groundwater is located at approximately 100 ft bgs.

In 2009, ROC initiated work on the former Vacuum Jct. D-31 junction box. The site was delineated using a backhoe to collect soil samples at regular intervals, creating a 10 x 30 x 12-ft deep excavation. The samples were field tested for chlorides, which evidenced elevated chloride concentrations. The samples were also tested for organic vapors using a PID, which resulted in varied readings. Representative composite samples were sent to a commercial laboratory for analysis of chloride and TPH. Laboratory analysis of the four-wall composite resulted in a chloride concentration of 3,320 mg/kg, a gasoline range organics (GRO) concentration of non-detect and a diesel range organics (DRO) concentration of 966 mg/kg. Laboratory analysis of the bottom composite resulted in a chloride concentration of 2,840 mg/kg, a GRO concentration of non-detect and a DRO concentration of 1,130 mg/kg. The excavated soil was blended on site and a sample of the blended soil returned a laboratory chloride concentration of 1,070 mg/kg, a GRO concentration of non-detect and a DRO concentration of 1,180 mg/kg. The blended backfill was returned to the excavation up to 5 ft below ground surface (bgs). At 5-4 ft

bgs, a 1-ft thick clay liner was installed and a clay compaction test performed on April 17th, 2009. Clean, imported soil was used to backfill the excavation to ground surface and to contour the site to the surrounding area. On June 8th, 2009, the site was seeded with a blend of native vegetation.

NMOCD was notified of potential groundwater impact on November 11th, 2009, and a junction box disclosure report was submitted to NMOCD with all the 2009 junction box closures and disclosures.

On February 8th, 2013, ROC submitted an Investigation and Characterization Plan (ICP) to NMOCD which was approved on March 4th, 2013. As part of the ICP, RECS personnel were on site April 9th through 11th to conduct soil bore installations. Six soil bores were installed and as the bores were advanced, samples were field tested for chlorides and hydrocarbons (Figure 2). Representative samples from each bore were taken to a commercial laboratory for analysis of chlorides and hydrocarbons (Appendix A). SB-1 returned laboratory chloride readings of 3,200 mg/kg at 50 ft bgs and decreased to 1,020 mg/kg at 85 ft bgs. GRO in SB-1 was non-detect for both samples and DRO was 17.5 mg/kg at 50 ft bgs and 14.9 mg/kg at 85 ft bgs. In SB-2, chloride readings returned results of 3,320 mg/kg at 20 ft bgs and decreased to 912 mg/kg at 85 ft bgs. GRO and DRO readings were non-detect. In SB-3, the chloride readings returned results of 320 mg/kg at the surface, 624 mg/kg at 15 ft bgs and 128 mg/kg at 20 ft bgs. GRO and DRO reading were non-detect. In SB-4, chloride readings returned results of 3,760 mg/kg at 20 ft bgs and decreased to 1,310 mg/kg at 85 ft bgs. GRO and DRO results were non-detect except for the DRO reading at 20 ft bgs, which was 30.4 mg/kg. In SB-5, chloride readings returned results of 2,800 mg/kg at 20 ft bgs and decreased to 432 mg/kg at 85 ft bgs. GRO and DRO results were non-detect except for the DRO reading at 20 ft bgs, which was 10.8 mg/kg. In SB-6, chloride readings returned results of 3,360 mg/kg at 20 ft bgs and decreased to 1,280 mg/kg at 85 ft bgs. GRO and DRO results were non-detect throughout the bore.

Request for Further Delineation

Soil bores completed so far resulted in elevated chloride concentration; however, 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.

Once further sampling is conducted at the site and the data is evaluated, RECS will submit a Corrective Action Plan (CAP) that will suggest a vadose zone remedy and, if warranted, a groundwater investigation plan.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-9174 or me if you have any questions or wish to discuss the site.

Sincerely,

A handwritten signature in black ink, appearing to read 'L. Weinheimer', with a long horizontal flourish extending to the right.

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

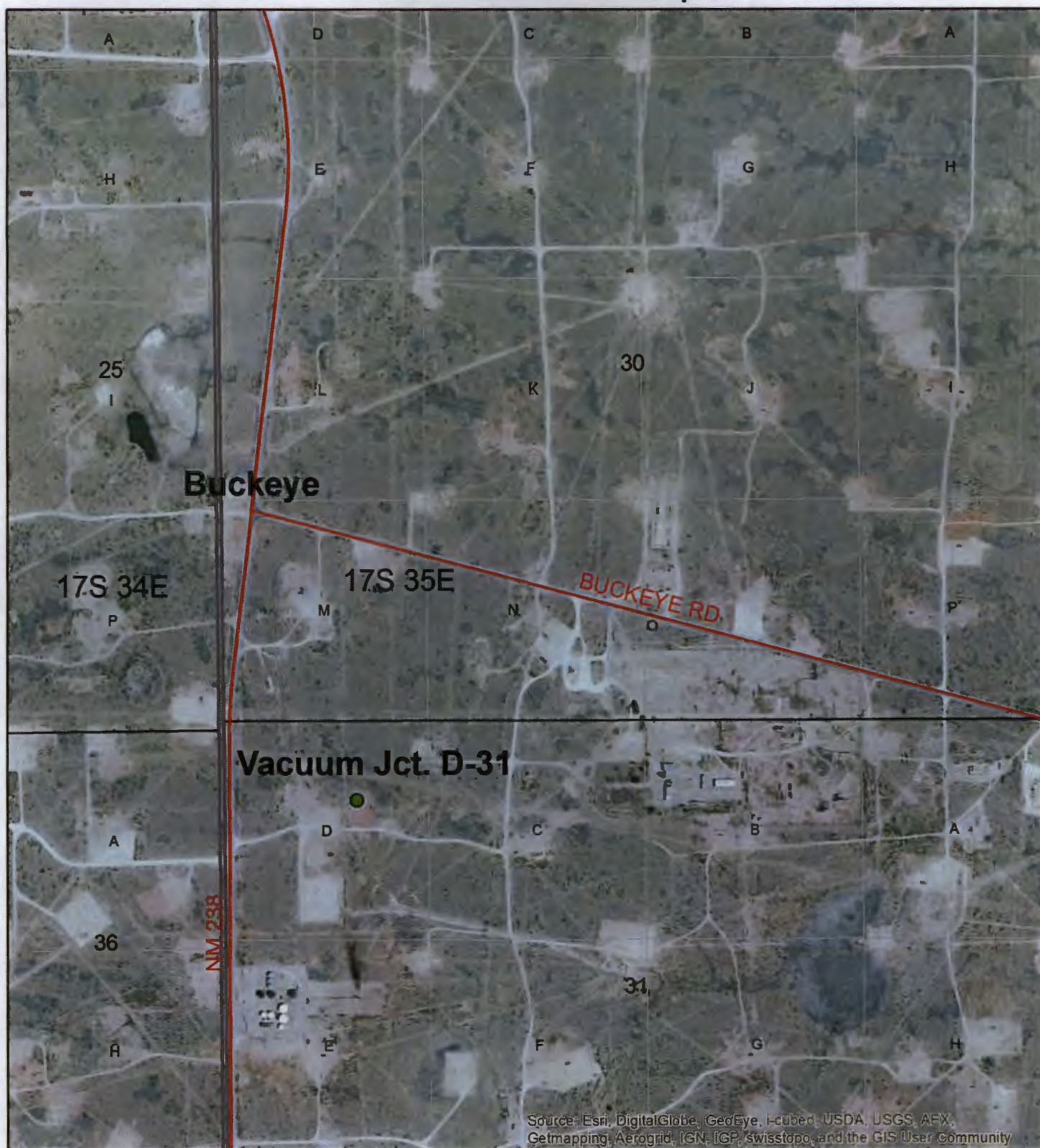
- Figure 1 – Site Location Map
- Figure 2 – Soil Bore Installation Map
- Appendix A – Soil Bore Installation Documentation



Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Site Location Map



Vacuum Jct. D-31

Legals: UL/D, Section 31
T17S, R35E
Lea County, NM

NMOCD Case #: 1R425-81

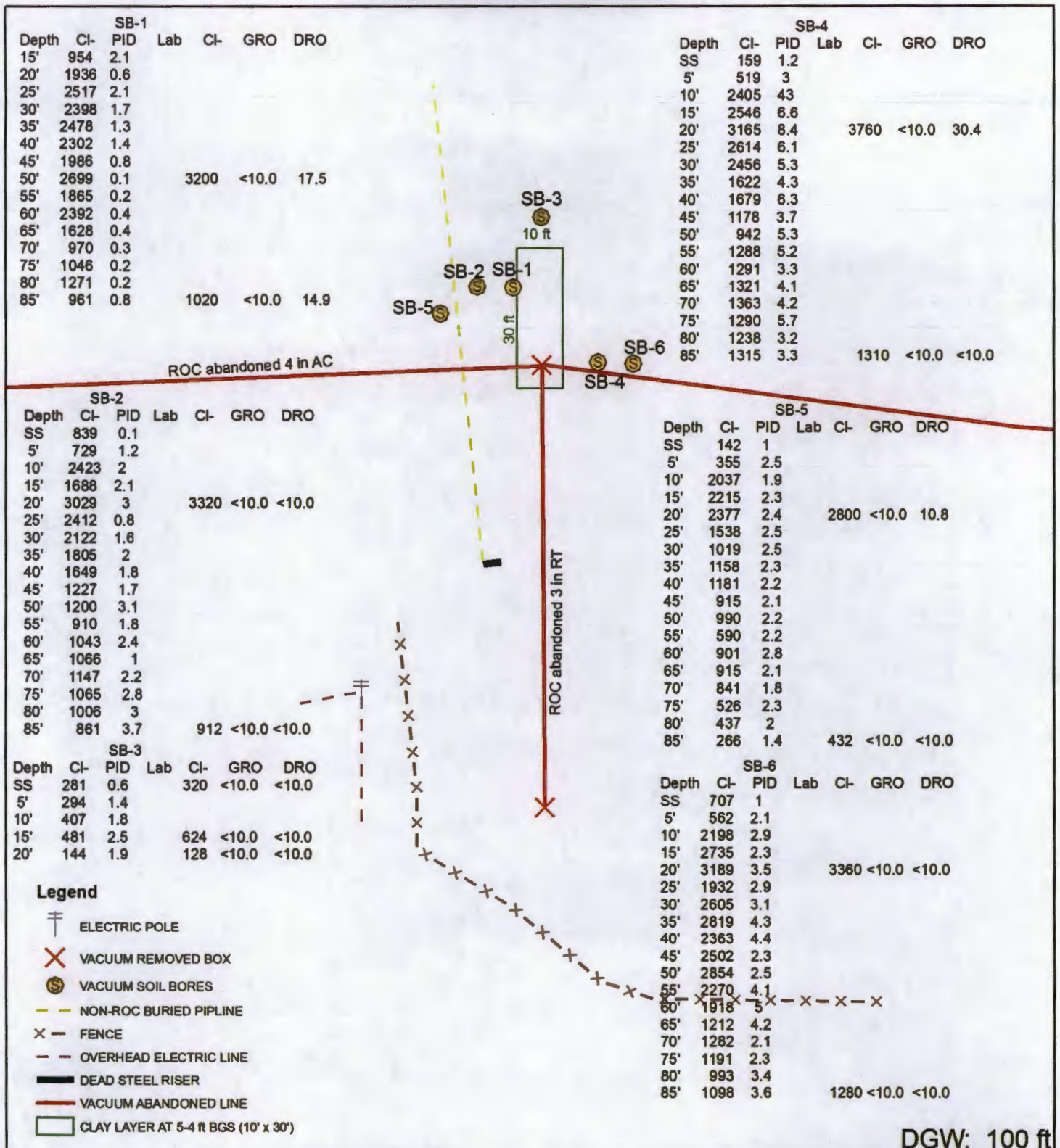
Figure 1



0 295 590 1,180
Feet

Drawing date: 2-8-13

Soil Bore Installation



DGW: 100 ft



Vacuum Jct. D-31

Legals: UL/D, Section 31
T17S, R35E
Lea County, NM

NMOCD Case #: 1R425-81

Figure 2



0 10 20 40
Feet

Drawing date: 5/17/13
Drafted by: L. Weinheimer



Appendix A

Soil Bore Installation Documentation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Logger:	Kyle Norman		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		
Start Date:	4/9/2013		
End Date:	4/9/2013		Project Name: Vacuum Jct. D-31 Well ID: SB-1 Project Consultant: RECS
Comments: SB-1 is located 15 ft. north of former junction box site. All samples were from cuttings. DRAFTED BY: T. Jennings TD = 85 ft GW = 100 ft			Location: UL/D, Sec. 31, T17S R35E Lat: 32°47'51.285"N County: Lea Long: 103°30'10.099"W State: NM

Depth	Field	LAB		PID	Description	Lithology	Well Construction	
	Cl ⁻ (mg/kg)	Cl ⁻ (mg/kg)	TPH (mg/kg)					
SS					Regolith Brown Sand			
5 ft					Regolith Brown Sand			
10 ft					Regolith Brown Sand			
15 ft	954			2.1	Caliche/Sandstone			
20 ft	1,936			0.6	Tan Sand			
25 ft	2,517			2.1				
30 ft	2,398			1.7				
35 ft	2,478			1.3				
40 ft	2,302			1.4				

					Tan Sand					bentonite seal
45 ft	1,986			0.8						
50 ft	2,699	3,200	GRO <10 DRO 17.5	0.1	Moist Red Sand					
55 ft	1,865			0.2						
60 ft	2,392			0.4						
65 ft	1,628			0.4						
70 ft	970			0.3						
75 ft	1,046			0.2						
80 ft	1,271			0.2						
85 ft	961	1,020	GRO <10 DRO 14.9	0.8						

Logger:	Kyle Norman		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		
Start Date:	4/9/2013		
End Date:	4/9/2013		Project Name: Vacuum Jct. D-31 Well ID: SB-2 Project Consultant: RECS
Comments: SB-2 is 10 ft. west of former junction box site. All samples were from cuttings DRAFTED BY: T. Jennings TD = 85 ft GW = 100 ft			Location: UL/D, Sec. 31, T17S R35E Lat: 32°47'51.286"N County: Lea Long: 103°30'10.196"W State: NM

Depth	Field	LAB		PID	Description	Lithology	Well Construction
	CI	CI	TPH				
	(mg/kg)	(mg/kg)	(mg/kg)				
SS	839			0.1	6" Brown Sand Top soil		
5 ft	729			1.2	Caliche/Sandstone		
10 ft	2,423			2.0			
15 ft	1,688			2.1	Tan Sand		
20 ft	3,029	3,320	GRO <10 DRO <10	3.0			
25 ft	2,412			0.8			
30 ft	2,122			1.6			
35 ft	1,805			2.0			
40 ft	1,649			1.8			

					Tan Sand					bentonite seal
45 ft	1,227			1.7						
					Damp Red Sand					
50 ft	1,200			3.1						
55 ft	910			1.8						
60 ft	1,043			2.4	Moist Red Sand					
65 ft	1,066			1.0						
70 ft	1,147			2.2						
75 ft	1,065			2.8						
80 ft	1,006			3.0						
85 ft	861	912	GRO <10 DRO <10	3.7						

Logger:	Kyle Norman						
Driller:	Harrison & Cooper, Inc.						
Drilling Method:	Air Rotary						
Start Date:	4/10/2013						
End Date:	4/10/2013		Project Name: Vacuum Jct. D-31 Project Consultant: RECS	Well ID: SB-3			
Comments: SB-3 is 30 ft north of former junction box site. All samples were from cuttings. DRAFTED BY: T. Jennings TD = 20 ft GW = 100 ft			Location: UL/D, Sec. 31, T17S R35E Lat: 32°47'51.433"N County: Lea Long: 103°30'10.032"W State: NM				
Depth	Field	LAB		PID	Description	Lithology	Well Construction
	CI	CI	TPH				
	(mg/kg)	(mg/kg)	(mg/kg)				
SS	281	320	GRO <10 DRO <10	0.6	6" Brown Sand Top soil		
5 ft	294			1.4			
10 ft	407			1.8			
15 ft	481	624	GRO <10 DRO <10	2.5	Caliche/Sandstone		bentonite seal
20 ft	144	128	GRO <10 DRO <10	1.9			

Logger:	Kyle Norman						
Driller:	Harrison & Cooper, Inc.						
Drilling Method:	Air Rotary						
Start Date:	4/10/2013						
End Date:	4/10/2013		Project Name: Vacuum Jct. D-31 Well ID: SB-4 Project Consultant: RECS				
Comments: SB-4 is 10 ft east of former junction box site. All samples were from cuttings. DRAFTED BY: T. Jennings TD = 85 ft GW = 100 ft			Location: UL/D, Sec. 31, T17S R35E Lat: 32°47'51.128"N County: Lea Long: 103°30'9.894"W State: NM				
Depth	Field	LAB		PID	Description	Lithology	Well Construction
	Cl ⁻ (mg/kg)	Cl ⁻ (mg/kg)	TPH (mg/kg)				
SS	159			1.2	6" Brown Sand Top soil		
5 ft	519			3.0			
10 ft	2,405			43.0			
15 ft	2,546			6.6	Caliche/Sandstone (Hydrocarbon Smell)		
20 ft	3,165	3,760	GRO <10 DRO 30.4	8.4			
25 ft	2,614			6.1			
30 ft	2,456			5.3	Tan Sand (Hydrocarbon Smell)		
35 ft	1,622			4.3			
40 ft	1,679			6.3			

					Tan Sand (Hydrocarbon Smell)					bentonite seal
45 ft	1,178			3.7	Moist Red Sand					
50 ft	942			5.3	Moist Red Sand With Some Caliche					
55 ft	1,288			5.2	Moist Red Sand					
60 ft	1,291			3.3						
65 ft	1,321			4.1						
70 ft	1,363			4.2						
75 ft	1,290			5.7						
80 ft	1,238			3.2						
85 ft	1,315	1,310	GRO <10 DRO <10	3.3						

Depth	Field	LAB		PID	Description	Lithology	Well Construction
	Cl ⁻	Cl ⁻	TPH				
	(mg/kg)	(mg/kg)	(mg/kg)				
SS	142			1.0	6" Brown Sand Top soil		
5 ft	355			2.5	Caliche/Sandstone		
10 ft	2,037			1.9			
15 ft	2,215			2.3	Tan Sand		
20 ft	2,377	2,800	GRO <10 DRO 10.8	2.4			
25 ft	1,538			2.5			
30 ft	1,019			2.5			
35 ft	1,158			2.3			
40 ft	1,181			2.2			

					Tan Sand				
45 ft	915			2.1					
50 ft	990			2.2					
					Moist Red Sand				
55 ft	590			2.2					
60 ft	901			2.8					
65 ft	915			2.1					
70 ft	841			1.8					
75 ft	526			2.3					
80 ft	437			2.0					
85 ft	266	432	GRO <10 DRO <10	1.4					

Logger:	Kyle Norman						
Driller:	Harrison & Cooper, Inc.						
Drilling Method:	Air Rotary						
Start Date:	4/11/2013						
End Date:	4/11/2013		Project Name: Vacuum Jct. D-31 Well ID: SB-6 Project Consultant: RECS				
Comments: SB-6 is 15 ft east of the former junction box site. All samples were from cuttings. DRAFTED BY: T. Jennings TD = 85 ft GW = 100 ft			Location: UL/D, Sec. 31, T17S R35E Lat: 32°47'51.123"N County: Lea Long: 103°30'9.803"W State: NM				
Depth	Field	LAB		PID	Description	Lithology	Well Construction
	CI	CI	TPH				
	(mg/kg)	(mg/kg)	(mg/kg)				
SS	707			1.0	6" Brown Sand Top soil		
5 ft	562			2.1	Caliche/Sandstone (Slight Hydrocarbon Smell)		
10 ft	2,198			2.9			
15 ft	2,735			2.3			
20 ft	3,189	3,360	GRO <10 DRO <10	3.5			
25 ft	1,932			2.9	Tan Sand		
30 ft	2,605			3.1			
35 ft	2,819			4.3			
40 ft	2,363			4.4			

					Tan Sand					bentonite seal
45 ft	2,502			2.3						
50 ft	2,854			2.5						
55 ft	2,270			4.1						
60 ft	1,918			5.0	Moist Red Sand					
65 ft	1,212			4.2						
70 ft	1,282			2.1						
75 ft	1,191			2.3						
80 ft	993			3.4						
85 ft	1,098	1,280	GRO <10 DRO <10	3.6						

April 12, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT. D-31 17S-35E

Enclosed are the results of analyses for samples received by the laboratory on 04/09/13 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 accredited 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

Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 Hack Conder
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

 Received: 04/09/2013
 Reported: 04/12/2013
 Project Name: VACUUM JCT. D-31 17S-35E
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 04/09/2013
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SB 1 @ 50' (H300850-01)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3200	16.0	04/11/2013	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	04/11/2013	ND	214	107	200	1.94	
DRO >C10-C28	17.5	10.0	04/11/2013	ND	210	105	200	3.26	
Surrogate: 1-Chlorooctane		79.9 %	65.2-140						
Surrogate: 1-Chlorooctadecane		104 %	63.6-154						

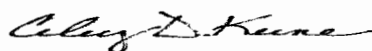
Sample ID: SB 1 @ 85' (H300850-02)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1020	16.0	04/11/2013	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	04/11/2013	ND	214	107	200	1.94	
DRO >C10-C28	14.9	10.0	04/11/2013	ND	210	105	200	3.26	
Surrogate: 1-Chlorooctane		86.6 %	65.2-140						
Surrogate: 1-Chlorooctadecane		111 %	63.6-154						

Cardinal Laboratories

* = Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

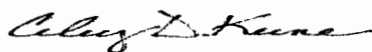
Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 4 of 4

Company Name: <u>Rice</u>				BILL TO				ANALYSIS REQUEST																				
Project Manager: <u>Hack Conder</u>				P.O. #:				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Chlorides</div> <div>TPH 8015 M</div> <div>BTEX</div> <div>Texas TPH</div> <div>Complete Cations/Anions</div> <div>TDS</div> </div>																				
Address:				Company:																								
City: <u>Hobbs</u> State: <u>NM</u> Zip: <u>88240</u>				Attn:																								
Phone #: Fax #:				Address:																								
Project #: Project Owner:				City:																								
Project Name:				State: Zip:																								
Project Location: <u>Vacuum Jct. D-31 175-35E</u>				Phone #:																								
Sampler Name: <u>Kyle Norman</u>				Fax #:																								
FOR LAB USE ONLY				MATRIX		PRESERV.		SAMPLING																				
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														
<u>H300850</u>																												
<u>1</u>	<u>SB1 @ 50'</u>	<u>9</u>	<u>1</u>			<u>✓</u>				<u>✓</u>			<u>4-9-13</u>	<u>2:50</u>	<u>✓</u>	<u>✓</u>												
<u>2</u>	<u>SB1 @ 85'</u>	<u>9</u>	<u>1</u>			<u>✓</u>				<u>✓</u>			<u>4-9-13</u>	<u>3:30</u>	<u>✓</u>	<u>✓</u>												

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: <u>Kyle Norman</u>	Date: <u>4-9-13</u> Time: <u>4:15</u>	Received By: <u>Jodi Benson</u>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Relinquished By:	Date:	Received By:	Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One)	Time:		REMARKS:	
Sampler - UPS - Bus - Other:	Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No	CHECKED BY: <u>[Signature]</u>	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

#126

April 12, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT. D-31 17S-35E

Enclosed are the results of analyses for samples received by the laboratory on 04/10/13 16:30.

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.

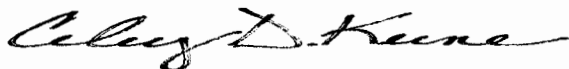
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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,



Caley D. Keene

Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 Hack Conder
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

 Received: 04/10/2013
 Reported: 04/12/2013
 Project Name: VACUUM JCT. D-31 17S-35E
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 04/10/2013
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SB 2 @ 20' (H300854-01)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3320	16.0	04/11/2013	ND	416	104	400	7.41	

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	04/11/2013	ND	214	107	200	1.94	
DRO >C10-C28	<10.0	10.0	04/11/2013	ND	210	105	200	3.26	

Surrogate: 1-Chlorooctane 80.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 104 % 63.6-154

Sample ID: SB 2 @ 85' (H300854-02)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	912	16.0	04/11/2013	ND	416	104	400	7.41	

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	04/11/2013	ND	214	107	200	1.94	
DRO >C10-C28	<10.0	10.0	04/11/2013	ND	210	105	200	3.26	

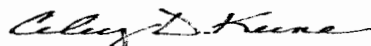
Surrogate: 1-Chlorooctane 80.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 Rice Operating Company
 Hack Conder
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

 Received: 04/10/2013
 Reported: 04/12/2013
 Project Name: VACUUM JCT. D-31 17S-35E
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 04/10/2013
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SB 3 @ SURFACE (H300854-03)

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	04/11/2013	ND	416	104	400	7.41	
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	04/11/2013	ND	204	102	200	0.165	
DRO >C10-C28	<10.0	10.0	04/11/2013	ND	204	102	200	4.10	
Surrogate: 1-Chlorooctane	85.5 %	65.2-140							
Surrogate: 1-Chlorooctadecane	108 %	63.6-154							

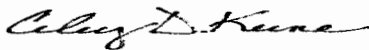
Sample ID: SB 3 @ 15' (H300854-04)

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	624	16.0	04/11/2013	ND	416	104	400	7.41	
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	04/11/2013	ND	204	102	200	0.165	
DRO >C10-C28	<10.0	10.0	04/11/2013	ND	204	102	200	4.10	
Surrogate: 1-Chlorooctane	88.4 %	65.2-140							
Surrogate: 1-Chlorooctadecane	105 %	63.6-154							

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received: 04/10/2013
Reported: 04/12/2013
Project Name: VACUUM JCT. D-31 17S-35E
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 04/10/2013
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SB 3 @ 20' (H300854-05)

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	04/11/2013	ND	416	104	400	7.41	
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	04/11/2013	ND	204	102	200	0.165	
DRO >C10-C28	<10.0	10.0	04/11/2013	ND	204	102	200	4.10	

Surrogate: 1-Chlorooctane 88.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

Sample ID: SB 4 @ 20' (H300854-06)

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3760	16.0	04/11/2013	ND	416	104	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	04/11/2013	ND	204	102	200	0.165	
DRO >C10-C28	30.4	10.0	04/11/2013	ND	204	102	200	4.10	

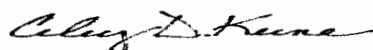
Surrogate: 1-Chlorooctane 85.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	04/10/2013	Sampling Date:	04/10/2013
Reported:	04/12/2013	Sampling Type:	Soil
Project Name:	VACUUM JCT. D-31 17S-35E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 4 @ 85' (H300854-07)

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1310	16.0	04/11/2013	ND	416	104	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	04/11/2013	ND	204	102	200	0.165	
DRO >C10-C28	<10.0	10.0	04/11/2013	ND	204	102	200	4.10	

Surrogate: 1-Chlorooctane 86.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

Sample ID: SB 5 @ 20' (H300854-08)

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2800	16.0	04/11/2013	ND	416	104	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	04/12/2013	ND	204	102	200	0.165	
DRO >C10-C28	10.8	10.0	04/12/2013	ND	204	102	200	4.10	

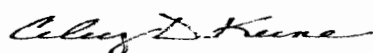
Surrogate: 1-Chlorooctane 86.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received: 04/10/2013
Reported: 04/12/2013
Project Name: VACUUM JCT. D-31 17S-35E
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 04/10/2013
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SB 5 @ 85' (H300854-09)**Chloride, SM4500Cl-B****mg/kg****Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	04/11/2013	ND	416	104	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	04/12/2013	ND	204	102	200	0.165	
DRO >C10-C28	<10.0	10.0	04/12/2013	ND	204	102	200	4.10	

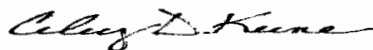
Surrogate: 1-Chlorooctane 84.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 104 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

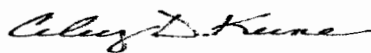
Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

#26



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

April 16, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM D-31-2 JCT 17S-35E

Enclosed are the results of analyses for samples received by the laboratory on 04/11/13 16:25.

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 accredited 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

Lab Director/Quality Manager

Analytical Results For:

Rice Operating Company
Hack Conder
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received: 04/11/2013
Reported: 04/16/2013
Project Name: VACUUM D-31-2 JCT 17S-35E
Project Number: NOT GIVEN
Project Location: NOT GIVEN

Sampling Date: 04/11/2013
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SB - 6 @ 20' (H300871-01)

Chloride, SM4500CI-B		mg/kg	Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3360	16.0	04/12/2013	ND	432	108	400	0.00	
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	04/15/2013	ND	195	97.6	200	3.04	
DRO >C10-C28	<10.0	10.0	04/15/2013	ND	195	97.3	200	3.66	

Surrogate: 1-Chlorooctane 82.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 101 % 63.6-154

Sample ID: SB - 6 @ 85' (H300871-02)

Chloride, SM4500CI-B		mg/kg	Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1280	16.0	04/12/2013	ND	432	108	400	0.00	
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	04/15/2013	ND	195	97.6	200	3.04	
DRO >C10-C28	<10.0	10.0	04/15/2013	ND	195	97.3	200	3.66	

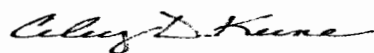
Surrogate: 1-Chlorooctane 81.5 % 65.2-140

Surrogate: 1-Chlorooctadecane 101 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

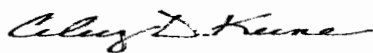
Notes and Definitions

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

Cardinal Laboratories

*=Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 4 of 4

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 or 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: <i>Kyle N.</i>		Date: <i>4-11-13</i>	Received By: <i>Jodi Benson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
		Time: <i>4:25</i>		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Relinquished By:		Date:	Received By:	REMARKS:	
		Time:		email results: zconder@rice-ecs.com	
Delivered By: (Circle One)		Sample Condition		Knorman@rice-ecs.com; lpena@riceswd.com	
Sampler - UPS - Bus - Other:		Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Kjones@riceswd.com; Bbaker@rice-ecs.com;	
		CHECKED BY: <i>JAN</i>		hconder@rice-ecs.com; Lweinheimer@rice-ecs.com	

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

26