

1R - 425-83

## REPORTS

DATE:

6-3-13

RECEIVED OCD

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

2013 JUN -5 P 2: 15

**Texerra LLC**

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

June 3<sup>rd</sup>, 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**  
**Rice Operating Company – Vacuum SWD System**  
**Vacuum Jct. A-36: UL A, Sec. 36, T17S, R34E**  
**NMOCD Case Number: 1R424-83**

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 ¼ mile SSE of Buckeye, New Mexico in UL A, Sec. 36, T17S, R34E as shown on the Site Location Map (Appendix). Soil bore installation indicated groundwater is located at a depth of approximately 102 +/- feet.

In 2009, ROC initiated work on the former Vacuum A-36 junction box as part of the system abandonment. The former junction box and surrounding soil was removed from an excavation of approximately dimensions 10 ft by 10 ft by 12 ft deep. Soils samples were field analyzed at regular intervals for chloride and hydrocarbon. The 12 ft sample 5 ft west, east, north and south of the source were analyzed by a commercial laboratory. Residual soil hydrocarbons were below detectable limits for all these samples. However, elevated residual soil chlorides (ranging from 672 to 3,200 mg/kg) were found in these bottom lateral samples.

The excavated soil was blended (testing 47.7 mg/kg TPH and 2,200 mg/kg chloride) and returned to the excavation. A 1 ft thick compacted clay barrier was installed from 4 to 5 ft bgs. Clean, imported soil was installed above the clay barrier and the surface was returned to the natural contour and

**VAC Jct A-36**

seeded. NMOCD was notified of potential groundwater impact on March 12<sup>th</sup>, 2010 and a Junction Box Disclosure Report was submitted with all the 2009 junction box closures and disclosures.

Rice Operating Company (ROC) has initiated soil sampling and analysis indicated in our Investigation and Characterization Plan (ICP) of February 15<sup>th</sup>, 2013. As part of the ICP, personnel were on site May 7<sup>th</sup> to conduct soil bore installations. One soil bore was installed at the closest possible distance, 30 feet north of the source, due to safety concerns. There are numerous safety hazards surrounding this site, including electrical high line wires located over the source that run east to west, and an underground non-ROC pipeline running northwest to southeast of our site. The highline wire prevented a soil bore from being drilled west of the site. The highline wire in combination with the non-ROC pipeline prevented a bore from being drilled south or east of the site. ROC was required to remain at least 30 ft away from the highline wire as well as a safe distance away from the non-ROC line (at least 10 ft). As the bore was advanced, samples were field tested for chlorides and hydrocarbons (Appendix). Representative samples from the bore were taken to a commercial laboratory for analysis of chlorides and hydrocarbons. SB-1 returned laboratory chloride readings of 3,280 mg/kg at 30 ft bgs and decreased to 1,180 mg/kg at 95 ft bgs. GRO and DRO results were non detect throughout the bore.

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. Due to the safety hazards surrounding the site, Texerra recommends that ROC analyze historical photos to determine if there are any abandoned facilities in the area of the former junction box. If warranted, ROC will continue to investigate the site to determine the lateral extent of the chloride contamination.

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

**VAC Jct A-36**

## **APPENDIX**

- **Site Location Map**
- **Soil Bore Installation** (soil bore location and results summary)
- **Soil Bore Log**
- **Laboratory Report**



**Vacuum Jct. A-36**  
Unit A, Section 36, T17S, R34E  
NMOCD Case #: 1R425-83

**Figure 1**



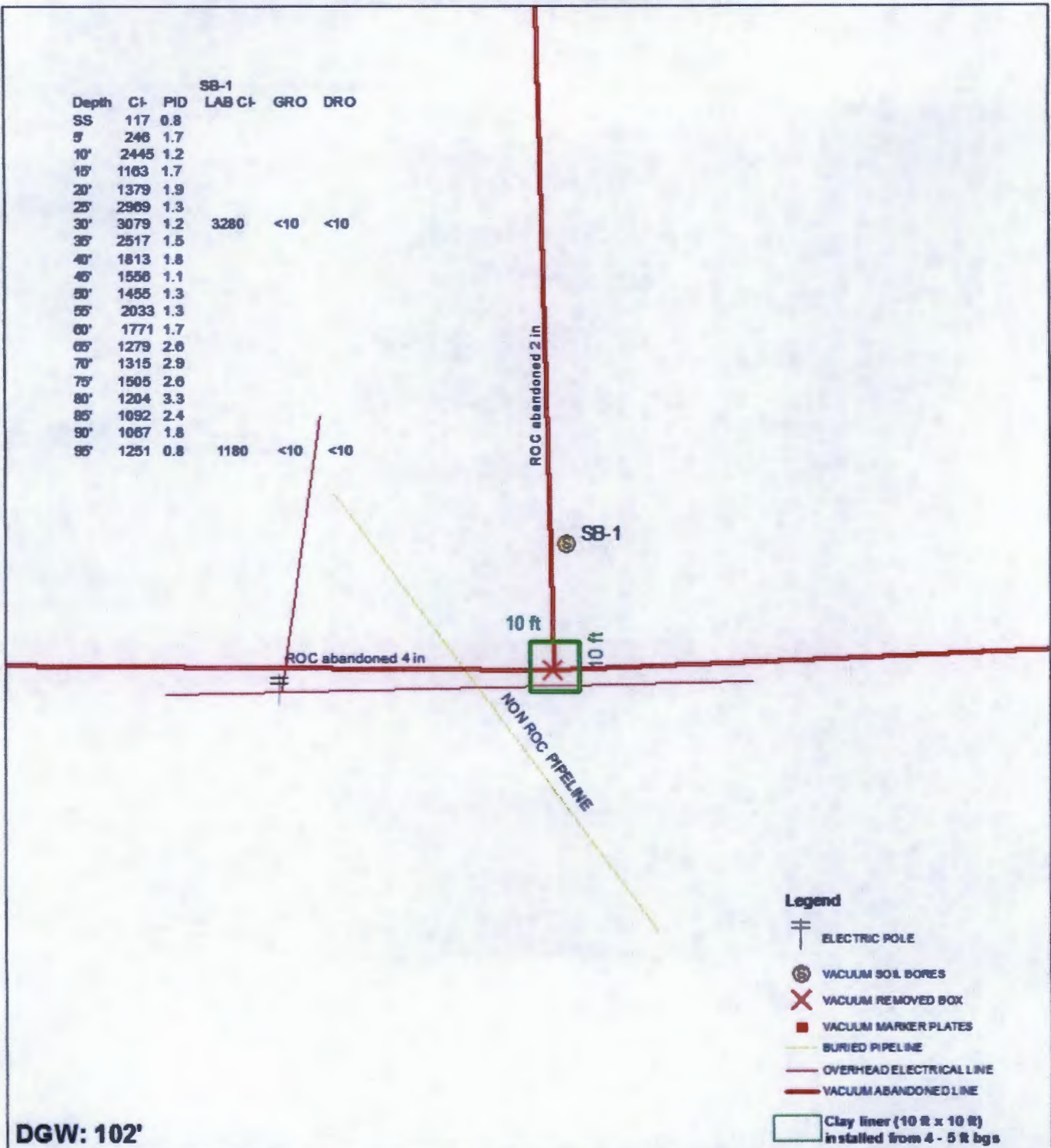
0 300 600 1,200  
Feet

Drawing date: 2-8-13



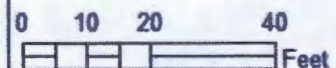
# Soil Bore Installation

Depth	Ct	PID	SB-1 LAB Ct	GRO	DRO
SS	117	0.8			
5'	246	1.7			
10'	2445	1.2			
15'	1163	1.7			
20'	1379	1.9			
25'	2969	1.3			
30'	3079	1.2	3280	<10	<10
35'	2517	1.5			
40'	1813	1.8			
45'	1556	1.1			
50'	1455	1.3			
55'	2033	1.3			
60'	1771	1.7			
65'	1279	2.6			
70'	1315	2.9			
75'	1505	2.6			
80'	1204	3.3			
85'	1092	2.4			
90'	1067	1.8			
95'	1251	0.8	1180	<10	<10



**Vacuum Jct. A-36**  
Unit A, Section 36, T17S, R34E

NMOCD Case #: 1R425-83





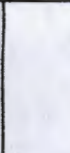


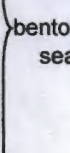









Drawing date: 5-17-13  
Drawn by: LS

Logger:	Kyle Norman				
Driller:	Harrison & Cooper, Inc.		Project Name:	Well ID:	
Drilling Method:	Air Rotary		Vacuum Jct. A-36	SB-1	
Start Date:	5/7/2013		Project Consultant: Texerra		
End Date:	5/7/2013	Location: UL A, Sec. 36, T17S, R34E		Lat: 32°47'50.911"N	County: Lea
Comments: SB-1 is located 30 ft north of the former junction box site. All samples were from cuttings.		DRAFTED BY: L. Peña		Long: 103°30'29.693"W	
TD = 95 ft		GW = 102 ft		State: NM	

Depth	Field	LAB		PID (ppm)	Description	Lithology	Well Construction
	CI <sup>+</sup> (mg/kg)	CI <sup>+</sup> (mg/kg)	TPH (mg/kg)				
SS	117			0.8	Brown Sand Caliche Mix		
5 ft	246			1.7	Clay With Caliche Damp		
10 ft	2,445			1.2	Caliche		
15 ft	1,163			1.7	Caliche With Some Sandstone		
20 ft	1,379			1.9			
					Red/Tan Sand		
25 ft	2,969			1.3			
30 ft	3,079	3,280	GRO <10 DRO <10	1.2			
35 ft	2,517			1.5			
40 ft	1,813			1.8			



45 ft	1,556			1.1	Red/Tan Sand				bentonite seal
50 ft	1,455			1.3	Tan Sand				
55 ft	2,033			1.3					
60 ft	1,771			1.7					
65 ft	1,279			2.6	Moist Red Sand				
70 ft	1,315			2.9					
75 ft	1,505			2.6	Moist Red Sand With Some Sandstone				
80 ft	1,204			3.3					
85 ft	1,092			2.4	Moist Red Sand				
90 ft	1,067			1.8					
95 ft	1,251	1,180	GRO <10 DRO <10	0.8					





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

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May 09, 2013

Hack Conder  
Rice Operating Company  
112 W. Taylor  
Hobbs, NM 88240

RE: VACUUM JCT. A-36 17S/34E

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](http://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,

A handwritten signature in black ink that reads "Coley D. Keene". The signature is written in a cursive, flowing style.

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: 05/07/2013  
Reported: 05/09/2013  
Project Name: VACUUM JCT. A-36 17S/34E  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 05/07/2013  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 30' (H301085-01)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3280	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	98.0 %	65.2-140								
Surrogate: 1-Chlorooctadecane	102 %	63.6-154								

**Sample ID: SB 1 @ 95' (H301085-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1180	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		105 %	65.2-140						
Surrogate: 1-Chlorooctadecane		114 %	63.6-154						

Cardinal Laboratories

\*=Accredited Analyte

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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

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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





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Relinquished By: <i>[Signature]</i>		Date: <i>5-2-13</i>	Received By: <i>Jodi Benson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #:
Relinquished By:		Time: <i>4:15</i>		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Fax #:
Delivered By: (Circle One)		Date:	Received By:	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
Sampler - UPS - Bus - Other:		Time:		
		Sample Condition Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: <i>[Signature]</i>	

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

to 505-393  
#54