

1R - 425-80

**REPORTS**

**DATE:**

8-8-11

RECEIVED OCD

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

**Texerra**

2011 AUG 15 P 1:25

627 Forest View Way Monument, Colorado 80132

Tel: 719-339-6791 E-mail: lpg@texerra.com

**August 8<sup>th</sup>, 2011**

**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 Jct D-31-2: UL/D, Sec. 31, T17S, R35E (formerly Vacuum Jct C-31-2)

NMOCD Case Number: 1R425-80

**Sent via Certified U.S. Mail w/ Return Receipt No. 7008 1830 0004 2694 4293**

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. This report summarizes work to date completed per the OCD-approved Investigation and Characterization Plan of May 2<sup>nd</sup>, 2011 for this site.

The location of the Vacuum Jct D-31-2 site is given in Figure 1. A summary of soil boring analyses from samples taken in June 2011 are given in Figure 2. Representative photographs of this work are given in the Appendix, as are copies of laboratory analyses.

Residual soil chlorides were elevated throughout each of the four soil borings drilled at the site. The depth to groundwater at this site is approximately 83 ft below ground surface (bgs). In contrast, residual soil petroleum hydrocarbons were essentially insignificant (PID readings < 100 ppm) in all soil borings except for SB-4 (approx. 25 ft southwest of the former junction box location) at 15 ft bgs where the PID reading measured 1,136 ppm.

It is clear from this initial investigation that further sampling and analyses are needed in order to characterize and delineate the extent of residual soil chlorides. Once the site is fully delineated, a report with recommendations will be submitted to the NMOCD.

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.

**Vacuum Jct D-31-2**

We appreciate your consideration of this ICP report. Please do not hesitate to contact either Katie Jones of Rice Operating Company or myself if you have any questions or need additional information.

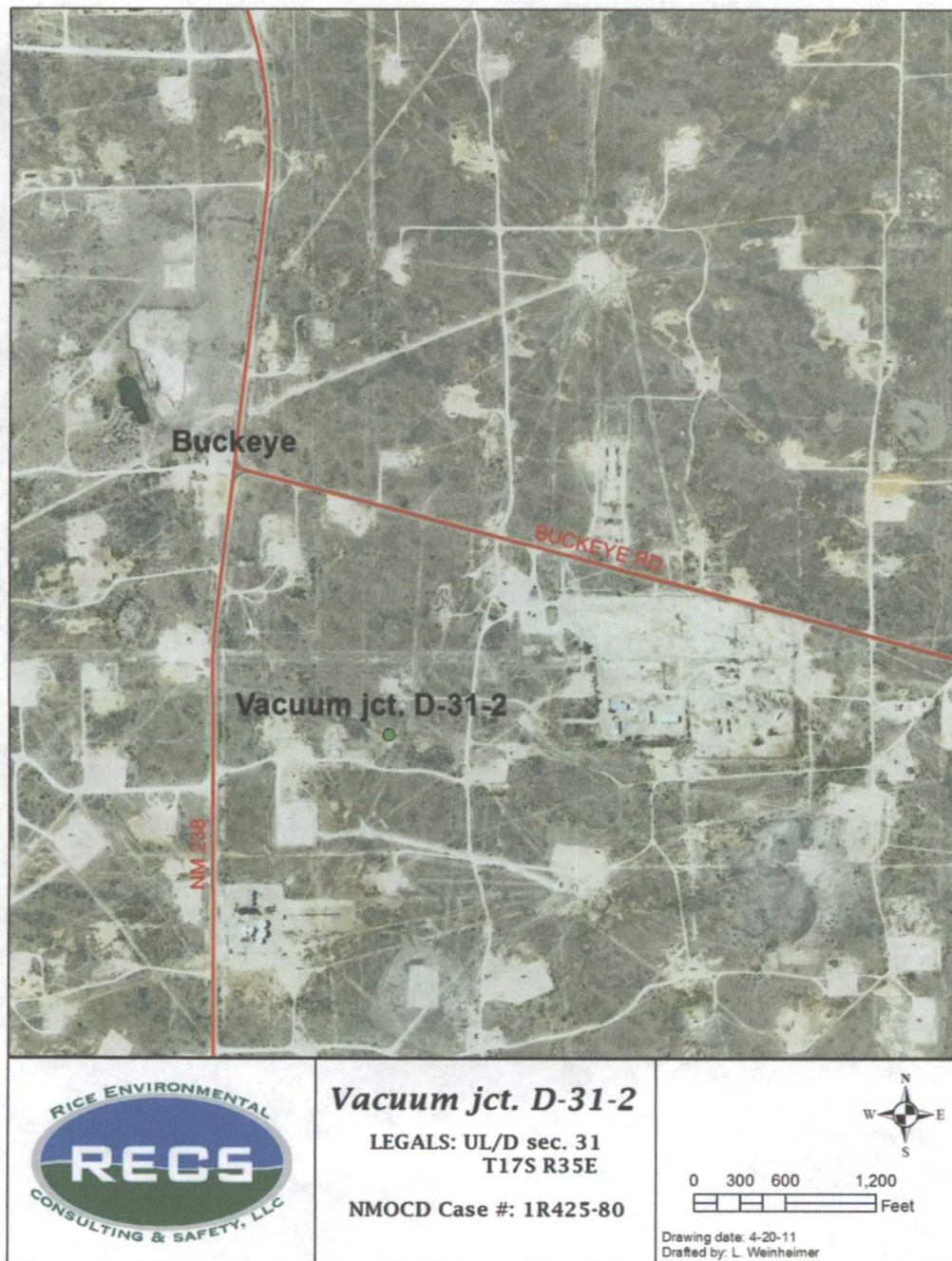
Sincerely,

A handwritten signature in black ink, appearing to be 'L. Peter Galusky, Jr.', written in a cursive style.

L. Peter Galusky, Jr. Ph.D.

Copy: Rice Operating Company

## Vacuum Jct D-31-2



**Figure 1 – Vacuum Jct D-31-2 location.**

## Vacuum Jct D-31-2

### Soil bore installation

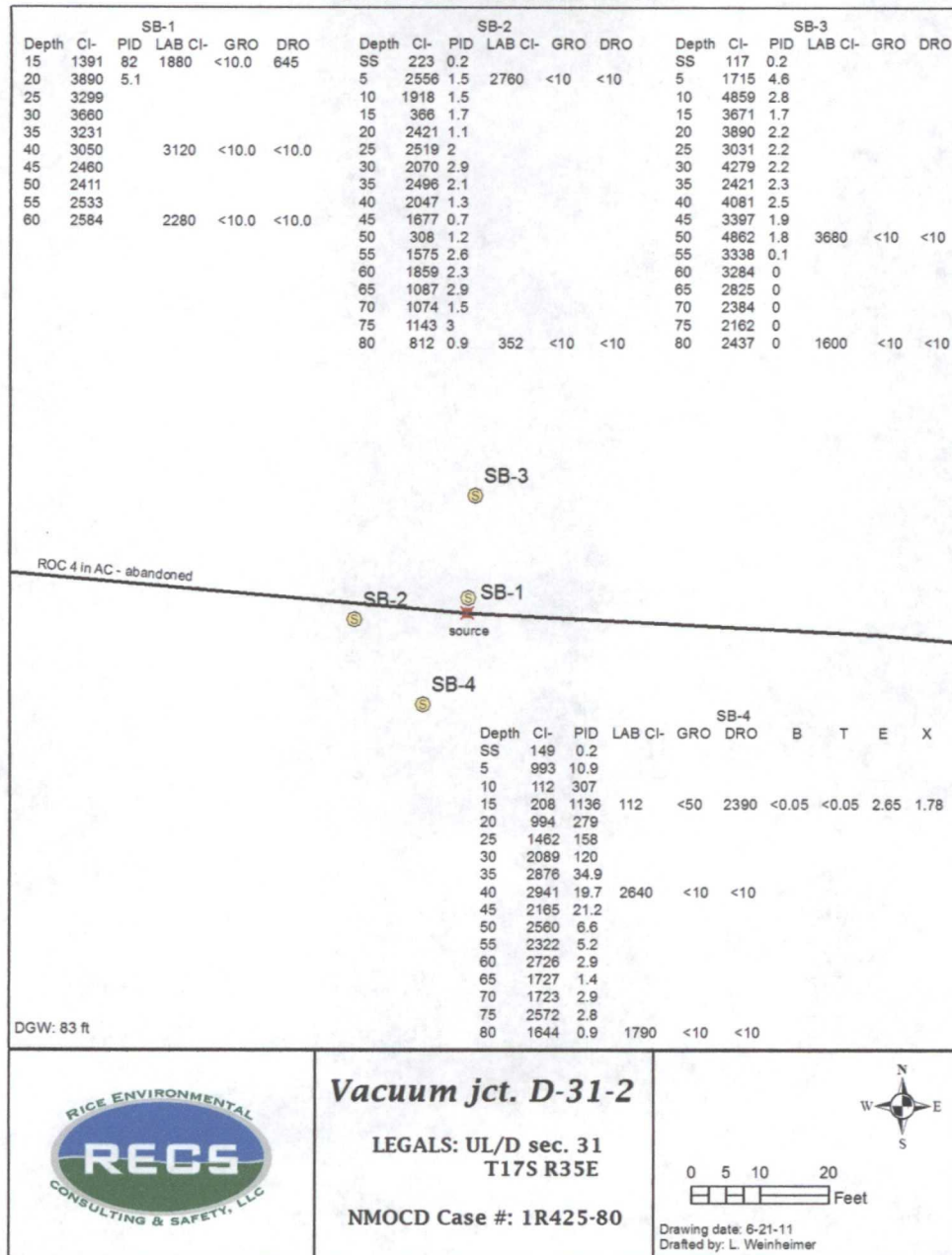


Figure 2 – Vacuum Jct D-31-2 soil boring locations and analytical results.



## Vacuum Jct D-31-2

### Vacuum Jct. D-31-2 Unit D, Section 31, T17S, R35E



drilling SB-2, facing southwest



plugging SB-2 with bentonite, facing west



drilling SB-3, facing northwest



plugging SB-3 with bentonite, facing north



drilling SB-4, facing south



plugging SB-4 with bentonite, facing south



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

June 17, 2011

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

RE: VACUUM JCT D-31-2

Enclosed are the results of analyses for samples received by the laboratory on 06/10/11 16:20.

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 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 (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: 06/10/2011  
Reported: 06/17/2011  
Project Name: VACUUM JCT D-31-2  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 06/10/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB 2 @ 5' (H101213-01)**

Chloride, SM4500CI-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2760	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M		mg/kg	Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	90.8 %	70-130							
Surrogate: 1-Chlorooctadecane	111 %	70-130							


**Sample ID: SB 2 @ 80' (H101213-02)**

Chloride, SM4500CI-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	352	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M		mg/kg	Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	83.9 %	70-130							
Surrogate: 1-Chlorooctadecane	99.1 %	70-130							

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





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

Received: 06/10/2011  
Reported: 06/17/2011  
Project Name: VACUUM JCT D-31-2  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 06/10/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB 3 @ 50' (H101213-03)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3680	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M			mg/kg		Analyzed By: AB				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	89.3 %	70-130							
Surrogate: 1-Chlorooctadecane	103 %	70-130							

**Sample ID: SB 3 @ 80' (H101213-04)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1600	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M			mg/kg		Analyzed By: AB				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	91.9 %	70-130							
Surrogate: 1-Chlorooctadecane	107 %	70-130							

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Celey D. Keene, Lab Director/Quality Manager

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

 Received: 06/10/2011  
 Reported: 06/17/2011  
 Project Name: VACUUM JCT D-31-2  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 06/10/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 4 @ 15' (H101213-05)**

BTX 8260B		mg/kg		Analyzed By: CMS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/14/2011	ND	2.21	111	2.00	7.93	
Toluene*	<0.050	0.050	06/14/2011	ND	2.24	112	2.00	7.82	
Ethylbenzene*	2.65	0.050	06/14/2011	ND	2.32	116	2.00	8.13	
<b>Total Xylenes*</b>	<b>1.78</b>	0.150	06/14/2011	ND	6.54	109	6.00	8.53	

Surrogate: Dibromofluoromethane 90.9 % 80-120

Surrogate: Toluene-d8 95.2 % 80-120

Surrogate: 4-Bromofluorobenzene 110 % 80-120

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>112</b>	16.0	06/15/2011	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	06/16/2011	ND	206	103	200	5.32	
<b>DRO &gt;C10-C28</b>	<b>2390</b>	50.0	06/16/2011	ND	187	93.3	200	5.61	

Surrogate: 1-Chlorooctane 117 % 70-130

Surrogate: 1-Chlorooctadecane 103 % 70-130

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Received: 06/10/2011  
Reported: 06/17/2011  
Project Name: VACUUM JCT D-31-2  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 06/10/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB 4 @ 40' (H101213-06)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2640	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M			mg/kg		Analyzed By: AB				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	94.6 %	70-130							
Surrogate: 1-Chlorooctadecane	104 %	70-130							

**Sample ID: SB 4 @ 80' (H101213-07)**

Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1790	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M			mg/kg		Analyzed By: AB				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	90.7 %	70-130							
Surrogate: 1-Chlorooctadecane	112 %	70-130							

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Celey D. Keene, Lab Director/Quality Manager

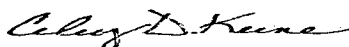
**Notes and Definitions**

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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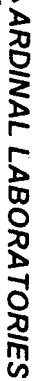
**Cardinal Laboratories****\*=Accredited Analyte**

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Celey D. Keene, Lab Director/Quality Manager



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

[illegible]

NEED SAMPLES BACK, PLEASE