

**1R-425-66**

**2013**

**Annual Report**

**DATE**

**March 10, 2014**

**From:** [Laura Flores](#)  
**To:** [Lowe, Leonard, EMNRD](#); [VonGonten, Glenn, EMNRD](#)  
**Cc:** ["Hack Conder"](#); ["Katie Jones"](#)  
**Subject:** ROC - Vacuum L-26 vent (1R425-66) 2013 Annual Groundwater Report  
**Date:** Monday, March 10, 2014 1:37:59 PM  
**Attachments:** [ROC - Vacuum L-26 vent \(1R425-66\) 2013 Annual Groundwater Report.pdf](#)

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Mr. Lowe,

Attached is the 2013 Annual Groundwater Report for Vacuum L-26 vent (1R425-66). Annual Reports are submitted yearly to update the NMOCD about groundwater quality and groundwater recovery, if applicable, for a particular site. This report does not require NMOCD approval; therefore, a flow chart is not included.

If you have any questions or require any additional information, please contact Hack Conder at 575-631-6432.

Thank you,

Laura Flores  
Project Manager  
Rice Environmental Consulting & Safety (RECS)

# Rice Environmental Consulting & Safety

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

**March 10<sup>th</sup>, 2014**

**Mr. Leonard Lowe**

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

**RE: 2013 Annual Groundwater Monitoring Report  
Rice Operating Company – Vacuum SWD System  
Vacuum L-26 vent (1R425-66): UL/L sec. 26 T17S R35E**

Mr. Lowe:

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.

The site is located approximately 4 miles east of Buckeye, New Mexico in unit letter L, Sec. 26, T17S, R35E as shown on the Site Location Map. Groundwater sampling at the site indicates that groundwater is located at +/- 56 ft bgs.

After initial backhoe characterization, the site was disclosed to NMOCD as a potential groundwater impact site on December 1<sup>st</sup>, 2008. Since groundwater impact was suspected, MW-1 was installed on November 15<sup>th</sup>, 2010. Beginning on May 23, 2011, a 64 ft x 63 ft area was excavated to a depth of 5 feet below the surface (bgs). The bottom of the excavation was padded with 6-inches of clean blow sand and a 20-mil reinforced polyethylene liner was installed at 4.5 feet bgs. A 6-inch pad of clean blow sand was placed above the liner to protect the liner from punctures. The site was backfilled with pond bottom soil and blow sand. Soil amendments were added to the site and the site was seeded with a native vegetative mix. On October 13<sup>th</sup>, 2011, NMOCD granted the soil closure for this site, and required that ROC place additional monitoring wells at the site. Two additional monitoring wells were installed at the site on April 11<sup>th</sup>, 2011. NMOCD approved the Additional Groundwater Monitoring and Corrective Action Plan for Groundwater on February 16<sup>th</sup>, 2012. As a result, MW-1 was plugged and abandoned and replaced with a 4 inch well, MW-1R, on July 9<sup>th</sup>, 2012. Each well has been sampled quarterly since installation.

Groundwater recovery began on July 26<sup>th</sup>, 2012, from MW-1R. Since that time, approximately 5,424 barrels of groundwater have been removed. Since groundwater recovery began, chloride concentrations in MW-1R and MW-3 have decreased, suggesting the pumping program has been effective. ROC will continue with groundwater recovery throughout the 2014 year and then ROC will evaluate the data for

continued pumping efficacy. In addition, quarterly groundwater sampling will continue through 2014.

Attached is the Appendix, which contains:

1. A site location map.
2. A map showing well locations.
3. A table presenting all laboratory results and depth to groundwater for each well at the site.
4. Graphs showing the concentrations of chloride and TDS in groundwater over time.
5. The laboratory analytical results for the most recent sampling event.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

A handwritten signature in cursive script, appearing to read "L. Flores".

Laura Flores  
Rice Environmental Consulting & Safety (RECS)  
Project Manager

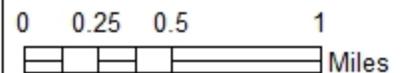
# Site Location Map



## *Vacuum L-26 vent*

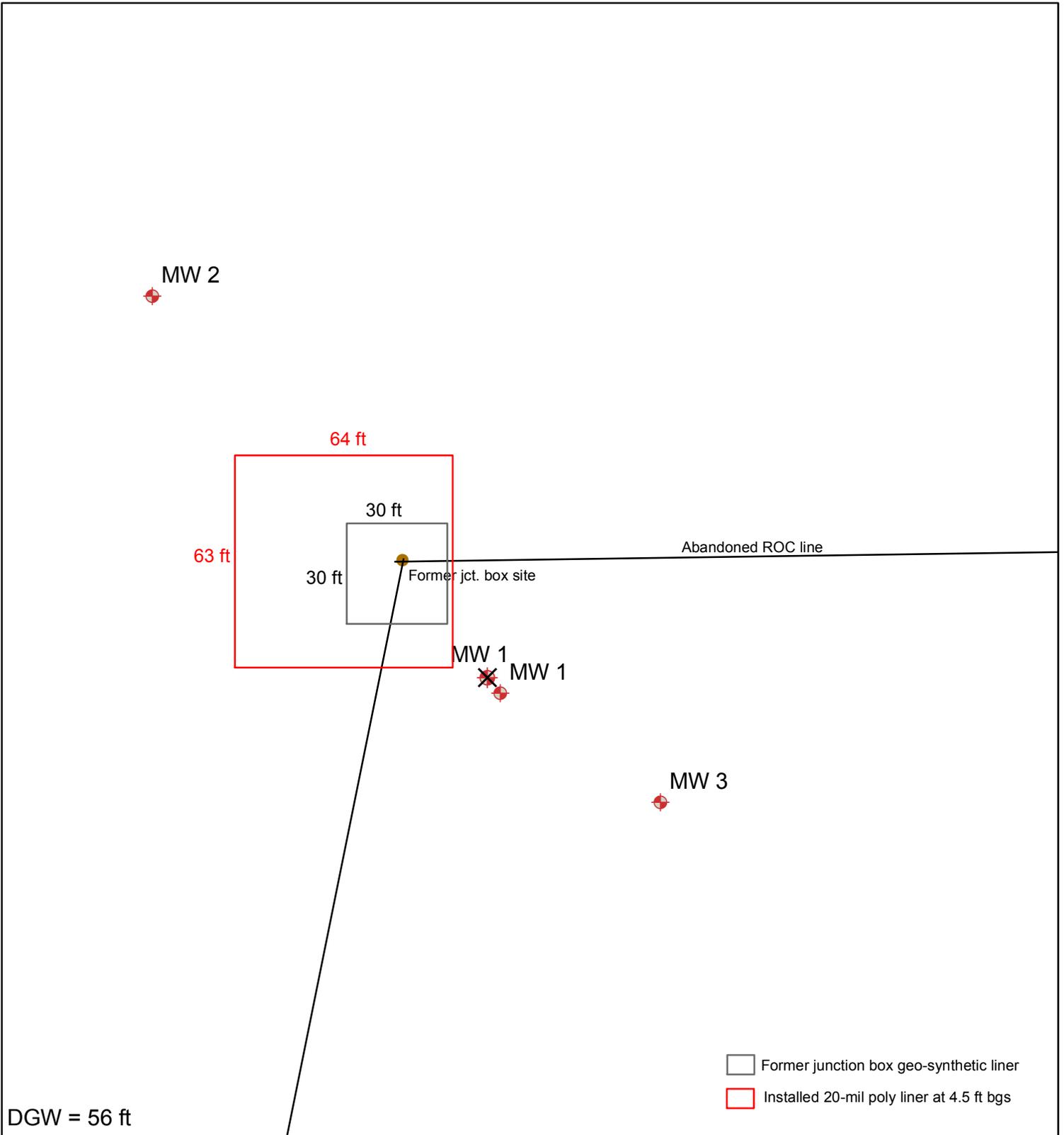
Case #: 1R425-66

Legals: UL/L sec. 26  
T17S R35E



Drawing date: 1-11-12  
Drafted by: L. Weinheimer

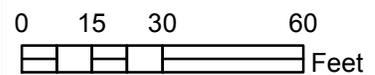
# Site Map



## *Vacuum L-26 vent*

Unit Letter L, Section  
T17S R35E

NMOCD Case #: 1R425-66



Drawing date: 2/25/14  
Drafted by: C. Ursanic

Vacuum L-26 vent (1R425-66)

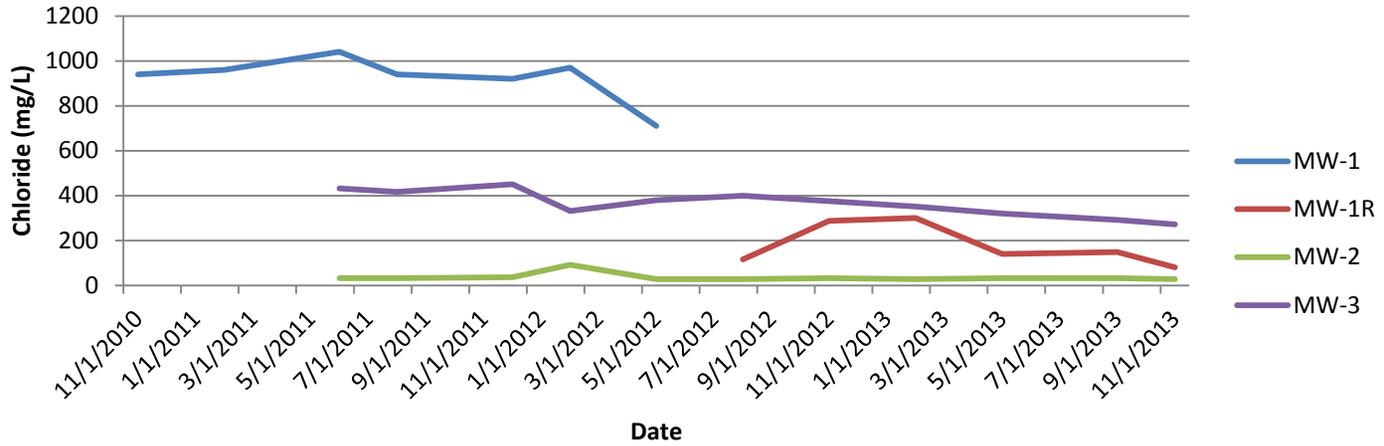
MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
				(mg/L)						
MW-1	56.53	72.54	11/22/2010	940	2120	<0.001	<0.001	<0.001	<0.003	79.6
	56.6	72.57	2/16/2011	960	2130	<0.001	<0.001	<0.001	<0.003	64
	56.7	72.57	6/4/2011	1040	2710	<0.001	<0.001	<0.001	<0.003	64.7
	56.79	72.57	8/31/2011	940	2440	<0.001	<0.001	<0.001	<0.003	67
	56.88	72.57	12/2/2011	920	2230	<0.001	<0.001	<0.001	<0.003	73.7
	56.95	72.57	2/22/2012	970	1930	<0.001	<0.001	<0.001	<0.003	66.3
	57.06	72.57	5/29/2012	710	1910	<0.001	<0.001	<0.001	<0.003	66.4

MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
				(mg/L)						
MW-1R	XXX	XXX	8/24/2012	116	551	<0.001	<0.001	<0.001	<0.003	63.6
	XXX	XXX	11/15/2012	288	960	<0.001	<0.001	<0.001	<0.003	59.5
	Pump in the Well	XXX	2/12/2013	300	958	<0.001	<0.001	<0.001	<0.003	55.1
	XXX	XXX	5/30/2013	140	651	<0.001	<0.001	<0.001	<0.003	60
	XXX	XXX	9/6/2013	148	692	<0.001	<0.001	<0.001	<0.003	50.2
	XXX	XXX	11/19/2013	80	446	<0.001	<0.001	<0.001	<0.003	58.7

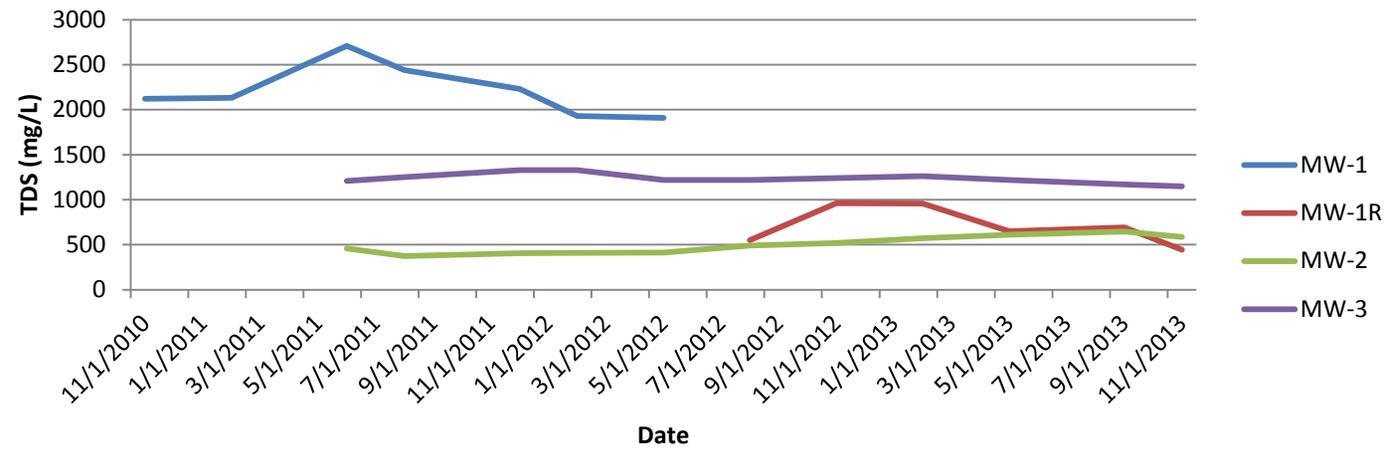
MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
				(mg/L)						
MW-2	56.83	62.78	6/4/2011	32	457	<0.001	<0.001	<0.001	<0.003	37
	56.93	62.78	8/31/2011	32	374	<0.001	<0.001	<0.001	<0.003	33.5
	57.02	62.78	12/2/2011	36	405	<0.001	<0.001	<0.001	<0.003	40.8
	57.09	62.78	2/22/2012	92	408	<0.001	<0.001	<0.001	<0.003	41.6
	57.2	62.78	5/29/2012	28	411	<0.001	<0.001	<0.001	<0.003	41.4
	57.44	62.78	8/24/2012	28	490	<0.001	<0.001	<0.001	<0.003	27.7
	54.48	62.78	11/15/2012	32	518	<0.001	<0.001	<0.001	<0.003	20.3
	57.49	62.78	2/12/2013	28	573	<0.001	<0.001	<0.001	<0.003	28.7
	57.62	62.78	5/30/2013	32	611	<0.001	<0.001	<0.001	<0.003	28.7
	57.75	62.78	9/6/2013	32	646	<0.001	<0.001	<0.001	<0.003	31
57.81	62.78	11/19/2013	28	587	<0.001	<0.001	<0.001	<0.003	32.2	

MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
				(mg/L)						
MW-3	56.14	68.92	6/4/2011	432	1210	<0.001	<0.001	<0.001	<0.003	69.1
	52.24	68.92	8/31/2011	416	1250	<0.001	<0.001	<0.001	<0.003	47.3
	56.34	68.92	12/2/2011	450	1330	<0.001	<0.001	<0.001	<0.003	56.8
	56.4	68.92	2/22/2012	332	1330	<0.001	<0.001	<0.001	<0.003	54.9
	56.57	68.92	5/29/2012	380	1220	<0.001	<0.001	<0.001	<0.003	57.4
	56.74	68.92	8/24/2012	400	1220	<0.001	<0.001	<0.001	<0.003	48.9
	56.77	68.92	11/15/2012	376	1240	<0.001	<0.001	<0.001	<0.003	48.7
	56.78	68.92	2/12/2013	352	1260	<0.001	<0.001	<0.001	<0.003	52.6
	56.91	68.92	5/30/2013	320	1220	<0.001	<0.001	<0.001	<0.003	49
	56.91	68.92	9/6/2013	292	1170	<0.001	<0.001	<0.001	<0.003	46.2
57.1	69.92	11/19/2013	272	1150	<0.001	<0.001	<0.001	<0.003	45.1	

### Chloride Concentration Versus Time Graph



### Total Dissolved Solids Concentrations Versus Time Graph



December 03, 2013

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

RE: VACUUM L-26 VENT

Enclosed are the results of analyses for samples received by the laboratory on 11/20/13 12:16.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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,



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:	11/20/2013	Sampling Date:	11/19/2013
Reported:	12/03/2013	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

**Sample ID: MONITOR WELL #1R (H302831-01)**

BTEX 8021B		mg/L		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	12/02/2013	ND	0.056	113	0.0500	0.721	
Toluene*	<0.001	0.001	12/02/2013	ND	0.056	111	0.0500	0.0556	
Ethylbenzene*	<0.001	0.001	12/02/2013	ND	0.055	111	0.0500	0.123	
Total Xylenes*	<0.003	0.003	12/02/2013	ND	0.163	108	0.150	0.0111	
Total BTEX	<0.006	0.006	12/02/2013	ND					

*Surrogate: 4-Bromofluorobenzene (PID) 117 % 89.5-126*

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride*</b>	<b>80.0</b>	4.00	11/25/2013	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Sulfate*</b>	<b>58.7</b>	10.0	11/25/2013	ND	17.8	89.0	20.0	4.72	

TDS 160.1		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>TDS*</b>	<b>446</b>	5.00	11/26/2013	ND	248	103	240	1.34	

Cardinal Laboratories

\*=Accredited Analyte

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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:	11/20/2013	Sampling Date:	11/19/2013
Reported:	12/03/2013	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

**Sample ID: MONITOR WELL #2 (H302831-02)**

BTEX 8021B		mg/L		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	11/24/2013	ND	0.056	113	0.0500	0.721		
Toluene*	<0.001	0.001	11/24/2013	ND	0.056	111	0.0500	0.0556		
Ethylbenzene*	<0.001	0.001	11/24/2013	ND	0.055	111	0.0500	0.123		
Total Xylenes*	<0.003	0.003	11/24/2013	ND	0.163	108	0.150	0.0111		
Total BTEX	<0.006	0.006	11/24/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 110 % 89.5-126

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	28.0	4.00	11/25/2013	ND	100	100	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	32.2	10.0	11/25/2013	ND	17.8	89.0	20.0	4.72		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	587	5.00	11/26/2013	ND	248	103	240	1.34		

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\*=Accredited Analyte

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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:	11/20/2013	Sampling Date:	11/19/2013
Reported:	12/03/2013	Sampling Type:	Water
Project Name:	VACUUM L-26 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC26 L-LEA CTY., NM		

**Sample ID: MONITOR WELL #3 (H302831-03)**

BTEX 8021B		mg/L		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	11/24/2013	ND	0.056	113	0.0500	0.721		
Toluene*	<0.001	0.001	11/24/2013	ND	0.056	111	0.0500	0.0556		
Ethylbenzene*	<0.001	0.001	11/24/2013	ND	0.055	111	0.0500	0.123		
Total Xylenes*	<0.003	0.003	11/24/2013	ND	0.163	108	0.150	0.0111		
Total BTEX	<0.006	0.006	11/24/2013	ND						

Surrogate: 4-Bromofluorobenzene (PID) 110 % 89.5-126

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	272	4.00	11/25/2013	ND	104	104	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	45.1	10.0	11/25/2013	ND	17.8	89.0	20.0	4.72		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1150	5.00	11/26/2013	ND	248	103	240	1.34		

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\*=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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Celey D. Keene, Lab Director/Quality Manager

