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March 31st, 2016

Dr. Tomas Oberding

New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

Re: **Annual Report**
Rice Operating Company – Vacuum SWD System
Vacuum F-33 boot (1R425-37): UL/F, Sec. 33, T17S, R35E

Sent via E-mail

Dr. Oberding:

This letter summarizes progress made over the past calendar year pursuant to the NMOCD approved Corrective Action Plan and Proposed Groundwater Recover and Project Update for this site, which is operated by Rice Operating Company (ROC). The site is located approximately 2.5 miles east of Buckeye, New Mexico at UL/F, Sec. 33, T17S, R35E as shown on the Site Location Map (Appendix - Figure 1). Monitor well sampling at the site indicates that the water table is approximately 82 ft bgs.

Background and Previous Work

In 2007, ROC initiated work on the former Vacuum F-33 boot junction box and a junction box disclosure report was submitted to NMOCD. An NMOCD approved Investigation and Characterization Plan (ICP) was implemented in 2009 to delineate residual soil chlorides and hydrocarbons and to evaluate groundwater quality beneath the site. The results of this work were reported to NMOCD in July 2013, along with a Corrective Action Plan (CAP), which proposed the installation of a 20-mil reinforced synthetic liner and an up-gradient groundwater monitor well. The CAP was approved by NMOCD on August 14th, 2013.

Rice Environmental Consulting & Safety (RECS) completed the installation of the liner (Appendix – Figure 2) and restored the ground surface as specified in the CAP in early 2014. . The results of this work were summarized and reported to NMOCD as an “Initial CAP Report and Soil Closure Request” on February 10th, 2014 and this was approved on March 28th, 2014. Following continued groundwater monitoring through 2014 ROC submitted a summary report “Proposed Groundwater Recover and Project Update” to NMOCD which proposed limited groundwater removal from the near-source monitor well (MW-1) to reduce groundwater chloride mass. NMOCD approved this work on April 2nd, 2015. ROC subsequently began groundwater pumping in May 2015.

Rice Operating Company

Groundwater Chlorides

Results of groundwater sampling from March 2009 through 2015 are given in the Appendix (Figure 3, Tables 1 & 2). Groundwater chloride concentrations in MW-1 have varied widely since sampling began in 2009, but averaged 695 mg/l over four quarterly measurements taken in 2015. This compares to an average of 830 mg/l over four quarterly measurements taken in 2014. It thus appears that the impermeable liner installed in 2014 is having significant effect. The up-gradient monitor well (MW-2) groundwater chlorides averaged 52 mg/l over the four quarters of 2015. Water-soluble petroleum hydrocarbons (BTEX) were not been detected in any of the groundwater samples taken in 2015 nor in any prior years.

A total of approximately 1,285 bbls of high-chloride groundwater were pumped from the near-source monitor well (MW-1) from May through November 2015. This equates to approximately 129 kg of chloride. The removed groundwater was used for SWD line and well maintenance.

ROC plans to continue withdrawing chloride impacted groundwater from MW-1 through 2016 and will report these results to NMOCD by April of 2017. We will then propose a course of action supported by the data.

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 Vacuum system is now abandoned.

We thus submit this report for your review and consideration. Please call Rice Operating Company or me if you have any questions or need additional information.

Thank you.

Sincerely,

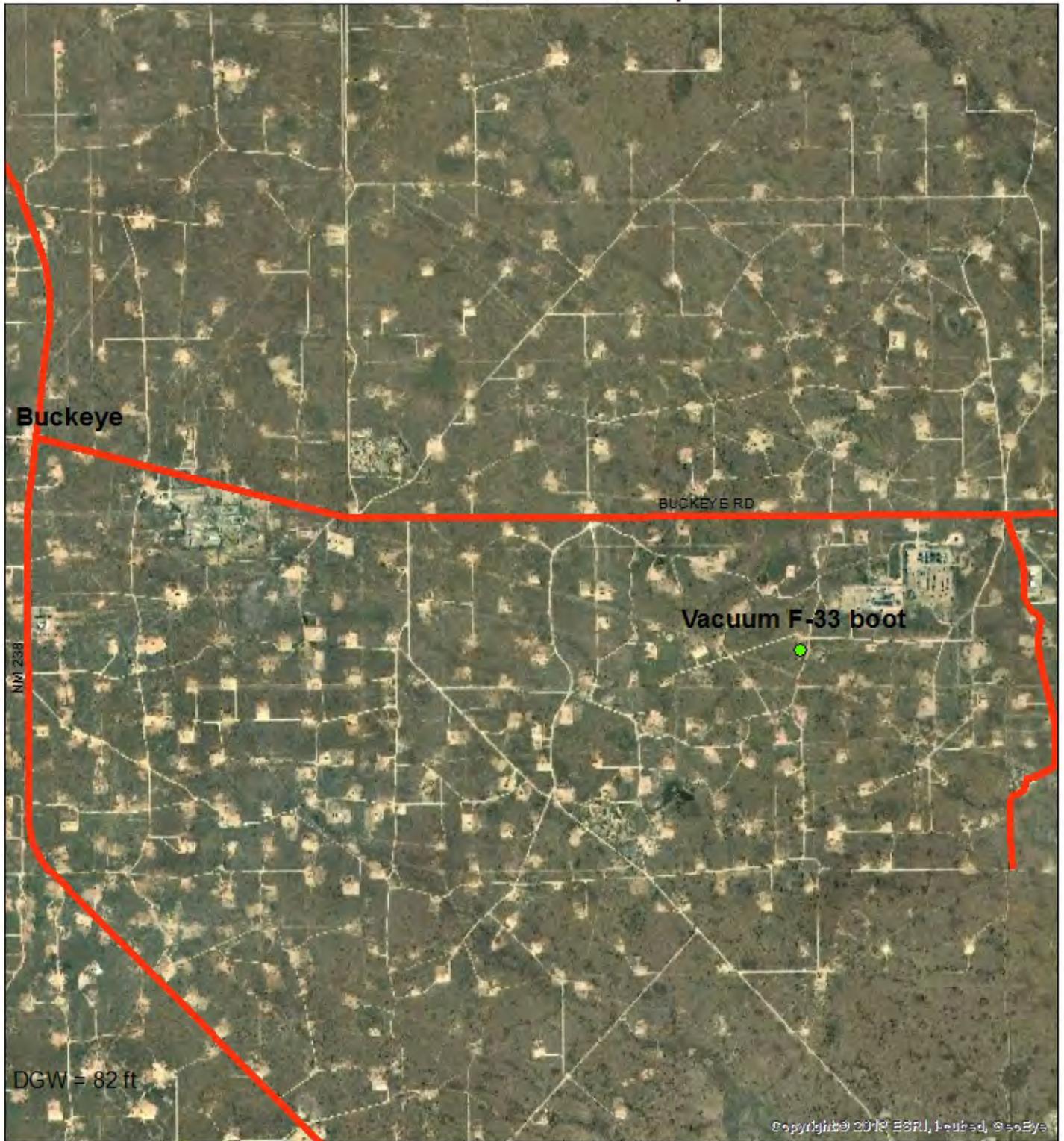


L. Peter (Pete) Galusky, Jr PE
NM Professional Engineer No. 22561

Copy: Rice Operating Company

Attachments (Appendix): Site Location Map; Soil Bores, Monitor Wells & Liner Dimensions and Groundwater Chloride Graph, Data Tables, Lab Reports

Site Location Map

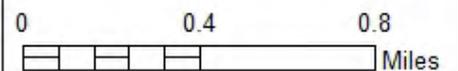


VACUUM F-33 BOOT

LEGALS: UL/F sec. 33
T-17-S R-35-E
LEA COUNTY, NM

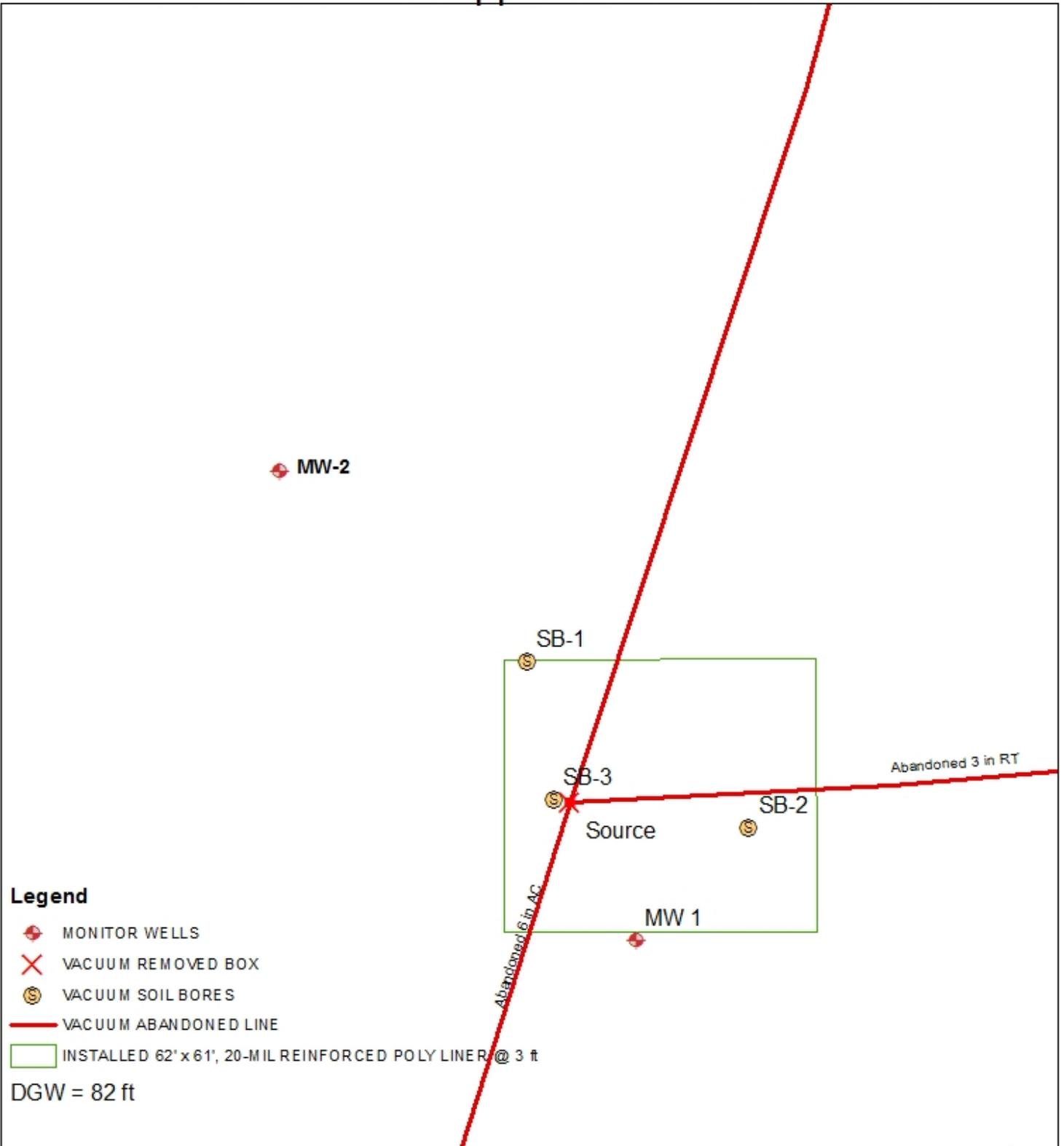
NMOCD CASE #: 1R425-37

Figure 1



Drawing date: 2/3/14
Drafted by: L. Flores

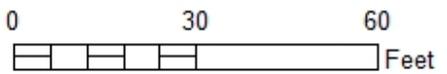
Installed NMOCD Approved Liner and MW-2



VACUUM F-33 BOOT

LEGALS: UL/F sec. 33
T-17-S R-35-E
LEA COUNTY, NM
NMOCD CASE #: 1R425-37

Figure 2



Drawing date: 2/3/14
Drafted by: L. Flores

Figure 3

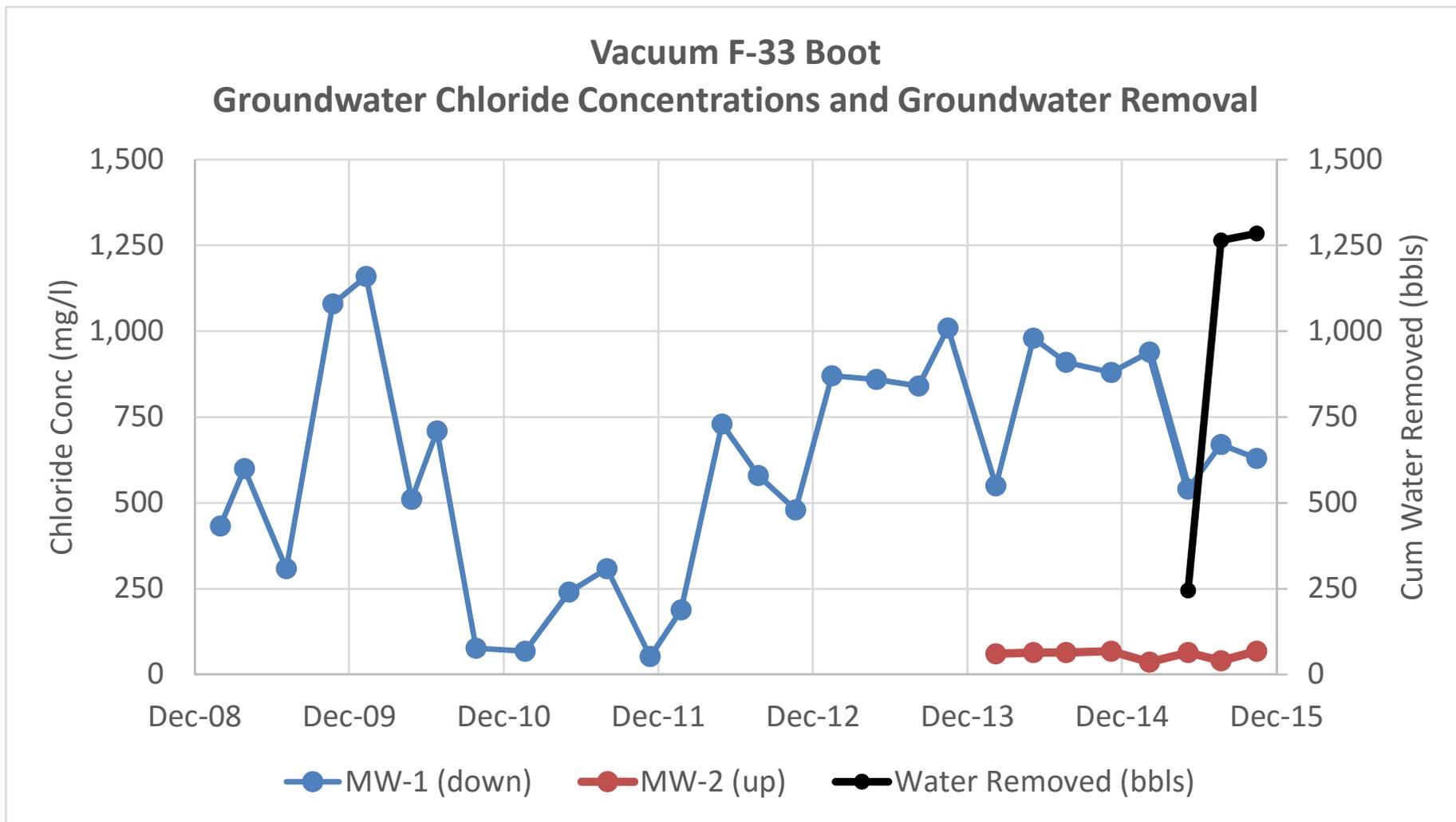


Table 1 - Groundwater Chloride Concentrations and Pumping Volumes

Rice Operating Company Vacuum F-33 Boot			
Date	Groundwater Cl- conc (mg/l)		Water Removed (bbls)
	MW-1 (downgradient)	MW-2 (upgradient)	
3/2/2009	432		
4/28/2009	600		
8/5/2009	308		
11/23/2009	1,080		
2/9/2010	1,160		
5/28/2010	510		
7/27/2010	710		
10/27/2010	76		
2/20/2011	68		
6/3/2011	240		
9/1/2011	308		
12/12/2011	52		
2/23/2012	188		
5/30/2012	730		
8/23/2012	580		
11/19/2012	480		
2/13/2013	870		
5/29/2013	860		
9/6/2013	840		
11/14/2013	1,010		
3/7/2014	550	60	
6/4/2014	980	64	
8/20/2014	910	64	
12/5/2014	880	68	
3/5/2015	940	36	
6/4/2015	540	64	245
8/21/2015	670	40	1,265
11/13/2015	630	68	1,285

Table 2a - Downgradient Monitor Well (MW-1) Full Dataset

MW	Depth to Water	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)
1	80.6	126.5	29.8	300	3/2/2009	432	1,070	<0.001	<0.001	<0.001	<0.003	56.0
1	80.7	126.5	29.8	150	4/28/2009	600	1,330	<0.001	<0.001	<0.001	<0.003	38.3
1	80.9	126.5	29.7	150	8/5/2009	308	845	<0.001	<0.001	<0.001	<0.003	25.2
1	81.0	126.5	29.6	150	11/23/2009	1,080	2,340	<0.001	<0.001	<0.001	<0.003	34.2
1	81.1	126.5	29.5	150	2/9/2010	1,160	2,240	<0.001	<0.001	<0.001	<0.003	54.6
1	81.3	126.5	29.4	150	5/28/2010	510	1,190	<0.001	<0.001	<0.001	<0.003	29.0
1	81.3	126.5	29.4	150	7/27/2010	710	1,500	<0.001	<0.001	<0.001	<0.003	40.8
1	81.4	126.5	29.3	250	10/27/2010	76	454	<0.001	<0.001	<0.001	<0.003	17.6
1	81.5	126.5	29.2	250	2/20/2011	68	365	<0.001	<0.001	<0.001	<0.003	17.2
1	81.7	126.5	29.2	400	6/3/2011	240	707	<0.001	<0.001	<0.001	<0.003	45.9
1	81.7	126.5	29.1	400	9/1/2011	308	825	<0.001	<0.001	<0.001	<0.003	56.6
1	81.8	126.5	29.1	400	12/12/2011	52	395	<0.001	<0.001	<0.001	<0.003	28.6
1	81.9	126.5	29.0	500	2/23/2012	188	605	<0.001	<0.001	<0.001	<0.003	45.2
1	81.8	126.5	29.0	500	5/30/2012	730	1,740	<0.001	<0.001	<0.001	<0.003	84.9
1	81.9	126.5	29.0	500	8/23/2012	580	1,280	<0.001	<0.001	<0.001	<0.003	81.2
1	81.9	126.5	29.0	500	11/19/2012	480	1,170	<0.001	<0.001	<0.001	<0.003	50.4
1	82.0	126.5	29.0	500	2/13/2013	870	1,680	<0.001	<0.001	<0.001	<0.003	59.7
1	82.0	126.5	28.9	500	5/29/2013	860	1,940	<0.001	<0.001	<0.001	<0.003	79.3

1	82.1	126.5	28.9	500	9/6/2013	840	2,000	<0.001	<0.001	<0.001	<0.003	227.0
1	82.2	126.5	28.8	500	11/14/2013	1,010	2,080	<0.001	<0.001	<0.001	<0.003	61.5
1	82.3	126.5	28.7	500	3/7/2014	550	1,390	<0.001	<0.001	<0.001	<0.003	63.4
1	82.3	126.5	28.7	500	6/4/2014	980	2,170	<0.001	<0.001	<0.001	<0.003	53.8
1	82.5	126.5	28.6	500	8/20/2014	910	2,220	<0.001	<0.001	<0.001	<0.003	50.9
1	82.2	126.5	28.8	250	12/5/2014	880	2,050	<0.001	<0.001	<0.001	<0.003	53.6
1	82.3	126.5	28.7	250	3/5/2015	940	2,010	<0.001	<0.001	<0.001	<0.003	50.3
1	XXX	126.5	XXX	Running	6/4/2015	540	1,360	<0.001	<0.001	<0.001	<0.003	55.5
1	XXX	126.5	XXX	Running	8/21/2015	670	1,480	<0.001	<0.001	<0.001	<0.003	51.0
1	XXX	126.5	0.0	200	11/13/2015	630	1,500	<0.001	<0.001	<0.001	<0.003	71.4

Table 2b - Upgradient Monitor Well (MW-2) Full Dataset

MW	Depth to Water	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)
2	82.0	95.1	2.1	10	3/7/2014	60	412	<0.001	<0.001	<0.001	<0.003	37.4
2	82.0	95.1	2.1	10	6/4/2014	64	378	<0.001	<0.001	<0.001	<0.003	39.6
2	82.1	95.1	2.1	10	8/20/2014	64	400	<0.001	<0.001	<0.001	<0.003	37.7
2	81.7	95.1	2.1	10	12/5/2014	68	370	<0.001	<0.001	<0.001	<0.003	30.7
2	81.9	95.1	2.1	10	3/5/2015	36	400	<0.001	<0.001	<0.001	<0.003	59.8
2	82.1	95.1	2.1	10	6/4/2015	64	422	<0.001	<0.001	<0.001	<0.003	31.3
2	82.3	95.1	2.0	10	8/21/2015	40	398	<0.001	<0.001	<0.001	<0.003	45.1
2	82.3	95.1	2.0	10	11/13/2015	68	440	<0.001	<0.001	<0.001	<0.003	34.6



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

November 23, 2015

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM F-33 BOOT

Enclosed are the results of analyses for samples received by the laboratory on 11/16/15 16:31.

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.

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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 "Hope S. Moreno". The signature is written in a cursive, flowing style.

Hope S. Moreno For Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	11/16/2015	Sampling Date:	11/13/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-33 BOOT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC33 F - LEA CTY, NM		

Sample ID: MONITOR WELL #1 (H503028-01)

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	11/17/2015	ND	0.020	100	0.0200	0.134	
Toluene*	<0.001	0.001	11/17/2015	ND	0.021	105	0.0200	1.34	
Ethylbenzene*	<0.001	0.001	11/17/2015	ND	0.019	95.9	0.0200	0.442	
Total Xylenes*	<0.003	0.003	11/17/2015	ND	0.062	103	0.0600	0.0650	
Total BTEX	<0.006	0.006	11/17/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	630	4.00	11/18/2015	ND	96.0	96.0	100	15.4	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	71.4	10.0	11/19/2015	ND	18.2	91.0	20.0	5.45	

TDS 160.1		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	1500	5.00	11/18/2015	ND	478	90.7	527	7.36	

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*=Accredited Analyte

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Hope S. Moreno For Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	11/16/2015	Sampling Date:	11/13/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-33 BOOT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC33 F - LEA CTY, NM		

Sample ID: MONITOR WELL #2 (H503028-02)

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	11/17/2015	ND	0.020	100	0.0200	0.134		
Toluene*	<0.001	0.001	11/17/2015	ND	0.021	105	0.0200	1.34		
Ethylbenzene*	<0.001	0.001	11/17/2015	ND	0.019	95.9	0.0200	0.442		
Total Xylenes*	<0.003	0.003	11/17/2015	ND	0.062	103	0.0600	0.0650		
Total BTEX	<0.006	0.006	11/17/2015	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	68.0	4.00	11/18/2015	ND	96.0	96.0	100	15.4		

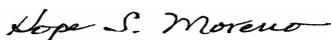
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	34.6	10.0	11/19/2015	ND	18.2	91.0	20.0	5.45		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	440	5.00	11/18/2015	ND	478	90.7	527	7.36		

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Hope S. Moreno For 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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Hope S. Moreno

Hope S. Moreno For Celey D. Keene, Lab Director/Quality Manager

