1R - 426-259

REPORTS

DATE:

7-12-12

Rice Environmental Consulting & Safety
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL
RETURN RECEIPT NO. 7008 1140 0001 3072 4581

July 12th, 2012

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: **CAP Report for Groundwater and Termination Request**
Rice Operating Company – BD SWD System
BD N-11 boot (1R426-259): UL/N sec. 11 T22S R37E

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 BD Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the BD 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 2.5 miles southeast of Eunice, New Mexico at UL/N sec. 11 T22S R37E as shown on the Site Location Map (Figure 1). Monitor well sampling at the site establishes groundwater at a depth of +/- 44 feet.

Between 2005 and 2008, ROC initiated work on the former BD N-11 boot. The site was delineated using a backhoe to form a trench and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The site was excavated to 30 ft x 10 ft x 12 ft. From the excavation, composite samples were collected for laboratory analysis. Laboratory tests of the site showed negligible gasoline range organics (GRO). The diesel range organics (DRO) in the 4-wall composite was 39.7 mg/kg and in the bottom composite was 16.5 mg/kg. Chlorides concentrations from the excavation read 1,152 mg/kg in the 4-wall composite and 1,232 mg/kg in the bottom composite. The site was backfilled with clean, imported soil to 4 feet below ground surface where a 1 ft thick clay layer was installed. A clay compaction test was performed on June 3rd, 2008. The site was brought up to ground surface with the remaining imported soil. The area was contoured to the surrounding landscape, seeded, and an identification plate was placed on the surface of the site to mark its location for future environmental considerations.

NMOCD was notified of potential groundwater impact on July 16th, 2010 and a junction box disclosure report was submitted to NMOCD via email on August 6th, 2010 with all the 2010 junction box closures and disclosures.

ICP Investigative Results

As part of the Investigation and Characterization Plan (ICP) approved by NMOCD on September 1st, 2010, six soil bores were advanced through the former junction box site on October 6th, 2010. ROC personnel field tested the soil for chlorides and screened in the field with a photo-ionization detector for hydrocarbons. Representative samples from the bores were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. In all the soil bores, except for SB-3, laboratory chloride readings decreased with depth to near background levels as they reached the capillary fringe. However, in SB-3, the laboratory chloride reading at the capillary fringe was 816 mg/kg; although, the chloride levels decreased with depth. GRO readings were non-detect at all depths throughout the bores, and DRO readings were non-detect at all depths in all bores except for the readings in SB-1 and SB-4. In SB-1, the DRO reading at 30 ft bgs was non-detect and at 40 ft bgs was 27.3 mg/kg. In SB-4, the DRO reading at 5 ft bgs was 702 mg/kg and at 40 ft bgs was 32.4 mg/kg.

To determine what affect the vadose zone chloride and hydrocarbon levels may have had on the groundwater below the site, three monitor wells were installed on November 9th, 2010. MW-1, the near-source monitor well, and MW-3, the down gradient monitor well, were not sampled as they were advanced. However, MW-2, the up gradient monitor well, was sampled to determine background levels of chlorides and hydrocarbons. Representative samples from MW-2 were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. At 15 ft bgs, the laboratory chloride reading was 864 mg/kg and at 40 ft bgs it was 160 mg/kg. GRO and DRO readings throughout the bore were non-detect.

As part of the ICP Report and Corrective Action Plan (CAP) approved by NMOCD on January 31st, 2012, RECS personnel were on site beginning on February 15th, 2012 to excavate the site to 46 ft x 51 ft x 20 ft bgs, and to excavate an additional 10 ft x 10 ft x 10 ft deep area surrounding SB-3 at the base of the 46 ft x 51 ft excavation to a total depth of 30 ft bgs. A 20-mil reinforced poly liner was installed and properly seated into the 10 x 10 ft excavation and another was installed and properly seated in the 46 ft x 51 ft excavation. The two liners provide a barrier that will inhibit the downward migration of chlorides and hydrocarbons to groundwater. The site was seeded with a blend of native vegetation and a silt net fence was placed around the site to maintain seed integrity. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater. A CAP Report and Vadose Zone Remediation report was submitted to NMOCD on May 29th, 2012 and was approved by NMOCD on June 26th, 2012 which described the actions taken to remediate the vadose zone.

RECS further recommended in the ICP Report and CAP that ROC remove chloride impacted groundwater from the site using the 4 inch monitor well, MW-1. A groundwater recovery system would be placed at the site to facilitate groundwater pumping and recovery. Removed water would be used for pipeline and well maintenance or re-vegetation of the site. A chloride mass calculation was generated as part of the

CAP which determined that the recovery system would need to extract a total of 445 barrels of groundwater equating to 186 kg of chloride.

Groundwater Remedy

Groundwater recovery at the site began on June 8th, 2012 and was completed on June 27th, 2012. During the recovery process, a total of 510 barrels of groundwater was extracted from the aquifer. Given the MW-1 had a chloride concentration of 3,250 mg/L (Appendix A), the 510 barrels of groundwater equates to 263 kg of chlorides extracted from the aquifer.

ROC has completed the corrective actions as approved by NMOCD in the CAP by installing and properly seating the two 20-mil reinforced poly liners at the site and by removing the necessary 186 kg of chlorides the site contributed to groundwater. Therefore, ROC requests 'remediation termination' status of the regulatory file.

Upon NMOCD's approval of this report, MW-1 and MW-3 will be plugged and abandoned with a 1-3 % bentonite/concrete slurry with a three foot concrete cap. The up-gradient well, MW-2, will remain open and will be used to monitor regional groundwater impacts in the area.

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,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

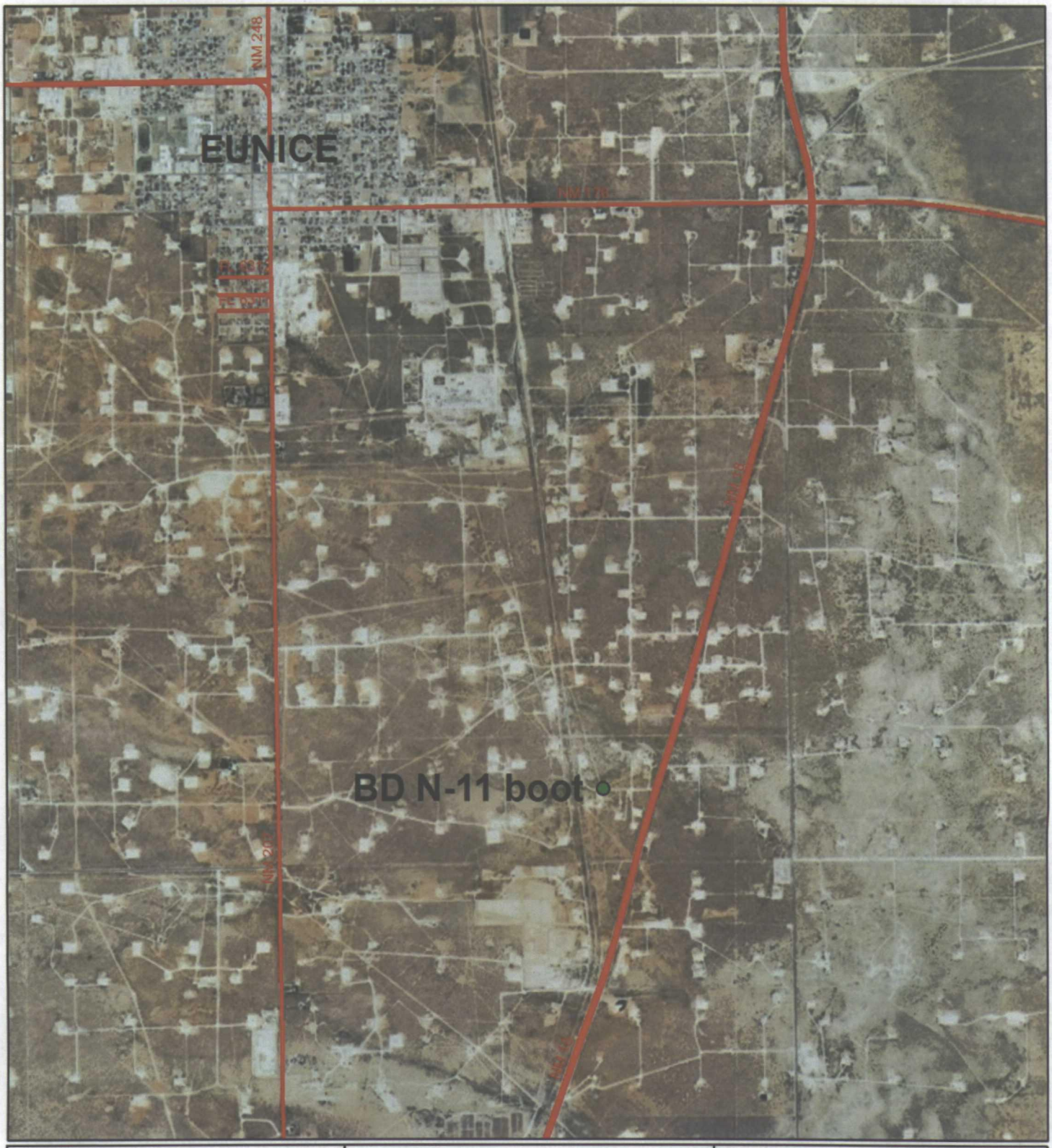
Attachments:

Figure 1 – Site Location Map
Appendix A – MW-1 Sampling Lab

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

Site Location Map



RICE ENVIRONMENTAL
RECS
CONSULTING & SAFETY, LLC

BD N-11 boot

Case #: 1R426-259

Legals: UL/N sec. 11
T22S R37E

Figure 1

N
W E
S

0 0.25 0.5 1
Miles

Drawing date: 1-19-12
Drafted by: L. Weinheimer

Appendix A

MW-1 Sampling Lab

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CARDINAL Laboratories

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

June 26, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD N-11 BOOT (22/37)

Enclosed are the results of analyses for samples received by the laboratory on 06/21/12 15:45.

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 accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	06/21/2012	Sampling Date:	06/21/2012
Reported:	06/26/2012	Sampling Type:	Water
Project Name:	BD N-11 BOOT (22/37)	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: MW-1 (H201419-01)

Chloride, SM4500Cl-B mg/L **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**3250**	4.00	06/26/2012	ND	100	100	100	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice		**BILL TO**	
Project Manager: Hack Conder		P.O. #:	
Address:		Company:	
City: Hobbs	State: NM Zip: 88240	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location: BD M-11		Phone #:	
Sampler Name: Kyle Norman		Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV			SAMPLING		ANALYSIS REQUEST										
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	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS					
H201419 -1	MW-1	G	1	✓									6-2-12	1450	✓										

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:	Date: 6-2-12	Received By:	Phone Result:	☐ Yes ☑ No	Add'l Phone #:
	Time: 3:45		Fax Result:	☐ Yes ☑ No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:		
	Time:		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		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☐ Yes ☑ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)		

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

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