1R - 426-279

REPORTS

DATE:

9-16-13

Rice Environmental Consulting & Safety
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 8258

September 16th, 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: **CAP Report and Termination Request**
Rice Operating Company – BD SWD System
BD Jct. C-23-1 (1R426-279): UL/C sec. 23 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.

Background and Previous Work

The site is located approximately 4 miles southeast of Eunice, New Mexico at UL/C sec. 23 T22S R37E as shown on the Site Location Map and Geographical Location Map (Figure 1 and 2). NM OSE records indicated that groundwater would likely be encountered at a depth of approximately 59 +/- feet. However, monitor well installation at the site shows that there is little to no groundwater at the site.

In 2010, ROC initiated work on the former BD C-23-1 junction box. The site was delineated using a backhoe to form a 35 ft x 5 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the four-wall composite, the bottom composite and the backfill were taken to a commercial laboratory for analysis. Laboratory tests of the four-wall composite showed a chloride reading of 784 mg/kg and gasoline range organics (GRO) and diesel range organics (DRO) readings of non-detect. The bottom composite showed a chloride laboratory reading of 2,200 mg/kg and GRO and DRO readings of non-detect. The soil was blended on site and backfilled to six feet below ground surface (bgs). Laboratory analysis of the blended backfill showed a chloride reading of 1,310 mg/kg and GRO and DRO readings of non-detect. At 6-5 ft bgs, a one foot thick clay layer was installed to inhibit the downward movement of chlorides. A clay compaction test was performed on March 23rd, 2010. The remaining backfill was taken to an NMOCD approved facility for

disposal. Clean imported soil was used to backfill the site to ground surface. 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 August 4th, 2010 and a junction box disclosure report was submitted to NMOCD with all the 2010 junction box closures and disclosures.

As part of the Investigation and Characterization Plan approved by NMOCD on July 20th, 2011, one soil bore was advanced through the former junction box site on September 2nd, 2011. RECS personnel field tested the soil for chlorides and screened in the field with a photo-ionization detector (PID) for hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for confirmation of field numbers. In SB-1, the laboratory chloride readings showed 1,250 mg/kg at 20 ft bgs, 1,630 mg/kg at 50 ft bgs and 4,800 mg/kg at 55 ft bgs.

On September 15th, 2011, an ICP Report was submitted to NMOCD that was subsequently approved on September 22nd, 2011. The report recommended that ROC continue to delineate the soils surrounding the former junction box site and the groundwater affected by the site by installing a near-source monitor well. On February 1st and 2nd, 2012, six additional soil bores (SB-2 through SB-7) were installed at the site. Representative samples from the bores were taken to a commercial laboratory for confirmation of field numbers. SB-2 returned laboratory chloride values of 960 mg/kg at 10 ft bgs, which decreased to 112 mg/kg at 40 ft bgs. SB-3 returned laboratory chloride values of 3,760 mg/kg at 20 ft bgs, which decreased to 1,730 mg/kg at 55 ft bgs. SB-4 returned laboratory chloride values of 1,540 mg/kg at 20 ft bgs, 1,580 mg/kg at 50 ft bgs, and 3,120 mg/kg at 55 ft bgs. SB-5 returned laboratory chloride values of 3,360 mg/kg at 45 ft bgs and 3,760 mg/kg at 55 ft bgs. SB-6 returned laboratory chloride values of 4,080 mg/kg, which decreased to 3,240 mg/kg at 55 ft bgs. SB-7 returned laboratory chloride values of 3,360 mg/kg at 10 ft bgs and 3,960 mg/kg at 55 ft bgs. GRO and DRO values were non detect in soil bores except for SB-6 which had DRO values of 28.9 mg/kg at 45 ft bgs and 13 mg/kg at 55 ft bgs.

On March 19th, 2012 ROC submitted a Report of Further Investigation which was approved by NMOCD on March 22nd, 2012. An extension request was sent to NMOCD on September 17th, 2012 and approved by NMOCD on September 18th, 2012. The report recommended that ROC continue to delineate the soils surrounding the former junction box and install a near-source monitor well to determine groundwater quality beneath the site. Additional monitor wells could be installed as necessary to fully delineate groundwater quality.

On February 12th, 2013, RECS personnel were on site to install three additional soil bores and two monitor wells. SB-8 delineated the eastern edge of the site, SB-9 delineated the western most edge of the site and SB-10 delineated the northern most edge of the site. As the three soil bores were being installed, soil samples were taken and field tested for both chlorides and hydrocarbons. Representative samples from each bores were taken to a commercial laboratory for confirmation of field numbers. SB-8 returned chloride values

of 1,040 mg/kg at 20 ft bgs, which decreased to 244 mg/kg at 30 ft bgs. SB-9 returned chloride values of 2,270 mg/kg at 15 ft bgs and 2,260 mg/kg at 50 ft bgs. SB-10 returned chloride values of 1,550 mg/kg at 10 ft bgs, 3,880 mg/kg at 45 ft bgs and 4,360 mg/kg at 50 ft bgs. GRO and DRO at all depths in all bores were non-detect.

Two monitor wells were installed at the site on February 12th, 2013. MW-1 was installed 71 ft southeast of the former junction box site and MW-2 was installed 92 ft northwest of the former junction box site. No sampling was conducted as MW-1 was installed. MW-2 was field sampled to determine background soil concentrations of chlorides and hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for analysis. Background concentrations in MW-2 showed chloride values of 208 mg/kg at 25 ft bgs, 3,880 mg/kg at 45 ft bgs and 2,680 mg/kg at 50 ft bgs. GRO and DRO values at all depth were non-detect.

On February 18th, 2013, ARC Environmental arrived at the site to develop the two monitor wells. MW-1was installed at a total depth of 75.60 feet, and had 0.69 gallons of water in the well 120 hours after being drilled. The well pumped at 0.25 gallons per minute until the well would no longer pump; this took less than two minutes. The well was then bailed dry with a bailer. The well recovered to a depth of 74.26 feet after 24 hours after pumping and bailing. ARC Environmental determined that there is not a significant quantity of water to use as a representative sample for the site since the well cannot sustain pumping. During the installation of MW-2, red bed clay was encountered at a depth of 61 ft bgs, which delineates the bottom of the aquifer. When ARC Environmental attempted to develop MW-2, the well had no water to a depth of 75.98 ft bgs.

There is little to no groundwater water beneath the site which can be affected by the residual chlorides at the site. MW-1 has 0.69 gallons of water within the well bore. MW-2 is dry. The rate of recharge in the aquifer is very slow due to the small rainfall amounts, the porosity of the formation consisting of low permeable rock and the presence of clay, which leave sediments that are thinly saturated or dry. Thus, there is little underground flow of water in the aquifer in this area.

On March 20th, 2013, ROC submitted a Corrective Action Plan (CAP) to NMOCD that was approved on April 23rd, 2013. As part of CAP, RECS recommended that ROC prepare the site for seeding by tilling the site, adding soil amendments as necessary and seeding the site with a blend of native vegetation. Vegetation would act as an evapo-transpiration barrier that will inhibit the downward migration of chlorides and hydrocarbons. Plants capture water through their roots and so reduce the amount of water infiltrating below the root zone.

ROC submitted a CAP Addendum on June 19th, 2013 to NMOCD that was approved on the same day. In the Addendum, RECS recommended that ROC plug and abandon MW-1 and MW-2 at the site. The wells would be plugged with a 1-3% bentonite/concrete slurry with a 3 ft concrete cap. Per a conversation between ROC and NMOCD on June

19th, 2013, ROC would proceed with the plugging the two monitoring wells (MW-1 and MW-2) at this site on that same day.

CAP Report

The two monitor wells (MW-1 and MW-2) were plugged and abandoned on June 19th, 2013. They were plugged with a 1-3% bentonite/concrete slurry with a 3 foot concrete cap. Documentation of these activities will be found in Appendix A.

Beginning on August 19th, 2013, RECS personnel were on site to prepare the site for seeding. A total of 24 yards of top soil was imported to the site to serve as a seed bed. A sample of this top soil was field tested for hydrocarbons and returned a result of 0 ppm. The sample was then taken to a commercial laboratory for analysis and returned a chloride reading of non-detect. On August 26th, 2013, soil amendments were added to the soil and the site was seeded with a blend of native vegetation. A silt net fence was placed around the site to retard erosion and maintain seed integrity. Seeding documentation will be found in Appendix B.

Since the site has been seeded and the monitor wells plugged and abandoned at site per Corrective Action Plan and Addendum, ROC respectfully requests 'remediation termination' status for the regulatory file. ROC acknowledges they have met the requirements of 19.15.29 NMAC, and no further action is required.

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,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

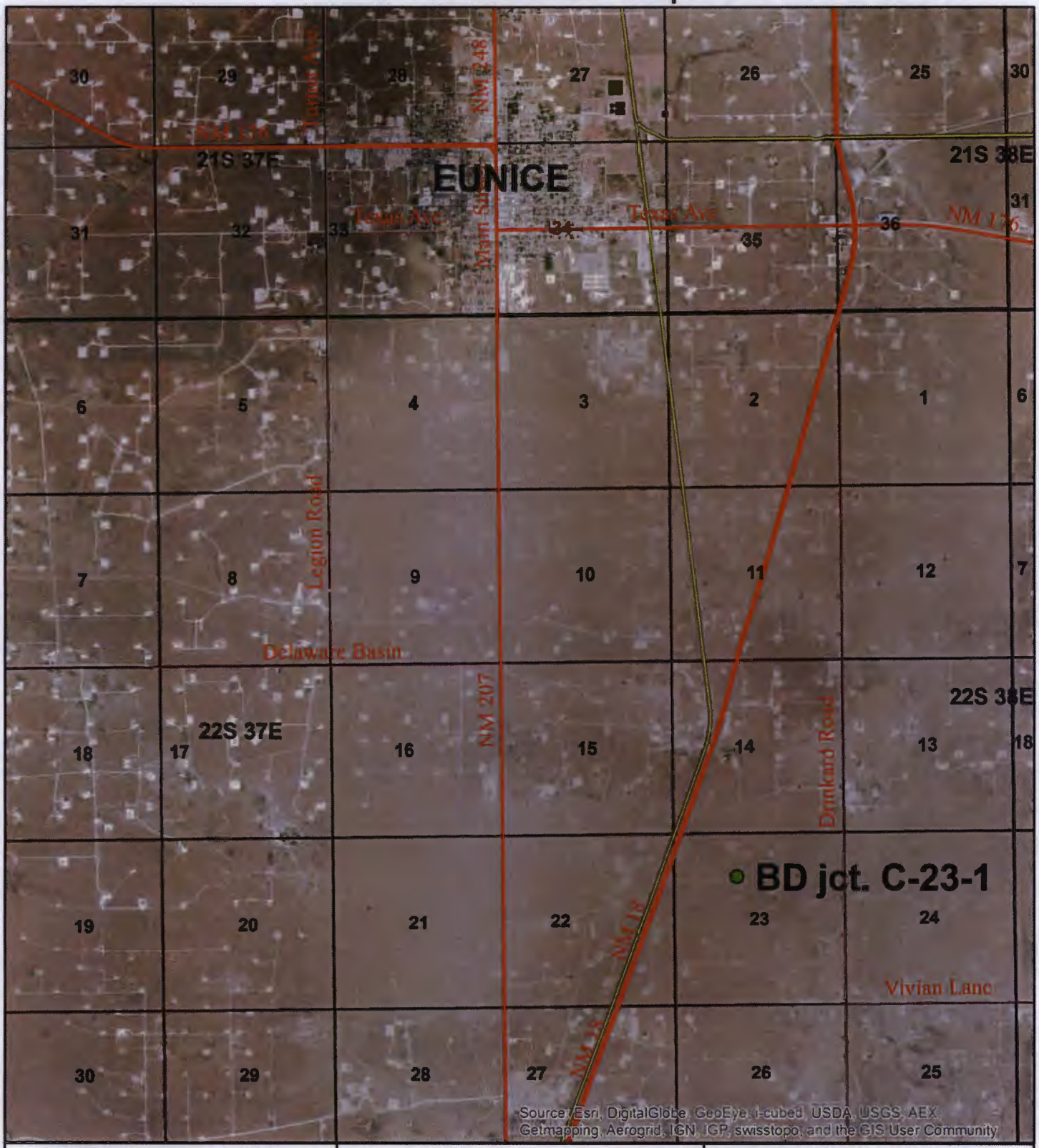
Attachments:

Figure 1 – Site Location Map
Figure 2 – Geographical Location Map
Appendix A – Plug and Abandonment of MW-1 and MW-2
Appendix B – Seeding Documentation

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Site Location Map



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

BD jct. C-23-1

LEGALS: UL/C sec. 23
T22S R37E

NMOCD Case #: 1R426-279

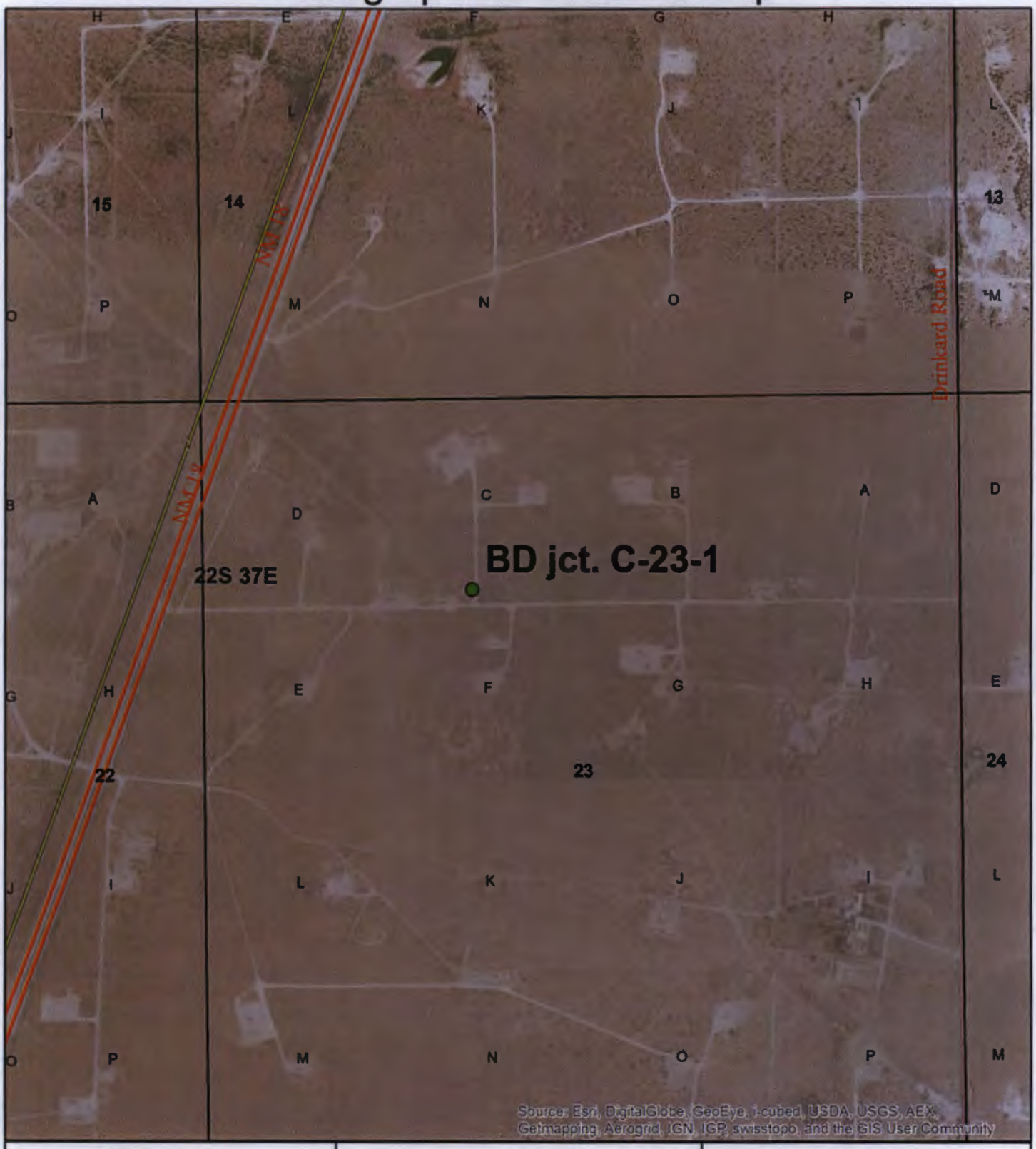
Figure 1

N W E S

0 0.3 0.6 1.2 Miles

Drawing date: 5-3-11
Drafted by: L. Weinheimer

Geographical Location Map



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

BD jct. C-23-1

LEGALS: UL/C sec. 23
T22S R37E

NMOCD Case #: 1R426-279

Figure 2

N W E S

0 370 740 1,480 Feet

Drawing date: 9/11/13
Drafted by: L. Weinheimer

Appendix A

Plug and Abandonment of MW-1 and MW-2

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

HARRISON & COOPER, INC.

Drilling & Pump Professionals

7414 85th Street, Lubbock, Texas 79424-4951

P.O. Box 96, Wolfforth, Texas 79382-0096

Ph: (806) 866-4026 Fax: (806) 866-4044 hcidrill.com

Plugging Report

Client	Rice Operating
Contractor	Harrison & Cooper
Date Completed	6/19/2013
Site	Jct. C-23-1
Well ID	MW-1
Casing Diameter	2"
Well Depth	72'
Casing Material	PVC
Plugging Material	Portland/Bentonite Slurry
Slurry Interval	3'-72'
Cement Interval	0'-3'

Copies: File
Email (Rice)

HARRISON & COOPER, INC.

Drilling & Pump Professionals

7414 85th Street, Lubbock, Texas 79424-4951

P.O. Box 96, Wolfforth, Texas 79382-0096

Ph: (806) 866-4026 Fax: (806) 866-4044 hcidrill.com

Plugging Report

Client	Rice Operating
Contractor	Harrison & Cooper
Date Completed	6/19/2013
Site	Jct. C-23-1
Well ID	MW-2
Casing Diameter	2"
Well Depth	73'
Casing Material	PVC
Plugging Material	Portland/Bentonite Slurry
Slurry Interval	3'-73'
Cement Interval	0'-3'

Copies: File
Email (Rice)

BD jct. C-23-1 (1R426-279)
Unit Letter C, Section 23, T-22-S, R-37-E

Pulling MW-1, facing south 6/19/13

Pulling MW-2, facing west 6/19/13

Plugging MW-2 with a 1-3% bentonite/concrete slurry and 3 ft concrete cap, facing north 6/19/13

Plugging MW-1 with a 1-3% bentonite/concrete slurry and 3 ft concrete cap, facing north 6/19/13

Appendix B

Seeding Documentation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

RICE ENVIRONMENTAL CONSULTING & SAFETY

PO Box 2948 Hobbs, NM 88241
PHONE: (575) 393-2967 FAX: (575) 393-0293
PID METER CALIBRATION & FIELD REPORT FORM

	CK.		
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000508
NO.		MODEL: PGM 7300	SERIAL NO: 590-000504
	X	MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: HAL-248-100-1	EXPIRATION DATE: 7/1/2015
METER READING ACCURACY: 100	

ACCURACY : +/- 2%

COMPANY
Rice Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	Jct. C-23-1	C	23	T22S	R37E

SAMPLE ID	PID	SAMPLE ID	PID
Imported Blowsand	0.0		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: _____ DATE: 8/21/13

CARDINAL Laboratories

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

August 28, 2013

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD C-23-1 JCT 22S-37E

Enclosed are the results of analyses for samples received by the laboratory on 08/22/13 8:50.

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

Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	BD C-23-1 JCT 22S-37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: IMPORTED BLOWSAND (H302010-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: DW**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/28/2013	ND	400	100	400	3.92	

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

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

Company Name:	RICE Operating	**BILL TO**	
Project Manager:	Kyle Norman	**P.O. #:**	
Address:	112 W. Taylor	**Company:**	
City:	Hobbs **State:** NM **Zip:** 88240	**Attn:**	
Phone #:	**Fax #:**	**Address:**	
Project #:	**Project Owner:**	**City:**	
Project Name:		**State:** **Zip:**	
Project Location:	BD C-23-1 MP	**Phone #:**	
Sampler Name:	Dylan Yarbrough	**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				
H302D10																								
1	Imported Blowsand	C	1			(					(		6/21/13	11:50	/									

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:** 6/21/13	**Received By:**	Jodi Henson
	Time: 6:50		
Relinquished By:	**Date:**	**Received By:**	
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No

CHECKED BY: (Initials)

Phone Result:	☐ Yes	☑ No	**Add'l Phone #:**
Fax Result:	☐ Yes	☑ No	**Add'l Fax #:**

REMARKS:

email results
knorman@rice-ecs.com;hconder@rice-ecs.com;
Lweinheimer@rice-ecs.com; kjones@riceswd.com;
Lpena@riceswd.com;dyarbrough@rice-ecs.com

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

#54

RICE ENVIRONMENTAL
RECS
CONSULTING & SAFETY, LLC

PO Box 2948
Hobbs, NM 88241
Phone: (575) 393-2967
Fax: (575) 393-0293

REVEGETATION FORM

1. General Information

Site name: BD Jct. C-23-1						
U/L	Section	Township	Range	County	Latitude	Longitude
C	23	21S	37E	Lea	32°22'51.724"N	103°8'10.384"W
Contact Name: Hack Conder						
Email: hconder@rice-ecs.com						
Site size: 50' x 60' Square feet: 3,000	Map detail of site attached ☐					
Additional information:						

2. Soils **Do not rip caliches subsoils; caliche rocks brought to the surface by ripping shall be removed.*

Salvaged from site ☐	Bioremediated ☐	Imported ☒	Blended ☐	Depth (in):
Texture:	Describe soil & subsoil:			
Soil prep methods:	Rip ☐ Depth(in):	Disc ☒ Depth (in):		Roller pack ☐
Date completed: 12-14-2012				

3. Bioremediation

Fertilizer ☒	Hay ☐	Other ☒
Type: BIO NHANCE		Describe: 3 BAGS POTTING MIX 1 BAG OF MANURE
Lbs/acre: 6 BAGS		

4. Seeding **Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R.*

Custom seed mix ☒	Prescribed mix ☐	Seed mix name: 5LBS. BLUE GRAMA, 5LBS. SUMMMER WHEAT, 5 LBS SIDE OATS Seeding date: 8-26-13
Broadcast ☒ Method: broadcast seeder		
Soil conditions during seeding: Dry ☒ Damp ☐ Wet ☐		
Photos attached ☐ Number of photos:	Observations:	

5. Certification I hereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief.

Name: Eduardo García	Title: Environmental Tech	Date: 8-26-13
Signature:		

BD Jct. C-23-1 (1R426-279)
Unit Letter C, Section 23, T22S, R37E

site prior,
facing west 8/7/2013

importing blow sand,
facing southwest 8/19/2013

spreading blow sand,
facing south 8/19/2013

spreading amendments,
facing south 8/26/2013

seeding the site,
facing west 8/26/2013

site complete,
facing southwest 8/26/2013