1R - 426-124

REPORTS

DATE:

8-24-12

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

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 9484

August 24th, 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: **Corrective Action Plan (CAP) Report for Groundwater and Termination Request**
Rice Operating Company – BD SWD System
BD jct. P-30 (1R426-124): UL/P sec. 30 T21S 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 2 miles west of Eunice, New Mexico at UL/P sec. 30 T21S R37E as shown on the Site Location Map (Figure 1). Monitor well sampling at the site indicates that groundwater is located at 97 ft bgs.

The former P-30 junction box was rebuilt at a location approximately 30 feet to the south of its former location as part of the ROC Pipeline Replacement/Upgrade Program. Between June 12th and June 21st, 2006, a 30 ft x 30 ft area was excavated to a depth of 12 feet below ground surface (bgs). Following the characterization of the soil, the excavated soil was blended and returned to the excavation up to 6 feet bgs. A 1-foot thick compacted clay barrier was installed to prevent the downward migration of any residual contaminants and the remaining blended soil was placed above the clay.

Using an air rotary drilling rig, five soil borings were completed on June 4th, 2008, to delineate the vadose zone conditions. On June 16th, 2009, one monitoring well (MW-1) was installed using an air rotary drilling rig. Soil samples were collected at regular intervals and field tested to analyze for chloride content. Select duplicate samples were submitted to a commercial laboratory for comparison with field values. The laboratory chloride readings for all five bores and MW-1, showed precipitous declines as the bores

were advanced to depth with only SB-1 and SB-3 having rather elevated chloride levels at depth.

On December 21st, 2010, ROC submitted a Corrective Action Plan (CAP) to NMOCD. An Addendum to the CAP was submitted on January 31st, 2011, and the CAP and Addendum were approved on February 1st, 2011. In the CAP and Addendum, ROC stated that they would install and properly seat a 20-mil reinforced poly liner measuring 110 ft x 103 ft to a depth of approximately 4 ft bgs. Soil with chloride concentrations no greater than 500 mg/kg and field hydrocarbon readings below 100 ppm would be backfilled over the liner. Any soils requiring disposal would be disposed of at a NMOCD approved facility. The site would then be seeded with a blend of native vegetation. Vegetation above the liner also provides 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.

ROC proposed to remove chloride impacted groundwater from the existing groundwater system located at BD O-23 vent and O-23-1 vent. Removed water would be used for pipeline and well maintenance. The estimate conservatively reflected the net impact to groundwater at the BD Jct. P-30 resulting from the former junction box site. It did not take into account other sources or regional conditions that may have existed up gradient from the site. The estimated chloride mass beneath the site was determined to be 599 kg.

Excavation for liner installation began on July 1st, 2011. The site was excavated to 111 ft x 104 ft to a depth of 4.5 ft. A 20-mil reinforced poly liner was installed and properly seated into the excavation over the 30 ft x 30 ft clay liner installed at 6-5 ft bgs. Padding of the liner was not necessary, since the soil at the site was primarily sandy/silty soils without appreciable rock. The site was backfilled with a blend of the excavated soil and soil imported to the site. The area was seeded with a mixture of native vegetation and a silt net fence was placed around the site to maintain seed integrity. A Corrective Action Plan Report on the Vadose Zone Remediation was submitted to NMOCD on August 1st, 2011, which detailed the liner installation activities. NMOCD approved the report and granted soil closure on September 22nd, 2011.

Corrective Action Plan Report for Groundwater

Groundwater recovery began at the BD O-23 vent and O-23-1 vent on July 19th, 2012 for the BD Jct. P-30 site and was completed on July 27th, 2012. During the recovery process, a total of 297 barrels were removed from BD O-23 vent and a total of 448 barrels were removed from BD O-23-1 vent. Given that at BD O-23 vent, MW-1R had a chloride concentration of 7,500 mg/L and RW-2 had a chloride concentration of 10,200 mg/L, the removal of the 297 barrels equates to 418 kg of chlorides extracted from the aquifer. At BD O-23-1 vent, MW-1R had a chloride concentration of 4,300 mg/L and RW-2 had a chloride concentration of 5,000 mg/L (Appendix A). Therefore, the 448 barrels removed equates to 331 kg of chlorides removed from the groundwater. Between the two sites, the recovery systems removed 745 barrels of groundwater which equates to 749 kg of chlorides removed (Appendix B).

ROC has completed the corrective actions as approved by NMOCD in the CAP by installing and properly seating a 20-mil reinforced liner measuring 111 ft x 104 ft x 4.5 ft deep over the 30 ft x 30 ft clay layer and by removing the necessary 599 kg of chloride the site contributed to groundwater. Therefore, ROC requests 'remediation termination' status of the regulatory file.

Upon NMOCD's approval of this report, MW-1 will be plugged and abandoned with a 1-3 % bentonite/concrete slurry with a three foot concrete cap and a report documenting this action will be submitted to NMOCD.

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

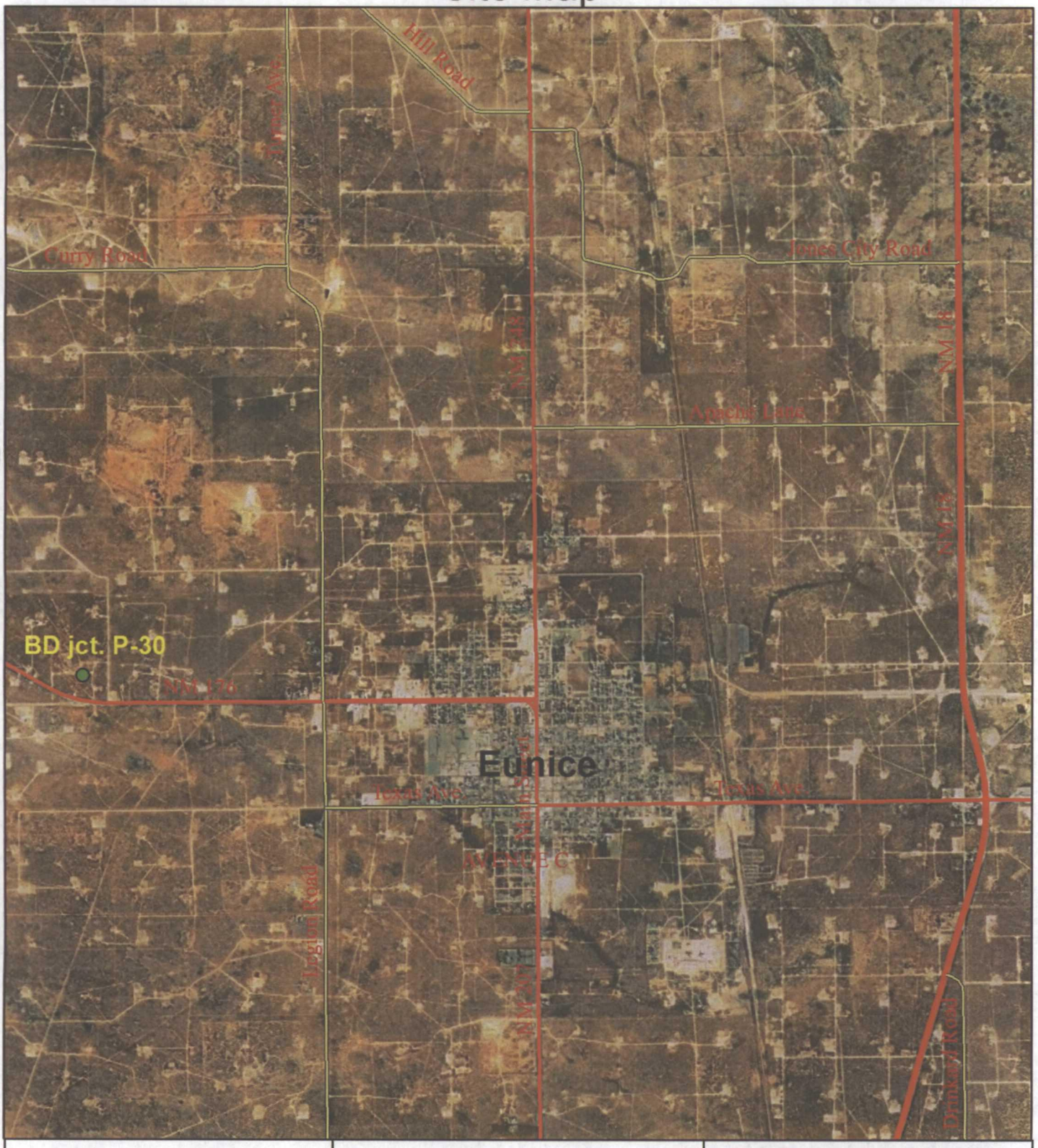
Attachments:

Figure 1 – Site Location Map
Appendix A – BD O-23 and O-23-1 vent MW Sampling Labs
Appendix B – Groundwater Withdrawal Sheet

Figures

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

Site Map



RICE ENVIRONMENTAL
RECS
CONSULTING & SAFETY, LLC

BD jct. P-30

NMOCD Case #: 1R426-124

Legals: UL/P sec. 30
T21S R37E

Figure 1

N
W E
S

0 0.25 0.5 1
Miles

Drawing date:7-13-11
Drafted by: L. Weinheimer

Appendix A

BD O-23 and O-23-1 vent MW Sampling Labs

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

July 31, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD O-23-1 VENT

Enclosed are the results of analyses for samples received by the laboratory on 07/25/12 13:11.

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:	07/25/2012	Sampling Date:	07/20/2012
Reported:	07/31/2012	Sampling Type:	Water
Project Name:	BD O-23-1 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T21S R37E SEC23 O-LEA CTY., NM		

Sample ID: MONITOR WELL 1R (H201716-01)

BTEX 8260B mg/L **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/26/2012	ND	0.019	95.7	0.0200	1.61	
Toluene*	<0.001	0.001	07/26/2012	ND	0.019	94.8	0.0200	0.368	
Ethylbenzene*	<0.001	0.001	07/26/2012	ND	0.019	94.4	0.0200	0.265	
Total Xylenes*	<0.003	0.003	07/26/2012	ND	0.056	93.4	0.0600	0.161	

Surrogate: Dibromofluoromethane	*105 %*	*59.8-161*
Surrogate: Toluene-d8	*99.3 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*88.5 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**4300**	4.00	07/30/2012	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**465**	10.0	07/31/2012	ND	18.8	94.0	20.0	11.3	

TDS 160.1 mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**8100**	5.00	07/26/2012	ND	232	96.7	240	3.57	

Cardinal Laboratories *=Accredited Analyte

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:	07/25/2012	Sampling Date:	07/20/2012
Reported:	07/31/2012	Sampling Type:	Water
Project Name:	BD O-23-1 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T21S R37E SEC23 O-LEA CTY., NM		

Sample ID: RECOVERY WELL 2R (H201716-02)

BTEX 8260B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/26/2012	ND	0.019	95.7	0.0200	1.61	
Toluene*	<0.001	0.001	07/26/2012	ND	0.019	94.8	0.0200	0.368	
Ethylbenzene*	<0.001	0.001	07/26/2012	ND	0.019	94.4	0.0200	0.265	
Total Xylenes*	<0.003	0.003	07/26/2012	ND	0.056	93.4	0.0600	0.161	

Surrogate: Dibromofluoromethane	*104 %*	*59.8-161*
Surrogate: Toluene-d8	*99.1 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*88.8 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**5000**	4.00	07/30/2012	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**472**	10.0	07/31/2012	ND	18.8	94.0	20.0	11.3	

TDS 160.1 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**10000**	5.00	07/26/2012	ND	232	96.7	240	3.57	

Cardinal Laboratories *=Accredited Analyte

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:	07/25/2012	Sampling Date:	07/20/2012
Reported:	07/31/2012	Sampling Type:	Water
Project Name:	BD O-23-1 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T21S R37E SEC23 O-LEA CTY., NM		

Sample ID: MONITOR WELL 2 (H201716-03)

BTEX 8260B mg/L **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/26/2012	ND	0.019	95.7	0.0200	1.61	
Toluene*	<0.001	0.001	07/26/2012	ND	0.019	94.8	0.0200	0.368	
Ethylbenzene*	<0.001	0.001	07/26/2012	ND	0.019	94.4	0.0200	0.265	
Total Xylenes*	<0.003	0.003	07/26/2012	ND	0.056	93.4	0.0600	0.161	

Surrogate: Dibromofluoromethane	*104 %*	*59.8-161*
Surrogate: Toluene-d8	*97.8 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*87.2 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**2150**	4.00	07/30/2012	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**377**	10.0	07/31/2012	ND	18.8	94.0	20.0	11.3	

TDS 160.1 mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**4560**	5.00	07/26/2012	ND	232	96.7	240	3.57	

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

Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company — PO#
Project Manager: Hack Conder	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: BD O-23-1 Vent
Project Location: T21S R37E Sec23 O ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2012)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Anions (Cl, SO4, CO3, HCO3)	Cations (Ca, Mg, Na, K)	Sulfates (SO4)	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
H20171																																					
1	Monitor Well 1R	G	3	X				2				1		7-20	11:05		X																	X	X	X	
2	Recovery Well 2R	G	3	X				2				1		7-20	11:20		X																	X	X	X	
3	Monitor Well 2	G	3	X				2				1		7-20	10:45		X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 7-25-2012	Time: 13:10	Received by: Jodi Henson — Date: 7/25/12 — Time: 13:11
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) — Date: — Time:

Phone Results: ☐ Yes ☐ No
Fax Results: ☐ Yes ☐ No Additional Fax Number:

REMARKS:

Email Results to: hconder@riceswd.com
iweinheimer@rice-ees.com
klones@riceswd.com
rozanne@valornet.com

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

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

CHECKED BY: (Initials)

#26

CARDINAL Laboratories

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

July 31, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD O-23 VENT

Enclosed are the results of analyses for samples received by the laboratory on 07/25/12 13:11.

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:	07/25/2012	Sampling Date:	07/20/2012
Reported:	07/31/2012	Sampling Type:	Water
Project Name:	BD O-23 VENT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T21S R37E SEC23 O-LEA CTY., NM		

Sample ID: MONITOR WELL 1R (H201717-01)

BTEX 8260B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/26/2012	ND	0.019	95.7	0.0200	1.61	
Toluene*	<0.001	0.001	07/26/2012	ND	0.019	94.8	0.0200	0.368	
Ethylbenzene*	<0.001	0.001	07/26/2012	ND	0.019	94.4	0.0200	0.265	
Total Xylenes*	<0.003	0.003	07/26/2012	ND	0.056	93.4	0.0600	0.161	

Surrogate: Dibromofluoromethane	*106 %*	*59.8-161*
Surrogate: Toluene-d8	*99.5 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*87.8 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**7500**	4.00	07/30/2012	ND	100	100	100	3.92	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**478**	10.0	07/31/2012	ND	18.8	94.0	20.0	11.3	

TDS 160.1 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**12800**	5.00	07/26/2012	ND	227	94.6	240	2.32	

Cardinal Laboratories

*=Accredited Analyte

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:	07/25/2012	Sampling Date:	07/20/2012
Reported:	07/31/2012	Sampling Type:	Water
Project Name:	BD O-23 VENT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T21S R37E SEC23 O-LEA CTY., NM		

Sample ID: RECOVERY WELL 2R (H201717-02)

BTEX 8260B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/26/2012	ND	0.019	95.7	0.0200	1.61	
Toluene*	<0.001	0.001	07/26/2012	ND	0.019	94.8	0.0200	0.368	
Ethylbenzene*	<0.001	0.001	07/26/2012	ND	0.019	94.4	0.0200	0.265	
Total Xylenes*	<0.003	0.003	07/26/2012	ND	0.056	93.4	0.0600	0.161	

Surrogate: Dibromofluoromethane	*108 %*	*59.8-161*
Surrogate: Toluene-d8	*100 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*86.9 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**10200**	4.00	07/30/2012	ND	100	100	100	3.92	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**403**	10.0	07/31/2012	ND	18.8	94.0	20.0	11.3	

TDS 160.1 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**18700**	5.00	07/26/2012	ND	227	94.6	240	2.32	

Cardinal Laboratories *=Accredited Analyte

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:	07/25/2012	Sampling Date:	07/20/2012
Reported:	07/31/2012	Sampling Type:	Water
Project Name:	BD O-23 VENT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T21S R37E SEC23 O-LEA CTY., NM		

Sample ID: MONITOR WELL 2 (H201717-03)

BTEX 8260B mg/L Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/26/2012	ND	0.019	95.7	0.0200	1.61	
Toluene*	<0.001	0.001	07/26/2012	ND	0.019	94.8	0.0200	0.368	
Ethylbenzene*	<0.001	0.001	07/26/2012	ND	0.019	94.4	0.0200	0.265	
Total Xylenes*	<0.003	0.003	07/26/2012	ND	0.056	93.4	0.0600	0.161	

Surrogate: Dibromofluoromethane	*106 %*	*59.8-161*
Surrogate: Toluene-d8	*98.8 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*85.4 %*	*53.7-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**4050**	4.00	07/30/2012	ND	100	100	100	3.92	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**298**	10.0	07/31/2012	ND	18.8	94.0	20.0	11.3	

TDS 160.1 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**7710**	5.00	07/26/2012	ND	227	94.6	240	2.32	

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

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company — PO#
Project Manager: Hack Conder	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 — Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #: — Project Name: BD O-23 Vent	
Project Location: T21S R37E Sec23 O ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp.	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2012)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Anions (Cl, SO4, CO3, HCO3)	Cations (Ca, Mg, Na, K)	Sulfates (SO4)	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
H201716																																					
1	Monitor Well 1R	G	3	X				2				1		7-20	9:05		X																	X	X	X	
2	Recovery Well 2R	G	3	X				2				1		7-20	9:20		X																	X	X	X	
3	Monitor Well 2	G	3	X				2				1		7-20	8:50		X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 7-25-2012	Time: 13:10	Received by: Wai Henson — Date: 7/25/12 — Time: 13:11
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) — Date: — Time:

Phone Results: ☐ Yes ☐ No
Fax Results: ☐ Yes ☐ No — Additional Fax Number:

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

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

CHECKED BY: (Initials)

REMARKS:

Email Results to: hconder@riceswd.com
bweinheimer@rice-ecs.com
kjones@riceswd.com
rozanne@valornet.com

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Appendix B

Groundwater Withdrawal Sheet

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

Record of Groundwater Withdrawal
Site Name: BD Jct. P-30 (1R426-124)

O-23 vent

Date	Fluid Hauled (bbls)	Lab	Comments	Date	Fluid Hauled (bbls)	Lab	Comments
7/19/2012			Started Pumping	7/19/2012			Started Pumping
7/20/2012	42.5	7,500		7/20/2012	42.5	10,200	
7/23/2012	42.5			7/23/2012	42.5		
7/25/2012	42.5			7/25/2012	42.5		
7/27/2012	21			7/27/2012	21		
Total for July	148.5 bbls	Total kg of Chloride removed	177	Total for July	148.5 bbls	Total kg of Chloride removed	241
	6237 gallons				6237 gallons		
BD O-23 vent	418	kg of Chloride removed					
	297	bbls removed					
	12474	gallons removed					

O-23-1 vent

Date	Fluid Hauled (bbls)	Lab	Comments	Date	Fluid Hauled (bbls)	Lab	Comments
7/19/2012			Started Pumping	7/19/2012			Started Pumping
7/20/2012	52	4,300		7/20/2012	52	5,000	
7/23/2012	65			7/23/2012	65		
7/25/2012	59.5			7/25/2012	59.5		
7/27/2012	47.5			7/27/2012	47.5		
Total for July	224 bbls	Total kg of Chloride removed	153	Total for July	224 bbls	Total kg of Chloride removed	178
	9408 gallons				9408 gallons		
BD O-23-1 vent	331	kg of Chloride removed					
	448	bbls removed					
	18816	gallons removed					
Total combined:	749	kg of Chloride removed					
	745	bbls removed					
	31290	gallons removed					