1R - 427-282

REPORTS

DATE:

9-20-11

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

CERTIFIED MAIL
RETURN RECIEPT NO. 7008 1140 0001 3070 5696

September 20th, 2011

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: **ICP Report and Termination Request**
Rice Operating Company – EME SWD System
EME K-9 vent (1R427-282): UL/K sec. 9 T20S 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 EME Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the EME 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/usage basis.

Background and Previous Work
The site is located approximately 2.5 miles south-east of Monument, New Mexico at UL/K sec. 9 T20S R37E as shown on the Site Location Map (Figure 1). Groundwater in this area is located approximately 20 +/- feet below ground surface (bgs).

In 2004, ROC initiated work on the former EME K-9 vent junction box. The site was delineated using a backhoe and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The excavation reached dimensions of 30 x 30 x 16 feet bgs where composite samples were collected for laboratory verification. Laboratory tests of the site showed negligible gasoline range organics (GRO) for the 4-wall composite, bottom composite, and remediated backfill. Diesel range organics (DRO) showed negligible readings in the 4-wall composite and bottom composite, and 337mg/kg in the remediated backfill. Chlorides at the site ranged from 304 mg/kg on the 4-wall composite, 112 mg/kg for the bottom composite at 16 ft bgs, and 48 mg/kg for the remediated backfill. At 16 feet bgs and at 6 feet bgs, a clay layer was installed to inhibit further chloride migration and a clay compaction test was administered on the upper clay layer on July 21st, 2004. Clean, imported soil was returned to the excavation to bring it up to ground surface. The area was contoured to the surrounding landscape and an identification plate was placed on the surface of the site to mark its location for future environmental considerations. A new water tight junction box was built at the site.

NMOCD was notified of potential groundwater impact on October 29, 2004 and a junction box disclosure report was submitted to NMOCD with all the 2008 junction box closures and disclosures.

ICP Investigative Results

As part of the Investigation and Characterization Plan approved by NMOCD on August 24th, 2010, one soil bore was advanced through the former junction box site to a depth of 18 ft bgs on September 14th, 2010 (Figure 2). ROC personnel field tested the soil for chlorides and screened for hydrocarbons in the field with a photo-ionization detector (PID). Representative samples from the bore were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers (Appendix A). Chloride concentrations were low throughout the soil bore (SB-1) confirming residual chlorides would not contribute to the degradation of groundwater in the area. PID readings were also low throughout SB-1 but peaked in the capillary fringe at 18 ft below ground surface (bgs) with a reading of 144.6 ppm. Laboratory analysis of the 18 ft bgs sample yielded a benzene concentration of non-detect and a total BTEX concentration of 1.027 mg/kg. The GRO concentration was 35.3 mg/kg and the DRO concentration was 302 mg/kg. BTEX and GRO concentrations in the 9 ft bgs sample were non-detect and the DRO concentration was 88.8 mg/kg.

Conclusion and Recommendation

Site investigation and characterization activities proved chlorides were not a constituent of concern at this site. TPH and BTEX were present but in low concentrations. The low PID readings throughout SB-1 and the elevated PID reading of the 18 ft sample (capillary fringe) suggest the TPH and BTEX concentrations in the 18 ft sample are wicking up from the groundwater below the site. Upward movement of petroleum fuels such as BTEX can take place due to capillary action and significantly increase the volume of soils impacted by BTEX. The existing 30x30-foot clay layers will inhibit migration of residual constituents through the vadose. The infiltration barrier installed below the root zone inhibits the downward migration of water through the subsurface, slowing movement of chloride or soluble hydrocarbons toward ground water.

This site is located at the intersection of two lease roads, and a concrete box was built in the same location (Figure 3). Vegetation surrounding this area has recovered and seeding is not required.

Since BTEX is non-detect throughout the site and relatively low in the 18 ft bgs sample, it seems evident that the hydrocarbons are wicking up from the groundwater below the site. In addition, benzene is also non-detect throughout the site and chloride levels are low. The existing clay layers will inhibit migration of any residual constituents through the vadose; as such, we believe the site in no way contributed to the degradation of the groundwater. Therefore, we asked that the site be given termination status and the regulatory file closed.

ROC 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
Figure 2 – Soil bore installation plat
Figure 3 – Site photos
Appendix A – Soil bore log and laboratory analysis

Figures

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

Site Location

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

EME K-9 vent

Legals: UL/K sec. 9
T20S R37E
NMOCD Case #: 1R427-282

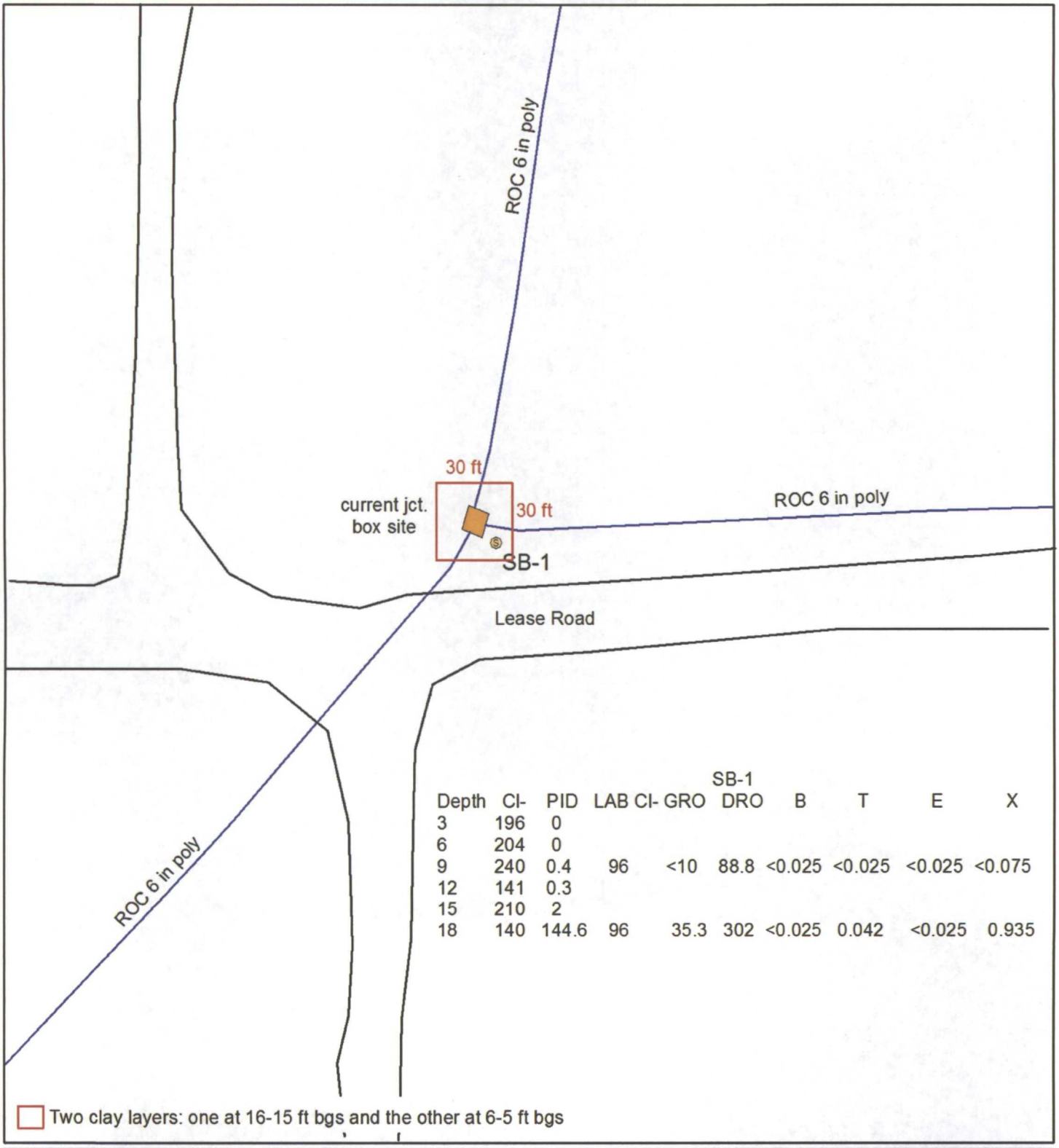
FIGURE 1

N W E S

0 0.25 0.5 1
Miles

Drawing date: 7-14-10
Drafted by: L. Weinheimer

Soil bore installation



SB-1

Depth	Cl-	PID	LAB Cl-	GRO	DRO	B	T	E	X
3	196	0							
6	204	0							
9	240	0.4	96	<10	88.8	<0.025	<0.025	<0.025	<0.075
12	141	0.3							
15	210	2							
18	140	144.6	96	35.3	302	<0.025	0.042	<0.025	0.935

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME K-9 vent

Legals: UL/K sec. 9
T20S R37E

NMOCD Case #: 1R427--282

Figure 2

N W E S

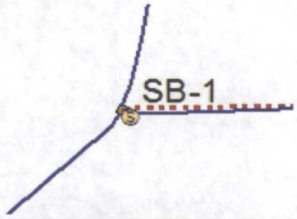
0 25 50 100 Feet

Drawing date:10-1-10
Drafted by: L. Weinheimer

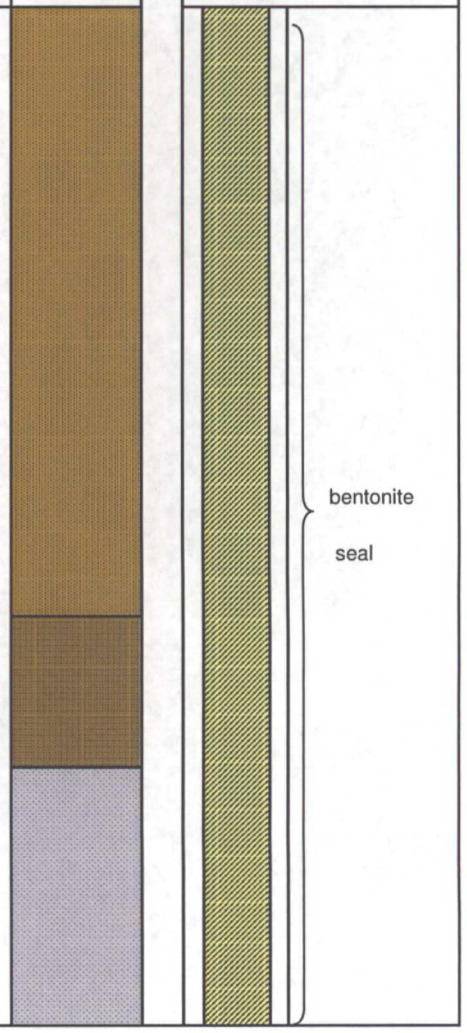
Appendix A

Soil bore log and laboratory analysis

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

Logger:	Lara Weinheimer		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper Inc. Drilling		
Drilling Method	Air Rotary		**Project Name:** EME K-9 vent **Well ID:** SB-1
Start Date:	9/14/2010		
End Date:	9/14/2010		**Project Consultant:** RECS
Comments: Located at the source of the former junction box site. **Drafted by: Lara Weinheimer** TD = 18 ft GW = 20 ft			**Location:** UL/K sec. 9 T20S R37E **Lat:** 32°35'2.332"N **Long:** 103°15'40.585"W **County**: LEA **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				light brown very fine sand with caliche particles. Slightly moist. No odor.
3 ft	196		0	
6 ft	204		0	
9 ft	240	Cl- 96	0.4	
B <0.025 T <0.025		GRO <10		
E <0.025 X <0.075		DRO 88.8		
12 ft	141		0.3	
				Light brown very fine sand with clay from clay layer and caliche particles. Slightly moist. Moderate hydrocarbon odor.
15 ft	210		2	
				Tan to gray very fine sand with substantial caliche. Slightly moist. Strong hydrocarbon odor.
18 ft	140	Cl- 96	144.6	
B <0.025 T 0.042		GRO 35.3		
E <0.025 X 0.935		DRO 302		



CARDINAL Laboratories

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

September 21, 2010

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME K-9 VENT

Enclosed are the results of analyses for samples received by the laboratory on 09/14/10 16:10.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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:	09/14/2010	Sampling Date:	09/14/2010
Reported:	09/21/2010	Sampling Type:	Soil
Project Name:	EME K-9 VENT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-9 VENT		

Sample ID: SB -1 @ 9' (H020848-01)

BTEX 8021B mg/kg **Analyzed By: cms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.025	0.025	09/20/2010	ND	1.02	102	1.00	3.57	
Toluene*	<0.025	0.025	09/20/2010	ND	1.12	112	1.00	4.42	
Ethylbenzene*	<0.025	0.025	09/20/2010	ND	1.13	113	1.00	2.83	
Total Xylenes*	<0.075	0.075	09/20/2010	ND	3.36	112	3.00	3.77	

Surrogate: 4-Bromofluorobenzene (PIL *105 %* *80-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	09/16/2010	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/17/2010	ND	159	79.5	200	1.65	
DRO >C10-C28	**88.8**	10.0	09/17/2010	ND	166	82.9	200	1.18	

Surrogate: 1-Chlorooctane *89.3 %* *70-130*

Surrogate: 1-Chlorooctadecane *109 %* *70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
A-01	Surrogate outside historical limits.
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

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 Operating Company	**BILL TO**
Project Manager: Hack Conder	**P.O. #:**
Address: 122 West Taylor	**Company:**
City: Hobbs **State:** NM **Zip:** 88240	**Attn:**
Phone #: 393-9174 **Fax #:** 397-1471	**Address:**
Project #: **Project Owner:**	**City:**
Project Name: Emg 18-9 vent	**State:** **Zip:**
Project Location: Emg 18-9 vent	**Phone #:**
Sampler Name: Lara Weinheimer	**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							
H20848-1	83-1 @ 9'	G	1			✓					✓		9-14-10	10:03	✓	✓	✓								

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: L. Weinheimer	**Date:** 9-14-10 **Time:** 4:10	**Received By:**	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	**Date:** **Time:**	**Received By:** Jodi Henson	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: Yes ☑ Intact: Yes ☐ No ☐ No	CHECKED BY: (Initials)

REMARKS:

email results

Hconder@riceswd.com; jpurvis@riceswd.com; Lweinheimer@riceswd.com

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

#26

NEED SAMPLES BACK, PLEASE

CARDINAL Laboratories

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

September 21, 2010

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME K-9 VENT

Enclosed are the results of analyses for samples received by the laboratory on 09/14/10 16:10.

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Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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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 (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:	09/14/2010	Sampling Date:	09/14/2010
Reported:	09/21/2010	Sampling Type:	Soil
Project Name:	EME K-9 VENT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-9 VENT		

Sample ID: SB-1 18' (H020849-01)

BTEX 8021B mg/kg **Analyzed By: cms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.025	0.025	09/20/2010	ND	1.02	102	1.00	3.57	
Toluene*	**0.042**	0.025	09/20/2010	ND	1.12	112	1.00	4.42	
Ethylbenzene*	<0.025	0.025	09/20/2010	ND	1.13	113	1.00	2.83	
Total Xylenes*	**0.935**	0.075	09/20/2010	ND	3.36	112	3.00	3.77	

Surrogate: 4-Bromofluorobenzene (PIL *109 %* *80-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	09/16/2010	ND	416	104	400	3.77	

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**35.3**	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	**302**	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane *93.1 %* *70-130*

Surrogate: 1-Chlorooctadecane *103 %* *70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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

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 Company
Project Manager: Hack Conder
Address: 122 West Taylor
City: Hobbs State: NM Zip: 88240
Phone #: 393-9174 Fax #: 397-1471
Project #: Project Owner:
Project Name: [illegible]
Project Location: [illegible]
Sampler Name: Lara Weinheimer

BILL TO
P.O. #:
Company:
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

Lab I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	Cl	TPH 8015M	BTEX
H20849-1	SB-1 @ 10'	G	1			✓					✓		[illegible]	12:09	✓	✓	✓

MATRIX: GROUNDWATER, WASTEWATER, SOIL, OIL, SLUDGE, OTHER. PRESERV: ACID/BASE, ICE / COOL, OTHER. SAMPLING: DATE, TIME. ANALYSIS REQUEST.

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: L. Weinheimer Date: 9-14-10 Time: 4:20
Received By:
Relinquished By: Date: Time:
Received By: Jodi Henson
Delivered By: (Circle One)
Sampler - UPS - Bus - Other:
Sample Condition Cool: ☒ Yes ☐ No Intact: ☒ Yes ☐ No
CHECKED BY: (Initials) JH

Phone Result: ☐ Yes ☒ No Add'l Phone #:
Fax Result: ☐ Yes ☒ No Add'l Fax #:
REMARKS:
email results

Hconder@riceswd.com; jpurvis@riceswd.com; Lweinheimer@riceswd.com

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

NEED SAMPLES BACK, PLEASE

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Appendix B

Site photo

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

Site photo, facing WSW 8/19/11