

1R - 427-365

# WORKPLANS

Date:

9-4-12

RECEIVED

SEP - 3 2012

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Return Receipt No. 7002 2410 0001 5813 4026

Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

ARCADIS U.S., Inc.  
1004 North Big Spring Street  
Suite 300  
Midland  
Texas 79701  
Tel 432.687.5400  
Fax 432.687.5401  
[www.arcadis-us.com](http://www.arcadis-us.com)

Mr. Ed Hansen  
New Mexico Energy, Minerals, & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87505

Environmental

Subject:

**ICP Report and Corrective Action Plan (CAP)  
EME Jct. C-13  
Unit C, SEC. 13, T20S, R36E, Monument, Lea County, New Mexico  
NMOCD CASE # 1R427-365**

Date:  
September 4, 2012

Contact:  
Sharon Hall

Mr. Hansen:

Phone:  
432.687.5400

RICE Operating Company (ROC) has retained ARCADIS U.S., Inc. (ARCADIS) to address potential environmental concerns at the above-referenced site. 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 ownership/usage basis. Environmental projects of this nature require System Party AFE approval prior to work commencing at the site. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is greatly appreciated.

Email:  
[sharon.hall@arcadis-us.com](mailto:sharon.hall@arcadis-us.com)

Our ref:  
MT001085.0001

ARCADIS U.S., Inc.  
TX Engineering License # F-533

On behalf of ROC, ARCADIS respectfully submits this ICP Report and Corrective Action Plan (CAP) for the above-referenced site.

#### **SITE HISTORY AND BACKGROUND**

The site is located approximately 3.5 miles southwest of Monument, New Mexico as shown on the Site Location Map. The junction box was eliminated and initial delineation was conducted from August 4<sup>th</sup>, 2011 through August 31<sup>st</sup>, 2011.

A backhoe was used to excavate soils from an excavation measuring 30 feet by 30 feet by 12 feet deep around the former junction box. Soil samples were collected at

regular intervals and analyzed in the field for chlorides using field-adapted Standard Method 4500-Cl<sup>-</sup>B and screened in the field using a photoionization detector (PID).

A five-point wall composite sample was collected from each of the four walls and combined to make a representative four-wall composite sample, and a five-point composite sample was collected from the bottom of the excavation and submitted to Cardinal Laboratories for gasoline range organics (GRO), diesel range organics (DRO) and chloride analysis. Chlorides were detected at a concentration of 992 milligrams per kilogram (mg/kg) in the four-wall composite sample and 960 mg/kg in the five-point composite bottom sample. GRO and DRO were not detected in either of the samples.

Based on the results of the soil sampling analytical results, elevated chloride concentrations are present at the subject site.

Approximately 204 cubic yards of excavated soil was properly disposed of at a NMOCD approved facility. The remaining excavated soils were blended on site with clean imported soil and backfilled into the excavation to a depth of five feet below ground surface. A 20-mil poly liner was installed at five feet below ground surface and the remaining excavation was backfilled with blended soil to ground surface. The area was contoured to the surrounding landscape.

A sample of the blended backfill material was submitted to Cardinal Laboratories for chloride analysis. Chlorides were detected at a concentration of 288 mg/kg.

ROC disclosed potential groundwater impact at the site to New Mexico Oil Conservation Division (NMOCD) via e-mail on March 13, 2012.

ROC submitted an ICP to NMOCD on May 30, 2012 and was approved by NMOCD on June 7, 2012.

## **ICP INVESTIGATION RESULTS**

Two soil borings (SB-1 and SB-2) were drilled at the site on July 11, 2012. The soil borings were drilled to depths of 27 and 40 feet below ground surface. Soil samples were collected analyzed in the field for chlorides using field-adapted Method 4500-Cl<sup>-</sup>B and screened in the field using a PID. Two samples from each boring were submitted to Cardinal Laboratories and analyzed for chlorides, GRO and DRO. Sample results and intervals sampled are shown on the attached Sore Bore

Installation figure and attached boring logs. SB-1 laboratory analysis resulted in a decrease in chloride concentration from 448 mg/kg at 15 feet to 272 mg/kg at 27 feet. Chloride concentrations in SB-2 decreased from 912 mg/kg at 9 feet to 208 mg/kg at 18 feet. GRO and DRO were not detected in any of the samples.

Groundwater was expected at a depth of 31 feet below ground surface. SB-2 was installed to a depth of 40 feet below ground surface where Triassic clays were encountered. No moist soils were encountered and the decision was made to leave the boring open for 48 hours to determine whether or not a saturated interval exists. After the 48-hour period no moisture was detected in the borehole. A letter to that effect from the driller is attached.

#### **PROPOSED CORRECTIVE ACTION WORKPLAN**

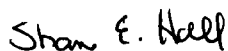
Based on the fact that a boring was installed to a depth that encountered Triassic clay and no moisture was detected and a 20-mil reinforced liner was installed at this site to prevent any potential chloride migration, ARCADIS recommends the following.

The site will be scraped to a depth of 6 inches to one foot and backfilled with clean soil. The site will then be seeded with native vegetation. Soil amendments will be added as necessary. Excavated soil will be evaluated for use as backfill, and any soil requiring disposal will be properly disposed of at a NMOCD approved facility.

Thank you for your consideration concerning this ICP Report and CAP. If you have any questions, do not hesitate to contact Hack Conder or me.

Sincerely,

ARCADIS U.S., Inc.



Sharon E. Hall  
Associate Vice President

Copies:  
Hack Conder, ROC

Attachments:

Site Location Map

Soil Bore Installation Data Figure

Soil Boring Logs

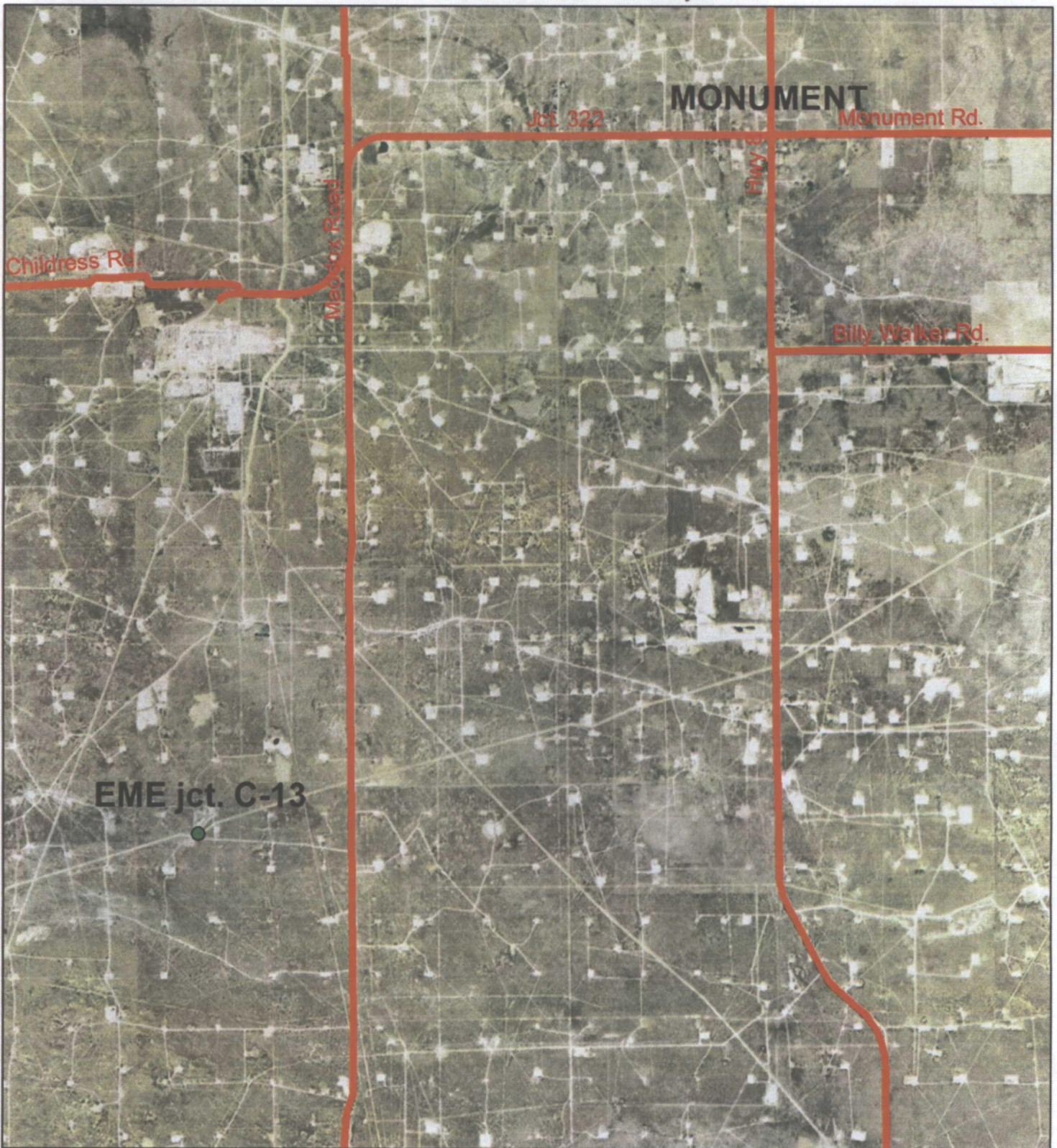
Laboratory Analysis

Photographs

Letter from driller documenting no groundwater

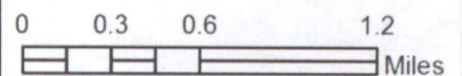


# Site Location Map



## ***EME jct. C-13***

Legals: UL/C sec. 13  
T-20-S R-36-E  
LEA COUNTY, NM



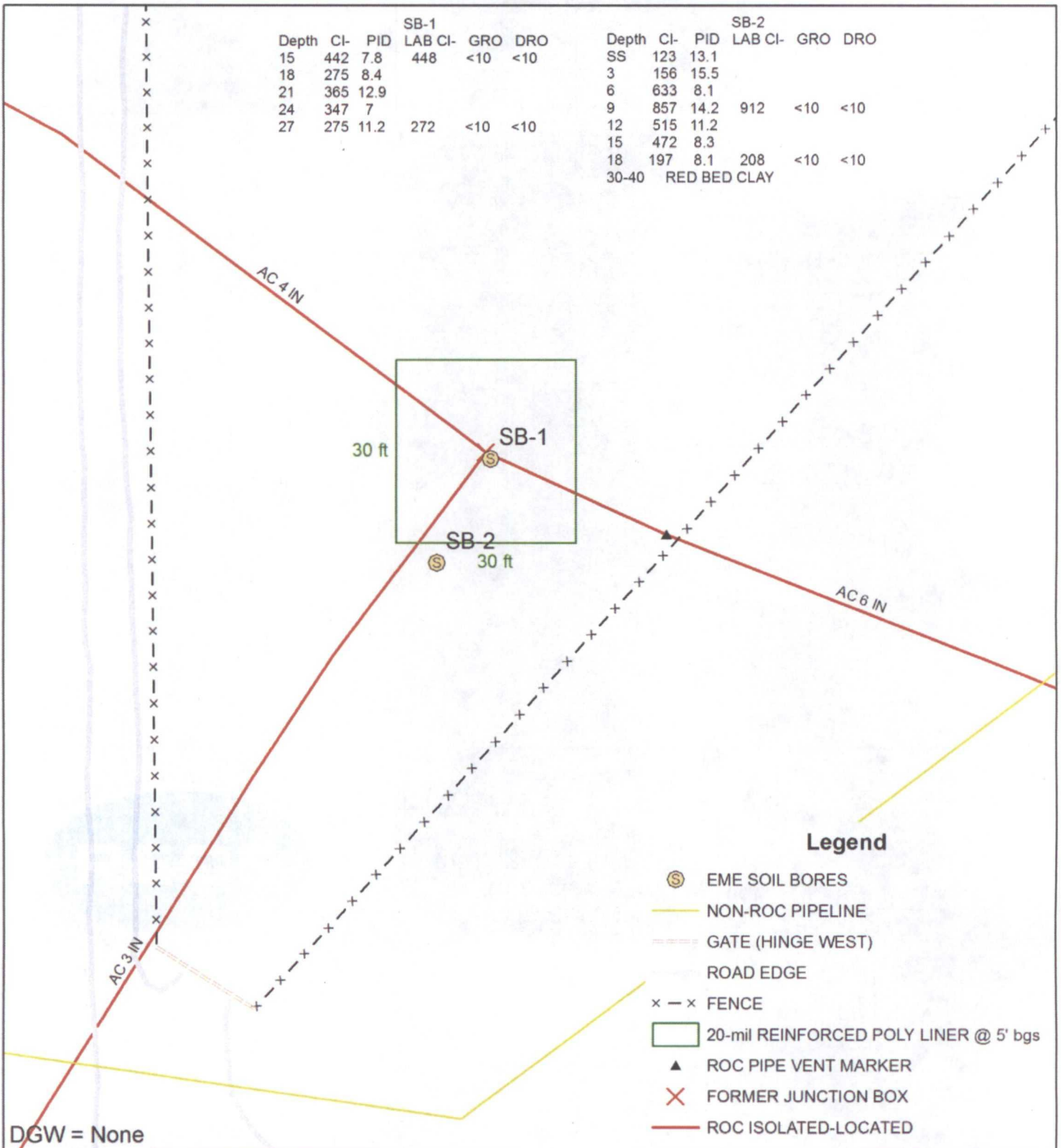
Drawing date: 5-2-12  
Drafted by: L. Weinheimer



# Soil Bore Installation

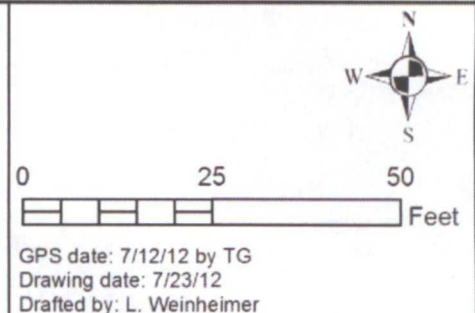
SB-1					
Depth	CI-	PID	LAB CI-	GRO	DRO
15	442	7.8	448	<10	<10
18	275	8.4			
21	365	12.9			
24	347	7			
27	275	11.2	272	<10	<10

SB-2					
Depth	CI-	PID	LAB CI-	GRO	DRO
SS	123	13.1			
3	156	15.5			
6	633	8.1			
9	857	14.2	912	<10	<10
12	515	11.2			
15	472	8.3			
18	197	8.1	208	<10	<10
30-40	RED BED CLAY				



**EME Jct. C-13**






UL/C SECTION 13  
T-20-S R-36-E  
LEA COUNTY, NM  
NMOCD Case #: 1R427-365



Logger:	Kyle Norman		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		
Start Date:	7/11/2012		
End Date:	7/11/2012		
Comments: Located at the former junction box site. All samples were from cuttings. DRAFTED BY: A.C. Ruth TD = 27 ft. GW = None		Project Name: EME Jct. C-13 Well ID: SB-1 Project Consultant: ARCADIS U.S., Inc. Location: UL/C sec. 13 T-20-S R-36-E Lat: 32°34'38.977"N Long: 103°18'41.752"W County: Lea State: NM	

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS				Regolith		
3 ft				Regolith		
6 ft				Regolith		
9 ft				Regolith		
12 ft				Regolith		
15 ft	442	CI- 448 GRO <10 DRO <10	7.8	Tan Sand		bentonite seal
18 ft	275		8.4	Tan Sand		bentonite seal
21 ft	365		12.9	Tan Sand		bentonite seal
24 ft	347		7	Tan Sand		bentonite seal



27 ft	275	CI- 272	11.2	Tan Sand					
		GRO							
		<10							
		DRO							
		<10							

Logger:	Kyle Norman			
Driller:	Harrison & Cooper, Inc.			
Drilling Method:	Air Rotary		Project Name:	Well ID:
Start Date:	7/11/2012		EME Jct. C-13	SB-2
End Date:	7/11/2012	Project Consultant: ARCADIS U.S., Inc.		Location: UL/C sec. 13 T-20-S R-36-E
Comments: Located 22 ft. southwest of the former junction box site. All samples were from cuttings. DRAFTED BY: A.C. Ruth TD = 40 ft. GW = None			Lat: 32°34'38.791"N	County: Lea
			Long: 103°18'41.87"W	State: NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown Sand		
SS	123		13.1			
3 ft	156		15.5	Tan Sand With Some Caliche		bentonite seal
6 ft	633		8.1			
9 ft	857	CI- 912 GRO <10 DRO <10	14.2			
12 ft	515		11.2	Tan Sand with Sand Stone		
15 ft	472		8.3			
				No Samples Taken		
18 ft	197	CI- 208 GRO <10 DRO <10	8.1			
21 ft						

24 ft				No Samples Taken						
27 ft										
30 ft				RED BED CLAY						
33 ft										
36 ft										
40 ft										

July 17, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME C-13 EOL (20S/36E)

Enclosed are the results of analyses for samples received by the laboratory on 07/11/12 16:40.

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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

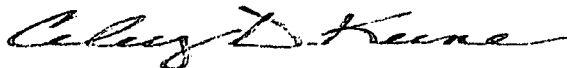
Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

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

Lab Director/Quality Manager



**Analytical Results For:**

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

 Received: 07/11/2012  
 Reported: 07/17/2012  
 Project Name: EME C-13 EOL (20S/36E)  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 07/11/2012  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 15' (H201589-01)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	448	16.0	07/13/2012	ND	400	100	400	0.00	
TPH 8015M		mg/kg		Analyzed By: AM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/13/2012	ND	164	82.2	200	0.261	
DRO >C10-C28	<10.0	10.0	07/13/2012	ND	166	83.0	200	0.729	

 Surrogate: 1-Chlorooctane 80.7 % 65.2-140  
 Surrogate: 1-Chlorooctadecane 100 % 63.6-154

**Sample ID: SB 1 @ 27' (H201589-02)**

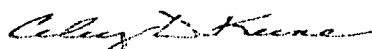
Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	07/13/2012	ND	400	100	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/16/2012	ND	174	87.0	200	0.184	
DRO >C10-C28	<10.0	10.0	07/16/2012	ND	185	92.6	200	5.08	

 Surrogate: 1-Chlorooctane 79.8 % 65.2-140  
 Surrogate: 1-Chlorooctadecane 97.7 % 63.6-154

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	07/11/2012	Sampling Date:	07/11/2012
Reported:	07/17/2012	Sampling Type:	Soil
Project Name:	EME C-13 EOL (20S/36E)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SB 2 @ 9' (H201589-03)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	912	16.0	07/13/2012	ND	400	100	400	0.00		
TPH 8015M		mg/kg		Analyzed By: AM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	07/16/2012	ND	174	87.0	200	0.184		
DRO >C10-C28	<10.0	10.0	07/16/2012	ND	185	92.6	200	5.08		
Surrogate: 1-Chlorooctane	71.3 %	65.2-140								
Surrogate: 1-Chlorooctadecane	88.3 %	63.6-154								

**Sample ID: SB 2 @ 18' (H201589-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	07/13/2012	ND	400	100	400	0.00		
TPH 8015M		mg/kg		Analyzed By: AM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	07/16/2012	ND	174	87.0	200	0.184		
DRO >C10-C28	<10.0	10.0	07/16/2012	ND	185	92.6	200	5.08		
Surrogate: 1-Chlorooctane	89.9 %	65.2-140								
Surrogate: 1-Chlorooctadecane	111 %	63.6-154								

Cardinal Laboratories

\* = Accredited Analyte

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 client for 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 thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celéy 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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Cardinal Laboratories

\*=Accredited Analyte

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---

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

### ANALYSIS REQUEST

#### BILL TO

Company Name: <u>Rice</u>		P.O. #:
Project Manager: <u>Hack Conder</u>		Company:
Address:		Attn:
City: <u>Hobbs</u>	State: <u>NM</u> Zip: <u>88240</u>	Address:
Phone #:	Fax #:	City:
Project #:	Project Owner:	State:
Project Name:		Zip:
Project Location: <u>Case 01340 2-13-05</u>		Phone #:
Sampler Name: <u>Kyle Norman</u>		Fax #:

Chlorides  
TPH 8015 M  
BTEX  
Texas TPH  
Complete Cations/Anions  
TDS

FOR LAB USE ONLY		Lab I.D.	Sample I.D.	GRAB OR (C)MP.	# CONTAINERS	MATRIX					PRESERV.	SAMPLING		
1	2					3	4	GROUNDWATER	WASTEWATER	SOIL	SLUDGE	OTHER	ACID/BASE	ICE/COOL
1	3616	15'		1	1								7/11/05	4:45
2	3616	17'		1	1								7/11/05	4:45
3	3616	18'		1	1								7/11/05	4:45
4	3616	18'		1	1								7/11/05	4:45

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Relinquished By: <u>[Signature]</u>	Date: <u>7-11-05</u>	Received By: <u>[Signature]</u>
Relinquished By: <u>[Signature]</u>	Date: <u>7-11-05</u>	Received By: <u>[Signature]</u>
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool - Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	CHECKED BY: <u>[Signature]</u>

Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
REMARKS:	
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	

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



**EME Jct. C-13**  
**Unit C, Section 13, T-20-S, R-36-E**



Drilling SB-1, facing east

7/11/12



Plugging SB-1 in total with bentonite

7/11/12



Completed SB-1, facing east

7/11/12



Drilling SB-2, facing east

7/11/12



Drilling into red bed clay at SB-2

7/11/12



Checking for water at SB-2, facing north

7/13/12



Plugging SB-2 in total with bentonite 7/13/12



Completed SB-2, facing north 7/13/12

# HARRISON & COOPER, INC.

*Drilling & Pump Professionals*

7414 85<sup>th</sup> Street, Lubbock, Texas 79424-4951

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

Ph: (806) 866-4026

Fax: (806) 866-4044

[hcidrill.com](http://hcidrill.com)

August 16, 2012

Rice Operating  
112 W. Taylor  
Hobbs, NM 88240

**RE: EME Jct. C-13  
Bore Hole Condition**

To whom it may concern:

On July 11, 2012, Harrison and Cooper were contracted by Rice Operating to drill and sample a soil boring to a total depth of 40' at the subject site. After a forty-eight hour holdover time the boring was gauged with a water level indicator to discover the moisture content was NON-detectable.

If any questions arise from this issue, do not hesitate to contact a representative with Harrison and Cooper.

Sincerely,

Kenny Cooper  
Operations Manager

Copies: File  
Email (Rice)

Regulated by: Texas Dept. of Licensing & Regulation, Water Well Division, P.O. Box 12157, Austin, TX 78711, (800) 803-9202

**Hansen, Edward J., EMNRD**

---

**From:** Katie Jones <kjones@riceswd.com>  
**Sent:** Tuesday, September 18, 2012 8:44 AM  
**To:** Hansen, Edward J., EMNRD  
**Cc:** Hack Conder; Laura Pena; Sharon Hall  
**Subject:** ROC - EME Jct. C-13 (1R427-365) ICP Report and CAP Addendum  
**Attachments:** EME Jct. C-13 (1R427-365) Site Location Map - No Groundwater Locations.jpg

Mr. Hansen,

The following is an Addendum to the EME Jct. C-13 (1R427-365) ICP Report and CAP submitted to the NMOCD on September 4, 2012.

Page 3, Paragraph 2; blue lettering should be added to the paragraph.

“Groundwater was expected at a depth of 31 feet below ground surface. SB-2 was installed to a depth of 40 feet below ground surface where Triassic clays were encountered. No moist soils were encountered and the decision was made to leave the boring open for 48 hours to determine whether or not a saturated interval exists. After the 48-hour period no moisture was detected in the borehole. A letter to that effect from the driller is attached. A plat showing this site in relation to other areas located in the EME system with no groundwater is attached.”

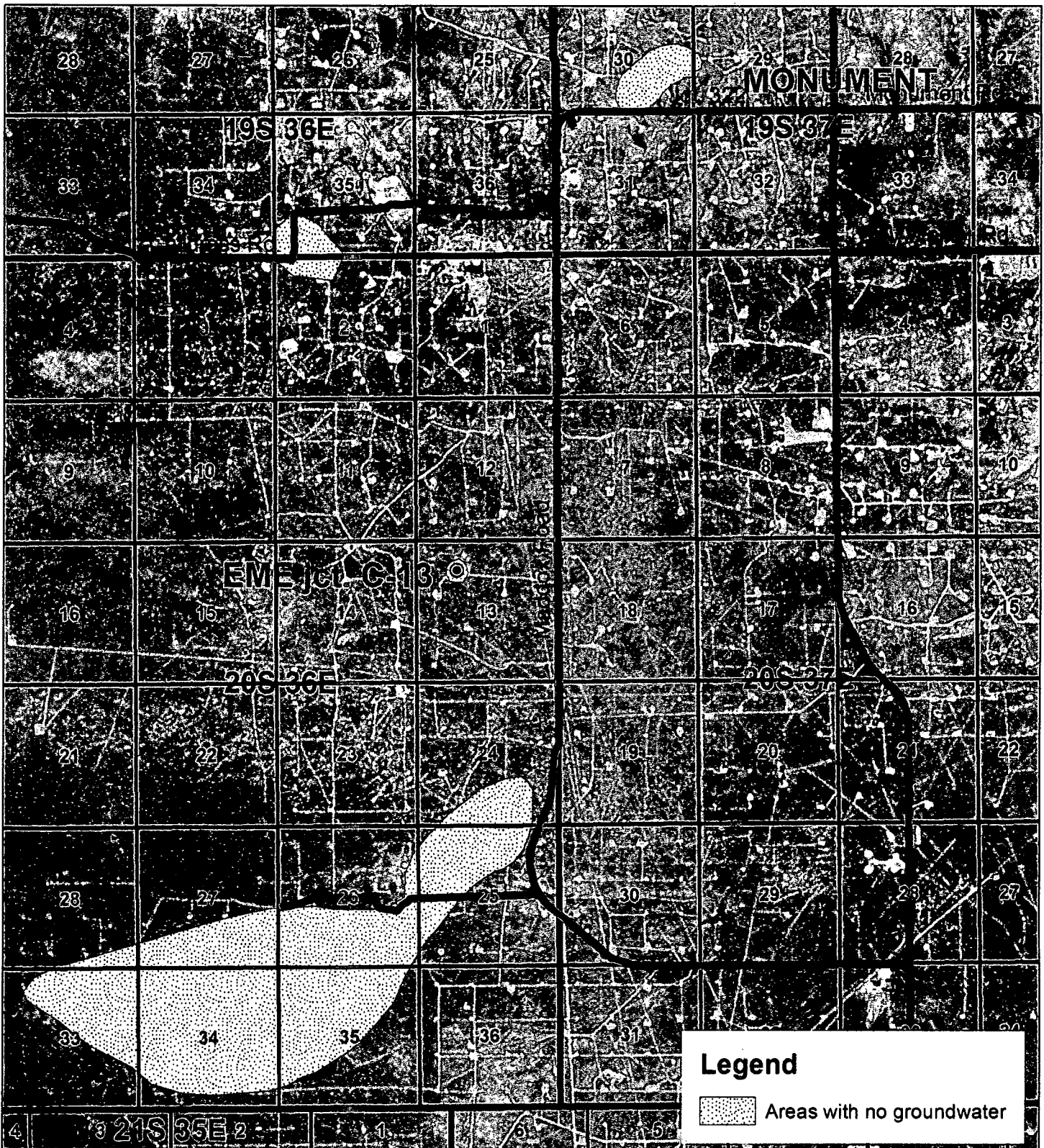
If you have any questions or need any additional information, please contact me or Hack Conder.

Thank you.

Katie Jones  
Environmental Project Manager  
*RICE Operating Company*



# Areas With No Groundwater



## Legend

 Areas with no groundwater




***EME jct. C-13***

Legals: UL/C sec. 13  
T-20-S R-36-E  
LEA COUNTY, NM

NMOCD Case #: 1R427-365



0 0.45 0.9 1.8  
 Miles

Drawing date: 9/12/12  
Drafted by: L. Weinheimer