

1R - 427-359

APPROVALS

YEAR(S):

2013

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Thursday, May 23, 2013 2:16 PM
To: Hack Conder (hconder@riceswd.com)
Cc: Leking, Geoffrey R, EMNRD; Laura Pena (lpna@riceswd.com); Katie Jones
<kjones@riceswd.com> (kjones@riceswd.com); Scott Curtis (scurtis@riceswd.com)
Subject: Remediation Plan (1R427-359) Termination - ROC EME Jct F-24 Site

**RE: Termination Request
for the Rice Operating Company's
EME Jct F-24 Site
Unit Letter F, Section 24, T20S, R36E, NMPM, Lea County, New Mexico
Remediation Plan (1R427-359) Termination**

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received Rice Operating Company's report and request to close the above-referenced site, dated May 8, 2013 (received May 20, 2013). The reports are acceptable to the OCD.

The above-referenced report, submitted in accordance with 19.15.29 NMAC (Rule 29; formally, Rule 116), indicates that Rice Operating Company has met the requirements of 19.15.29 NMAC; therefore, the OCD approves the report and hereby notifies you that the remediation plan (1R427-359) is terminated in accordance with 19.15.29 NMAC.

Please be advised that OCD approval of this report does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

RICE *Operating Company*

122 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax: (575) 397-1471

CERTIFIED MAIL

RETURN RECEIPT NO. 7007 2560 0000 4569 9231

RECEIVED

May 8, 2013

MAY 20 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

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

RE: Termination Request
EME Jct. F-24 (1R427-359): UL/F, Sec. 24, T20S, R36E
RICE Operating Company – Eunice Monument Eumont SWD System

Mr. Hansen:

Rice Operating Company (ROC) is the service provider (agent) for the EME Saltwater Disposal (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

In 2010, ROC initiated work on the former F-24 junction box. The site is located in UL/F, Sec. 24, T20S, R36E. NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 28 +/- feet. The site was delineated using a backhoe to collect soil samples at regular intervals, creating a 20x20x12 ft deep excavation. Each sample was field titrated for chlorides and screened for TPH, resulting in low chloride concentrations and elevated organic vapor concentrations. The excavated soil was blended on site and representative composite samples of the excavation walls, bottom and blended backfill were sent to a commercial for analysis of chloride and TPH, resulting in a 4-wall chloride concentration of 16 mg/kg, a gasoline range organics (GRO) concentration below detectable limits and a diesel range organics (DRO) concentration of 83.3 mg/kg. The bottom composite resulted in a chloride concentration of 80 mg/kg, a GRO concentration of 64.9 mg/kg and a DRO concentration of 683 mg/kg. The blended backfill resulted in a chloride concentration of 32 mg/kg and GRO and DRO concentrations below detectable limits. The 4-wall sample was analyzed for BTEX, resulting in a benzene concentration below detectable limits, 0.771 mg/kg for toluene, 0.121 mg/kg for ethyl benzene and 2.05 mg/kg for total xylenes. The bottom sample was also analyzed for BTEX, resulting in benzene and ethyl benzene

concentration below detectable limits, a toluene concentration of 0.104 mg/kg and 0.169 mg/kg for total xylenes. The excavation was backfilled with clean imported soil to 5 ft below ground surface (BGS). At 5-4 ft BGS, a 1 ft thick compacted clay layer was installed with a compaction test performed on 11/23/2010. The clay layer will provide a barrier that will inhibit the downward migration of chlorides to groundwater. The remaining excavation was backfilled with clean soil to ground surface and contoured to the surrounding area. On 11/29/2010, the site was seed with a blend of native vegetation.

To further investigate the depth of TPH presence, a soil bore was initiated on 12/10/2010 at the former junction box source. The boring was advanced to a total depth of 27 ft BGS with soil samples collected every 3 ft between 15 – 27 ft BGS. Each sample was field titrated for chlorides and screened for TPH, resulting in low concentrations of each. The 15 ft, 24 ft and 27 ft samples were taken to a commercial laboratory for analysis of chloride and TPH, which resulted in a chloride concentration of 176 mg/kg for the 15 ft samples, 480 mg/kg for the 24 ft sample and decreased to 240 mg/kg for the 27 ft sample. GRO and DRO concentrations were below detectable limits throughout. The entire bore was plugged with bentonite to ground surface.

On 4/4/2013, the site was seeded with a blend of native vegetation. Vegetation will act as an evapo-transpiration barrier that will also 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. The site revegetation form and photos of these activities are attached.

The junction box site location map, final report, photodocumentation, soil bore installation, laboratory analyses, PID sheets, cross-section diagram, clay compaction test, hydraulic conductivity, 2010 BTEX study, chloride graph, revegetation form and seeding photodocumentation are attached.

Recommendations

Site investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate groundwater in excess of NMOCD standards. This site meets the requirements of the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). As such, ROC request termination of the regulatory file, or similar closure status.

Please contact me at (575)393-9174 if you have any questions or wish to discuss this site.
Thank you for your time and consideration.

Sincerely,
RICE Operating Company

A handwritten signature in black ink, appearing to read "H. Conder", with a long horizontal flourish extending to the right.

Hack Conder
Environmental Manager

enclosures

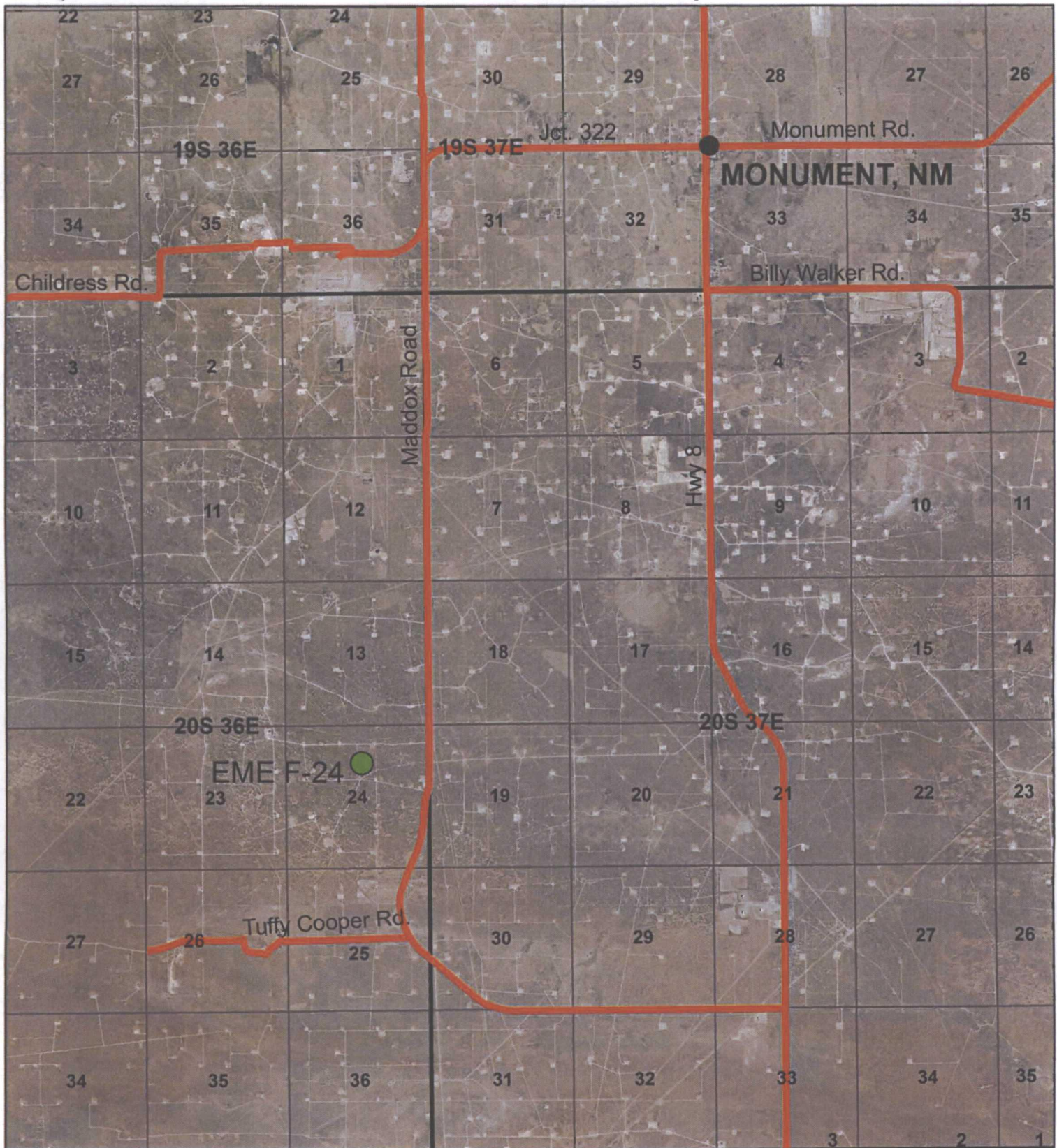
RECEIVED OGD
2013 MAY 17 P 2:25



Site Location Map

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

Site Location Map



EME Jct. F-24
(1R427-359)

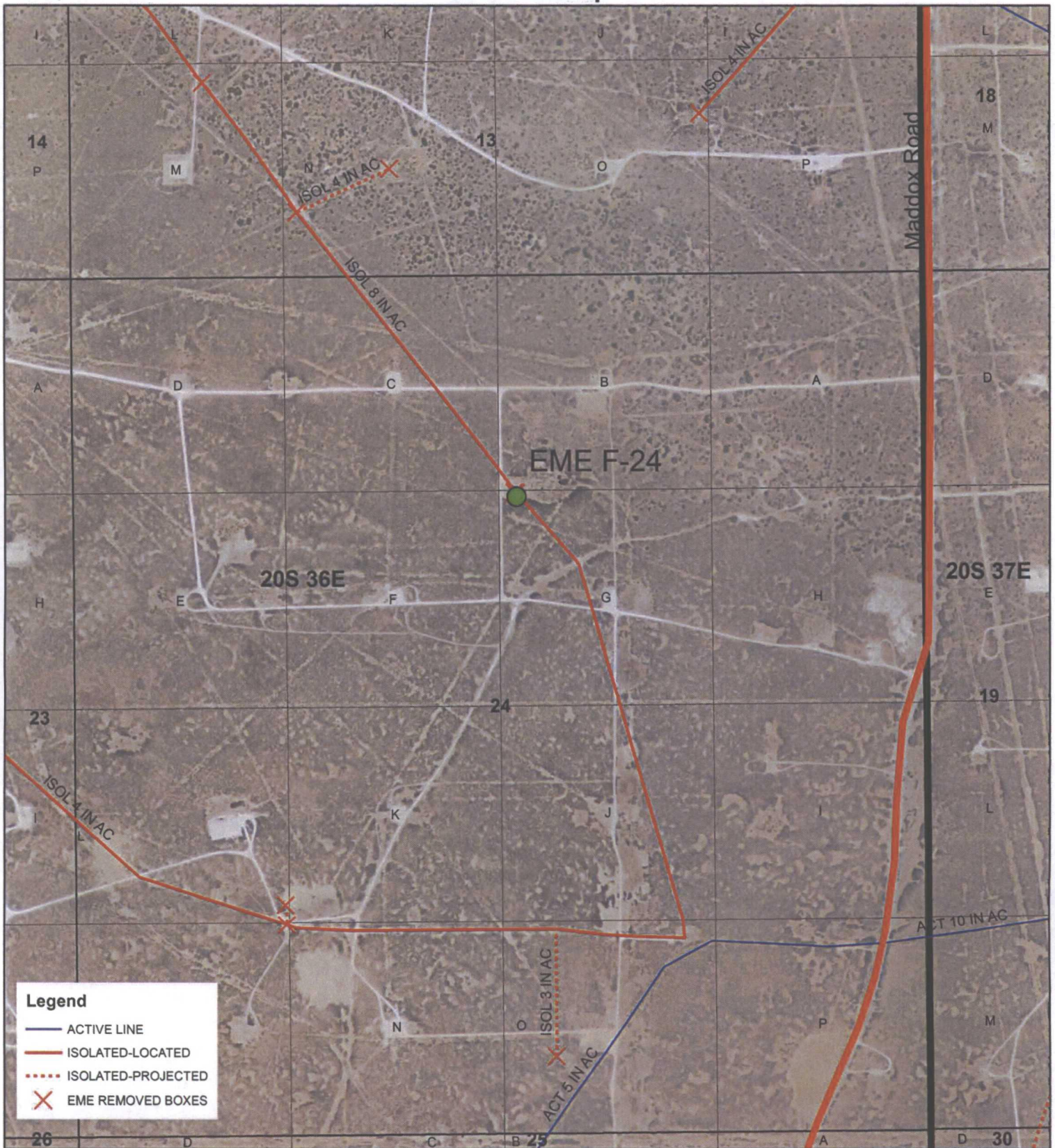
UL/F SECTION 24
T20S, R36E
LEA COUNTY, NM



0 0.5 1
Miles

Drawing date: 5/3/13

Area Map



EME Jct. F-24 (1R427-359)

UL/F SECTION 24
T20S, R36E
LEA COUNTY, NM



0 500 1,000
Feet

Drawing date: 5/3/13

Junction Box Report

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

**RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT**

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
Eunice Monument Eumont (EME)	Jct F-24	F	24	20S	36E	Lea	Length	Width	Depth
							eliminated		

LAND TYPE: BLM STATE FEE LANDOWNER Jimmie T. Cooper et ux Betty B OTHER

Depth to Groundwater 28 feet NMOC SITE ASSESSMENT RANKING SCORE: 20

Date Started 9/15/2010 Date Completed 12/10/2010 OCD Witness no

Soil Excavated 177.8 cubic yards Excavation Length 20 Width 20 Depth 12 feet

Soil Disposed 228 cubic yards Offsite Facility C & C Landfarm Location Monument, NM

FINAL ANALYTICAL RESULTS: Sample Date 10/28/2010, 12/10/2010, Sample Depth 12 ft., 15 ft., 24 ft., 27 ft.

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOC guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
4-WALL COMP.	PID = 48.8				<10.0	83.3	16
BOTTOM COMP.	<0.050	0.771	0.121	2.05	64.9	683	80
BACKFILL COMP.	<0.050	0.104	<0.050	0.169	<10.0	<10.0	32
SB # 1 @ 15 ft.	PID = 0				<10.0	<10.0	176
SB # 1 @ 24 ft.	PID = 0				<10.0	<10.0	480
SB # 1 @ 27 ft.	PID = 0				<10.0	<10.0	240

General Description of Remedial Action: This Junction and line were eliminated

during the pipeline replacement/upgrade program. After the former junction box was removed, an investigation was conducted using a backhoe to collect soil samples at regular intervals creating a 20X20X12-ft. deep excavation. Chloride field test performed on each sample yielded low concentrations. Organic vapors were measured using a PID, which yielded some elevated concentrations. The excavated soil was blended on site and representative samples were collected from the blended backfill, the bottom of the excavation, and the excavation walls. The representative samples were taken to a commercial laboratory for analysis of chloride, TPH, and BTEX. The entire excavated soil was hauled to a NMOC approved facility. The excavation was backfilled with clean imported soil to 5 ft. below ground surface (BGS). At 5-4 ft. BGS, a 1-ft. thick clay barrier was installed with compaction test performed on 11/23/2010. The remaining excavation was backfilled with clean imported soil to ground surface and

contoured to the surrounding area. On 11/29/2010, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. To further investigate the depth of TPH presence, a soil bore was initiated on 12/10/2010 at the former junction box source. The boring was advanced to a depth of 27 ft. BGS with soil samples collected every 3 ft. between 15-27 ft. BGS. Chloride field test performed on each sample yielded low concentrations. Organic vapors were measured using a PID, which yielded low concentrations. The 15 ft., 24 ft., and 27 ft. samples were taken to a commercial laboratory for analysis of chloride and TPH, which confirmed low concentrations of each. The entire bore was plugged with bentonite to ground surface.

enclosures, photos, soil bore log, lab results, PID screenings, cross-section, compaction results, hydraulic conductivity, proctor, BTEX comparison study, chloride curve

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
4-wall comp.	n/a	114
bottom comp.	12	148
backfill comp.	n/a	142
background	6"	92
SB # 1 at the former junction (source)	15'	243
	18'	155
	21'	209
	24'	448
	27'	226

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SITE SUPERVISOR Robert Egans SIGNATURE *Robert Egans* COMPANY RICE OPERATING COMPANY

REPORT ASSEMBLED BY Larry Bruce Baker Jr. INITIAL LBB

PROJECT LEADER Larry Bruce Baker Jr. SIGNATURE *Larry Bruce Baker Jr.* DATE 3-29-11



Delineation trench being excavated

9/15/2010



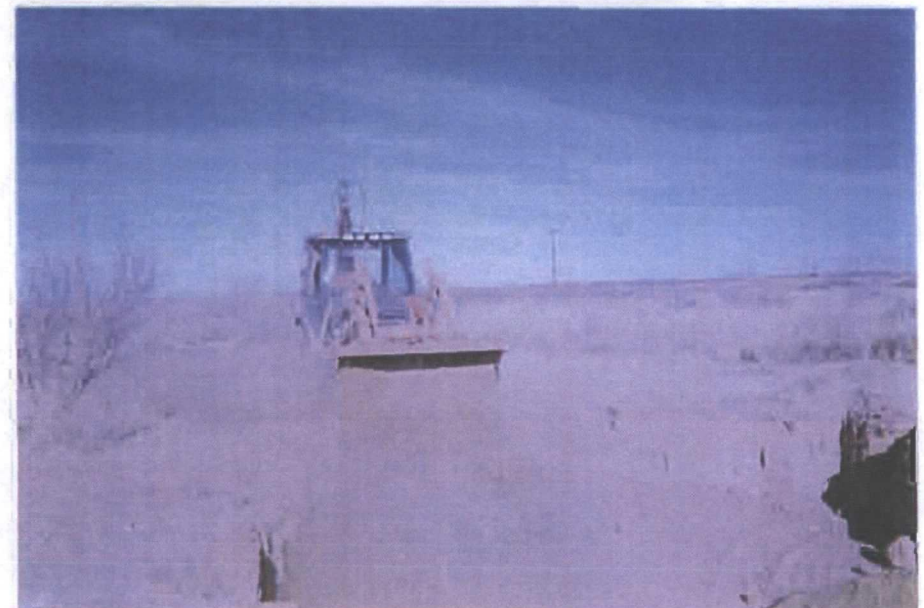
Samples being collected

10/12/2010



Performing compaction test

11/23/2010



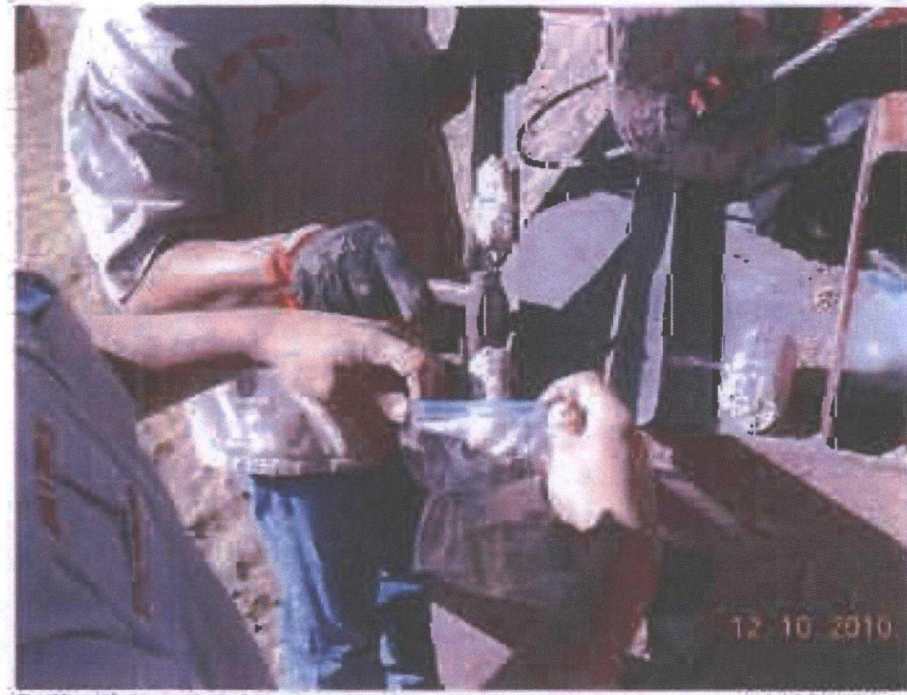
Backfilling excavation above clay liner

11/23/2010



Drilling the soil bore

12/10/2010





Collecting sample





12/10/2010



Plugging bore hole with bentonite

12/10/2010

Logger:	Jordan Woodfin			
Driller:	Harrison & Cooper, Inc.		Project Name:	Well ID:
Drilling Method:	Split spoon sampling		EME jct. F-24	SB-1
Start Date:	12/10/2010		Project Consultant: N/A	
End Date:	12/10/2010	Location: UL/F sec. 24 T20S R36E		
Comments: Located at the source of the former junction box site.			Lat: 32°33'44.11"N	
DRAFTED BY: L. Weinheimer			County: LEA	
TD = 27 ft			Long: 103°18'27.274"W	
GW = 28 ft			State: NM	

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
15 ft	243	Cl- 176 GRO <10 DRO <10	0	Tan with some brown fine sand, clay and caliche (well consolidated)		
18 ft	155		0			
21 ft	209		0			
24 ft	448	Cl- 480 GRO <10 DRO <10	0			
27 ft	226	Cl- 240 GRO <10 DRO <10	0	Brownish red sandy silt and clay		

bentonite
seal



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: 12/10/2010
Reported: 12/15/2010
Project Name: EME JCT F-24 (20-36)
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 12/10/2010
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SB #1 @ 15' (H021498-01)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	Sp. Recovery	True Value QC	RPD	Qualifier
Chloride	176	16.0	12/13/2010	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	12/14/2010	ND	213	106	200	6.74	
DRO >C10-C28	<10.0	10.0	12/14/2010	ND	226	113	200	5.87	

Sintesi e caratteristiche

95.2%

30-130

Surrogate: 1-Chlorooctadecane

94.5%

59.250

COPY

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*=Accredited Analyte

[illegible]

Calvin L. Kene

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.				BILL TO				ANALYSIS REQUEST																											
Project Manager: Hack Conder				P.O. #:				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Chlorides</div> <div>TPH 8015 M</div> <div>BTEX</div> <div>Texas TPH</div> <div>Complete Cations/Anions</div> <div>TPH 8015 M Extended Thru C40</div> </div>																											
Address: 122 West Taylor				Company:																															
City: Hobbs State: NM Zip: 88240				Attn:																															
Phone #: 575-393-9174 Fax #: 575-393-2476				Address:																															
Project #:				City:																															
Project Name: EME Jct F-24				State: Zip:																															
Project Location: EME Jct F-24				Phone #:																															
Sampler Name: Jordan Woodfin				Fax #:																															
Lab. I.D.				Sample I.D.																															
<table border="1"> <thead> <tr> <th colspan="2"># OF CONTAINERS</th> <th colspan="2">MATRIX</th> <th colspan="2">PRESERV</th> <th colspan="2">SAMPLING</th> </tr> <tr> <th>GROUNDWATER</th> <th>WASTEWATER</th> <th>SOIL</th> <th>SLUDGE</th> <th>OTHER</th> <th>ACIDBASE</th> <th>ICE COOL</th> <th>OTHER</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				# OF CONTAINERS		MATRIX						PRESERV		SAMPLING		GROUNDWATER	WASTEWATER	SOIL	SLUDGE	OTHER	ACIDBASE	ICE COOL	OTHER									<table border="1"> <thead> <tr> <th>DATE</th> <th>TIME</th> </tr> </thead> <tbody> <tr> <td>12/11/10</td> <td>10:30</td> </tr> </tbody> </table>			
# OF CONTAINERS		MATRIX		PRESERV		SAMPLING																													
GROUNDWATER	WASTEWATER	SOIL	SLUDGE	OTHER	ACIDBASE	ICE COOL	OTHER																												
DATE	TIME																																		
12/11/10	10:30																																		

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 to the business. All claims, including those for negligence, shall be subject to the limitations of the contract. Cardinal's liability shall be limited to the amount paid by the client to the business. Cardinal's liability shall be limited to the amount paid by the client to the business.

Relinquished By: Jordan Woodfin	Date: 12/11/10	Received By: [Signature]	Date: 12/11/10
Relinquished By:	Date:	Received By:	Date:
Delivered By: (Circle One)	Sample Condition	CHECKED BY:	Remarks:
Sampler: UPS - Bus - Other:	Cool Intact	[Signature]	email results
	Yes No		Hconder@riceswd.com; jwoodfin@riceswd.com;
			Lweinheimer@riceswd.com kjones@riceswd.com

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

NEED SAMPLES BACK, PLEASE

Analytical Results For:

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

 Received: 12/10/2010
 Reported: 12/15/2010
 Project Name: EME JCT F-24 (20-36)
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 12/10/2010
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: SB #1 @ 24' (H021497-01)

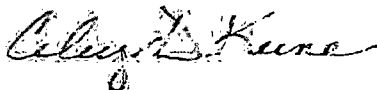
Chloride, SM4500Cl-B			mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	480	16.0	12/13/2010	ND	416	104	400	3.77		
TPH 8015M			mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	12/14/2010	ND	213	106	200	6.74		
DRO >C10-C28	<10.0	10.0	12/14/2010	ND	226	113	200	5.87		
Surrogate: 1-Chlorooctane	92.3 %	70-130								
Surrogate: 1-Chlorooctadecane	92.7 %	70-130								

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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: 12/10/2010
Reported: 12/15/2010
Project Name: EME JCT F-24 (20-36)
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 12/10/2010
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: SB #1 @ 27' (H021496-01)

Chloride, SM4500Cl-B			mg/kg							
			Analyzed By: HM							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	240	16.0	12/13/2010	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	12/14/2010	ND	213	106	200	6.74		
DRO >C10-C28	<10.0	10.0	12/14/2010	ND	226	113	200	5.87		
Surrogate: 1-Chlorooctane			97.3%	70-130						
Surrogate: 1-Chlorodecane			101%	70-130						

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Celestine D. Keene

Celestine D. Keene, Lab Director/Quality Manager

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>Rice Operating Company</u>				BILL TO				ANALYSIS REQUEST														
Project Manager: <u>Hack Conder</u>				P.O. #:				Chlorides TPH 8015 M BTEX Texas TPH Complete Cations/Anions TPH 8015 M Extended Thru C40														
Address: <u>122 West Taylor</u>				Company:																		
City: <u>Hobbs</u> State: <u>NM</u> Zip: <u>88240</u>				Attn:																		
Phone #: <u>575-393-9174</u> Fax #: <u>575-397-1471</u>				Address:																		
Project #: _____ Project Owner: _____				City:																		
Project Name: <u>EME Jct F-24</u>				State: _____ Zip: _____																		
Project Location: <u>EME Jct F-24</u>				Phone #: _____																		
Sampler Name: <u>Jordan Woodfin</u>				Fax #: _____																		
FOR LAB USE ONLY																						
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							
<u>12/14/10</u>	<u>SB #1 @ 27'</u>	<u>2</u>	<u>1</u>			<u>✓</u>					<u>✓</u>		<u>12/10/10</u>	<u>11:00</u>	<u>✓</u>	<u>✓</u>						

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 analysis. 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: <u>Jordan Woodfin</u>	Date: <u>12/10/10</u> Time: <u>4:45</u>	Received By: <u>[Signature]</u>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Relinquished By: _____	Date: _____ Time: _____	Received By: _____	Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:			REMARKS: email results	
Sample Condition: Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			CHECKED BY: <u>[Signature]</u> (Initials)	
			Hconder@riceswd.com; jwoodfin@riceswd.com; Lweinheimer@riceswd.com kjones@riceswd.com	

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

NEED SAMPLES BACK, PLEASE

RICE OPERATING COMPANY

122 West Taylor Hobbs, NM 88240

PHONE: (575) 393-9174 FAX: (575) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

Check Model Number:

X

Model: PGM 7300

Model: PGM 7300

Model: PGM 7300

Serial No: 590-000183

Serial No: 590-000508

Serial No: 590-000504

Model: PGM 7600

Model: PGM 7600

Model: PGM 7600

Serial No: 110-023920

Serial No: 110-013744

Serial No: 110-013676

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

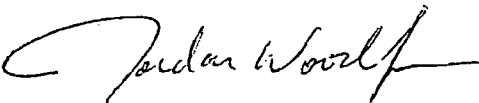
LOT NO : 924503	EXPIRATION DATE: 7-5-12
FILL DATE: 7-6-09	METER READING ACCURACY: 100

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	F-24	F	24	20S	36E

SAMPLE ID	PID	SAMPLE ID	PID
SB #1			
15'	0		
18'	0		
21'	0		
24'	0		
27'	0		

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

SIGNATURE: 

DATE: 12-10-10

Analytical Results For:

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

Received:	10/28/2010	Sampling Date:	10/28/2010
Reported:	11/03/2010	Sampling Type:	Soil
Project Name:	EME JCT F-24 (20-36)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	NOT GIVEN		

Sample ID: 4 WALL COMP @ 20 X 20 (H021174-02)

Chloride, SM4500CI-B			mg/kg							Analyzed By: HM
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	10/29/2010	ND	464	116	400	3.51		
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	10/30/2010	ND	178	88.9	200	7.41		
DRO >C10-C28	83.3	10.0	10/30/2010	ND	178	88.9	200	7.46		
<hr/>										
Surrogate: 1-Chlorooctane	107 %	70-130								
Surrogate: 1-Chlorooctadecane	110 %	70-130								

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received: 10/28/2010
Reported: 11/03/2010
Project Name: EME JCT F-24 (20-36)
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 10/28/2010
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Celey D. Keene

Sample ID: 5 PT. BOTTOM COMP @ 12' (H021174-01)

BTX 8021B		mg/kg		Analyzed By: cms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/03/2010	ND	2.20	110	2.00		
Toluene*	0.771	0.050	11/03/2010	0.060	2.07	103	2.00		
Ethylbenzene*	0.121	0.050	11/03/2010	ND	1.98	98.9	2.00		
Total Xylenes*	2.05	0.150	11/03/2010	ND	5.91	98.5	6.00		

Surrogate, 4-Bromofluorobenzene (PTL) 102 % 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	80.0	16.0	10/29/2010	ND	464	116	400	3.51	

TPH 8015M		mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	64.9	10.0	10/30/2010	ND	178	88.9	200	7.41	
DRO >C10-C28	683	10.0	10/30/2010	ND	178	88.9	200	7.46	

Surrogate, 1-Chlorooctane 100 % 70-130

Surrogate, 1-Chlorooctadecane 102 % 70-130

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	10/28/2010	Sampling Date:	10/28/2010
Reported:	11/03/2010	Sampling Type:	Soil
Project Name:	EME JCT F-24 (20-36)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Coley D. Keene
Project Location:	NOT GIVEN		

Sample ID: BLENDED BACKFILL (H021174-03)

BTX 8021B		mg/kg		Analyzed By: cms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	11/03/2010	ND	2.20	110	2.00		
Toluene*	0.104	0.050	11/03/2010	0.080	2.07	103	2.00		
Ethylbenzene*	<0.050	0.050	11/03/2010	ND	1.98	98.9	2.00		
Total Xylenes*	0.169	0.150	11/03/2010	ND	5.91	98.5	6.00		

Surrogate: 4-Bromofluorobenzene (PIL) 85.5 % 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	32.0	16.0	10/29/2010	ND	464	116	400	3.51	

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	10/30/2010	ND	178	88.9	200	7.41	
DRO >C10-C28	<10.0	10.0	10/30/2010	ND	178	88.9	200	7.46	

Surrogate: 1-Chlorooctane 97.7 % 70-130

Surrogate: 1-Chlorooctadecane 109 % 70-130

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Coley D. Keene

Coley D. Keene, Lab Director/Quality Manager



PHONE (575) 293-2326 * 101 E. MARLAND * HOBBS, NM 88240

Analytical Results For:

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

Received: 10/28/2010
Reported: 11/03/2010
Project Name: EME JCT F-24 (20-36)
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 10/28/2010
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Celey D. Keene

Sample ID: BOTTOM GRAB PT 1 - 5 @ 12' (H021174-04)

BTEX 8021B

mg/kg

Analyzed By: cms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.090	0.050	11/03/2010	ND	2.20	110	2.00		
Toluene*	1.37	0.050	11/03/2010	0.080	2.07	103	2.00		
Ethylbenzene*	0.697	0.050	11/03/2010	ND	1.98	98.9	2.00		
Total Xylenes*	3.76	0.150	11/03/2010	ND	5.91	98.5	6.00		

Surrogate: 4-Bromofluorobenzene (PIL) 111 % 80-120

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Celey D. Keene, Lab Director/Quality Manager

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ARDINAL LABORATORIES

101 East Mainland, 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: <u>Arden Operating Company</u> Project Manager: <u>Bruce Baker</u> Address: <u>122 W. Main</u> City: <u>Hobbs</u> State: <u>NM</u> Zip: <u>88240</u> Phone #: <u>505-393-2326</u> Fax #: <u>505-393-2476</u> Project #: <u>EMF-101-124 (20186)</u> Project Name: <u>EMF-101-124 (20186)</u> Project Location: <u>Arden Operating Company</u> Sample Name: <u>Arden Operating Company</u>		BILL TO: P.O. #: Company: Address: City: State: Zip: Phone #: Fax #:		ANALYSIS REQUEST									
Lab I.D.: <u>H21174</u> Sample I.D.: <u>1 SPT Bottom Compell</u> <u>2 4-in-1 Compell</u> <u>3 6-in-1 Backfill</u> <u>4 Bottom Compell Pt. 12</u> <u>Bottom Compell Pt. 26</u> <u>Bottom Compell Pt. 36</u> <u>Bottom Compell Pt. 46</u> <u>Bottom Compell Pt. 56</u>		MATRIX PREP RESERV SAMPLING		DATE TIME <u>10-28-11 11:03</u> <u>10-28-11 11:09</u> <u>10-28-11 11:54</u> <u>11-28-11 11:26</u> <u>11-28-11 11:34</u> <u>11-28-11 11:39</u> <u>11-28-11 11:49</u> <u>11-28-11 11:54</u>									
				CL FPM Section B-Tex COPY Composite B-Tex Cont.									
Requested By: <u>R. Baker</u> Date: <u>10/18/10</u> Time: <u>1:10</u> Received By: <u>[Signature]</u> Date: <u>10/18/10</u> Time: <u>1:10</u> Received By: <u>[Signature]</u>		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No REMARKS: <u>EMF-101 Results to</u> <u>10-28-11 Results to</u> <u>11-28-11 Results to</u> <u>11-28-11 Results to</u>		Delivered By: (Circle One) Sample: <input type="checkbox"/> UPS <input type="checkbox"/> Bus <input type="checkbox"/> Other									

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

RICE OPERATING COMPANY

122 West Taylor Hobbs, NM 88240

PHONE: (575) 393-9174 FAX: (575) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

Check Model Number:

✓

Model: PGM 7300 Serial No: 590-000183
 Model: PGM 7300 Serial No: 590-000508
 Model: PGM 7300 Serial No: 590-000504

Model: PGM 7600 Serial No: 110-023920
 Model: PGM 7600 Serial No: 110-013744
 Model: PGM 7600 Serial No: 592-903318

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: 925621	EXPIRATION DATE: 9-27-2012
FILL DATE:	METER READING ACCURACY: 99.8

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	F-24	F	24	20	36

SAMPLE ID	PID	SAMPLE ID	PID
5pt Bottom Composite	335.0		
4 Wall Composite	48.8		
Blended Backfill	163.3		

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

SIGNATURE:

[Signature]

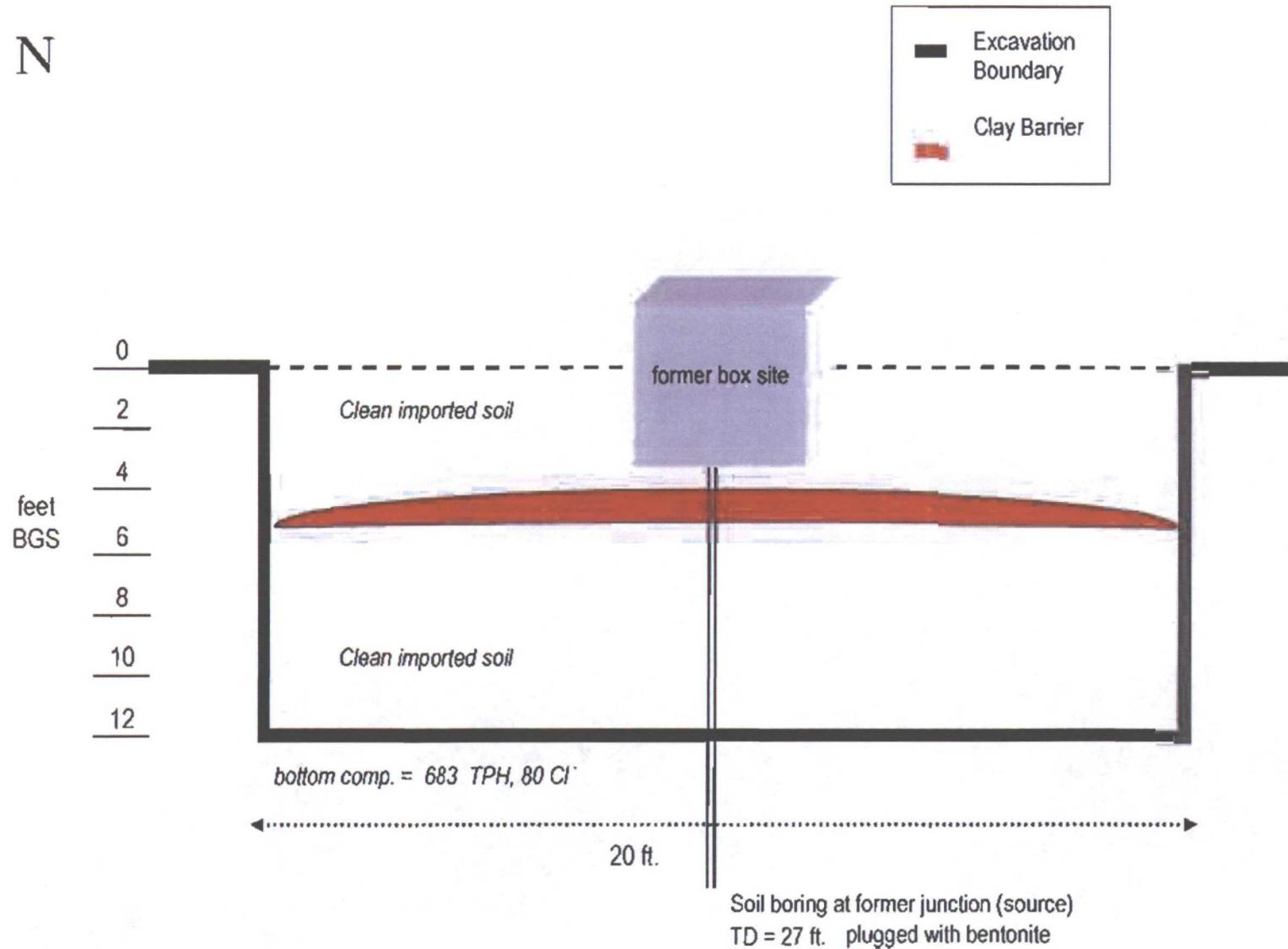
DATE: 10/25/2010

EME Jct. F-24
Unit 'F', Sec. 24, T20S, R36E

Excavation Cross-Section

N

S





LABORATORY TEST REPORT
PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(575) 393-9827



DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS, III, P.E./P.S.

To: Rice Operating Company
122 W. Taylor
Hobbs, NM 88240

Material: Cooper Red Clay

Project: EME Junction F-24 (21/36)
Project No. 2010.1346

Test Method: ASTM: D 2922

Date of Test: November 23, 2010

Depth: See Below

Depth of Probe: 6"

Test No.	Location	Dry Density		% Moisture	Depth
		% Max			
SG 1	10' N. & 8' E. of SW Corner	92.2		13.3	FSG

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DEC 15 2010

RICE OPERATING
HOBBS, NM

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Control Density: 103.0
ASTM: D 698

Optimum Moisture: 20.0%

Required Compaction: 90-95%

Densometer ID: 815
PETTIGREW & ASSOCIATES

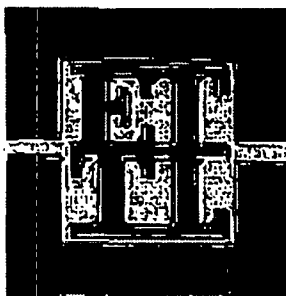
Lab No.: 10 11266-11267

Copies To: Rice Operating

BY:

BY:

P.E.



Home Office - 1717 East Erwin Street

Tyler, Texas 75702-6398

Office: (903) 695-4421 Lab: (903) 695-6402 Fax: (903) 695-6113

Area Offices

210 Beech Street
707 West Cotton St.

Texarkana, AR 71854
Longview, TX 75804

(870) 772-0013
(903) 758-0402

Acct ID: PETTIGREW File ID: C4535-101
Report Date: 08/27/2010
Project: Pettigrew Associates - Project #2010.1026, Hobbs, NM
Location: Material Origin: Cooper Pit, Sample Location: N/G
Client: Pettigrew & Associates, Hobbs, NM
Contractor: Not Given

Date Sampled: 08/19/2010
Sampled By: Client
By Order Of: Erica Hart
Order Number:

REPORT: FLEXIBLE WALL PERMEAMETER

LAB NO: 9880

Test Method: See Below

TEST RESULTS

Report No: 1-1201-000004
Page 2 of 2

TEST READINGS

Z1(Mercury Height Difference @ t1): 5.1 cm Hydraulic Gradient = 9.17

Date	elapsed t (seconds)	Z (pipet @ t)	□□□ (cm)	temp (deg C)	□ (temp corr)	k (cm/sec)	k (ft./day)	Reset = *
8/23/2010	2460	6.1	0.5573253	26.2	0.885	1.95E-08	5.54E-05	
8/23/2010	3120	8	0.8573253	26.2	0.885	1.84E-08	5.21E-05	
8/23/2010	3840	5.9	0.7573263	26.2	0.885	1.74E-08	4.93E-05	
8/23/2010	4820	5.8	0.8573253	25.2	0.885	1.66E-08	4.70E-05	

SUMMARY

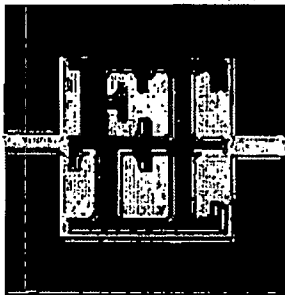
ka =	1.80E-08 cm/sec	Acceptance criteria =	25 %
kl		Vm	
k1 =	1.95E-08 cm/sec	8.7 %	Vm = $\frac{k_a - k_l}{k_a} \times 100$
k2 =	1.84E-08 cm/sec	2.3 %	
k3 =	1.74E-08 cm/sec	3.2 %	
k4 =	1.66E-08 cm/sec	7.8 %	

Hydraulic conductivity	k =	1.80E-08 cm/sec	8.08E-05 ft/day
Void Ratio	e =	0.72	
Porosity	n =	0.42	
Bulk Density	□□□	1.95 g/cm3	122.0 pcf
Water Content	W =	0.38 cm3/cm3	(at 20 deg C)
Intrinsic Permeability	kint =	1.84E-13 cm2	(at 20 deg C)

Remarks: These tests were performed solely at the request of the Client for his own use. No warranties are expressed or implied regarding the suitability of the site for construction or whether or not the reported data represents all conditions of the site.

Charge: Pettigrew & Associates Attn: Erica Hart
Orig: Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
1-cc Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
E-Mail: ehart@pettigrew.us

COPY



Home Office - 1717 East Erwin Street

Tyler, Texas 75702-8398

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Area Offices

210 Beach Street
707 West Cotton St.

Texarkana, AR 71854

(870) 772-0013

Longview, TX 75604

(903) 758-0402

Acct ID: PETTIGREW File ID: C4535-101
Report Date: 08/27/2010
Project: Pettigrew Associates - Project #2010.1026, Hobbs, NM
Location: Material Origin: Cooper Pft, Sample Location: N/G
Client: Pettigrew & Associates, Hobbs, NM
Contractor: Not Given

Date Sampled: 08/19/2010
Sampled By: Client
By Order Of: Erica Hart
Order Number:

REPORT: FLEXIBLE WALL PERMEAMETER

LAB NO: 9880
Test Method: See Below

TEST RESULTS

Report No: 1-1201-000004
Page 1 of 2

**HYDRAULIC CONDUCTIVITY DETERMINATION
FLEXIBLE WALL PERMEAMETER - CONSTANT VOLUME
(Mercury Permometer Test)**

Project: Rice Operating Project 2010.1026 for Pettigrew & Associates, P.A., Hobbs, NM
Date: 8/25/2010 Panel Number: P 1; ASTM D 5084
Project No.: C 4535-101 Permometer Data
Boring No.: ap = 0.031416 cm² Set Mercury to Equilibrium 1.8 cm³
Sample: 9880 aa = 0.787120 cm² Pipet Rp 6.7 cm³
Depth (ft): M1 = 0.030160 C = 0.00045027 Annulus Rs 1.5 cm³
Other Location: Cooper Pft M2 = 1.040863 T = 0.203778894
Material Description: Red Clay (Client's Sample No 10 5902-5903) Lab Molded @ ~95% ASTM D 698

SAMPLE DATA

Wet Wt. sample + ring or tare:		512.33 g	Before Test		After Test	
Tare or ring Wt.:		0.0 g	Tare No.:	T 7	Tare No.:	T 11
Wet Wt. of Sample:		512.33 g	Wet Wt.+tare:	881.97	Wet Wt.+tare:	753.77
Diameter:	2.71 in	8.90 cm ²	Dry Wt.+tare:	753.65	Dry Wt.+tare:	647.11
Length:	2.78 in	7.02 cm	Tare Wt.:	221.20	Tare Wt.:	219.29
Area:	6.79 in ²	37.34 cm ²	Dry Wt.:	532.35	Dry Wt.:	427.82
Volume:	16.00 in ³	262.14 cm ³	Water Wt.:	126.42	Water Wt.:	108.86
Unit Wt.(wet):	121.96 pcf	1.95 g/cm ³	% moist.:	24.1	% moist.:	24.8
Unit Wt.(dry):	98.28 pcf	1.67 g/cm ³				

Assumed Specific Gravity: 2.70 Max Dry Density(pcf) = 103 OMC = 20
% of max = 85.4 +/- OMC = 4.12
Calculated % saturation: 84.07 void ratio (e) = 0.72 Porosity (n) = 0.42

Charge: Pettigrew & Associates Attn: Erica Hart
Orig. Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
1-cc Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
E-Mail: ehart@pettigrew.us

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PETTIGREW & ASSOCIATES, P.A.

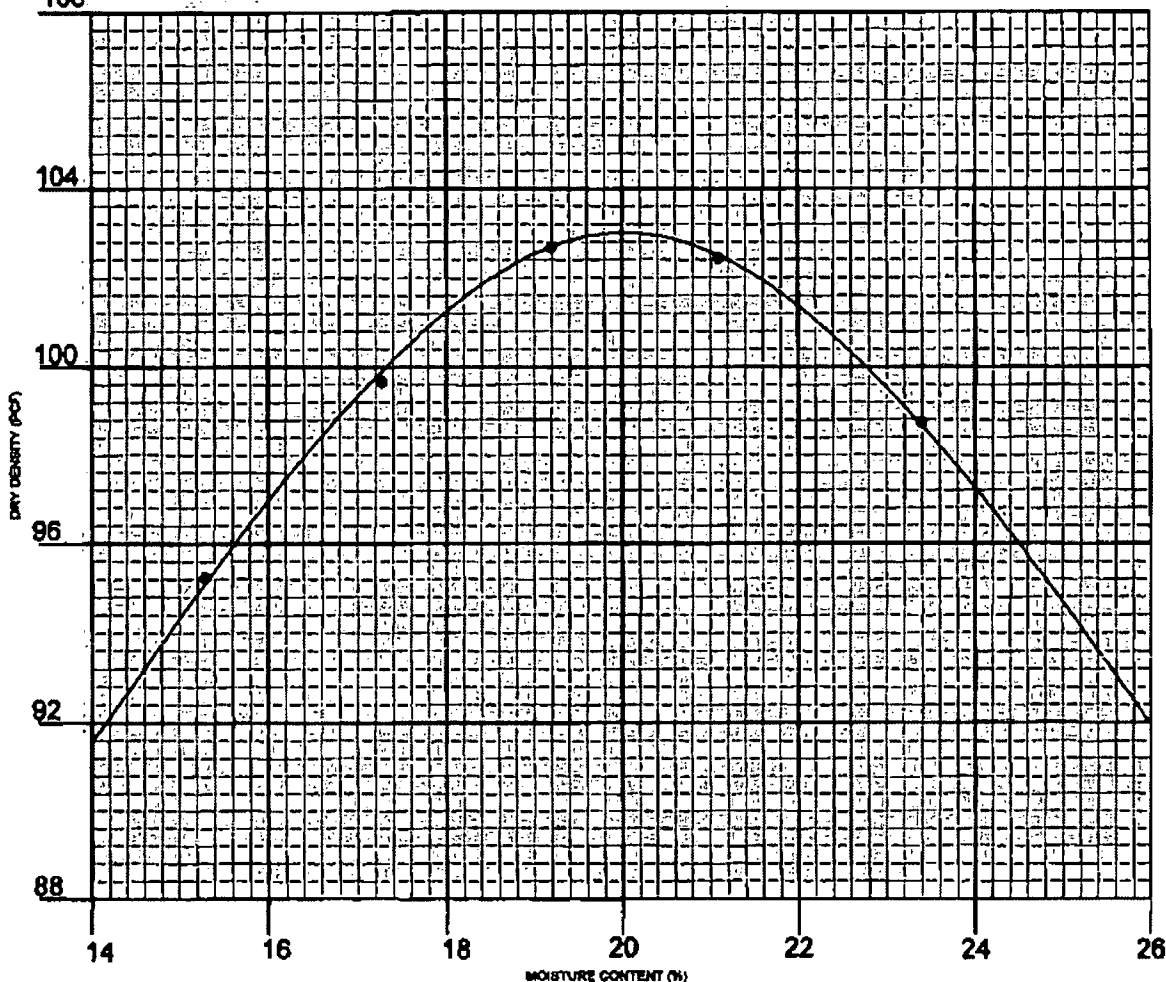
1110 N. GRIMES ST.

HOBBS, NM 88240

(575) 393-9827



108



General Information

CLIENT: Rice Operating PROJECT: Project No. 2010.1026

SAMPLE LOCATION: Cooper Pit

SOIL DESCRIPTION: Cooper Red Clay

SOIL CLASSIFICATION: _____ TEST METHOD: ASTM: D 698

ATTERBERG: LL _____ PI _____ Sampled & Delivered 8/13/10

DATE: 8/13/10 LAB NO. 10 5902-5903

DRY WEIGHT LB/CU. FT. 103.0 MOISTURE CONTENT % 20.0

SIEVE ANALYSIS - % PASSING									

COPY

PETTIGREW & ASSOCIATES

BY: Ericam Hart

BY: [Signature]

COPIES: Rice Operating

2010 BTEX Study

Revised Junction Box Upgrade Plan (2003)

System: EME
Site: Jct. F-24

Date: 10/28/2010
Sampler: Robert Egans

Laboratory: Cardinal
Laboratories

Location	Component	PID reading (ppm)	FIELD COMPOSITE (mg/kg)			
			Benzene	Toluene	Ethyl Benzene	Total Xylenes
bottom composite at 12 ft BGS	1	335	<0.050	0.771	0.121	2.05
	2					
	3					
	4					
	5					
			LAB COMPOSITE (mg/kg)			
			0.090	1.37	0.697	3.76

Field PID tests <100 ppm are considered final for BTEX. If PID is >100 ppm, the components of the BTEX composite sample will be collected individually and will be composited under laboratory conditions to prevent excessive volatilization. A 15-box, 30-sample study will be made to compare field-compositing with lab-compositing BTEX samples. Composite components are collected in a skewed 'W' pattern.

Revised Junction Box Upgrade Work Plan (July 16, 2003)

CHLORIDE CONCENTRATION CURVE

RICE Operating Company

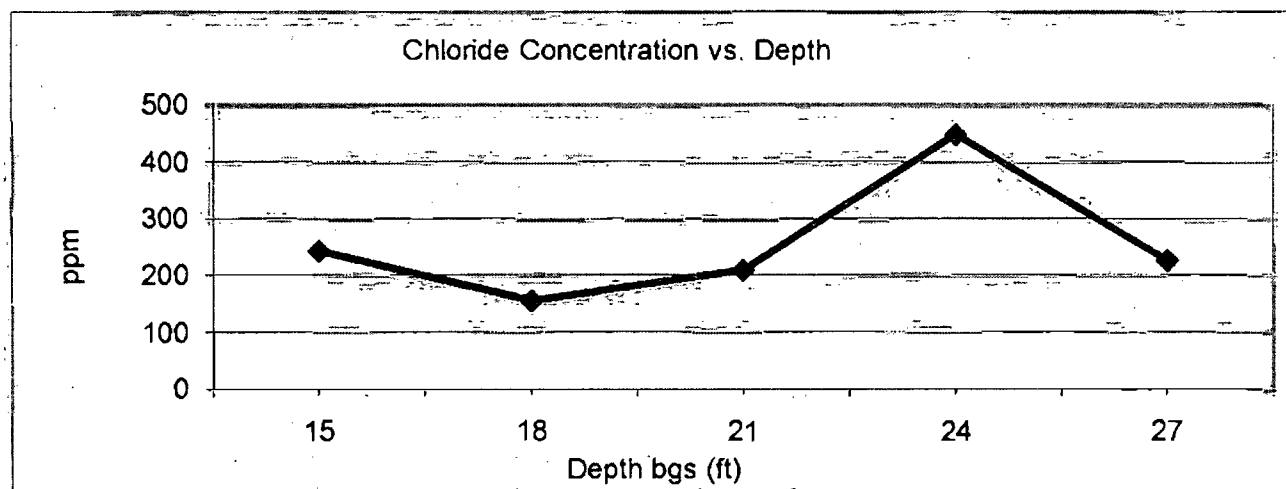
EME JCT. F-24

Unit 'F', Sec. 24, T20S, R36E

Soil bore at former junction box (source)

Depth bgs (ft)	[Cl] ppm
15	243
18	155
21	209
24	448
27	226

Groundwater = 28 ft





Revegetation Form and Photodocumentation

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471



PO Box 5630
Hobbs, NM 88241
Phone: (575) 393-4411
Fax: (575) 393-0293

REVEGETATION FORM

1. General Information

Site name: EME Jct. F-24						
U/L F	Section 24	Township 20S	Range 36E	County Lea	Latitude N32°56'168.45	Longitude 103°31'168.30
Contact Name: ZACHARY CONDER						
Email: zconder@rice-ecs.com						
Site size: 60'x50'			Map detail of site attached <input type="checkbox"/>			
Square feet: 3,000						
Additional information:						

2. Soils

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

Salvaged from site <input type="checkbox"/>	Bioremediated <input type="checkbox"/>	Imported <input checked="" type="checkbox"/>	Blended <input type="checkbox"/>	Depth (in):	
Texture:		Describe soil & subsoil:			
Soil prep methods:	Rip <input type="checkbox"/>	Depth(in):	Disc <input type="checkbox"/>	Depth (in):	Roller pack <input type="checkbox"/>
Date completed: 12/10/2010					

3. Bioremediation

Fertilizer <input checked="" type="checkbox"/> 6 bags Restor N	Hay <input type="checkbox"/>	Other <input checked="" type="checkbox"/> 3 bags Garden Soil
Hance		1 bag Manure
Type:		Describe:
Lbs/acre:		

4. Seeding

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

Custom seed mix <input checked="" type="checkbox"/>	Prescribed mix <input type="checkbox"/>	Seed mix name: 3 lbs blue Grama, 3 lbs Side oats, 3 lbs Lea County Mix
Seeding date:		
Broadcast <input checked="" type="checkbox"/>		
Method: Mechanical Drop Seeder		
Soil conditions during seeding: Dry <input checked="" type="checkbox"/> Damp <input type="checkbox"/> Wet <input type="checkbox"/>		
Photos attached <input type="checkbox"/>	Observations:	
Number of photos:		

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: Kyle Norman	Title: Environmental Tech	Date: 4/4/2013
Signature:		

EME Jct. F-24 (1R427-359)

UL/F, Section 24, T20S, R36E



Spreading amendments, facing north

4/4/2013



Tilling site, facing north

4/4/2013



Seeding site, facing north

4/4/2013



Site complete, facing east

4/4/2013