

1R - 427-82

# APPROVALS

YEAR(S):

2013

**Hansen, Edward J., EMNRD**

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**From:** Hansen, Edward J., EMNRD  
**Sent:** Thursday, September 05, 2013 1:48 PM  
**To:** Hack Conder (hconder@riceswd.com)  
**Cc:** Leking, Geoffrey R, EMNRD; Laura Pena (lpena@riceswd.com); Katie Jones <kjones@riceswd.com> (kjones@riceswd.com); Scott Curtis (scurtis@riceswd.com)  
**Subject:** Remediation Plan (1R427-82) Termination - ROC EME A-26 Site

**RE: Termination Request  
for the Rice Operating Company's  
EME A-26 Site  
Unit Letter A, Section 26, T20S, R36E, NMPM, Lea County, New Mexico  
Remediation Plan (1R427-82) 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 August 27, 2013 (received August 30, 2013). The report is 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 (1R427-82) 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*

112 West Taylor • Hobbs, New Mexico 88240  
Phone: (575) 393-9174 • Fax: (575) 397-1471

RECEIVED OGD  
2013 AUG 20 PM 2:31

CERTIFIED MAIL

RETURN RECEIPT NO. 7007 2560 0000 4569 8913

**August 27, 2013**

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

RE: Termination Request  
EME A-26 (1R427-82): UL/A, Sec. 26, 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 2002, ROC initiated work on the former A-26 junction box. The site is located in UL/A, Sec. 26, T20S, R36E. An updated study of NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 112 +/- feet. The junction box is located near a production facility. The area between the junction box and the facility is overlaid by hardpan.

The site was delineated using a backhoe to collect soil samples at regular intervals, creating a 20x13x10 ft deep excavation. Each sample was field titrated for chlorides. Representative samples were collected from the excavation sidewalls and bottom and sent to a commercial laboratory for analysis. The sidewalls sample resulted in a chloride concentration of 1,450 mg/kg, a gasoline range organics (GRO) concentration of 75.7 mg/kg, a diesel range organics (DRO) concentration of 809 mg/kg, a toluene concentration of 0.031 mg/kg, an ethyl benzene concentration of 0.144 mg/kg and concentrations of benzene and total xylenes below detectable limits. The bottom composite sample resulted in a chloride concentration of 496 mg/kg, a GRO concentration of 86.5 mg/kg, DRO concentration of 603 mg/kg, a toluene concentration of 0.036 mg/kg, an ethyl benzene concentration of 0.065 mg/kg and concentrations of

benzene and total xylenes below detectable limits. At 10 ft bgs, a compacted clay layer was installed. The clay layer will provide a barrier that will inhibit the downward migration of chlorides to groundwater. The excavated soil was blended on site and a representative samples was collected and sent to a commercial laboratory for analysis, resulting in a chloride concentration of 532 mg/kg, a GRO concentration of 186 mg/kg, a DRO concentration of 977 mg/kg, a toluene concentration of 0.075 mg/kg, an ethyl benzene concentration of 0.125 mg/kg and benzene and total xylenes concentrations below detectable limits. The excavation was backfilled with the blended backfill to ground surface and contoured to the surrounding area. A new, watertight junction box was built over the site location.

In order to determine what affect the residual chlorides in the vadose zone would have on the groundwater beneath the site, ROC personnel ran the U.S. Environmental Protection Agency Exposure Assessment Multimedia Model – Multimed (Version 1.50, 2005). Based on the model parameters from the soil data at the site, the residual chlorides will peak at 86.83 mg/kg in the groundwater in 455 years. Given that this chloride level is below WQCC standards, no further action is warranted for the vadose zone or for groundwater at the site. Based on the Multimedia Model analysis, it is evident that the residual chlorides in the vadose zone will not impair groundwater beneath the site. The existing 20x13x10 ft deep clay layer installed at the site will inhibit further migration of constituents to groundwater.

The junction box site maps, final report, site diagram, photodocumentation, laboratory analysis, Multimed file and chloride graph and current photodocumentation.

### **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)393-2967 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,  
RICE Operating Company



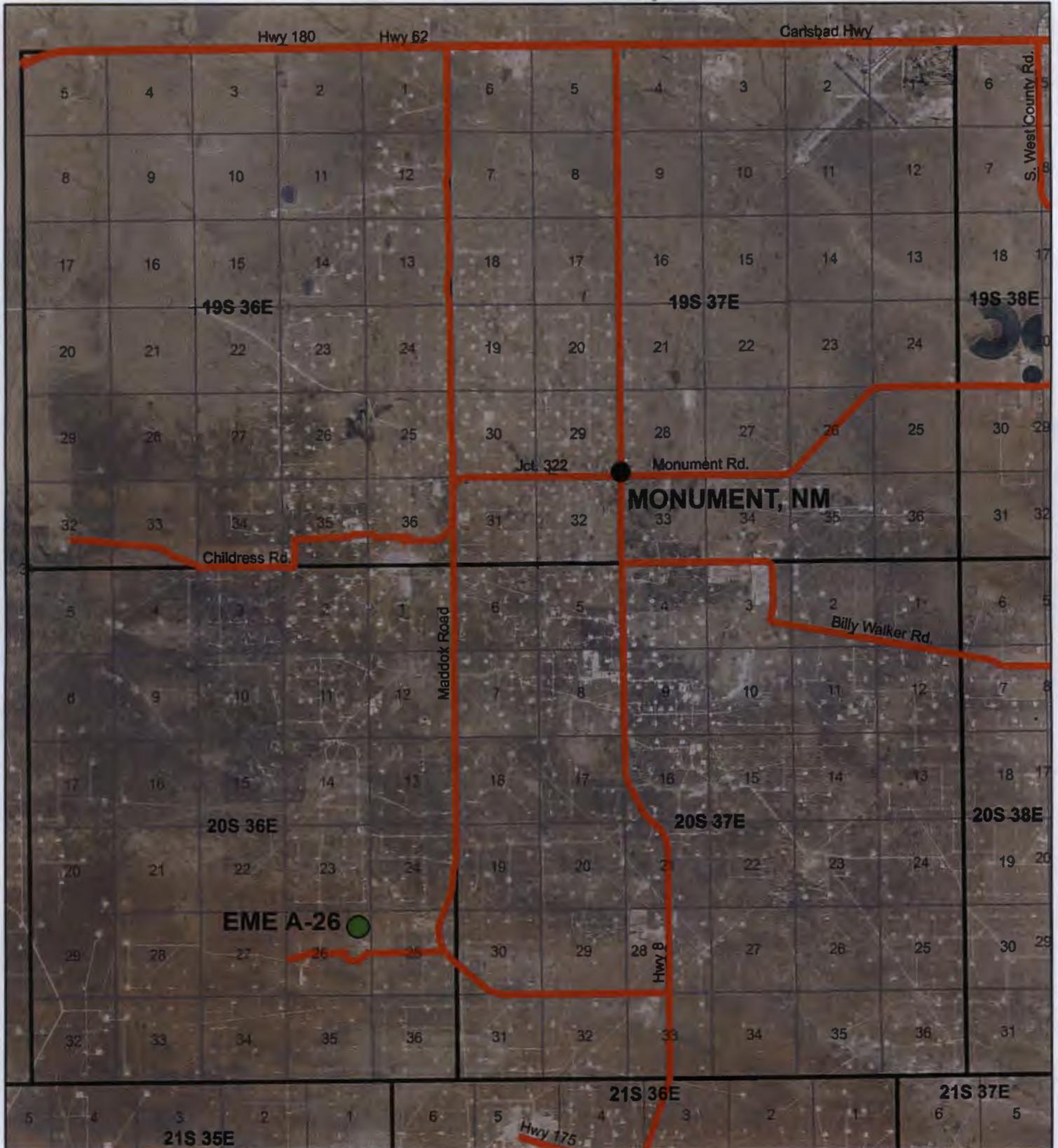
Hack Conder  
Environmental Manager

enclosures

# Site Maps

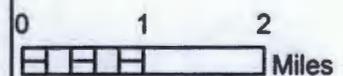
**RICE *Operating Company* (ROC)**  
112 West Taylor Hobbs, NM 88240  
Phone: (575) 393-9174 Fax: (575) 397-1471

# Site Location Map



**EME A-26  
(1R427-82)**

**UL/A SECTION 26  
T20S, R36E  
LEA COUNTY, NM**



Drawing date: 5/6/13 LS

# Area Map



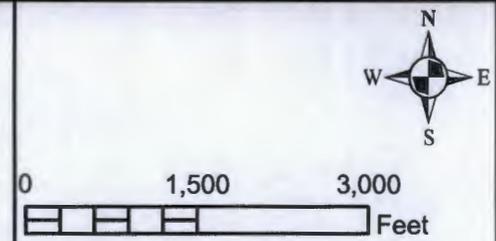
**Legend**

- ACTIVE LINE
- ISOLATED-LOCATED
- ⋯ ISOLATED-PROJECTED
- X EME REMOVED BOXES



## EME A-26 (1R427-82)

UL/A SECTION 26  
T20S, R36E  
LEA COUNTY, NM



Drawing date: 5/6/13 LS

# 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		
							Length	Width	Depth
EME	A-26	A	26	20 S	36 E	Lea	under construction		

LAND TYPE: BLM \_\_\_\_\_ STATE \_\_\_\_\_ FEE LANDOWNER Tuffy Cooper OTHER \_\_\_\_\_

Depth to Groundwater >100 feet NMOCD SITE ASSESSMENT RANKING SCORE: 0

Date Started 12/18/2002 Date Completed 12/26/2002 OCD Witness No

Soil Excavated 96 cubic yards Excavation Length 20 Width 13 Depth 10 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

**FINAL ANALYTICAL RESULTS:** Sample Date 12/23/2002 Sample Depth 10' bgs

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 NMOCD 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
SIDEWALLS	<0.025	0.031	0.144	<0.470	75.7	809	1450
BOTTOM	<0.025	0.036	0.065	<0.419	86.5	603	496
REMEDIATED	<0.025	0.075	0.125	<0.701	186	977	532

General Description of Remedial Action: This junction contained a boot in the past

and is located near a production facility. The area between the junction and the facility is overlaid by hardpan. Vertically, TPH virtually ceased at 10' bgs and chlorides exhibited a decline. The impacted soil below the junction box was excavated until visual TPH diminished.

A 20' x 13' x 10' excavation was created where TPH was below guideline concentrations.

A clay barrier was installed at the bottom of the excavation at 10' bgs to slow vertical migration of the impact in the future. The excavated soil was then land-farmed on location and backfilled into the excavation. The residual TPH in the backfilled soil is expected to naturally attenuate. The junction has been re-plumbed and a water-tight box has been built over the location.

cc: lab results; diagram

**CHLORIDE FIELD TESTS**

LOCATION	DEPTH	ppm
Vertical	4'	1482
	8'	1095
	14'	673
10' E	10'	1436
10' W	10'	706
8' S	10'	953
5' N	10'	947
Bottom Comp.	10'	769
Wall Comp.	8'	1809
Remed. Comp.	n/a	641

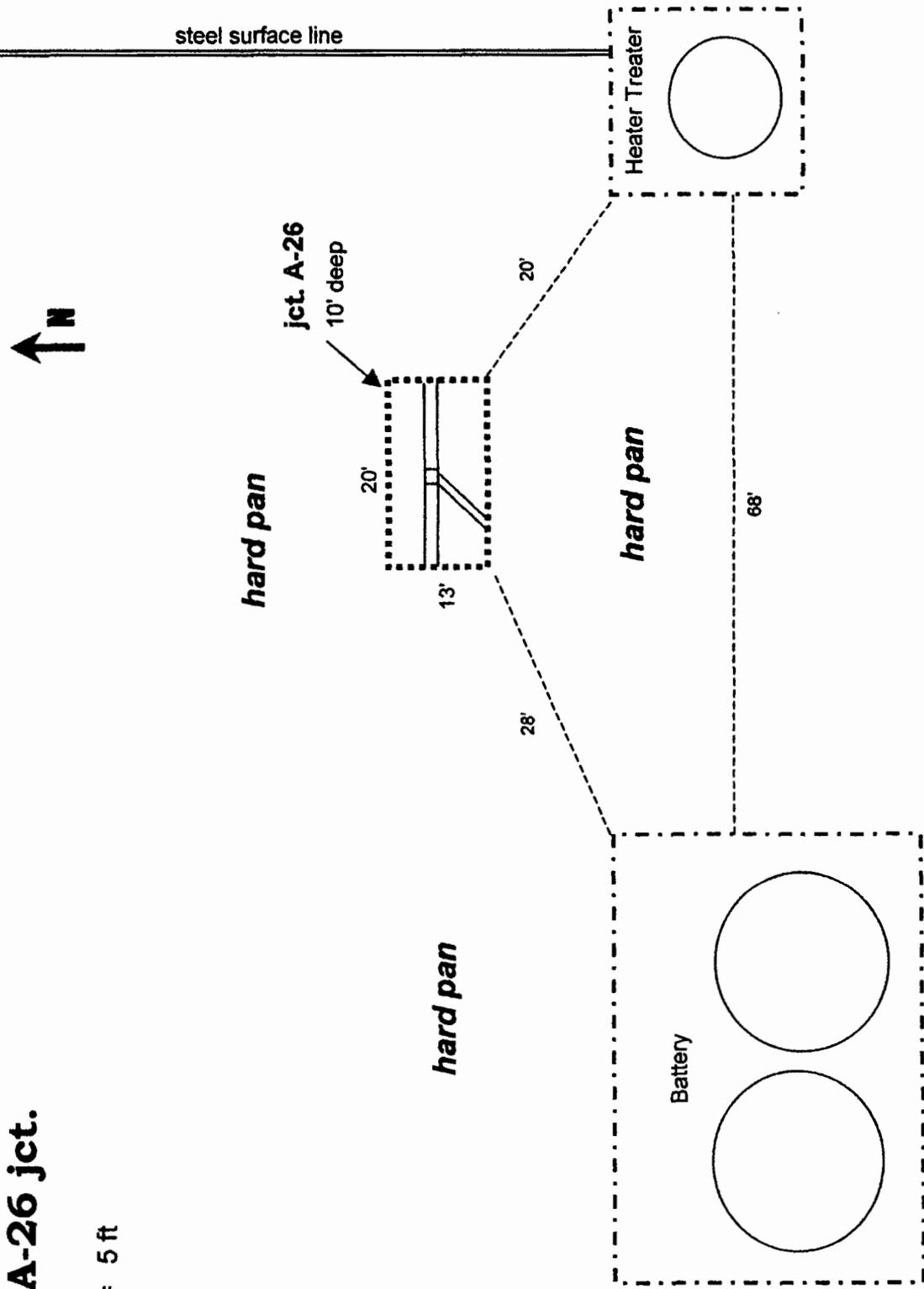
I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE 1/9/2003 PRINTED NAME Kristin Farris

SIGNATURE Kristin Farris TITLE Projects Scientist

# EME A-26 jct.

— = 5 ft



R O A D

EME A-26 jct.



NORM Removal



Impact Excavation

# ANALYTICAL REPORT

## Prepared for:

**Kristin Farris  
Rice Operating  
122 W. Taylor  
Hobbs, NM 88240**

**Project:** A-26 Jct.  
**PO#:** 749  
**Order#:** G0205343  
**Report Date:** 12/30/2002

### Certificates

**US EPA Laboratory Code TX00158**

# ENVIRONMENTAL LAB OF TEXAS

## SAMPLE WORK LIST

Rice Operating  
122 W. Taylor  
Hobbs, NM 88240  
505-397-1471

Order#: G0205343  
Project: EME  
Project Name: A-26 Jct.  
Location: EME

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

<u>Lab ID:</u>	<u>Sample :</u>	<u>Matrix:</u>	<u>Date / Time</u> <u>Collected</u>	<u>Date / Time</u> <u>Received</u>	<u>Container</u>	<u>Preservative</u>
0205343-01	Bottom Comp @ 10'	SOIL	12/23/02	12/27/02 16:40	4 oz glass	Ice
	<u>Lab Testing:</u> 8015M 8021B/5030 BTEX Chloride	Rejected: No		Temp: 3.0 C		
0205343-02	Wall Comp	SOIL	12/23/02	12/27/02 16:40	4 oz glass	Ice
	<u>Lab Testing:</u> 8015M 8021B/5030 BTEX Chloride	Rejected: No		Temp: 3.0 C		
0205343-03	Remediated Comp	SOIL	12/26/02	12/27/02 16:40	4 oz glass	Ice
	<u>Lab Testing:</u> 8015M 8021B/5030 BTEX Chloride	Rejected: No		Temp: 3.0 C		

# ENVIRONMENTAL LAB OF TEXAS

## ANALYTICAL REPORT

Kristin Farris  
 Rice Operating  
 122 W. Taylor  
 Hobbs, NM 88240

Order#: G0205343  
 Project: EME  
 Project Name: A-26 Jct.  
 Location: EME

Lab ID: 0205343-01  
 Sample ID: Bottom Comp @ 10'

### 8015M

<u>Method</u>	<u>Date</u>	<u>Date</u>	<u>Sample</u>	<u>Dilution</u>	<u>Analyst</u>	<u>Method</u>
Blank	Prepared	Analyzed	Amount	Factor		
		12/27/02	1	5	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	86.5	50.0
DRO, >C12-C35	603	50.0
TOTAL, C6-C35	689	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	16%	70	130
1-Chlorooctadecane	11%	70	130

### 8021B/5030 BTEX

<u>Method</u>	<u>Date</u>	<u>Date</u>	<u>Sample</u>	<u>Dilution</u>	<u>Analyst</u>	<u>Method</u>
Blank	Prepared	Analyzed	Amount	Factor		
0004209-02		12/30/02 11:14	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Toluene	0.036	0.025
Ethylbenzene	0.065	0.025
p/m-Xylene	0.356	0.025
o-Xylene	0.063	0.025

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	85%	80	120
Bromofluorobenzene	92%	80	120

# ENVIRONMENTAL LAB OF TEXAS

## ANALYTICAL REPORT

Kristin Farris  
 Rice Operating  
 122 W. Taylor  
 Hobbs, NM 88240

Order#: G0205343  
 Project: EME  
 Project Name: A-26 Jct.  
 Location: EME

Lab ID: 0205343-02  
 Sample ID: Wall Comp

### 8015M

<u>Method</u>	<u>Date</u>	<u>Date</u>	<u>Sample</u>	<u>Dilution</u>	<u>Analyst</u>	<u>Method</u>
Blank	Prepared	Analyzed	Amount	Factor		
		12/27/02	1	1	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	75.7	10.0
DRO, >C12-C35	809	10.0
TOTAL, C6-C35	885	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	88%	70	130
1-Chlorooctadecane	71%	70	130

### 8021B/5030 BTEX

<u>Method</u>	<u>Date</u>	<u>Date</u>	<u>Sample</u>	<u>Dilution</u>	<u>Analyst</u>	<u>Method</u>
Blank	Prepared	Analyzed	Amount	Factor		
0004209-02		12/30/02 11:36	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Toluene	0.031	0.025
Ethylbenzene	0.144	0.025
p/m-Xylene	0.391	0.025
o-Xylene	0.079	0.025

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	82%	80	120
Bromofluorobenzene	93%	80	120

# ENVIRONMENTAL LAB OF TEXAS

## ANALYTICAL REPORT

Kristin Farris  
 Rice Operating  
 122 W. Taylor  
 Hobbs, NM 88240

Order#: G0205343  
 Project: EME  
 Project Name: A-26 Jct.  
 Location: EME

Lab ID: 0205343-03  
 Sample ID: Remediated Comp

### 8015M

<u>Method</u>	<u>Date</u>	<u>Date</u>	<u>Sample</u>	<u>Dilution</u>	<u>Analyst</u>	<u>Method</u>
<u>Blank</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Amount</u>	<u>Factor</u>	<u>Factor</u>	<u>Method</u>
		12/27/02	1	5	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	186	50.0
DRO, >C12-C35	977	50.0
TOTAL, C6-C35	1,160	50.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	18%	70	130
1-Chlorooctadecane	13%	70	130

### 8021B/5030 BTEX

<u>Method</u>	<u>Date</u>	<u>Date</u>	<u>Sample</u>	<u>Dilution</u>	<u>Analyst</u>	<u>Method</u>
<u>Blank</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Amount</u>	<u>Factor</u>	<u>Factor</u>	<u>Method</u>
0004209-02		12/30/02 11:58	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Toluene	0.075	0.025
Ethylbenzene	0.125	0.025
p/m-Xylene	0.597	0.025
o-Xylene	0.104	0.025

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	103%	80	120
Bromofluorobenzene	89%	80	120

Approval: Jeanne McMurrey 12-30-02  
 Raland K. Tuttle, Lab Director, QA Officer      Date  
 Celey D. Keene, Org. Tech. Director  
 Jeanne McMurrey, Inorg. Tech. Director  
 Sandra Biezugbe, Lab Tech.  
 Sara Molina, Lab Tech.

# ENVIRONMENTAL LAB OF TEXAS

## ANALYTICAL REPORT

Kristin Farris  
Rice Operating  
122 W. Taylor  
Hobbs, NM 88240

Order#: G0205343  
Project: EME  
Project Name: A-26 Jct.  
Location: EME

Lab ID: 0205343-01  
Sample ID: Bottom Comp @ 10'

### Test Parameters

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Chloride	496	mg/kg	1	20	9253	12/30/02	SB

Lab ID: 0205343-02  
Sample ID: Wall Comp

### Test Parameters

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Chloride	1450	mg/kg	1	20	9253	12/30/02	SB

Lab ID: 0205343-03  
Sample ID: Remediated Comp

### Test Parameters

<u>Parameter</u>	<u>Result</u>	<u>Units</u>	<u>Dilution Factor</u>	<u>RL</u>	<u>Method</u>	<u>Date Analyzed</u>	<u>Analyst</u>
Chloride	532	mg/kg	1	20	9253	12/30/02	SB

Approval: Jeanne McMurrey 12-30-02  
Raland K. Tuffe, Lab Director, QA Officer      Date  
Celey D. Keene, Org. Tech. Director  
Jeanne McMurrey, Inorg. Tech. Director  
Sandra Biezugbe, Lab Tech.  
Sara Molina, Lab Tech.

# ENVIRONMENTAL LAB OF TEXAS

## QUALITY CONTROL REPORT

8015M

Order#: G0205343

<b>BLANK</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0004207-02			<10.0		
<b>CONTROL</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0004207-03	.	952	1220	128.2%	
<b>CONTROL DUP</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0004207-04		952	1110	116.6%	9.4%
<b>SRM</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg		0004207-05		1000	1116	111.6%	

# ENVIRONMENTAL LAB OF TEXAS

## QUALITY CONTROL REPORT

**8021B/5030 BTEX**

Order#: G0205343

<b>BLANK</b>		LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
SOIL							
	Benzene-mg/kg	0004209-02			<0.025		
	Toluene-mg/kg	0004209-02			<0.025		
	Ethylbenzene-mg/kg	0004209-02			<0.025		
	p/m-Xylene-mg/kg	0004209-02			<0.025		
	o-Xylene-mg/kg	0004209-02			<0.025		
<b>MS</b>		LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
SOIL							
	Benzene-mg/kg	0205342-05	0	0.1	0.100	100.0%	
	Toluene-mg/kg	0205342-05	0	0.1	0.102	102.0%	
	Ethylbenzene-mg/kg	0205342-05	0	0.1	0.104	104.0%	
	p/m-Xylene-mg/kg	0205342-05	0	0.2	0.208	104.0%	
	o-Xylene-mg/kg	0205342-05	0	0.1	0.097	97.0%	
<b>MSD</b>		LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
SOIL							
	Benzene-mg/kg	0205342-05	0	0.1	0.106	106.0%	5.8%
	Toluene-mg/kg	0205342-05	0	0.1	0.108	108.0%	5.7%
	Ethylbenzene-mg/kg	0205342-05	0	0.1	0.112	112.0%	7.4%
	p/m-Xylene-mg/kg	0205342-05	0	0.2	0.227	113.5%	8.7%
	o-Xylene-mg/kg	0205342-05	0	0.1	0.111	111.0%	13.5%
<b>SRM</b>		LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
SOIL							
	Benzene-mg/kg	0004209-05		0.1	0.110	110.0%	
	Toluene-mg/kg	0004209-05		0.1	0.111	111.0%	
	Ethylbenzene-mg/kg	0004209-05		0.1	0.110	110.0%	
	p/m-Xylene-mg/kg	0004209-05		0.2	0.219	109.5%	
	o-Xylene-mg/kg	0004209-05		0.1	0.104	104.0%	

# ENVIRONMENTAL LAB OF TEXAS

## QUALITY CONTROL REPORT

### Test Parameters

Order#: G0205343

<b>BLANK</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0004201-01			<20.0		
<b>MS</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0205342-02	5140	1000	6130	99.0%	
<b>MSD</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0205342-02	5140	1000	6150	101.0%	0.3%
<b>SRM</b>	SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg		0004201-04		4960	4960	100.0%	

# CASE NARRATIVE

## ENVIRONMENTAL LAB OF TEXAS

**Prepared for:**

Rice Operating  
122 W. Taylor  
Hobbs, NM 88240

**Order#:** G0205343

**Project:** A-26 Jct.

The following samples were received as indicated below and on the attached Chain of Custody record. All analyses were performed within the holding time and with acceptable quality control results unless otherwise noted.

SAMPLE ID	LAB ID	MATRIX	Date Collected	Date Received
Bottom Comp @ 10'	0205343-01	SOIL	12/23/2002	12/27/2002
Wall Comp	0205343-02	SOIL	12/23/2002	12/27/2002
Remediated Comp	0205343-03	SOIL	12/26/2002	12/27/2002

**Surrogate recoveries on the 8015M are outside the control limits because they were diluted out.  
(0205343-01,03)**

The enclosed results of analyses are representative of the samples as received by the laboratory. Environmental Lab of Texas makes no representations or certifications as to the methods of sample collection, sample identification, or transportation handling procedures used prior to our receipt of samples. To the best of my knowledge, the information contained in this report is accurate and complete.

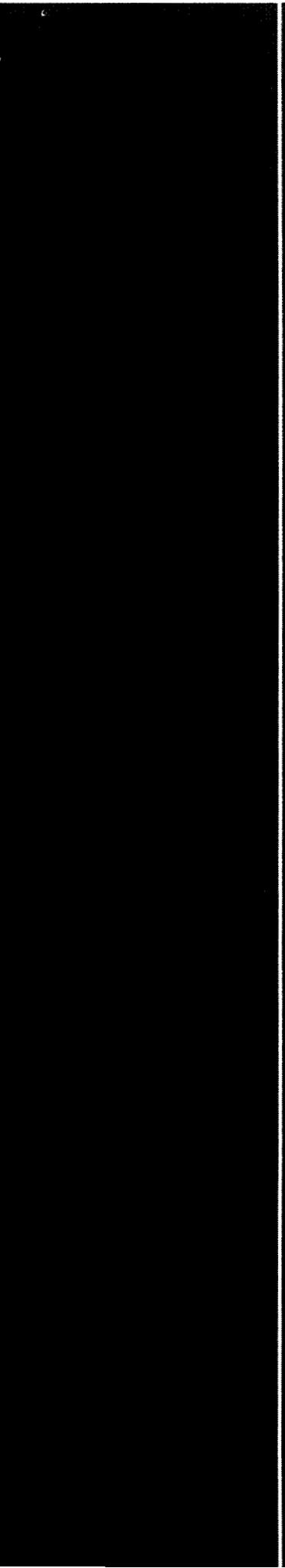
Approved By:

*Jeanne McMurry*  
Environmental Lab of Texas I, Ltd.

Date:

12-30-02





# Multimed File and Graph

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



DATA FOR MATERIAL 1  
 -----  
 VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Saturated hydraulic conductivity	cm/hr	CONSTANT	3.60	-999.	-999.	-999.
Unsaturated zone porosity	--	CONSTANT	0.250	-999.	-999.	-999.
Air entry pressure head	m	CONSTANT	0.700	-999.	-999.	-999.
Depth of the unsaturated zone	m	CONSTANT	29.0	0.000	0.000	0.000

DATA FOR MATERIAL 1  
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 VADOSE ZONE FUNCTION VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Residual water content	--	CONSTANT	0.116	-999.	-999.	-999.
Brook and Corey exponent, EN	--	CONSTANT	-999.	-999.	-999.	-999.
ALFA coefficient	1/cm	CONSTANT	0.500E-02	-999.	-999.	-999.
Van Genuchten exponent, ENN	--	CONSTANT	1.09	-999.	-999.	-999.

NSATURATED ZONE TRANSPORT MODEL PARAMETERS

LAY - Number of different layers used 1  
 TSTPS - Number of time values concentration calc 40  
 UMMY - Not presently used 1  
 SOL - Type of scheme used in unsaturated zone 1  
       - Stehfest terms or number of increments 18  
 TEL - Points in Lagrangian interpolation 3  
 GPTS - Number of Gauss points 104  
 IT - Convolution integral segments 2  
 BOUND - Type of boundary condition 3  
 TSGEN - Time values generated or input 1  
 MAX - Max simulation time -- 0.0  
 TFUN - Weighting factor -- 1.2

PTIONS CHOSEN

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 tehfest numerical inversion algorithm  
 xponentially decaying continuous source  
 omputer generated times for computing concentrations

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 VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Thickness of layer	m	CONSTANT	29.0	-999.	-999.	-999.
Longitudinal dispersivity of layer	m	DERIVED	-999.	-999.	-999.	-999.
Percent organic matter	--	CONSTANT	0.000	-999.	-999.	-999.
Bulk density of soil for layer	g/cc	CONSTANT	1.99	-999.	-999.	-999.
Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Solid phase decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Dissolved phase decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Overall chemical decay coefficient	1/yr	DERIVED	-999.	-999.	-999.	-999.
Acid catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Neutral hydrolysis rate constant	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Base catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Reference temperature	C	CONSTANT	25.0	-999.	-999.	-999.
Normalized distribution coefficient	ml/g	CONSTANT	0.000	-999.	-999.	-999.
Distribution coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Biodegradation coefficient (sat. zone)	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Air diffusion coefficient	cm <sup>2</sup> /s	CONSTANT	-999.	-999.	-999.	-999.
Reference temperature for air diffusion	C	CONSTANT	-999.	-999.	-999.	-999.
Molecular weight	g/M	CONSTANT	-999.	-999.	-999.	-999.
Mole fraction of solute	--	CONSTANT	-999.	-999.	-999.	-999.
Vapor pressure of solute	mm Hg	CONSTANT	-999.	-999.	-999.	-999.
Henry's law constant	atm-m <sup>3</sup> /M	CONSTANT	-999.	-999.	-999.	-999.
Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000	0.000	1.00
Not currently used		CONSTANT	0.000	0.000	0.000	0.000
Not currently used		CONSTANT	0.000	0.000	0.000	0.000

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.152E-01	-999.	-999.	-999.
Area of waste disposal unit	m <sup>2</sup>	DERIVED	24.1	-999.	-999.	-999.
Duration of pulse	yr	DERIVED	50.0	-999.	-999.	-999.
Spread of contaminant source	m	DERIVED	-999.	-999.	-999.	-999.
Recharge rate	m/yr	CONSTANT	0.000	-999.	-999.	-999.
Source decay constant	1/yr	CONSTANT	0.250E-01	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	0.181E+04	-999.	-999.	-999.

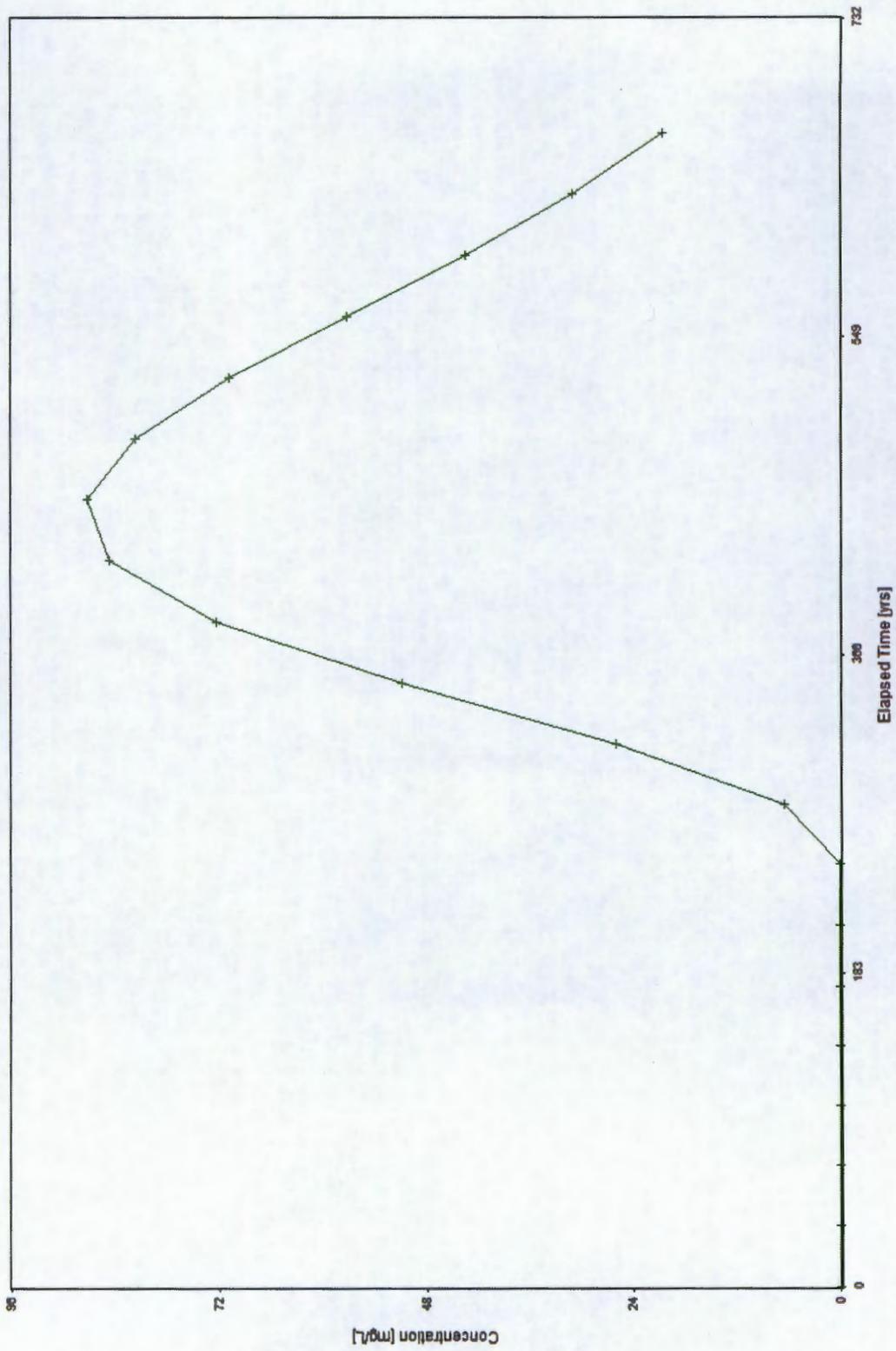
Width scale of facility	m	CONSTANT	3.96	-999.	-999.	-999.
Near field dilution		DERIVED	1.00	0.000	0.000	1.00

AQUIFER SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS			LIMITS	
			MEAN	STD DEV	MIN	MAX	
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.	
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.	
Bulk density	g/cc	CONSTANT	1.86	-999.	-999.	-999.	
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.	
Source thickness (mixing zone depth)	m	DERIVED	-999.	-999.	-999.	-999.	
Conductivity (hydraulic)	m/yr	CONSTANT	315.	-999.	-999.	-999.	
Gradient (hydraulic)		CONSTANT	0.300E-02	-999.	-999.	-999.	
Groundwater seepage velocity	m/yr	DERIVED	-999.	-999.	-999.	-999.	
Retardation coefficient	--	DERIVED	-999.	-999.	-999.	-999.	
Longitudinal dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.	
Transverse dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.	
Vertical dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.	
Temperature of aquifer	C	CONSTANT	20.0	-999.	-999.	-999.	
pH	--	CONSTANT	7.00	-999.	-999.	-999.	
Organic carbon content (fraction)		CONSTANT	0.000	-999.	-999.	-999.	
Well distance from site	m	CONSTANT	1.00	-999.	-999.	-999.	
Angle off center	degree	CONSTANT	0.000	-999.	-999.	-999.	
Well vertical distance	m	CONSTANT	0.000	-999.	-999.	-999.	

TIME	CONCENTRATION
0.000E+00	0.00000E+00
0.350E+02	0.00000E+00
0.700E+02	0.00000E+00
0.105E+03	0.00000E+00
0.140E+03	0.00000E+00
0.175E+03	0.00000E+00
0.210E+03	0.00000E+00
0.245E+03	0.00000E+00
0.280E+03	0.65123E+01
0.315E+03	0.25843E+02
0.350E+03	0.50539E+02
0.385E+03	0.71978E+02
0.420E+03	0.84294E+02
0.455E+03	0.86832E+02
0.490E+03	0.81262E+02
0.525E+03	0.70339E+02
0.560E+03	0.56858E+02
0.595E+03	0.43157E+02
0.630E+03	0.30792E+02
0.665E+03	0.20387E+02

Chloride Concentration At The Receptor Well  
EME A-26



# Current Photodocumentation

**RICE *Operating Company* (ROC)**  
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Phone: (575) 393-9174 Fax: (575) 397-1471

**EME A-26 (1R427-82)**  
Unit Letter A, Section 26, T20S, R36E



Facing west

7/22/2013



Facing north

7/22/2013