

1R - 427-121

APPROVALS

YEAR(S):

2013

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Wednesday, September 11, 2013 2:33 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 (1R427-121) Termination - ROC EME J-10 Site

**RE: Termination Request
for the Rice Operating Company's
EME J-10 Site
Unit Letter J, Section 10, T21S, R36E, NMPM, Lea County, New Mexico
Remediation Plan (1R427-121) 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 September 5, 2013 (received September 9, 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 (1R427-121) 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 8937

September 5, 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

RECEIVED OGD
2013 SEP - 9 10 14 07

RE: Termination Request
EME J-10 (1R427-121): UL/J, Sec. 10, T21S, R36E
RICE Operating Company – Eunice Monument Eumont (EME) 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 and Previous Work

In 2001, ROC initiated work on the former J-10 junction box. The site is located in UL J, Sec. 10, T21S, R36E. An updated survey of NM OSE records, conducted in 2013, indicate that groundwater would likely be encountered at a depth of approximately 196 +/- feet. The site was delineated using a backhoe to form a 13x12x8-ft deep excavation and soil samples were screened at regular intervals for chlorides. Each sample was field titrated for chlorides. Representative composite samples of the sidewalls and bottom were submitted to a commercial laboratory to be analyzed for chloride, TPH, and BTEX. The sidewall composite resulted in a chloride concentration of 259 mg/kg, gasoline range organics (GRO) concentration below detectable limits, a diesel range organics (DRO) concentration of 1,720 mg/kg, a benzene concentration of 2.21 mg/kg, toluene of 0.594 mg/kg, ethyl benzene of 0.223 mg/kg, and total xylenes of 1.49 mg/kg. The bottom composite sample resulted in a chloride concentration of 226 mg/kg, a GRO and benzene concentration below detectable limits, a DRO concentration of 513 mg/kg, a toluene of 0.352 mg/kg, ethyl benzene of 0.277 mg/kg and a total xylenes concentration of 1.34 mg/kg. A compacted clay layer was installed and will provide a barrier that will inhibit the downward migration of chlorides to groundwater. The total of 48 cubic yards of excavated soil was properly disposed of at a NMOCD approved facility. The excavation was backfilled to ground

surface and contoured to the surrounding area. A new, watertight junction box was installed at the site and has since been eliminated. Vegetation has rebounded at this site so no further action is warranted. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater.

The junction box site maps, final report, laboratory analysis, disposal manifests and current 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.

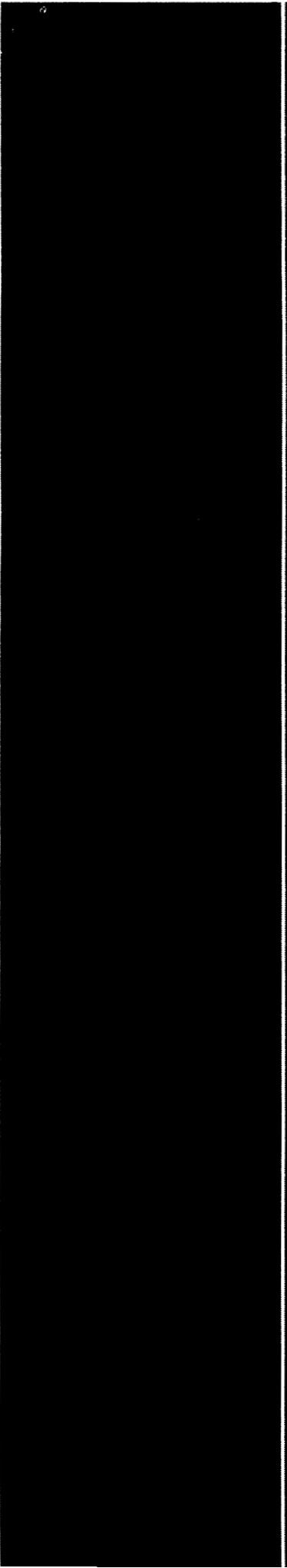
Please contact me at (575)393-9174 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,
RICE Operating Company

A handwritten signature in cursive script that reads "Laura Flores".

Laura Flores
Environmental Project Assistant Manager

enclosures



Site Maps

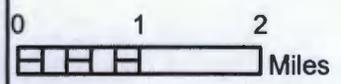
RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

Site Location Map



**EME Jct J-10
(1R427-121)**

UL/J SECTION 10
T21S, R36E
LEA COUNTY, NM



Drawing date: 5/6/13 LS

Area Map



Legend

- ACTIVE LINE
- ISOLATED-LOCATED
- ISOLATED-PROJECTED

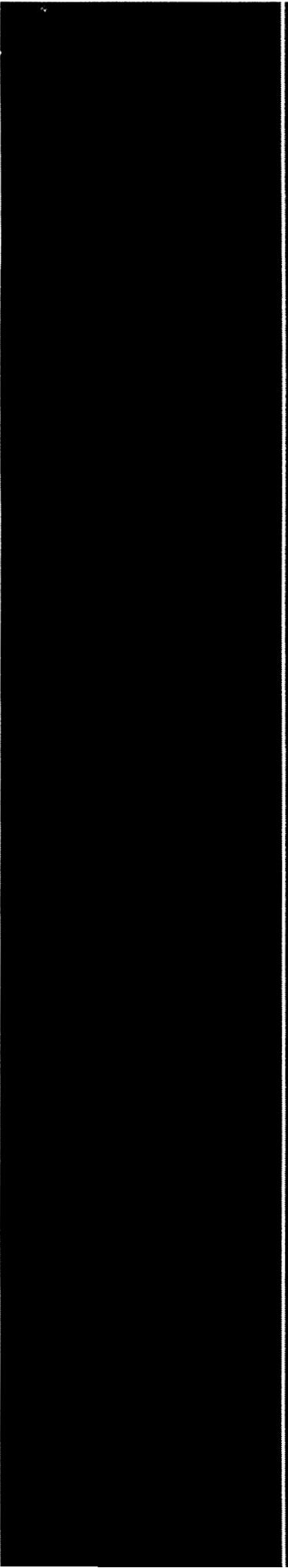


**EME Jct J-10
(1R427-121)**

UL/J SECTION 10
T21S, R36E
LEA COUNTY, NM

0 250 500 Feet

Drawing date: 8/7/13 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**

927-121

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	J-10	J	10	21S	38E	LEA	12	11	5

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Millard Deck OTHER _____

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

Date Started 01/24/2001 Date Completed 01/24/2001 OCD Witness NO

Soil Excavated 48 cubic yards Excavation Length 13 Width 12 Depth 8 feet

Soil Disposed 48 cubic yards Offsite Facility Sundance Location Eunice, NM

FINAL ANALYTICAL RESULTS: Sample Date 01/24/2001 Sample Depth 8'

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	2.21	0.594	0.223	1.49	<50	1720	259
BOTTOM	<0.2	0.352	0.277	1.34	<50	513	226

General Description of Remedial Action: Delineated vertical and lateral extent.

High impact soil was hauled to a permitted disposal facility. Installed a compacted clay liner and water tight junction box and backfilled with fresh soil. Natural attenuation will remediate the remaining hydrocarbon.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
SIDEWALLS	4'	410
BOTTOM	8'	335

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

DATE January 24, 2001

PRINTED NAME D. E. Anderson

SIGNATURE Chris Rodriguez

TITLE Project Leader - Environmental



**ARDINAL
LABORATORIES**

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: JAMES STURGILL
122 W. TAYLOR
HOBBS, NM 88240
FAX TO:

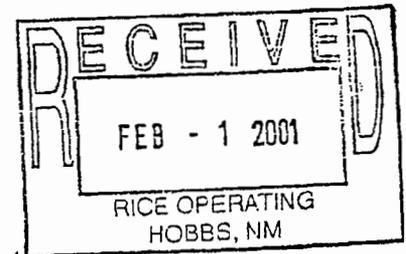
Receiving Date: 01/24/01
Reporting Date: 01/25/01
Project Number: J-10 BOTTOM & SIDES
Project Name: J-10 BOTTOM & SIDES
Project Location: SECTION 10 T21 R36E - EME

Sampling Date: 01/24/01
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	GRO (C ₆ -C ₁₀) (mg/Kg)	DRO (>C ₁₀ -C ₂₈) (mg/Kg)	CI* (mg/Kg)
ANALYSIS DATE		01/24/01	01/24/01	01/25/01
H5549-1	SIDES	<50	1720	259
H5549-2	BOTTOM	<50	513	226
Quality Control		760	761	1051
True Value QC		800	800	1000
% Recovery		95.0	95.1	105
Relative Percent Difference		0.2	3.3	3.9

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; CI: Std. Methods 4500-CFB

*Analysis performed on a 1:4 w:v aqueous extract.



Burgess J. Cooke
Chemist

1/25/01
Date



ARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

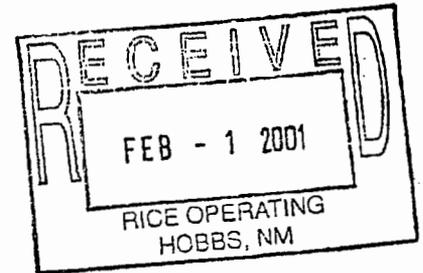
ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: JAMES STURGILL
122 W. TAYLOR
HOBBS, NM 88240
FAX TO:

Receiving Date: 01/24/01
Reporting Date: 01/25/01
Project Number: J-10 BOTTOM & SIDES
Project Name: J-10 BOTTOM & SIDES
Project Location: SECTION 10 T21 R36E - EME

Sampling Date: 01/24/01
Sample Type: SOIL
Sample Condition: COOL, INTACT
Sample Received By: BC
Analyzed By: JA

LAB NUMBER	SAMPLE ID	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE		01/23/01	01/23/01	01/23/01	01/23/01
H5549-1	SIDES	2.21	0.594	0.223	1.49
H5549-2	BOTTOM	<0.200	0.352	0.277	1.34
Quality Control		0.096	0.107	0.097	0.298
True Value QC		0.100	0.100	0.100	0.300
% Accuracy		96	107	97	99
Relative Percent Difference		2.2	0.7	2.2	2.1

METHOD: EPA SW 846-8020, 5030, Gas Chromatography



Chemist

1-25-01

Date

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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

H5549SHOBBSRICEBTEXONLY



CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(915) 673-7001 Fax (915) 673-7020 (505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ___ of ___

Company Name: <i>Rice Operating</i>		BILL TO		ANALYSIS REQUEST																							
Project Manager: <i>Jim Sturgill</i>		P.O. #:																									
Address: <i>122 W Taylor</i>		Company:																									
City: <i>Hobbs</i> State: <i>NM</i> Zip: <i>88240</i>		Attn:																									
Phone #: <i>505 (393 9124)</i> Fax #:		Address:																									
Project #: <i>J-10 Bottom & Sides</i> Project Owner:		City:																									
Project Name: <i>J-10 Bottom & Sides</i>		State: Zip:																									
Project Location: <i>SECTION 10 T21 R36E - EME</i>		Phone #:																									
Sampler Name: <i>Jim Sturgill</i>		Fax #:																									
FOR LAB USE ONLY																											
Lab I.D.	Sample I.D.	(G/RAB OR (C)OMP.	# CONTAINERS													MATRIX					PRESERV.			SAMPLING		<i>Blot, 8015, cd</i>	
				GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME													
<i>HSS 49-1</i>	<i>J-10 Bottom</i>	<i>4</i>				<i>X</i>							<i>1/24/01</i>														
<i>-2</i>	<i>J-10 Sides</i>	<i>9</i>				<i>X</i>							<i>1/25/01</i>														

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.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: <i>James Sturgill</i>		Date: <i>1-24-01</i>	Received By:	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:
Relinquished By:		Time: <i>11:00</i>	Received By: (Lab Staff)	Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One)			<i>Burke A. Cook</i>	REMARKS:	
Sampler - UPS - Bus - Other:			Sample Condition		
			Cool Intact		
			<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
			CHECKED BY: (Initials)		

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

Sundance Services, Inc.

P.O. Box 1737 ★ Eunice, NM 88231
(505) 394-2511

NO 36846

LEASE OPERATOR/SHIPPER/COMPANY:

LEASE NAME:

692

TRANSPORTER COMPANY:

TIME:

AM/PM

DATE:

VEHICLE NO.:

DRIVER NO.:

CHARGE TO:

TYPE OF MATERIAL

Production Water

Drilling Fluids

Completion Fluids

Tank Bottoms

Contaminated soil

C-117 No.: _____

Other Material:

BS&W Content: _____

Description: _____

VOLUME OF MATERIAL BBLs. _____ :

YARD _____ :

AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HERewith IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. § 6901, et seq., THE NM HEALTH AND SAF. CODE § 361.001, et seq., AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED DRILLING FLUIDS, PRODUCED WATERS, AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

ALSO AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, TRANSPORTER REPRESENTS AND WARRANTS THAT ONLY THE MATERIAL DELIVERED BY OPERATOR/SHIPPER TO TRANSPORTER IS NOW DELIVERED BY TRANSPORTER TO SUNDANCE SERVICES, INC.'S FACILITY FOR DISPOSAL.

THIS WILL CERTIFY that the above Transporter loaded the material represented by this Transporter Statement at the above described location, and that it was tendered by the above described shipper. This will certify that no additional materials were added to this load, and that the material was delivered without incident.

DRIVER: _____

(SIGNATURE)

FACILITY REPRESENTATIVE: _____

(SIGNATURE)

White-Sundance Canary-Sundance Acct#1 Pink-Sundance Acct#2 Gold-Transporter

Revised 12/27/95

Sundance Services, Inc.

P.O. Box 1737 ★ Eunice, NM 88231
(505) 394-2511

NO 38355

LEASE OPERATOR/SHIPPER/COMPANY:

LEASE NAME:

TRANSPORTER COMPANY:

TIME:

AM/PM

DATE:

VEHICLE NO.:

DRIVER NO.:

CHARGE TO:

TYPE OF MATERIAL

- Production Water
 Tank Bottoms
 Other Material:

- Drilling Fluids
 Contaminated soil
 BS&W Content: _____

- Completion Fluids
 C-117 No.: _____

Description: _____

VOLUME OF MATERIAL BBLs. _____ : YARD _____ : _____

AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HEREWITH IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. § 6901, et seq., THE NM HEALTH AND SAF. CODE § 361.001, et seq., AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED DRILLING FLUIDS, PRODUCED WATERS, AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

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DRIVER: _____
(SIGNATURE)

FACILITY REPRESENTATIVE: _____
(SIGNATURE)

Sundance Services, Inc.

P.O. Box 1737 ★ Eunice, NM 88231
(505) 394-2511

NI 98856

LEASE OPERATOR/SHIPPER/COMPANY: _____

LEASE NAME: _____

TRANSPORTER COMPANY: _____

TIME: _____

AM/PM

DATE: _____

VEHICLE NO.: _____

DRIVER NO.: _____

CHARGE TO: _____

TYPE OF MATERIAL

Production Water

Drilling Fluids

Completion Fluids

Tank Bottoms

Contaminated soil

C-117 No.: _____

Other Material:

BS&W Content: _____

Description: _____

VOLUME OF MATERIAL BBLs. _____ : YARD 12 : _____

AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HEREWITH IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. § 6901, et seq., THE NM HEALTH AND SAF. CODE § 361.001, et seq., AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED DRILLING FLUIDS, PRODUCED WATERS, AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

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DRIVER: _____
(SIGNATURE)

FACILITY REPRESENTATIVE: _____
(SIGNATURE)

Sundance Services, Inc.

P.O. Box 1737 ★ Eunice, NM 88231
(505) 394-2511

112 38905

LEASE OPERATOR/SHIPPER/COMPANY: Kico 4-10
LEASE NAME: WIE T-10 AFE-692
TRANSPORTER COMPANY: West 2 works TIME: _____ AM/PM
DATE: 3-01 VEHICLE NO.: 21 DRIVER NO.:

CHARGE TO: Kico

TYPE OF MATERIAL 3-10 T-10 R-36

- Production Water Drilling Fluids Completion Fluids
 Tank Bottoms Contaminated soil C-117 No.: _____
 Other Material: BS&W Content: _____

Description: Hydrate

VOLUME OF MATERIAL BBLs. _____ : YARD 12 : _____

AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HEREWITH IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. § 6901, et seq., THE NM HEALTH AND SAF. CODE § 361.001, et seq., AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED DRILLING FLUIDS, PRODUCED WATERS, AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

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DRIVER: _____
(SIGNATURE)

FACILITY REPRESENTATIVE: [Signature]
(SIGNATURE)

Current Photodocumentation

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

EME J-10 (1R427-121)

UL/J, Section 10, T21S, R36E



Facing east

7/16/2013



Facing north

7/16/2013

MULTIMED V1.01 DATE OF CALCULATIONS: 11-SEP-2013 TIME: 11: 1:20

U. S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

Switched to Stehfest algorithm to avoid numerical problems
with Convolution algorithm. Problems were caused by
high source decay rate. Everything ok now, execution continuing...

1

Run options

--- -----

EME J-10

1R427-121

Chemical simulated is Benzene

Option Chosen Saturated and unsaturated zone models

Run was DETERMIN

Infiltration Specified By User: 4.800E-03 m/yr

Run was transient

Well Times: Find Maximum Concentration

Reject runs if Y coordinate outside plume

Reject runs if Z coordinate outside plume

Gaussian source used in saturated zone model

1

1

UNSATURATED ZONE FLOW MODEL PARAMETERS

(input parameter description and value)

NP - Total number of nodal points

240

NMAT - Number of different porous materials 1
 KPROP - Van Genuchten or Brooks and Corey 1
 IMSHGN - Spatial discretization option 1
 NVFLAYR - Number of layers in flow model 1

OPTIONS CHOSEN

Van Genuchten functional coefficients

User defined coordinate system

1

Layer information

LAYER NO.	LAYER THICKNESS	MATERIAL PROPERTY
1	57.30	1

DATA FOR MATERIAL 1

VADOSE ZONE MATERIAL VARIABLES

LIMITS		VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
MIN	MAX				MEAN	STD DEV
-999.	-999.	Saturated hydraulic conductivity	cm/hr	CONSTANT	3.60	-999.
-999.	-999.	Unsaturated zone porosity	--	CONSTANT	0.250	-999.

-999.	Air entry pressure head	m	CONSTANT	0.700	-999.
	-999.				
0.000	Depth of the unsaturated zone	m	CONSTANT	57.3	0.000
	0.000				

DATA FOR MATERIAL 1

 VADOSE ZONE FUNCTION VARIABLES

LIMITS		VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
MIN	MAX				MEAN	STD DEV
-999.	-999.	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.

UNSATURATED ZONE TRANSPORT MODEL PARAMETERS

NLAY	- Number of different layers used	1
NTSTPS	- Number of time values concentration calc	40
DUMMY	- Not presently used	1
ISOL	- Type of scheme used in unsaturated zone	1
N	- Stehfest terms or number of increments	18
NTEL	- Points in Lagrangian interpolation	3
NGPTS	- Number of Gauss points	104

NIT - Convolution integral segments 2
 IBOUND - Type of boundary condition 3
 ITSGEN - Time values generated or input 1
 TMAX - Max simulation time -- 0.0
 WTFUN - Weighting factor -- 1.2

OPTIONS CHOSEN

 Stehfest numerical inversion algorithm
 Exponentially decaying continuous source
 Computer generated times for computing concentrations

1

DATA FOR LAYER 1

 VADOSE TRANSPORT VARIABLES

LIMITS		VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
MIN	MAX				MEAN	STD DEV
-999.	-999.	Thickness of layer	m	CONSTANT	57.3	-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.

CHEMICAL SPECIFIC VARIABLES

LIMITS		VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
MIN	MAX				MEAN	STD DEV
-999.	-999.	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	1/M-yr	CONSTANT	0.000	-999.
-999.	-999.	Neutral hydrolysis rate constant	1/yr	CONSTANT	0.000	-999.
-999.	-999.	Base catalyzed hydrolysis rate	1/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 ² /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.	Mole fraction of solute	--	CONSTANT	-999.	-999.
-999.	-999.				
-999.	Vapor pressure of solute	mm Hg	CONSTANT	-999.	-999.
-999.	-999.				
-999.	Henry`s law constant	atm-m ³ /M	CONSTANT	-999.	-999.
-999.	-999.				
0.000	Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000
0.000	1.00				
0.000	Not currently used		CONSTANT	0.000	0.000
0.000	0.000				
0.000	Not currently used		CONSTANT	0.000	0.000
0.000	0.000				
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SOURCE SPECIFIC VARIABLES

LIMITS		VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
MIN	MAX				MEAN	STD DEV
-999.	-999.	Infiltration rate	m/yr	CONSTANT	0.480E-02	-999.
-999.	-999.	Area of waste disposal unit	m ²	DERIVED	24.1	-999.
-999.	-999.	Duration of pulse	yr	DERIVED	10.0	-999.
-999.	-999.	Spread of contaminant source	m	DERIVED	-999.	-999.
-999.	-999.	Recharge rate	m/yr	CONSTANT	0.000	-999.
0.000	0.000	Source decay constant	1/yr	CONSTANT	0.250E-01	0.000
-999.	-999.	Initial concentration at landfill	mg/l	CONSTANT	2.21	-999.

-999.	Length scale of facility -999.	m	CONSTANT	6.10	-999.
-999.	Width scale of facility -999.	m	CONSTANT	3.96	-999.
0.000	Near field dilution 1.00		DERIVED	1.00	0.000

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AQUIFER SPECIFIC VARIABLES

LIMITS		VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS	
MIN	MAX				MEAN	STD DEV
-999.	-999.	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.	Transverse dispersivity	m	FUNCTION OF X	-999.	-999.
-999.	-999.				
-999.	Vertical dispersivity	m	FUNCTION OF X	-999.	-999.
-999.	-999.				
-999.	Temperature of aquifer	C	CONSTANT	20.0	-999.
-999.	-999.				
-999.	pH	--	CONSTANT	7.00	-999.
-999.	-999.				
-999.	Organic carbon content (fraction)		CONSTANT	0.000	-999.
-999.	-999.				
-999.	Well distance from site	m	CONSTANT	1.00	-999.
-999.	-999.				
-999.	Angle off center	degree	CONSTANT	0.000	-999.
-999.	-999.				
-999.	Well vertical distance	m	CONSTANT	0.000	-999.
-999.	-999.				

MAXIMUM WELL CONCENTRATION IS 0.7297E-02 AT 0.254E+04 YEARS