1R - 427-47

APPROVALS

YEAR(S):

2013

Hansen, Edward J., EMNRD

From:	Hansen, Edward J., EMNRD
Sent:	Thursday, September 12, 2013 4:26 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 (1R427-47) Termination - ROC EME K-18 Site

RE: Termination Request
for the Rice Operating Company's
EME K-18 Site
Unit Letter K, Section 18, T19S, R37E, NMPM, Lea County, New Mexico
Remediation Plan (1R427-47) 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 (1R427-47) 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*
419 West Cain • Hobbs, New Mexico 88240
Phone: (575) 393-2967 • Fax: (575) 393-0293

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

RE: Termination Request
EME K-18 (1R427-47): UL/K, Sec. 18, T19S, R37E
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 2003, ROC initiated work on the former K-18 junction box. The site is located in UL/K, Sec. 18, T19S, R37E. NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 52 +/- 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 field screened using a PID for hydrocarbons, resulting in elevated chloride concentrations and low PID readings. Representative composite samples of the excavation walls and bottom were sent to a commercial for analysis of chloride and TPH, resulting in a sidewalls chloride concentration of 320 mg/kg and concentrations of gasoline range organics (GRO) concentration and diesel range organics (DRO) below detectable limits. The bottom composite resulted in a chloride concentration of 528 mg/kg and concentrations of GRO and DRO below detectable limits. A sample of the remediated backfill was collected and sent to a commercial laboratory for analysis of chloride and TPH, resulting in a chloride concentration of 464 mg/kg, a GRO concentration below detectable limits and a DRO concentration of 95.7 mg/kg. The excavation was backfilled with the remediated soil to 6 ft below ground surface (bgs). At 6 ft bgs, a 1.5 ft thick compacted clay layer was installed. The clay layer will provide a barrier that will inhibit the downward migration of

chlorides to groundwater. The remaining excavation was backfilled with the remediated soil to ground surface and contoured to the surrounding area.

To further investigate the depth of chloride presence, a soil bore was initiated on January 2, 2004 at the former junction box site. The boring was advanced to a depth of 26 ft bgs, where a hard caliche layer was found and could no longer be drilled. Soil samples collected every 5 ft. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons, resulting in concentrations that did relent with depth. The 26 ft sample was sent to a commercial laboratory for analysis, resulting in a chloride concentration of 352 mg/kg. The entire bore hole was plugged to ground surface.

Vegetation has rebounded at this site; therefore, no revegetation is necessary. 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 junction box site location map, area map, soil bore plat, logs, laboratory analysis and 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)393-2967 if you have any questions or wish to discuss this site. Thank you for your time and consideration.
Sincerely,
RICE Operating Company

Laura Flores

Laura Flores
Environmental Project Assistant Manager

enclosures

Site Maps

RICE *Operating Company* (ROC)
419 West Cain Hobbs, NM 88240
Phone: (575) 393-2967 Fax: (575) 393-0293

Site Location Map

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME JCT K-18

UL K SECTION 18
T-19-S R-37-E
LEA COUNTY, NM

N W E S

0 1 2 Miles

Drawing date: 8/6/13
Drafted by: T. Grieco

Area Map

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME JCT K-18

UL K SECTION 18
T-19-S R-37-E
LEA COUNTY, NM

N W E S

0 0.1 0.2 Miles

Drawing date: 5/6/13
Drafted by: T. Grieco

Junction Box Report

RICE *Operating Company* (ROC)
419 West Cain Hobbs, NM 88240
Phone: (575) 393-2967 Fax: (575) 393-0293

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	K-18	K	18	19S	37E	Lea	Eliminated		

LAND TYPE: BLM _____ STATE X FEE LANDOWNER _____ OTHER _____

Depth to Groundwater 52 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10

Date Started 12/1/2003 Date Completed 12/12/2003 OCD Witness No

Soil Excavated 178 cubic yards Excavation Length 20 Width 20 Depth 12 feet

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

FINAL ANALYTICAL RESULTS: Sample Date 12/3/2003 Sample Depth 12 ft 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	PID ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
SIDEWALLS	0.0	<10.0	<10.0	320
BOTTOM	0.0	<10.0	<10.0	528
REMEDIATED	433.0	<10.0	95.7	464
SOIL BORE @ 26 ft	XXX	XXX	XXX	352

General Description of Remedial Action: This site was delineated with a backhoe producing a 20 x 20 x 12-ft-deep excavation. Although chloride concentrations declined with depth, a slight increase that occurred at 14 ft caused concern. TPH concentrations were below NMOCD guidelines. On 1/2/2004, a soil bore was initiated to confirm the decline and the extent of chloride impact was found at 26 ft bgs. At this depth, very hard caliche was encountered and the bore machine could not advance any deeper. Field tests of split spoon samples to 26 ft create a conclusive declination trend of chloride concentrations (see graph). The excavation was backfilled to 6 ft bgs. At 6 ft, a 1.5 compacted clay barrier was installed to inhibit further chloride migration (see diagram). The remaining soil was backfilled on top of the clay and the surface was contoured.

enclosures: chloride graph, photos, lab results, PID readings, bore log, diagram, clay compaction test

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	7	1305
	8	1272
	9	1154
	10	1272
	11	1251
	12	1117
	13	754
	14	922
soil bore	15	473
	20	300
	25	250
	26	296
4-wall comp.	n/a	327
bottom comp.	12	504
remed. comp.	na	419

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

DATE 2/19/2004 PRINTED NAME Kristin Farris

SIGNATURE Kristin Farris TITLE Project Scientist

EME jct. K-18

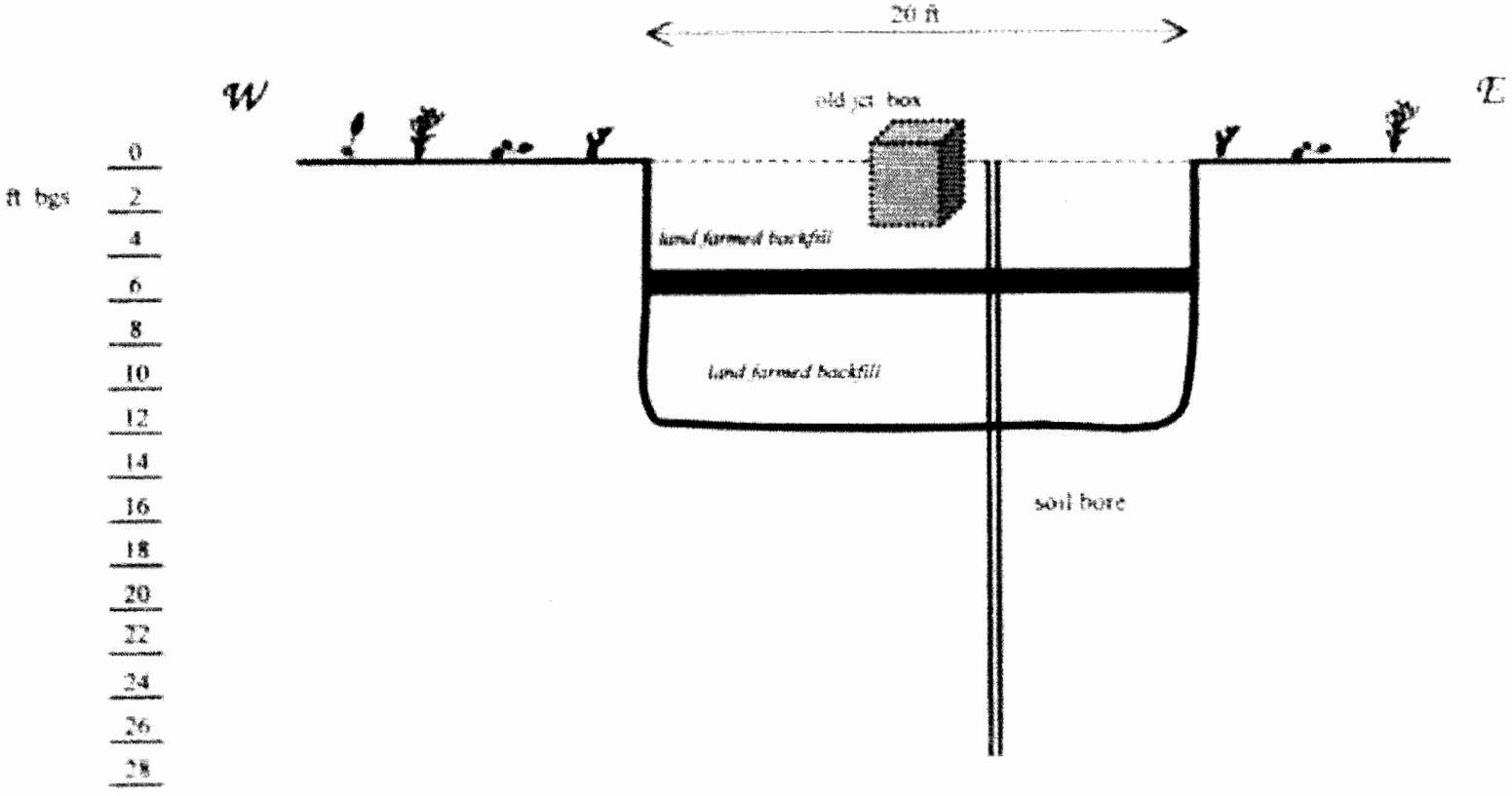
Undisturbed Junction Box 10/2/2003

Compacted Clay Barrier Installed at 6 ft bgs

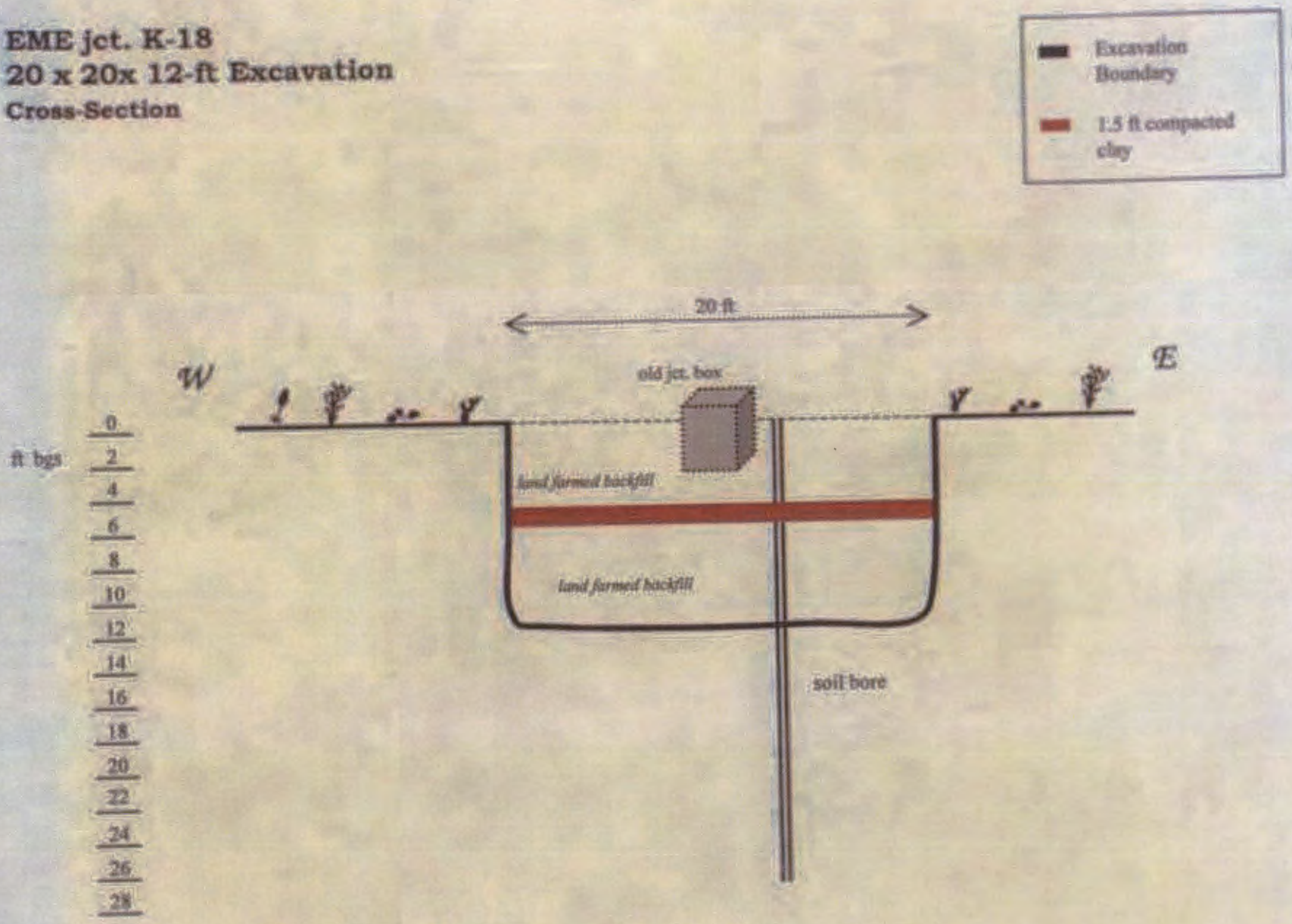
Backfilled Site

Soil Bore Delineation 1/2/2004

EME jct. K-18
20 x 20x 12-ft Excavation
Cross-Section



EME jct. K-18
20 x 20x 12-ft Excavation
Cross-Section



EME jct. K-18

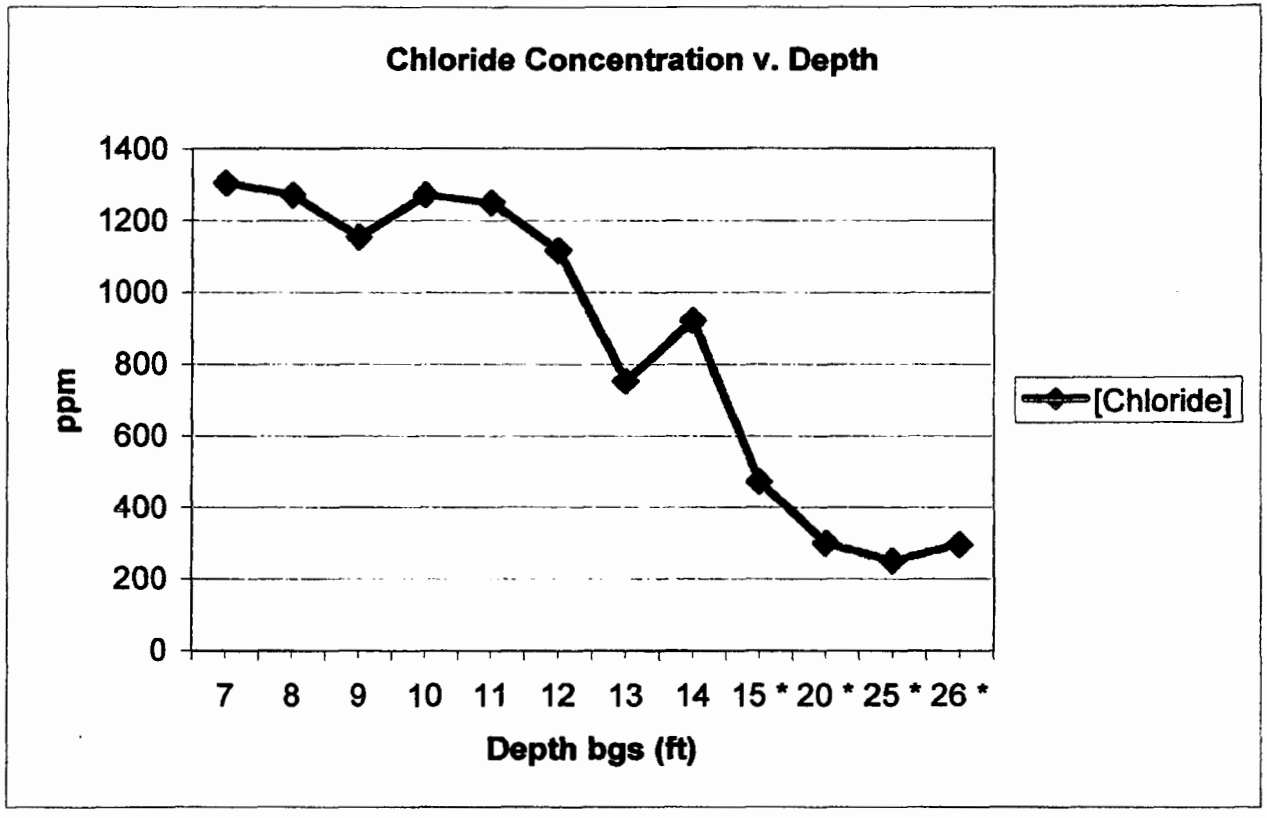
T19S, R37E

Vertical Delineation at Source

Depth bgs (ft)	[Cl⁻] ppm
7	1305
8	1272
9	1154
10	1272
11	1251
12	1117
13	754
14	922
15 *	473
20 *	300
25 *	250
26 *	296

Groundwater = 52 ft

* Soil bore samples



Logger:	Joe Gatts; Mort Bates	**Client:**	**Well ID:**
Driller:	Atkins Engineering Associates, Inc.	RICE Operating Company	
Drilling Method:	Hollow Stem Auger	**Project Name:**	
Start Date:	1/2/2004	jct. K-18	
End Date:	1/2/2004	**Location:**	**SB-1**
Notes:	Backfilled with drill cuttings; TD = 27 ft; Groundwater = 52 ft	EME SWD System	
		Sec. 18, T19S, R37E	
		Lea County, NM	

Depth (feet)	Split Spoon chloride	Split Spoon PID	Description	Lithology	Additional Notes
0.0			Silty Sand mixed with Broken Caliche: loose, tan, dry		Blended backfill from backhoe excavation
1.0					
2.0					
3.0					
4.0					
5.0					
6.0					
7.0					
8.0					
9.0					
10.0					
11.0					
12.0			Caliche: firm, light gray, dry		
13.0					
14.0					
15.0	473	no odor			
16.0					
17.0					
18.0			Silty Sand: loose, tan, dry		
19.0					
20.0	300	no odor			
21.0			Caliche: hard, light tan, dry		
22.0					
23.0					
24.0					
25.0	250	no odor			
26.0	296	no odor			lab = 352 ppm Cl⁻
27.0					

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 01/05/04
Reporting Date: 01/06/04
Project Number: NOT GIVEN
Project Name: K-18
Project Location: EME

Analysis Date: 01/06/04
Sampling Date: 01/02/04
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: AH

LAB NUMBER	SAMPLE ID	Cl^- (mg/Kg)
H8320-1	SOIL BORE 26' BGS	352
Quality Control		1010
True Value QC		1000
% Recovery		101
Relative Percent Difference		7.0

METHOD: Standard Methods	4500-Cl^-B

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

Amy Hill
Chemist

1/6/04
Date

h8320

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020

101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

Page ____ of ____

Company Name:	RICE Operating
Project Manager:	Kristin Farris
Address:	122 W Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	393-9174 Fax #: 397-1471
Project #:	Project Owner:
Project Name:	K-18
Project Location:	EME
Sampler Name:	J. Batts

BILL TO

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

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER :	PRESERV: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chlorido
H8320-1	Soil Bore 26'bgs	6	1			x					x		1/2/04	1030	

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 ... 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 ... 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, ... 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 collection, including attorney's fees.

Sampler Relinquished: J. Batts	Date: 1/5/04 Time: 930	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: 1/5/04 Time: 10:30	Received By: (Lab Staff) Burgess K Cooke	Fax Result: ☒ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool ☒ Yes ☐ No; Intact ☒ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: Fax to RICE

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

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 12/03/03
Reporting Date: 12/04/03
Project Number: NOT GIVEN
Project Name: EME K-18
Project Location: LEA CO., NM

Sampling Date: 12/03/03
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		12/03/03	12/03/03	12/04/03
H8218-1	BOTTOM 12'	<10.0	<10.0	528
H8218-2	4 WALL COMP.	<10.0	<10.0	320
H8218-3	REMEDIATED BACKFILL	<10.0	95.7	464
Quality Control		764	779	1010
True Value QC		800	800	1000
% Recovery		95.5	97.4	101
Relative Percent Difference		0.8	0.5	1.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl^-: Std. Methods 4500-Cl^-B
*Analyses performed on 1:4 w:v aqueous extracts.

Chemist

12/4/03
Date

H8218.XLS

CHAIN OF CUSTODY AND ANALYSIS REQUEST

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

Page ____ of ____

Company Name:	RICE Operating Company
Project Manager:	Brielin Farris
Address:	122 W. Taylor
City:	Hobbs, State: NM Zip: 88240
Phone #:	393-9174 Fax #: 397-1471
Project #:	Project Owner:
Project Name:	EME 15-18
Project Location:	Lea
Sampler Name:	Gary Stark

BILL TO

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

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: TPH 8015	Chloride										
H8218-1	Bottom 12'	C	G			X					X		12/3	12:41	X	X										
-2	4 Wall Comp	C	G			X					X		12/3	12:54	X	X										
-3	Remediated Backfill	C	G			X					X		12/3	12:30	X	X										

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 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.

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 collection, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	
	Time:		
Relinquished By:	Date: 12/3/13	Received By: (Lab Staff)	
Gary Stark	Time: 4:08 PM		
Delivered By: (Circle One)	Sample Condition: Cool: Yes / No; Intact: Yes / No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:			

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:
Fax rice a copy

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

ENVIRONMENTAL TECHNOLOGY GROUP, INC.

2540 WEST MARLAND
HOBBS, NEW MEXICO 88240
PHONE: (505) 397-4882 FAX: (505) 397-4701

VOC FIELD TEST REPORT FORM

MINI RAE PLUS CLASSIC PHOTOIONIZATION GAS DETECTOR

MODEL NO: PGM 761S
SERIAL NO: 103999
CALIBRATION GAS
GAS COMPOSITION: ISOBUTYLENE 100 PPM
AIR BALANCE
LOT NO: 67401 FILL DATE: 12-3-03
EXP. DATE: 11/04 ACCURACY: 100ppm ± 20%
METER READING
ACCURACY: 99.4

SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE
EME	K-18	K	18	T19S	R37E

SAMPLE	PID RESULT	SAMPLE	PID RESULT
Composite		4 Wall	0.0
Samples			
		Remediated	
10' North	0.0	backfill	433
10' South	0.0		
10' west	0.0		
10' East	0.0		
Bottom 12'	0.0		

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

Gary Hunt — Signature
Field Tech — Title
12-3-03 — Date

LABORATORY TEST REPORT
PETTIGREW and ASSOCIATES, P.A.
1110 N. GRIMES
HOBBS, NM 88240
(505) 393-9827

AASHTO R18

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

To: Rice Operating Corporation
Attn: Carolyn Haynes
122 W. Taylor
Hobbs, NM 88240

Material: Red Clay

Test Method: ASTM: D 2922

Project: EME K-18

Date of Test: December 12, 2003

Depth: Finished Subgrade

Test No.	Location	Dry Density % Maximum	% Moisture	Depth
SG-1	Pit - 10' S. & 3' E. of the NW Corner	95.0	20.9	

Control Density: 104.2
ASTM: D 698

Optimum Moisture: 21.4%

Required Compaction: 95%

Lab No.: 03 7641-7642

Copies To: Rice Operating

PETTIGREW and ASSOCIATES

BY: Tom Reed S.E./T.

Current Photodocumentation

RICE *Operating Company* (ROC)
419 West Cain Hobbs, NM 88240
Phone: (575) 393-2967 Fax: (575) 393-0293

EME K-18 (1R427-47)
Unit Letter K, Section 18, T19S, R37E

Facing west 7/23/2013

Facing south 7/23/2013

MULTIMED V1.01 DATE OF CALCULATIONS: 11-SEP-2013 TIME: 18:30:27

U. S. E N V I R O N M E N T A L P R O T E C T I O N A G E N C Y

E X P O S U R E A S S E S S M E N T

M U L T I M E D I A M O D E L

MULTIMED (Version 1.50, 2005)

1
Run options
--- -------

EME K-18

1R427-47
Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models
Run was DETERMIN
Infiltration Specified By User: 3.050E-02 m/yr
Run was transient
Well Times: Find Maximium 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	10.00	1

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	10.0	0.000	0.000	0.000

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS 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.

1

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		2
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		2
ITSGEN	- Time values generated or input		1
TMAX	- Max simulation time	--	0.0

WTFUN - Weighting factor -- 1.2

OPTIONS CHOSEN
------- ------
Convolution integral approach
Nondecaying pulse source
Computer generated times for computing concentrations
1

DATA FOR LAYER 1
---- --- -----
VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Thickness of layer	m	CONSTANT	10.0	-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.

1

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	cm2/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^3/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				

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SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.305E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	DERIVED	24.1	-999.	-999.	-999.
Duration of pulse	yr	CONSTANT	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	0.000	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	400.	-999.	-999.	-999.
Length scale of facility	m	CONSTANT	6.10	-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				
1					

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.				

MAXIMUM WELL CONCENTRATION IS 197.5 AT 0.103E+03 YEARS