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By OCD; Dr. Oberding at 2:41 pm, Sep 15, 2015

PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

September 10, 2015

Dr. Tomas Oberding

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

**RE: Corrective Action Plan (CAP)
Rice Operating Company – EME SWD System
EME L-20 AD (1R-1159): UL/L sec. 20 T19S R37E**

Dr. Oberding:

RICE Operating Company (ROC) has retained Basin Environmental Service Technologies (Basin) to address potential environmental concerns at the above-referenced site in the EME Salt Water Disposal (SWD) system.

ROC is the service provider (agent) for the EME SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Background and Previous Work

The site is located approximately 1.6 miles northwest of Monument, New Mexico at UL/L sec. 20 T19S R37E as shown on the Geographical Location Map (Figure 1) and Area Map (Figure 2). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 31 +/- feet; however, non-ROC monitor wells in the area indicate that groundwater will be encountered at a depth of approximately 23 +/- feet (Figure 3).

On February 7th, 2007, ROC discovered an accidental discharge due to a cracked 6 inch AC line. Approximately 60 barrels of produced water were released and 30 barrels were recovered. An initial C-141 was submitted to NMOCD on February 8th, 2007 and approved on February 15th, 2007 (Appendix A).

Personnel were on site to begin soil delineation of the accidental discharge, with samples being collected at regular intervals and field tested for chlorides and hydrocarbons. A 5 point composite of the surface resulted in a chloride concentration of 1,125 mg/kg and a PID reading of 0.3 mg/kg. The edge of the leak area was hand augered and resulted in low chloride concentrations throughout.

Verticals were installed at the site and samples were collected in regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each vertical were taken to a commercial laboratory for analysis. Vertical 1 resulted in a chloride concentration of 112 mg/kg at 7 ft bgs. Vertical 2 resulted in a chloride concentration of 320 mg/kg at 7 ft bgs. Vertical 3 resulted in a chloride concentration of 832 mg/kg at 5 ft bgs. Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) were below detectable limits throughout (Figure 4).

To further delineate the site, two soil bores were installed on May 21st, 2015. As the bores were advanced, soil samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis (Appendix B). Laboratory analysis of SB-1 returned chloride concentrations of 9,460 at the surface and decreased to 208 mg/kg at 9 ft bgs. SB-2 returned chloride concentrations of 32 mg/kg at the surface and below detectable limits at 6 ft bgs. GRO and DRO analysis returned values of non-detect in throughout. The bore holes were plugged in total with bentonite to the ground surface.

To determine if the residual chloride in the vadose zone pose a threat to groundwater quality, Basin ran the U.S. Environmental Protection Agency Exposure Assessment Multimedia Model (MULTIMED Version 1.5, 2005). The model output concludes that the peak concentration of chloride in groundwater contributed by the vadose zone soils would be approximately 99 mg/L in 90 years using the proposed liner. Since the estimated increase in chloride concentrations in groundwater from residual chloride migration is below the WQCC standard of 250 mg/L, Basin recommends the following corrective action (Appendix C).

Corrective Action Plan

Based on the multimed analysis, Basin recommends that ROC install and properly seat a modified 20-mil reinforced poly liner at 5 – 4 ft bgs (Figure 4). The liner will cover an area of approximately 2,380 ft² and will inhibit the downward migration of constituents through the vadose zone. The soils placed above the liner will have a laboratory chloride reading no greater than 500 mg/kg and a field PID measurement below 100 ppm. Excavated soils will be evaluated for use as backfill and any soils that do not meet requirements will be properly disposed of at a NMOCD approved facility. The excavation will be backfilled to ground surface and contoured to the surrounding location. The soils over and surrounding the site will then be prepared with soil amendments as necessary and seeded with a native vegetative mix. 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.

Once the CAP work is completed by installing the 20-mil reinforced poly liner and seeding the site, ROC will submit a written report that will include a request for ‘remediation termination’ and site closure.

Basin appreciates the opportunity to work with you on this project. Please call Katie Jones Davis at (575) 393-9174 or me if you have any questions or wish to discuss the site.

Sincerely,

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

Laura Flores
Environmental Project Manager
Basin Environmental

Attachments:

- Figure 1 – Geographical Location Map
- Figure 2 – Area Map
- Figure 3 – Surrounding Monitor Well Locations
- Figure 4 – Proposed Liner Installation
- Appendix A – Initial C-141
- Appendix B – Soil Bore Installation Documentation
- Appendix C – Multimed Output and Graph

Figures

Geographical Location Map

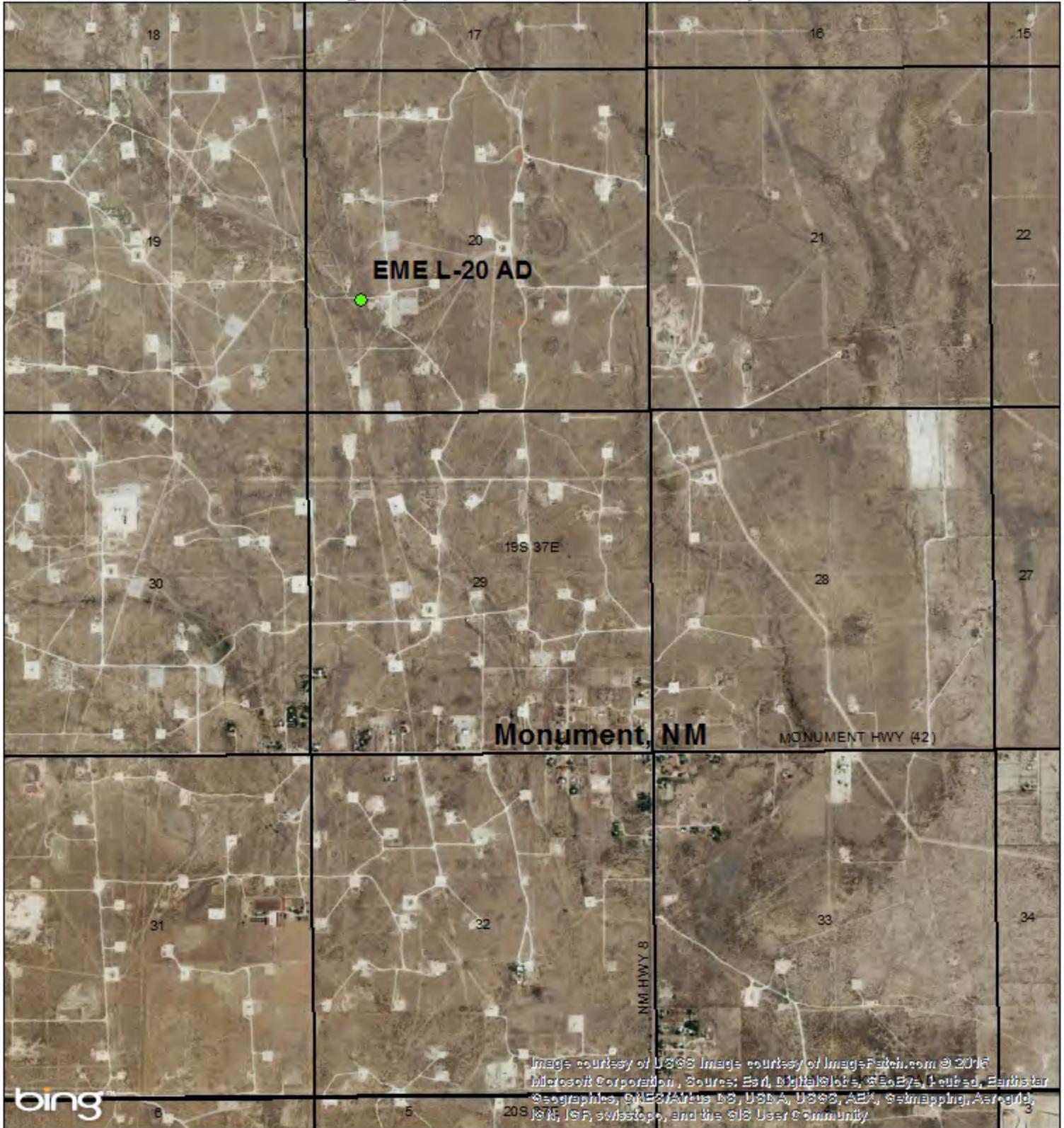


Image courtesy of USGS Image courtesy of ImagePatch.com © 2015
Microsoft Corporation, Source: Esri, DigitalGlobe, GeoEye, Earthstar
Geographics, CNES/Airbus DS, USDA, USGS, Aero, Getmapping, Aergrid,
IGN, ICF, swisstopo, and the GIS User Community



EME L-20 AD

NMOCD Case #: 1RP-1159

UL L SECTION 20
T-19-S R-37-E
LEA COUNTY, NM

Figure 1

Landowner: Jimmie T. Cooper
DGW: 23 ft

GPS: 32.642727, -103.279111

0 1,400 2,800

Feet



Drawing date: 4/15/2015

Drafted by: L. Flores

Area Map



bing™

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community. Image courtesy of USGS ImagePatch.com ©2015 Microsoft Corporation



EME L-20 AD

NMOCD Case #: 1RP-1159

UL L SECTION 20
T-19-S R-37-E
LEA COUNTY, NM

Figure 2

Landowner: Jimmie T. Cooper
DGW: 23 ft

GPS: 32.642727, -103.279111

0 210 420
Feet

Drawing date: 4/15/2015
Drafted by: L. Flores



Non - ROC Monitor Wells



Legend

- NON - ROC MONITOR WELL
- SOURCE
- ACTIVE ROC LINE
- ROC ISOLATED LINE
- ROC ISOLATED PROJECTED LINE
- ACTIVE CONCRETE JCT BOX
- LEAK AREA - 3992 SQ FT



EME L-20 AD

NMOCD Case #: 1RP-1159

UL L SECTION 20
T-19-S R-37-E
LEA COUNTY, NM

Figure 3

Landowner: Jimmie T. Cooper
DGW: 23 ft

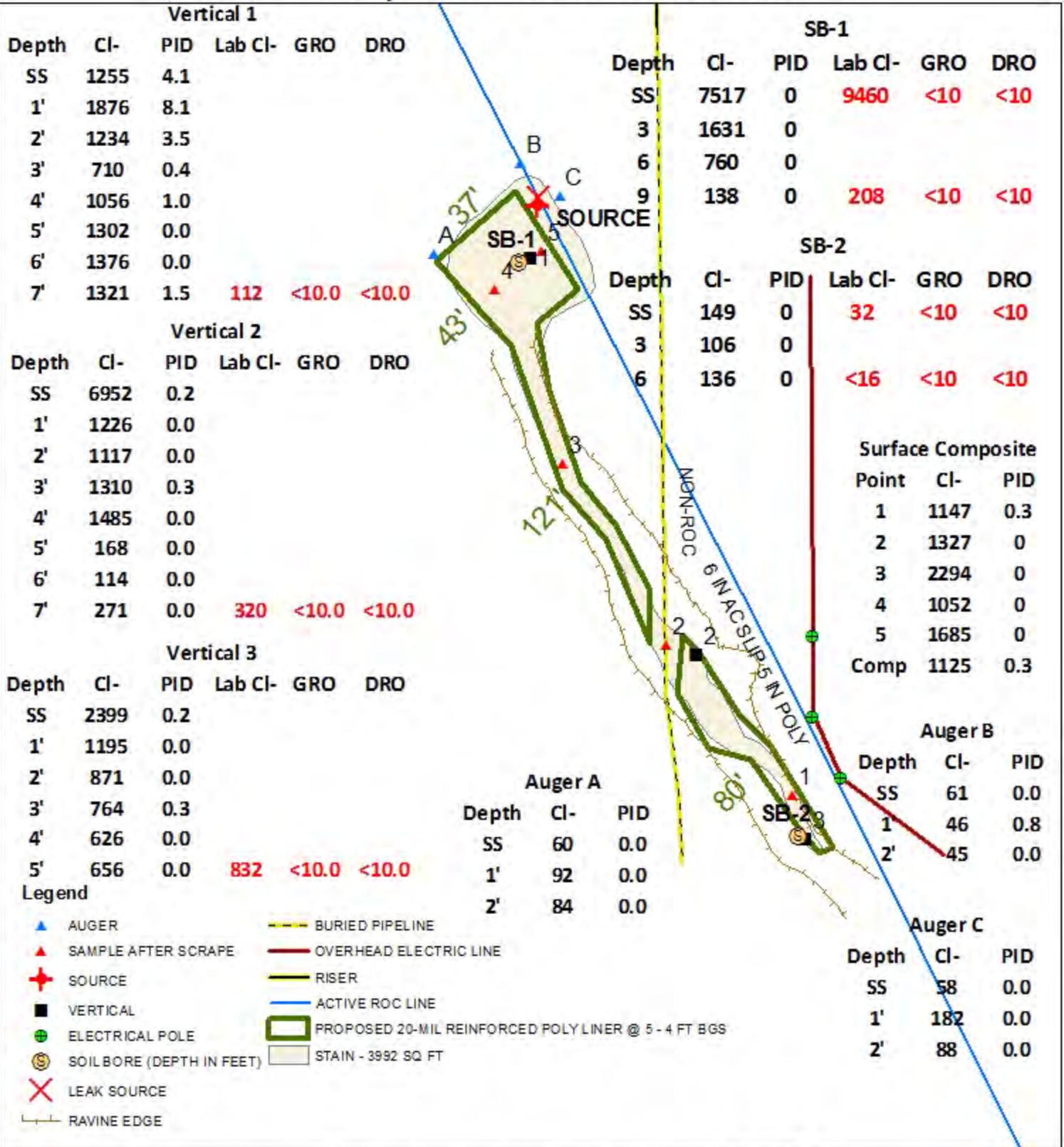
GPS: 32.642727, -103.279111

0 50 100
Feet

GPS date: 5/12/15
Drawing date: 5/13/15
Drafted by: T. Grieco



Proposed Liner Installation



EME L-20 AD
 NMOCD Case #: 1RP-1159
 UL L SECTION 20
 T-19-S R-37-E
 LEA COUNTY, NM

Figure 4
 Landowner: Jimmie T. Cooper
 DGW: 23 ft
 GPS: 32.642727, -103.279111
 0 25 50 Feet
 GPS date: 7/8/15
 Drawing date: 7/10/15
 Drafted by: L. Weinheimer

Appendix A

Initial C-141

Basin Environmental Service Technologies

P.O. Box 2948, Hobbs, NM 88241

Phone 575.393.2967

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

Submit 2 Copies to appropriate
District Office in accordance
with Rule 116 on back
side of form

Release Notification and Corrective Action

OPERATOR Initial Report Final Report

Name of Company Rice Operating	Contact Tony Grieco
Address 122 W. Taylor St., Hobbs, NM 88240	Telephone No. (505) 631-2532
Facility Name EME L-20 Junction Box	Facility Type Salt Water Gathering System
Surface Owner Jimmie T. Cooper	Mineral Owner
	Lease No.

LOCATION OF RELEASE

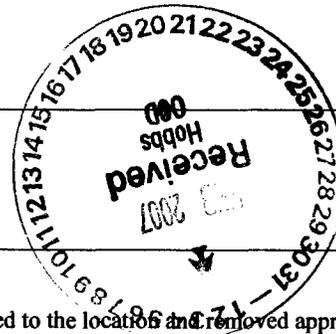
Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	20	19S	37E					

48'

Latitude 32° 38.552 N Longitude 103° 16.720 W

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 60 barrels	Volume Recovered 30 barrels
Source of Release Broken 6" A-C Pipeline	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 2/7/07 10:00 AM
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Pat Caperton	
By Whom? Tony Grieco	Date and Hour 2/7/07 1:30 PM	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully.*		
Describe Cause of Problem and Remedial Action Taken.* Cracked 6" A-C line. Line has been permanently repaired		
Describe Area Affected and Cleanup Action Taken.* Area consisted of pasture and pipeline right-of-way. A water truck was called to the location and removed approx. 30 barrels of standing water. Delineation results and work plan to follow. Groundwater is between 40-50 ft bgs		



I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature:	OIL CONSERVATION DIVISION	
Printed Name: Tony Grieco	Approved by District Supervisor:	
Title: Environmental Tech	Approval Date: 2-15-07	Expiration Date: 4-15-07
E-mail Address: tgrieco@riceswd.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 2/8/07 Phone: (505) 631-2532	SUBMITAL OF WORKPLAN w/ FULL DELINEATION FOR OCS APPROVAL	

* Attach Additional Sheets If Necessary

Facility - PPAC0704652459
Incident - n PAC0704652554

application - PPAC0704652651

RP#1159

Appendix B

Soil Bore Installation Documentation

Basin Environmental Service Technologies

P.O. Box 2948, Hobbs, NM 88241

Phone 575.393.2967

May 29, 2015

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME L-20 AD

Enclosed are the results of analyses for samples received by the laboratory on 05/21/15 16:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	05/21/2015	Sampling Date:	05/21/2015
Reported:	05/29/2015	Sampling Type:	Soil
Project Name:	EME L-20 AD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB 1 (VERT) 1 @ SS (H501288-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9460	16.0	05/27/2015	ND	432	108	400	7.69	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/22/2015	ND	177	88.4	200	0.142	
DRO >C10-C28	<10.0	10.0	05/22/2015	ND	194	96.9	200	1.15	
<i>Surrogate: 1-Chlorooctane</i>	<i>96.7 %</i>	<i>47.2-157</i>							
<i>Surrogate: 1-Chlorooctadecane</i>	<i>108 %</i>	<i>52.1-176</i>							

Sample ID: SB 1 (VERT) 1 @ 9' (H501288-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	05/27/2015	ND	432	108	400	7.69	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/22/2015	ND	177	88.4	200	0.142	
DRO >C10-C28	<10.0	10.0	05/22/2015	ND	194	96.9	200	1.15	
<i>Surrogate: 1-Chlorooctane</i>	<i>101 %</i>	<i>47.2-157</i>							
<i>Surrogate: 1-Chlorooctadecane</i>	<i>114 %</i>	<i>52.1-176</i>							

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	05/21/2015	Sampling Date:	05/21/2015
Reported:	05/29/2015	Sampling Type:	Soil
Project Name:	EME L-20 AD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB 2 (VERT) 3 @ SS (H501288-03)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/27/2015	ND	432	108	400	7.69	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/22/2015	ND	177	88.4	200	0.142	
DRO >C10-C28	<10.0	10.0	05/22/2015	ND	194	96.9	200	1.15	
<i>Surrogate: 1-Chlorooctane</i>	<i>97.6 %</i>	<i>47.2-157</i>							
<i>Surrogate: 1-Chlorooctadecane</i>	<i>108 %</i>	<i>52.1-176</i>							

Sample ID: SB 2 (VERT) 3 @ 6' (H501288-04)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	05/27/2015	ND	432	108	400	7.69	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/22/2015	ND	177	88.4	200	0.142	
DRO >C10-C28	<10.0	10.0	05/22/2015	ND	194	96.9	200	1.15	
<i>Surrogate: 1-Chlorooctane</i>	<i>100 %</i>	<i>47.2-157</i>							
<i>Surrogate: 1-Chlorooctadecane</i>	<i>117 %</i>	<i>52.1-176</i>							

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- ** Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report



Celey D. Keene, Lab Director/Quality Manager

Appendix C

Multimed Output and Graph

Basin Environmental Service Technologies
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

U. S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

1

Run options
--- -----

Rice EME L-20 AD

1R-1159
Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models
Run was DETERMIN
Infiltration Specified By User: 1.524E-02 m/yr
Run was transient
Well Times: Entered Explicitly
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	4.88	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	4.88	0.000	0.000	0.000

DATA FOR MATERIAL 1

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.

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 3
 ITSGEN - Time values generated or input 1
 TMAX - Max simulation time -- 0.0
 WTFUN - Weighting factor -- 1.2

OPTIONS CHOSEN

 Convolution integral approach
 Exponentially decaying continuous source
 Computer generated times for computing concentrations

DATA FOR LAYER 1

VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Thickness of layer	m	CONSTANT	4.88	-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	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.	-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

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 ²	CONSTANT	139.	-999.	-999.	-999.
Duration of pulse	yr	DERIVED	0.100E-08	-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	642.	-999.	-999.	-999.
Length scale of facility	m	DERIVED	-999.	-999.	-999.	-999.
Width scale of facility	m	DERIVED	-999.	-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
0.100E+02	0.00000E+00
0.200E+02	0.00000E+00
0.300E+02	0.72416E-02
0.400E+02	0.55809E+00
0.500E+02	0.57462E+01
0.600E+02	0.26909E+02
0.700E+02	0.58921E+02
0.800E+02	0.86508E+02
0.900E+02	0.99391E+02
0.100E+03	0.97707E+02
0.110E+03	0.86452E+02
0.120E+03	0.72373E+02
0.130E+03	0.58575E+02
0.140E+03	0.46440E+02
0.150E+03	0.36515E+02
0.160E+03	0.28568E+02
0.170E+03	0.22300E+02
0.180E+03	0.17409E+02
0.190E+03	0.13631E+02
0.200E+03	0.10535E+02

Chloride Concentration At The Receptor Well Rice EME L-20 AD

