1R -_426-31_

WORKPLANS

Date:
02/20/2015

APPROVED
By OCD; Dr. Oberding at 10:29 am, Feb 20, 2015

L Peter Galusky, Jr PE

Texerra LLC

RECEIVED
By OCD; Dr. Oberding at 10:28 am, Feb 20, 2015

February 11th, 2015

Dr. Tomas Oberding
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

Re: **ICP Report and CAP**
Rice Operating Company – BD SWD System
BD G-16 EOL (1R426-31): UL/G, Sec. 16, T22S, R37E

Sent via E-mail

Dr. Oberding:

Texerra LLC (Texerra) is submitting this Investigation and Characterization Plan (ICP) Report and Corrective Action Plan (CAP) on behalf of Rice Operating Company (ROC) per the NMOCD approved ICP of October 15th, 2013 for this former SWD system junction box. The site is located approximately 3 miles south of Eunice (Figure 1). Depth to groundwater is estimated to be approximately 96 ft bgs.

Background and Previous Work

In 2002, ROC initiated work on the former BD G-16 EOL junction box. The site was delineated using a backhoe to form a 30 ft x 30 ft x 9 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the four-wall composite and the bottom composite were taken to a commercial laboratory for analysis. Laboratory tests of the four-wall composite showed a chloride reading of 3,230 mg/kg, a gasoline range organics (GRO) readings of non-detect and a diesel range organics (DRO) reading of 27.2 mg/kg. The bottom composite showed a chloride laboratory reading of 2,560 mg/kg, a GRO reading of non-detect and a DRO reading of 126 mg/kg. BTEX readings for both samples were non-detect, except for the xylene reading in the sidewall composite, which returned a result of 0.016 mg/kg and the toluene reading in the bottom composite, which returned a result of 0.006 mg/kg. At the bottom of the 9 ft excavation, a

20055 Laredo Ln **Monument, CO 80132**
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Tel: 719-339-6791

1 foot thick clay layer was installed to inhibit the downward migration of constituents to groundwater. The site was backfilled and the area was contoured to the surrounding landscape. NMOCD was notified of potential groundwater impact on January 31st, 2003 and a junction box disclosure report was submitted to NMOCD with all the 2002 junction box closures and disclosures.

ROC submitted an ICP on October 15th, 2013, the focus of which was to delineate the lateral and vertical extent of residual soil chlorides and hydrocarbons within the area (surrounding the former junction box), to estimate the likely effects of these on groundwater over time and to propose a protective remedy.

ICP Results

Based on the NMOCD approved ICP, seven soil bores (SB-1 through SB-7) were drilled in April of 2014 as indicated in Figures 2a & 2b. Residual soil chlorides significantly decreased in SB-1, peaking at 2,320 mg/dg at 55 ft bgs then dropping to 244 mg/kg at 80 ft bgs. The lateral and depth limits of significant (> 250 mg/kg) residual soil chlorides were defined by SB-2, to the north, SB-5 to the east, SB-3 to the south and SB-7 to the west, where the bottom three samples had progressively declining chlorides and with the bottom sample measuring less than 250 mg/kg.

PID readings for residual soil hydrocarbons tended to be moderately elevated (> 10 ppm) in most of the soil bores to depths ranging from approximately 5 to 40 ft bgs, but were significantly elevated in the bottom sample (80 ft bgs) of SB-1. BTEX concentrations were measured in soil samples taken at selected locations and sent to the laboratory, with the highest reading for among these being for xylene at 12.2 mg/g at 5 ft bgs from SB-6.

The MultiMed model was used to estimate the effects of leaching of residual soil chlorides and xylene, with the installation of a 71x53-ft, 20-mil reinforced liner, on groundwater quality beneath the study area. The inputs for the chloride MultiMed run are given in Table 1, and the inputs for the xylene Multimed run are given in Table 2. The maximum projected (modeled) elevation in groundwater chloride is 67.24 mg/L at approximately 190 yrs into the future (Figure 3, Table 1). The maximum projected (modeled) elevation in groundwater xylene is 0.28 mg/L at approximately 390 yrs into the future (Figure 4, Table 2). This value is below the New Mexico human health standard (in 20.6.2.3103.A NMAC) of 0.62 mg/l.

Corrective Action Plan (CAP)

Although these anticipated impacts are essentially de minimis we propose to effectively isolate these residual constituents, and thus prevent these minor impacts, through the installation of a 71 by 53 ft sub-surface, synthetic liner across the affected area (Figures 2a and 2b). The liner will be carefully seated and installed at an approximate depth of 4 to 5 ft bgs over six inches of clean blow sand, with another six inches added overtop of the liner. The backfill material will have a laboratory chloride reading below 500 mg/kg and a field PID reading below 100 ppm. The excavated soil will be evaluated for use as backfill. Any soil requiring disposal will be properly disposed of at a NMOCD approved facility. We will then prepare the surface and seed with a native seed mix. Vegetation above the liner will provide a natural infiltration barrier for the site. Plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater.

ROC is the service provider (agent) for the BD 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. We thus submit this CAP for your review and consideration.

Please call Rice Operating Company or me if you have any questions or need additional information.

Thank you.

Sincerely,

L. Peter (Pete) Galusky, Jr PE

Copy: Rice Operating Company

Attachment List

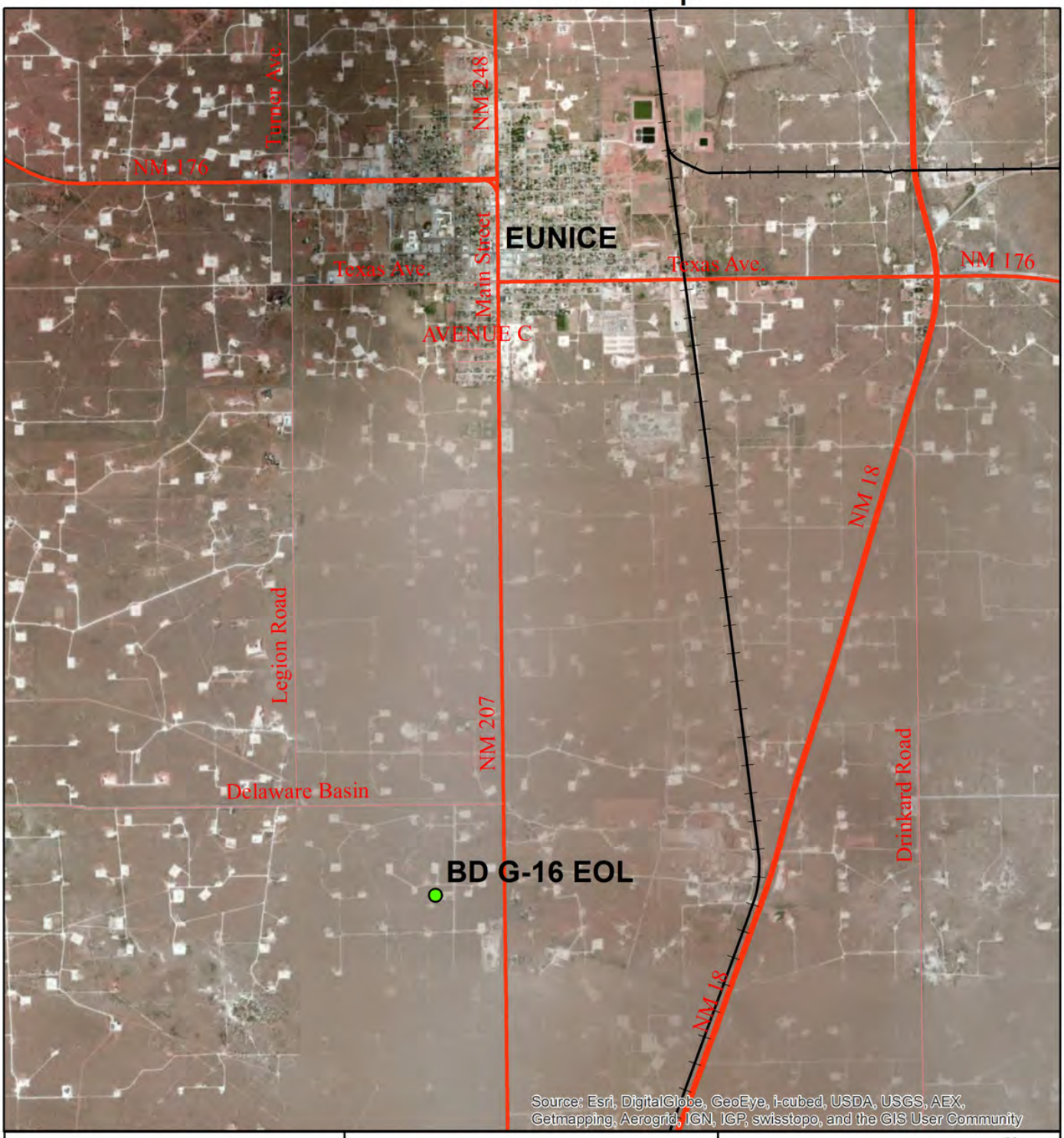
Figures & Tables

Site Location Map
Soil Bore & Sample Result Summary, Plan View of Proposed Liner
MultiMed Projected Groundwater Chloride Concentrations
MultiMed Chloride Report
MultiMed Projected Groundwater Xylene Concentrations
MultiMed Xylene Report

Appendix

Soil Bore Logs (w/ field chloride & PID and lab chloride analyses)
Laboratory Reports

Site Location Map



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

BD G-16 EOL

Legals: UL/G sec. 16
T-22-S R-37-E
LEA COUNTY, NM

NMOCD Case #: 1R426-31

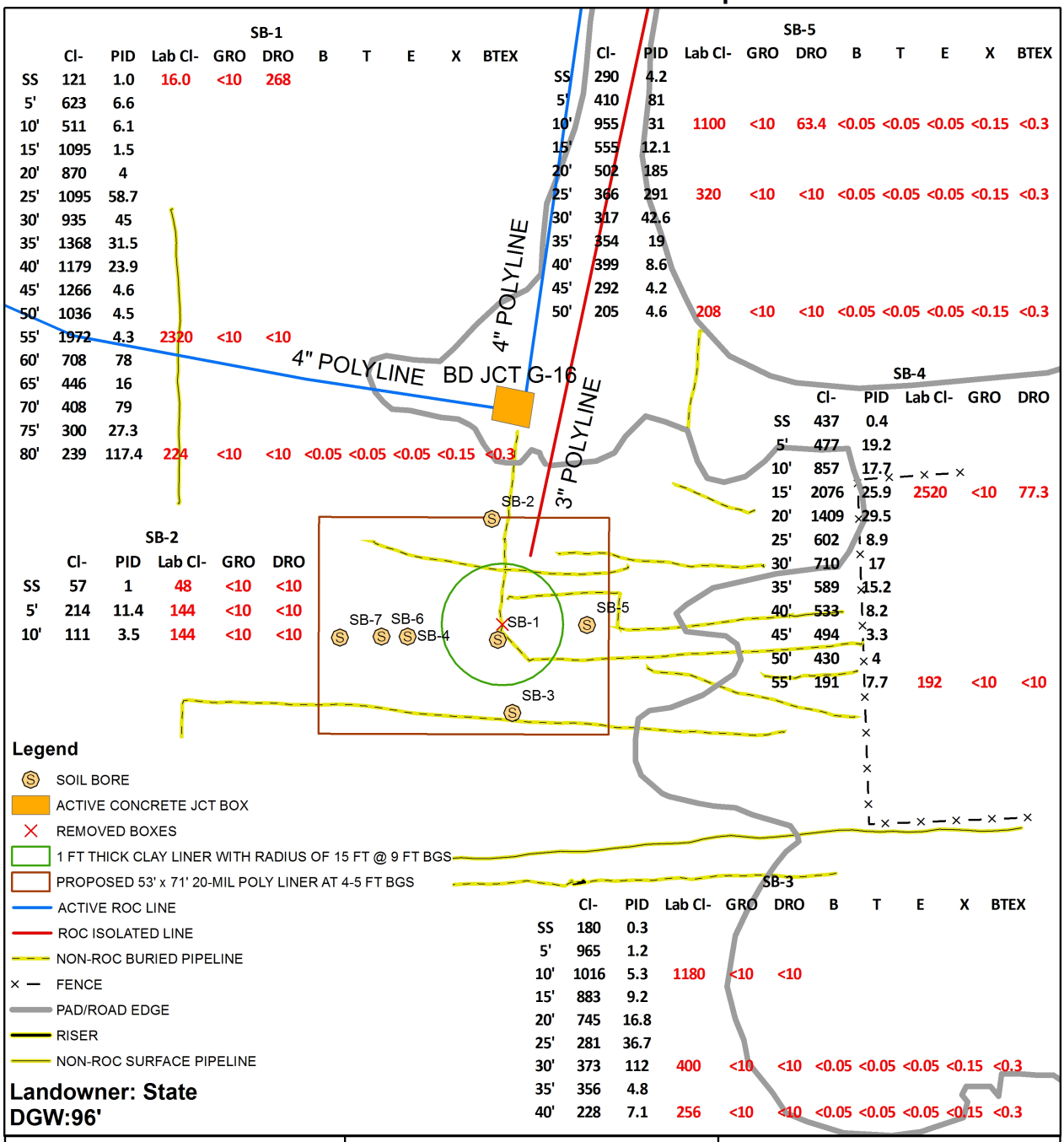
Figure 1

N
W E
S

0 0.45 0.9
Miles

Drawing date: 8/14/13
Drafted by: L. Weinheimer

Soil Bore Installation and Proposed Liner



SB-1

	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X	BTEX
SS	121	1.0	16.0	<10	268					
5'	623	6.6								
10'	511	6.1								
15'	1095	1.5								
20'	870	4								
25'	1095	58.7								
30'	935	45								
35'	1368	31.5								
40'	1179	23.9								
45'	1266	4.6								
50'	1036	4.5								
55'	1972	4.3	2320	<10	<10					
60'	708	78								
65'	446	16								
70'	408	79								
75'	300	27.3								
80'	239	117.4	224	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

SB-2

	Cl-	PID	Lab Cl-	GRO	DRO
SS	57	1	48	<10	<10
5'	214	11.4	144	<10	<10
10'	111	3.5	144	<10	<10

SB-5

	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X	BTEX
SS	290	4.2								
5'	410	81								
10'	955	31	1100	<10	63.4	<0.05	<0.05	<0.05	<0.15	<0.3
15'	555	12.1								
20'	502	185								
25'	366	291	320	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
30'	317	42.6								
35'	354	19								
40'	399	8.6								
45'	292	4.2								
50'	205	4.6	208	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

SB-4

	Cl-	PID	Lab Cl-	GRO	DRO
SS	437	0.4			
5'	477	19.2			
10'	857	17.7			
15'	2076	25.9	2520	<10	77.3
20'	1409	29.5			
25'	602	8.9			
30'	710	17			
35'	589	15.2			
40'	533	8.2			
45'	494	3.3			
50'	430	4			
55'	191	7.7	192	<10	<10

SB-3

	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X	BTEX
SS	180	0.3								
5'	965	1.2								
10'	1016	5.3	1180	<10	<10					
15'	883	9.2								
20'	745	16.8								
25'	281	36.7								
30'	373	112	400	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3
35'	356	4.8								
40'	228	7.1	256	<10	<10	<0.05	<0.05	<0.05	<0.15	<0.3

RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

BD G-16 EOL

Unit Letter G, Section 16
T-22-S R-37-E

NMOCD Case # : 1R426-31

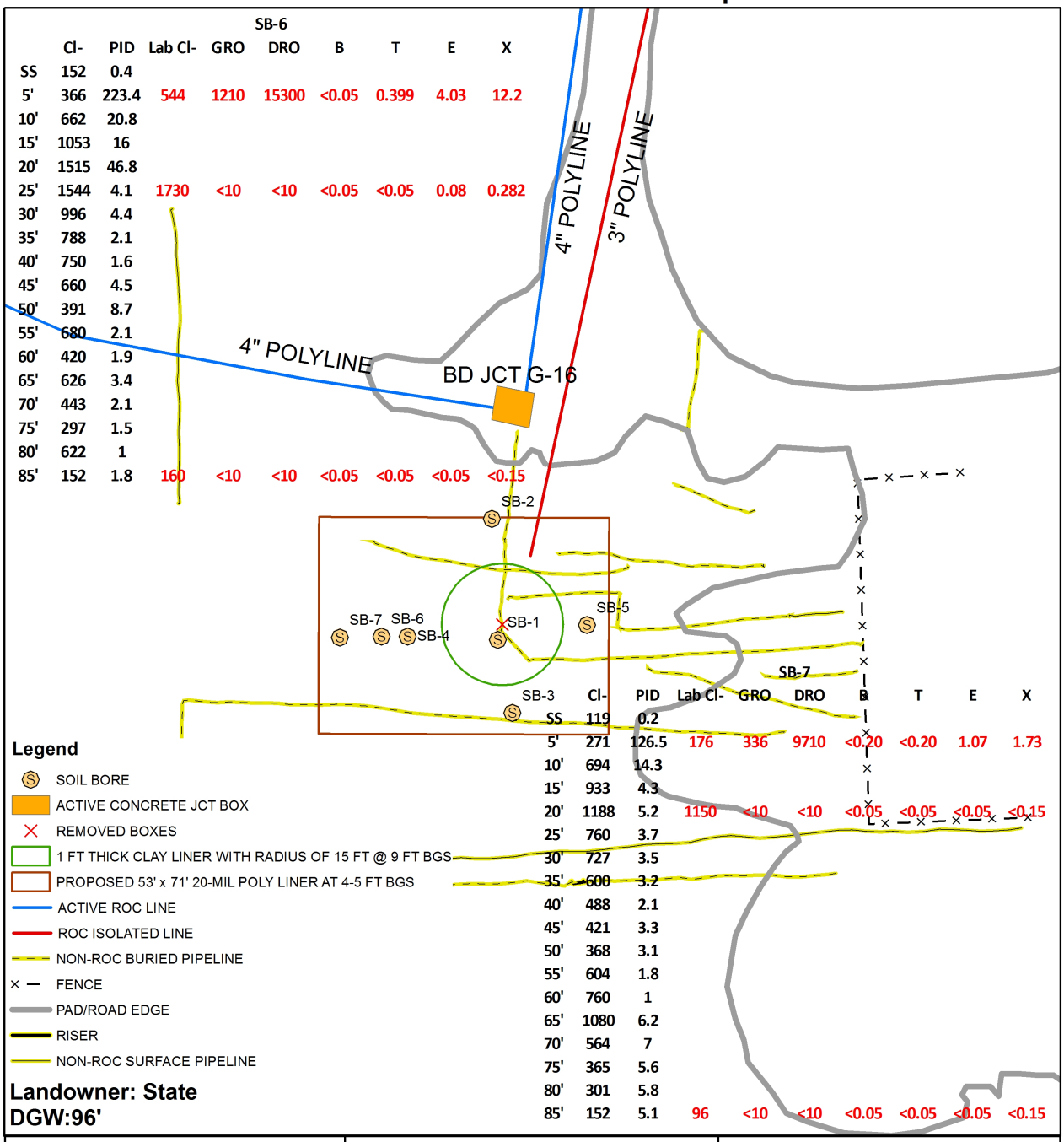
Figure 2a

N
W E
S

0 20 40
Feet

GPS Date: 4/14/14
Drawing date: 4/16/14, 10/6/14
Drafted by: C. Ursanic, L. Weinheimer

Soil Bore Installation and Proposed Liner



SB-6

	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X
SS	152	0.4							
5'	366	223.4	544	1210	15300	<0.05	0.399	4.03	12.2
10'	662	20.8							
15'	1053	16							
20'	1515	46.8							
25'	1544	4.1	1730	<10	<10	<0.05	<0.05	0.08	0.282
30'	996	4.4							
35'	788	2.1							
40'	750	1.6							
45'	660	4.5							
50'	391	8.7							
55'	680	2.1							
60'	420	1.9							
65'	626	3.4							
70'	443	2.1							
75'	297	1.5							
80'	622	1							
85'	152	1.8	160	<10	<10	<0.05	<0.05	<0.05	<0.15

SB-7

	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X
SS	119	0.2							
5'	271	126.5	176	336	9710	<0.20	<0.20	1.07	1.73
10'	694	14.3							
15'	933	4.3							
20'	1188	5.2	1150	<10	<10	<0.05	<0.05	<0.05	<0.15
25'	760	3.7							
30'	727	3.5							
35'	600	3.2							
40'	488	2.1							
45'	421	3.3							
50'	368	3.1							
55'	604	1.8							
60'	760	1							
65'	1080	6.2							
70'	564	7							
75'	365	5.6							
80'	301	5.8							
85'	152	5.1	96	<10	<10	<0.05	<0.05	<0.05	<0.15

RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

BD G-16 EOL

Unit Letter G, Section 16
T-22-S R-37-E

NMOCD Case # : 1R426-31

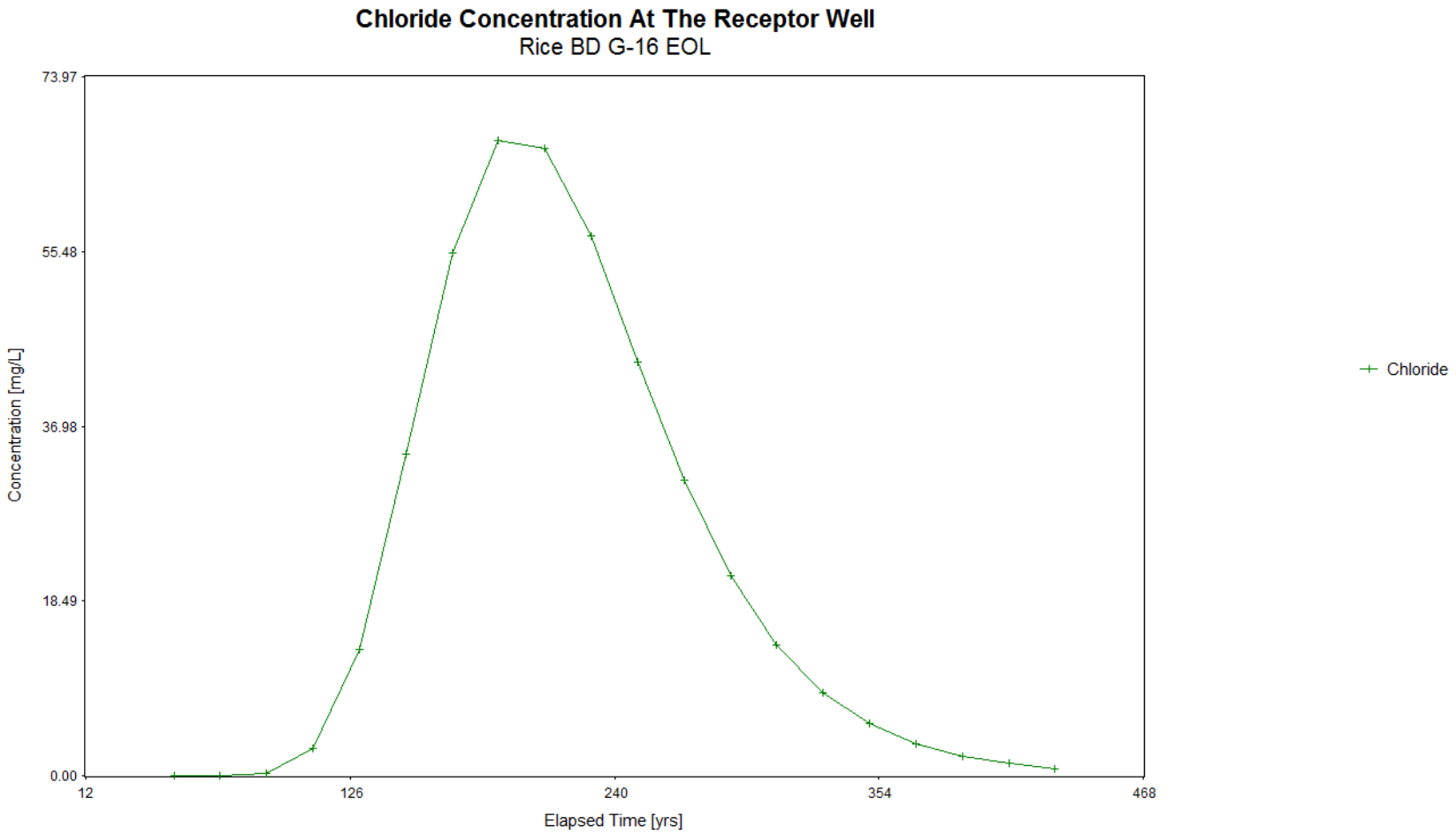
Figure 2b

N
W E
S

0 20 40
Feet

GPS Date: 4/14/14
Drawing date: 4/16/14, 10/6/14
Drafted by: C. Ursanic, L. Weinheimer

Figure 3


Chloride Concentration At The Receptor Well
Rice BD G-16 EOL
73.97
55.48
36.98
18.49
0.00
Concentration [mg/L]
12
126
240
354
468
Elapsed Time [yrs]
Chloride

MULTIMED V1.01 DATE OF CALCULATIONS: 13-JAN-2015 TIME: 10:36:51

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

Table 1

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
--- -------

Rice BD G-16 EOL

1R426-31
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	11.58	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 11.6 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		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
1

DATA FOR LAYER 1
VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Thickness of layer	m	CONSTANT	11.6	-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.
Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.

1

CHEMICAL SPECIFIC VARIABLES

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

1

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Infiltration rate	m/yr	CONSTANT	0.152E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	CONSTANT	350.	-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	680.	-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				

1

AQUIFER SPECIFIC VARIABLES

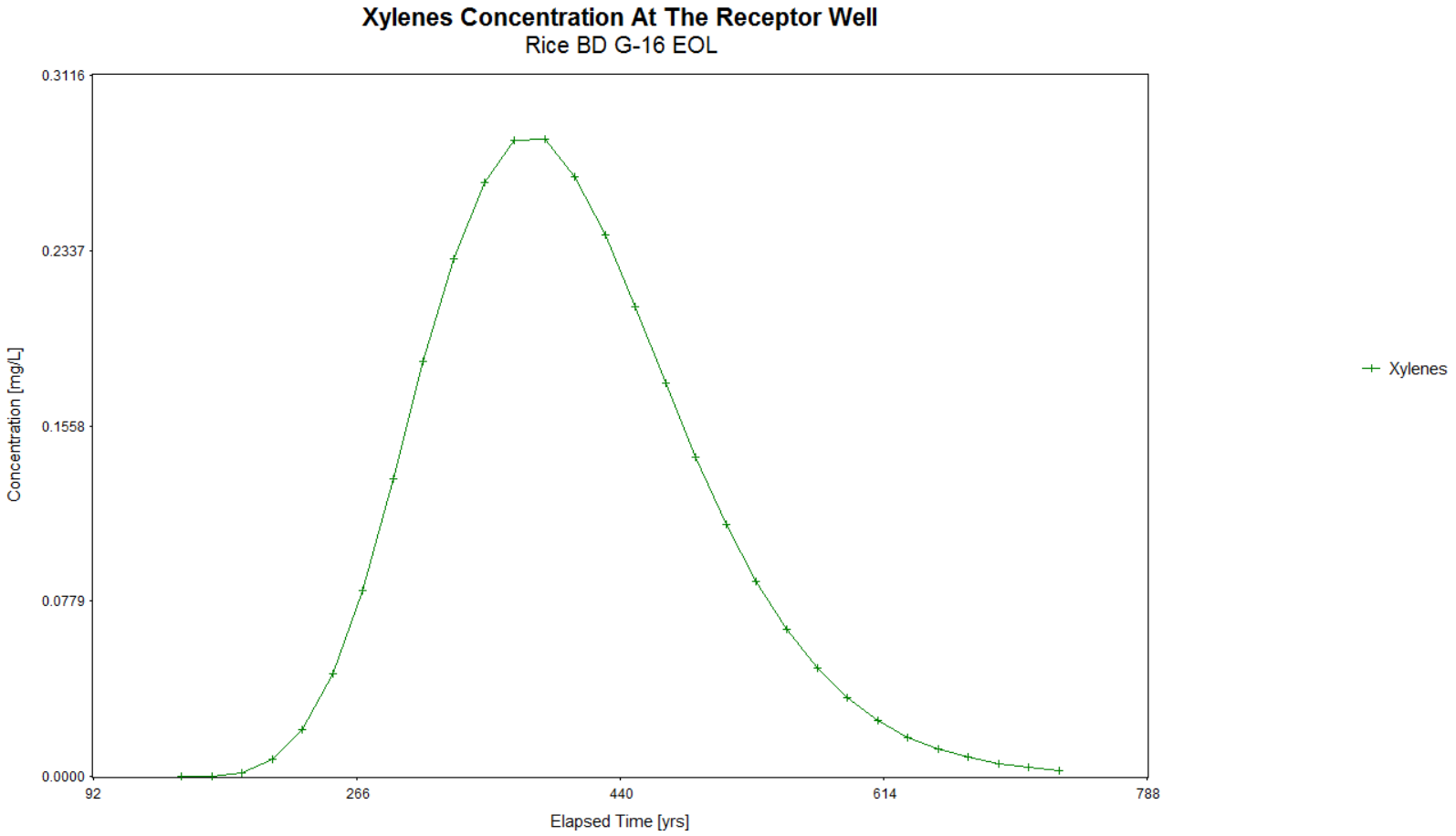
VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.
Bulk density	g/cc	CONSTANT	1.86	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.
Source thickness (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.

1

TIME	CONCENTRATION
0.500E+02	0.00000E+00
0.700E+02	0.13722E-02
0.900E+02	0.20935E+00
0.110E+03	0.29161E+01
0.130E+03	0.13343E+02

0.150E+03	0.34008E+02
0.170E+03	0.55371E+02
0.190E+03	0.67245E+02
0.210E+03	0.66377E+02
0.230E+03	0.57135E+02
0.250E+03	0.43781E+02
0.270E+03	0.31311E+02
0.290E+03	0.21165E+02
0.310E+03	0.13777E+02
0.330E+03	0.87610E+01
0.350E+03	0.54763E+01
0.370E+03	0.33845E+01
0.390E+03	0.20764E+01
0.410E+03	0.12679E+01
0.430E+03	0.77192E+00

Figure 4


Xylenes Concentration At The Receptor Well
Rice BD G-16 EOL
Concentration [mg/L]
0.3116
0.2337
0.1558
0.0779
0.0000
92
266
440
614
788
Elapsed Time [yrs]
Xylenes

MULTIMED V1.01 DATE OF CALCULATIONS: 13-JAN-2015 TIME: 10:38:58

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

Table 2

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
--- -------

Rice BD G-16 EOL

1R426-31
Chemical simulated is Xylenes

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	24.00	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 24.0 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		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
1

DATA FOR LAYER 1
VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Thickness of layer	m	CONSTANT	24.0	-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.
Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.

1

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	LIMITS STD DEV	MIN	MAX
Solid phase decay coefficient	1/yr	DERIVED	10.0	-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

1

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	LIMITS STD DEV	MIN	MAX
Infiltration rate	m/yr	CONSTANT	0.152E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	CONSTANT	350.	-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	4.74	-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				

1

AQUIFER SPECIFIC VARIABLES

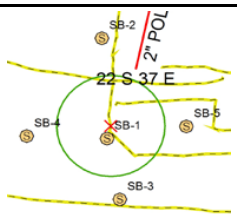
VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS		LIMITS	
			MEAN	STD DEV	MIN	MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.
Bulk density	g/cc	CONSTANT	1.86	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	6.10	-999.	-999.	-999.
Source thickness (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.

1

TIME	CONCENTRATION
0.150E+03	0.37819E-04
0.170E+03	0.19399E-03
0.190E+03	0.16634E-02
0.210E+03	0.73476E-02
0.230E+03	0.20992E-01

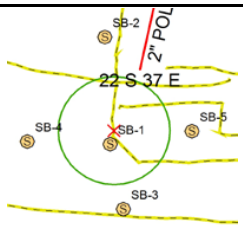
0.250E+03	0.45564E-01
0.270E+03	0.82785E-01
0.290E+03	0.13238E+00
0.310E+03	0.18442E+00
0.330E+03	0.23016E+00
0.350E+03	0.26413E+00
0.370E+03	0.28265E+00
0.390E+03	0.28327E+00
0.410E+03	0.26653E+00
0.430E+03	0.24050E+00
0.450E+03	0.20887E+00
0.470E+03	0.17493E+00
0.490E+03	0.14194E+00
0.510E+03	0.11187E+00
0.530E+03	0.86487E-01
0.550E+03	0.65316E-01
0.570E+03	0.48186E-01
0.590E+03	0.34749E-01
0.610E+03	0.24890E-01
0.630E+03	0.17471E-01
0.650E+03	0.12149E-01
0.670E+03	0.83636E-02
0.690E+03	0.56838E-02
0.710E+03	0.38397E-02
0.730E+03	0.25703E-02

Appendices

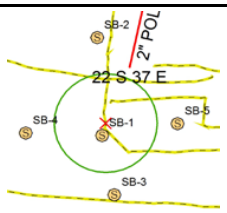
Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		**Project Name:** BD G-16 EOL **Well ID:** SB-1
Drilling Method:	Air Rotary		**Project Consultant:** Texerra
Start Date:	4/14/2014		
End Date:	4/14/2014		
Comments: All samples were taken from cuttings. SB-1 is located 4' south of the former junction box site. **DRAFTED BY:** Catherine Uršanić TD = 80' GW = 96'			**Location:** UL/G Sec. 16 T-22-S R-37-E **Lat:** 32°23'33.428"N **County**:Lea **Long:** 103°9'54.458"W **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND WITH / CALICHE NO ODOR		
SS	121	Lab Cl-16	1			
		GRO <10		DARK CALICHE / SOME ODOR		
		DRO 268				
5 ft	623		6.6			
				TAN SAND / NO ODOR		
10 ft	511		6.1			
				CALICHE		
15 ft	1095		1.5			
				TAN SAND / NO ODOR		
20 ft	870		4			
25 ft	1095		58.7			
30 ft	935		45			
35 ft	1368		31.5			
40 ft	1179		23.9			Bentonite Seal
45 ft	1266		4.6			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND / NO ODOR		
50 ft	1036		4.5			
				BROWN / GREEN SAND / NO ODOR		
55 ft	1972	Lab Cl-2320	4.3			
		GRO <10				
		DRO <10				
60 ft	708		78			
65 ft	446		16			
				TAN SAND / NO ODOR		
70 ft	408		79			
75 ft	300		27.3			
80 ft	239	Lab Cl-224	117.4			
	B <0.05 T <0.05	GRO <10				
	E <0.05 X <0.15	GRO <10				

Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		**Project Name:** BD G-16 EOL **Well ID:** SB-2
Drilling Method:	Air Rotary		**Project Consultant:** Texerra
Start Date:	4/14/2014		
End Date:	4/14/2014		
Comments: All samples were taken from cuttings. SB-2 is located 26' north of the former junction box site. **DRAFTED BY:** Catherine Uršanić TD = 10' GW = 96'			**Location:** UL/G Sec. 16 T-22-S R-37-E **Lat:** 32°23'33.725"N **Long:** 103°9'54.477"W **County**:Lea **State**:NM

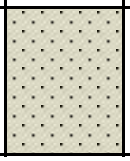
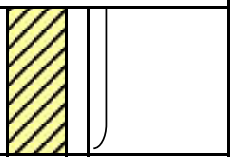
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND / NO ODOR		
SS	57	Lab Cl-48	1			
		GRO <10		TAN SAND / NO ODOR		Bentonite Seal
		DRO <10				
5 ft	214	Lab Cl-144	11.4			
		GRO <10				
		DRO <10				
10 ft	111	Lab Cl-144	3.5			
		GRO <10				
		DRO <10				

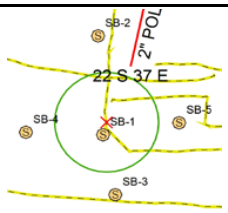
Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		
Drilling Method:	Air Rotary		**Project Name:** BD G-16 EOL **Well ID:** SB-3
Start Date:	4/14/2014		
End Date:	4/14/2014		**Project Consultant:** Texerra
Comments:All samples were taken from cuttings. SB-3 is located 22' south of the former junction box site. **DRAFTED BY:** Catherine Uršanić			**Location:** UL/G Sec. 16 T-22-S R-37-E
TD = 40'	GW = 96'		**Lat:** 32°23'33.25"N **County**:Lea
			Long:103°9'54.425"W **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				BROWN SAND / NO ODOR
SS	180		0.3	
				TAN SAND / NO ODOR
5 ft	965		1.2	
10 ft	1,016	Lab Cl- 1180	5.3	
		GRO <10		
		DRO <10		
15 ft	883		9.2	
20 ft	745		16.8	
25 ft	281		36.7	
30 ft	373	Lab Cl- 400	112	
	B <0.05 T <0.05	GRO <10		
	E <0.05 X <0.15	DRO <10		
35 ft	356		4.8	

Lithology

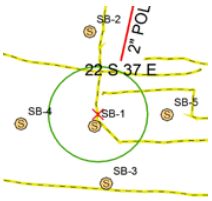
Well Construction: Bentonite Seal

Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology		Well Construction
40 ft	228	Lab Cl-256	7.1	TAN SAND / NO ODOR				
	B <0.05 T <0.05	GRO <10						
	E <0.05 X <0.15	GRO <10						

Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		**Project Name:** BD G-16 EOL **Well ID:** SB-4
Drilling Method:	Air Rotary		**Project Consultant:** Texerra
Start Date:	4/14/2014		
End Date:	4/14/2014		
Comments: All samples were taken from cuttings. SB-4 is located 23' west of the former junction box site. **DRAFTED BY:** TD = 55' GW = 96'			**Location:** UL/G Sec. 16 T-22-S R-37-E **Lat:** 32°23'33.436"N **County**:Lea **Long:**103°9'54.726"W **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND / NO ODOR		Bentonite Seal
SS	437		0.4			
5 ft	477		19.2			
10 ft	857		17.7			
15 ft	2076	Lab Cl-2520	25.9			
		GRO <10				
		DRO 77.3				
20 ft	1409		29.5			
25 ft	602		8.9			
30 ft	710		17			
35 ft	589		15.2			
40 ft	533		8.2			

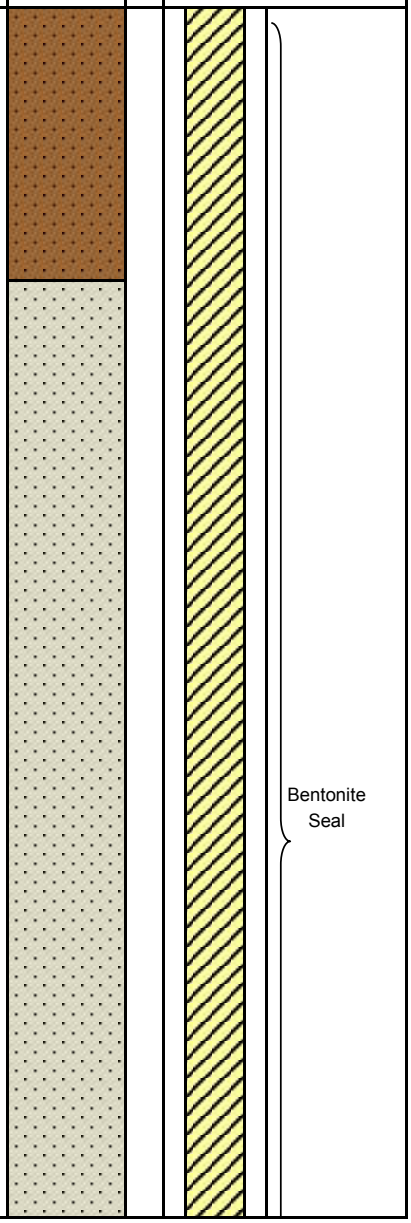
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology		Well Construction
45 ft	494		3.3					
50 ft	430		4	TAN SAND / NO ODOR				
55 ft	191	**Lab Cl-192**	7.7					
		GRO <10						
		DRO <10						

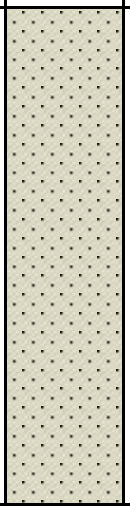
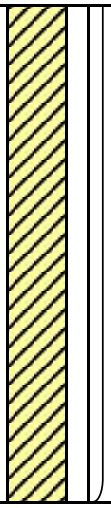
Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		**Project Name:** BD G-16 EOL **Well ID:** SB-5
Drilling Method:	Air Rotary		**Project Consultant:** Texerra
Start Date:	4/15/2014		
End Date:	4/15/2014		
Comments: All samples were taken from cuttings. SB-5 is located 21' east of the former junction box site. **DRAFTED BY:** Catherine Uršanić TD = 50' GW = 96'			**Location:** UL/G Sec. 16 T-22-S R-37-E **Lat:** 32°23'33.472"N **County**:Lea **Long:** 103°9'54.208"W **State**:NM

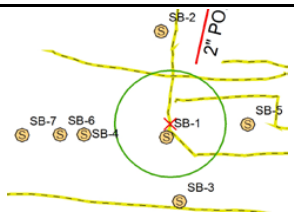
Depth (feet)	Chloride field tests	LAB	PID	Description
				BROWN SAND / DRY / NO ODOR
SS	290		4.2	
5 ft	410		81	
				TAN SAND / DRY / NO ODOR
10 ft	955	Lab Cl-1100	31	
	B <0.05 T <0.05	GRO <10		
	E <0.05 X <0.15	DRO 63.4		
15 ft	555		12.1	
20 ft	502		185	
25 ft	366	Lab Cl-320	291	
	B <0.05 T <0.05	GRO <10		
	E <0.05 X <0.15	DRO <10		
30 ft	317		42.6	
35 ft	354		19	

Lithology

Well Construction

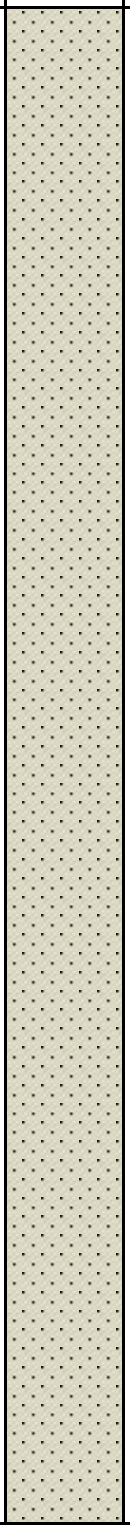


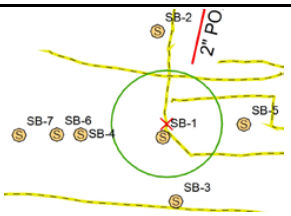
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND / DRY / NO ODOR		
40 ft	399		8.6			
45 ft	292		4.2			
50 ft	205	**Lab Cl-208**	4.6			
	B <0.05 T <0.05	**GRO <10**				
	E <0.05 X <0.15	**DRO <10**				

Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		
Drilling Method:	Air Rotary		**Project Name:** BD G-16 EOL **Well ID:** SB-6
Start Date:	5/16/2014		
End Date:	5/16/2014		**Project Consultant:** RECS
Comments: All samples were taken from cuttings. SB-6 was installed 30' west of the former junction box. **DRAFTED BY:** C. Ursanic			**Location:** UL/G Sec. 16 T-22-S R-37-E
			Lat: 32°23'33.444"N **County**:Lea
TD = 85'	GW = 96'		**Long:**103°9'54.803"W **State**:NM

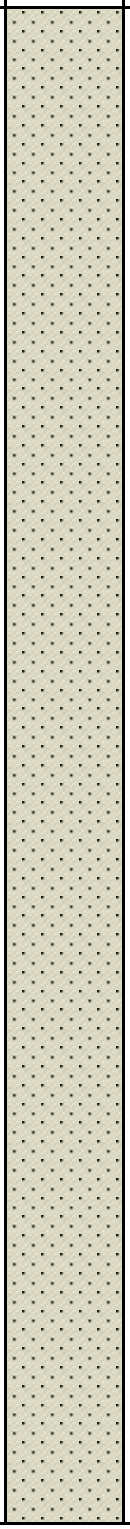
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	152		0.4			
5 ft	366	Lab Cl- 544	223.4	BROWN SAND/NO ODOR/DRY		
	B <0.05 T 0.399	GRO 1210				
	E 4.03 X 12.2	DRO 15300				
10 ft	662		20.8			
15 ft	1053		16			
20 ft	1515		46.8			
25 ft	1544	Lab Cl- 1730	4.1	TAN SAND/DRY/NO ODOR		
	B <0.05 T <0.05	GRO <10				
	E 0.08 X 0.282	DRO <10				
30 ft	996		4.4			
35 ft	788		2.1			

Bentonite Seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	750		1.6	TAN SAND/DRY/NO ODOR		 Bentonite Seal
45 ft	660		4.5			
50 ft	391		8.7			
55 ft	680		2.1			
60 ft	420		1.9			
65 ft	626		3.4			
70 ft	443		2.1			
75 ft	297		1.5			
80 ft	622		1			
85 ft	152	Lab Cl-160	1.8			
	B T <0.05 <0.05	GRO <10				
	E X <0.05 <0.15	DRO <10				

Logger:	Edward Cesareo		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper		
Drilling Method:	Air Rotary		**Project Name:** BD G-16 EOL **Well ID:** SB-7
Start Date:	5/16/2014		
End Date:	5/16/2014		**Project Consultant:** RECS
Comments: All samples were taken from cuttings. SB-7 was installed 40' west of the former junction box. **DRAFTED BY:** C. Ursanic			**Location:** UL/G Sec. 16 T-22-S R-37-E
TD = 85'	GW = 96'		**Lat:** 32°23'33.442"N **County**:Lea **Long:**103°9'54.919"W **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	119		0.2			
5 ft	271	Lab Cl- 176	126.5	BROWN SAND/NO ODOR/DRY		
	B <0.20 T <0.20	GRO 336				
	E 1.07 X 1.73	DRO 9710				
10 ft	694		14.3			
15 ft	933		4.3			
20 ft	1188	Lab Cl- 1150	5.2			Bentonite Seal
	B <0.05 T <0.05	GRO <10				
	E <0.05 X <0.15	DRO <10				
25 ft	760		3.7	TAN SAND/DRY/NO ODOR		
30 ft	727		3.5			
35 ft	600		3.2			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	488		2.1	TAN SAND/DRY/NO ODOR		 Bentonite Seal
45 ft	421		3.3			
50 ft	368		3.1			
55 ft	604		1.8			
60 ft	760		1			
65 ft	1080		6.2			
70 ft	564		7			
75 ft	365		5.6			
80 ft	301		5.8			
85 ft	152	Lab Cl-96	5.1			
	B <0.05 T <0.05	GRO <10				
	E <0.05 X <0.15	DRO <10				

CARDINAL Laboratories

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April 22, 2014

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD G-16 EOL

Enclosed are the results of analyses for samples received by the laboratory on 04/14/14 16:42.

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 accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #1 SURFACE (H401129-01)

Chloride, SM4500Cl-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	04/16/2014	ND	400	100	400	3.92	

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	04/16/2014	ND	199	99.3	200	1.82	
DRO >C10-C28	**268**	10.0	04/16/2014	ND	218	109	200	2.81	

Surrogate: 1-Chlorooctane	*114 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*133 %*	*63.6-154*

Sample ID: SB #1 55' (H401129-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2320**	16.0	04/16/2014	ND	400	100	400	3.92	

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	04/16/2014	ND	199	99.3	200	1.82	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	218	109	200	2.81	

Surrogate: 1-Chlorooctane	*118 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*105 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #1 80' (H401129-03)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/15/2014	ND	2.25	113	2.00	9.92	
Toluene*	<0.050	0.050	04/15/2014	ND	2.13	106	2.00	10.0	
Ethylbenzene*	<0.050	0.050	04/15/2014	ND	2.10	105	2.00	9.59	
Total Xylenes*	<0.150	0.150	04/15/2014	ND	6.11	102	6.00	9.41	
Total BTEX	<0.300	0.300	04/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *116 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**224**	16.0	04/16/2014	ND	400	100	400	3.92	

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	04/16/2014	ND	199	99.3	200	1.82	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	218	109	200	2.81	

Surrogate: 1-Chlorooctane *114 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *105 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #2 SURFACE (H401129-04)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	04/16/2014	ND	400	100	400	3.92	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane	*97.5 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*91.4 %*	*63.6-154*

Sample ID: SB #2 5' (H401129-05)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	04/16/2014	ND	400	100	400	3.92	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*96.0 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #2 10' (H401129-06)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	04/17/2014	ND	416	104	400	3.77	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane	*101 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*97.2 %*	*63.6-154*

Sample ID: SB #3 10' (H401129-07)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1180**	16.0	04/17/2014	ND	416	104	400	3.77	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane	*105 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*97.3 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #3 30' (H401129-08)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/15/2014	ND	2.25	113	2.00	9.92	
Toluene*	<0.050	0.050	04/15/2014	ND	2.13	106	2.00	10.0	
Ethylbenzene*	<0.050	0.050	04/15/2014	ND	2.10	105	2.00	9.59	
Total Xylenes*	<0.150	0.150	04/15/2014	ND	6.11	102	6.00	9.41	
Total BTEX	<0.300	0.300	04/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *116 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**400**	16.0	04/17/2014	ND	416	104	400	3.77	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane *102 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *95.0 %* *63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #3 40' (H401129-09)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/15/2014	ND	2.25	113	2.00	9.92	
Toluene*	<0.050	0.050	04/15/2014	ND	2.13	106	2.00	10.0	
Ethylbenzene*	<0.050	0.050	04/15/2014	ND	2.10	105	2.00	9.59	
Total Xylenes*	<0.150	0.150	04/15/2014	ND	6.11	102	6.00	9.41	
Total BTEX	<0.300	0.300	04/15/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *116 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	04/17/2014	ND	416	104	400	3.77	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane *104 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *98.3 %* *63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/14/2014	Sampling Date:	04/14/2014
Reported:	04/22/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #4 15' (H401129-10)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2520**	16.0	04/17/2014	ND	416	104	400	3.77	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	**77.3**	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane	*105 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*99.2 %*	*63.6-154*

Sample ID: SB #4 55' (H401129-11)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**192**	16.0	04/17/2014	ND	416	104	400	3.77	

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	04/16/2014	ND	192	96.2	200	3.12	
DRO >C10-C28	<10.0	10.0	04/16/2014	ND	210	105	200	2.25	

Surrogate: 1-Chlorooctane	*108 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*101 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: RICE Operating	BILL TO
Project Manager: Katie Jones	P.O. #:
Address: 112 W. Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location: BD 6-16 E.O.L 22-S/37-E	Phone #:
Sampler Name: Edward Cesareo	Fax #:

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING DATE	SAMPLING TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H401129																				
1	SB#1 Surface	G	1			X					X		4-14-14	10:50	X	X				
2	SB#1 55'	G	1			X					X			10:55	X	X				
3	SB#1 80'	G	1			X					X			11:00	X	X	X			
4	SB#2 Surface	G	1			X					X			11:35	X	X				
5	SB#2 5'	G	1			X					X			11:40	X	X				
6	SB#2 10'	G	1			X					X			11:45	X	X				
7	SB#3 10'	G	1			X					X			12:45	X	X				
8	SB#3 30'	G	1			X					X			12:50	X	X	X			
9	SB#3 40'	G	1			X					X			12:55	X	X	X			
10																				

Relinquished By: Edward Cesareo	Date: 4-14-14	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 4:42		Fax Result: ☐ Yes ☑ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email results hconder@rice-ecs.com; Lweinheimer@rice-ecs.com; kjones@riceswd.com; Lpena@riceswd.com; Knorman@rice-ecs.com, ecesareo@rice-ecs.com
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
CHECKED BY: (Initials)

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

#54

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: RICE Operating	BILL TO
Project Manager: Katie Jones	P.O. #:
Address: 112 W. Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location: BD 6-16 E.O.L 22-S/37-E	Phone #:
Sampler Name: Edward Cesareo	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H401129																				
10	SB#4 15'	G	1			/					/		4-14-14	3:35	/	/				
11	SB#4 55'	G	1			/					/		4-14-14	3:40	/	/				

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 consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Edward Cesareo	Date: 4-14-14 Time: 4:42	Received By: Jodi Henson	
Relinquished By:	Date: Time:	Received By:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	

Phone Result: ☐ Yes ☑ No Add'l Phone #:
Fax Result: ☐ Yes ☑ No Add'l Fax #:
REMARKS:

email results
hconder@rice-ecs.com; Lweinheimer@rice-ecs.com;
kjones@riceswd.com; Lpena@riceswd.com;
Knorman@rice-ecs.com, ecesareo@rice-ecs.com

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

#54

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

April 23, 2014

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD G-16 EOL

Enclosed are the results of analyses for samples received by the laboratory on 04/15/14 16:05.

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 accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/15/2014	Sampling Date:	04/15/2014
Reported:	04/23/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #5 10' (H401134-01)

BTEX 8021B mg/kg **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/17/2014	ND	2.68	134	2.00	12.6	
Toluene*	<0.050	0.050	04/17/2014	ND	2.55	127	2.00	13.1	
Ethylbenzene*	<0.050	0.050	04/17/2014	ND	2.53	126	2.00	14.0	
Total Xylenes*	<0.150	0.150	04/17/2014	ND	7.29	122	6.00	13.9	
Total BTEX	<0.300	0.300	04/17/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *119 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1100**	16.0	04/17/2014	ND	400	100	400	3.92	

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	04/17/2014	ND	206	103	200	0.409	
DRO >C10-C28	**63.4**	10.0	04/17/2014	ND	218	109	200	0.425	

Surrogate: 1-Chlorooctane *105 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *100 %* *63.6-154*

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/15/2014	Sampling Date:	04/15/2014
Reported:	04/23/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #5 25' (H401134-02)

BTEX 8021B mg/kg **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/17/2014	ND	2.68	134	2.00	12.6	
Toluene*	<0.050	0.050	04/17/2014	ND	2.55	127	2.00	13.1	
Ethylbenzene*	<0.050	0.050	04/17/2014	ND	2.53	126	2.00	14.0	
Total Xylenes*	<0.150	0.150	04/17/2014	ND	7.29	122	6.00	13.9	
Total BTEX	<0.300	0.300	04/17/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *120 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**320**	16.0	04/17/2014	ND	400	100	400	3.92	

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	04/17/2014	ND	206	103	200	0.409	
DRO >C10-C28	<10.0	10.0	04/17/2014	ND	218	109	200	0.425	

Surrogate: 1-Chlorooctane *111 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *102 %* *63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	04/15/2014	Sampling Date:	04/15/2014
Reported:	04/23/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	22-S / 37-E		

Sample ID: SB #5 50' (H401134-03)

BTEX 8021B mg/kg **Analyzed By: CK**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/17/2014	ND	2.68	134	2.00	12.6	
Toluene*	<0.050	0.050	04/17/2014	ND	2.55	127	2.00	13.1	
Ethylbenzene*	<0.050	0.050	04/17/2014	ND	2.53	126	2.00	14.0	
Total Xylenes*	<0.150	0.150	04/17/2014	ND	7.29	122	6.00	13.9	
Total BTEX	<0.300	0.300	04/17/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *120 %* *89.4-126*

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	04/17/2014	ND	400	100	400	3.92	

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	04/17/2014	ND	206	103	200	0.409	
DRO >C10-C28	<10.0	10.0	04/17/2014	ND	218	109	200	0.425	

Surrogate: 1-Chlorooctane *105 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *97.7 %* *63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: RICE Operating	BILL TO
Project Manager: Katie Jones	P.O. #:
Address: 112 W. Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location: BD G-16 E.O.L. 22-S/37-E	Phone #:
Sampler Name: Edward Cesareo	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H401135																				
1	SB#5 10'	G	1			/					/		4-15-14	9:35	/	/	/			
2	SB#5 25'	G	1			/					/		"	9:40	/	/	/			
3	SB#5 50'	G	1			/					/		"	9:45	/	/	/			

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 consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Stuart Cesare	Date: 4-15-14 Time: 4:05	Received By: Jodi Henson	
Relinquished By:	Date: Time:	Received By:	

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
CHECKED BY: (Initials)

Phone Result: ☐ Yes ☑ No Add'l Phone #:
Fax Result: ☐ Yes ☑ No Add'l Fax #:
REMARKS:

email results
hconder@rice-ecs.com; Lweinheimer@rice-ecs.com;
kjones@riceswd.com; Lpena@riceswd.com;
Knormar@rice-ecs.com, ecesareo@rice-ecs.com

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

#54

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 27, 2014

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD G-16 EOL

Enclosed are the results of analyses for samples received by the laboratory on 05/16/14 15:00.

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 accreditated 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

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	05/16/2014	Sampling Date:	05/16/2014
Reported:	05/27/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	22-S / 37-E		

Sample ID: SB #6 5' (H401515-01)

BTEX 8021B mg/kg Analyzed By: MS S-04

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/21/2014	ND	2.27	114	2.00	2.21	
Toluene*	**0.399**	0.050	05/21/2014	ND	2.23	112	2.00	1.54	
Ethylbenzene*	**4.03**	0.050	05/21/2014	ND	2.13	107	2.00	1.16	
Total Xylenes*	**12.2**	0.150	05/21/2014	ND	6.73	112	6.00	0.527	
Total BTEX	**16.6**	0.300	05/21/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *744 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**544**	16.0	05/23/2014	ND	416	104	400	0.00	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**1210**	100	05/23/2014	ND	202	101	200	0.794	
DRO >C10-C28	**15300**	100	05/23/2014	ND	224	112	200	0.343	

Surrogate: 1-Chlorooctane *215 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *374 %* *63.6-154*

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	05/16/2014	Sampling Date:	05/16/2014
Reported:	05/27/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	22-S / 37-E		

Sample ID: SB #6 25' (H401515-02)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/21/2014	ND	2.27	114	2.00	2.21	
Toluene*	<0.050	0.050	05/21/2014	ND	2.23	112	2.00	1.54	
Ethylbenzene*	**0.080**	0.050	05/21/2014	ND	2.13	107	2.00	1.16	
Total Xylenes*	**0.282**	0.150	05/21/2014	ND	6.73	112	6.00	0.527	
Total BTEX	**0.362**	0.300	05/21/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *116 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1730**	16.0	05/23/2014	ND	416	104	400	0.00	

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	05/23/2014	ND	202	101	200	0.794	
DRO >C10-C28	<10.0	10.0	05/23/2014	ND	224	112	200	0.343	

Surrogate: 1-Chlorooctane *107 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *109 %* *63.6-154*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	05/16/2014	Sampling Date:	05/16/2014
Reported:	05/27/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	22-S / 37-E		

Sample ID: SB #6 85' (H401515-03)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/22/2014	ND	2.26	113	2.00	2.72	
Toluene*	<0.050	0.050	05/22/2014	ND	2.21	111	2.00	2.27	
Ethylbenzene*	<0.050	0.050	05/22/2014	ND	2.14	107	2.00	2.39	
Total Xylenes*	<0.150	0.150	05/22/2014	ND	6.72	112	6.00	2.43	
Total BTEX	<0.300	0.300	05/22/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *103 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	05/23/2014	ND	416	104	400	0.00	

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	05/23/2014	ND	202	101	200	0.794	
DRO >C10-C28	<10.0	10.0	05/23/2014	ND	224	112	200	0.343	

Surrogate: 1-Chlorooctane *116 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *120 %* *63.6-154*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	05/16/2014	Sampling Date:	05/16/2014
Reported:	05/27/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	22-S / 37-E		

Sample ID: SB #7 5' (H401515-04)

BTEX 8021B mg/kg **Analyzed By: MS** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	05/22/2014	ND	2.26	113	2.00	2.72	
Toluene*	<0.200	0.200	05/22/2014	ND	2.21	111	2.00	2.27	
Ethylbenzene*	**1.07**	0.200	05/22/2014	ND	2.14	107	2.00	2.39	
Total Xylenes*	**1.73**	0.600	05/22/2014	ND	6.72	112	6.00	2.43	
Total BTEX	**2.80**	1.20	05/22/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *199 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**176**	16.0	05/23/2014	ND	416	104	400	0.00	

TPH 8015M mg/kg **Analyzed By: MS** **S-06**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**336**	100	05/23/2014	ND	202	101	200	0.794	
DRO >C10-C28	**9710**	100	05/23/2014	ND	224	112	200	0.343	

Surrogate: 1-Chlorooctane *174 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *473 %* *63.6-154*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	05/16/2014	Sampling Date:	05/16/2014
Reported:	05/27/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	22-S / 37-E		

Sample ID: SB #7 20' (H401515-05)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/22/2014	ND	2.26	113	2.00	2.72	
Toluene*	<0.050	0.050	05/22/2014	ND	2.21	111	2.00	2.27	
Ethylbenzene*	<0.050	0.050	05/22/2014	ND	2.14	107	2.00	2.39	
Total Xylenes*	<0.150	0.150	05/22/2014	ND	6.72	112	6.00	2.43	
Total BTEX	<0.300	0.300	05/22/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1150**	16.0	05/23/2014	ND	416	104	400	0.00	

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	05/23/2014	ND	202	101	200	0.794	
DRO >C10-C28	<10.0	10.0	05/23/2014	ND	224	112	200	0.343	

Surrogate: 1-Chlorooctane *111 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *115 %* *63.6-154*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

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

Received:	05/16/2014	Sampling Date:	05/16/2014
Reported:	05/27/2014	Sampling Type:	Soil
Project Name:	BD G-16 EOL	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	22-S / 37-E		

Sample ID: SB #7 85' (H401515-06)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/22/2014	ND	2.26	113	2.00	2.72	
Toluene*	<0.050	0.050	05/22/2014	ND	2.21	111	2.00	2.27	
Ethylbenzene*	<0.050	0.050	05/22/2014	ND	2.14	107	2.00	2.39	
Total Xylenes*	<0.150	0.150	05/22/2014	ND	6.72	112	6.00	2.43	
Total BTEX	<0.300	0.300	05/22/2014	ND					

Surrogate: 4-Bromofluorobenzene (PID *101 %* *89.4-126*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	05/23/2014	ND	416	104	400	0.00	

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	05/23/2014	ND	202	101	200	0.794	
DRO >C10-C28	<10.0	10.0	05/23/2014	ND	224	112	200	0.343	

Surrogate: 1-Chlorooctane *123 %* *65.2-140*

Surrogate: 1-Chlorooctadecane *126 %* *63.6-154*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603
(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: RICE Operating	BILL TO
Project Manager: Katie Jones	P.O. #:
Address: 112 W. Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location: BD G-16 E.O.L. 22-S/37-E	Phone #:
Sampler Name: Edward Cesareo	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME
1	SB#6 5'	G	1			X					X		5-16-14	10:40
2	SB#6 25'	G	1			X					X			10:45
3	SB#6 85'	G	1			X					X			10:50
4	SB#7 5'	G	1			X					X			12:50
5	SB#7 20'	G	1			X					X			12:55
6	SB#7 85'	G	1			X					X			1:00

ANALYSIS REQUEST: Chlorides; TPH 8015 M; BTEX; Texas TPH; Complete Cations/Anions; TDS

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 consequental damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 5-16-14	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 3:00		Fax Result: ☐ Yes ☑ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email results hconder@rice-ecs.com; Lweinheimer@rice-ecs.com; kjones@riceswd.com; Lpena@riceswd.com; Knorman@rice-ecs.com ecesareo@rice-ecs.com
	Time:		

Delivered By: (Circle One) Sampler - UPS - Bus - Other: 4.8°

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials) CK

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

H54

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
	X	MODEL: PGM 7300	SERIAL NO: 590-000508
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300 X	SERIAL NO: 590-902553

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : THAN -248-100-3	7/12/2017
METER READING ACCURACY: 100PPM	

ACCURACY : +/- 2%

COMPANY
ROC

SITE	UNIT	SECTION	TOWN SHIP	RANGE
BD G-16 E.O.L.	G	16	22-S	37-E

SAMPLE ID	PID	SAMPLE ID	PID
SB# 1 SURFACE	1	SB#1 60'	78
SB#1 5'	6.6	SB#1 65'	16
SB#1 10'	6.1	SB#1 70'	79
SB#1 15'	1.5	SB#1 75'	27.3
SB#1 20'	4	SB#1 80'	117.4
SB#1 25'	58.7		
SB#1 30'	45	SB#2 SURFACE	1
SB#1 35'	31.5	SB#2 5'	11.4
SB#1 40'	23.9	SB#2 10'	3.5
SB#1 45'	4.6		
SB#1 50'	4.5		
SB#1 55'	4.3		

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

SIGNATURE: [signature]

DATE: 4-14-14

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
	X	MODEL: PGM 7300	SERIAL NO: 590-000508
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300 X	SERIAL NO: 590-902553

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : THAN -248-100-3	7/12/2017
METER READING ACCURACY: 100PPM	

ACCURACY : +/- 2%

COMPANY
ROC

SITE	UNIT	SECTION	TOWN SHIP	RANGE
BD G-16 E.O.L.	G	16	22-S	37-E

SAMPLE ID	PID	SAMPLE ID	PID
SB# 3 SURFACE	0.3	SB#4 10'	17.7
SB#3 5'	1.2	SB#4 15'	25.9
SB#3 10'	5.3	SB#4 20'	29.5
SB#3 15'	9.2	SB#4 25'	8.9
SB#3 20'	16.8	SB#4 30'	17
SB#3 25'	36.7	SB#4 35'	15.2
SB#3 30'	112	SB#4 40'	8.2
SB#3 35'	4.8	SB#4 45'	3.3
SB#3 40'	7.1	SB#4 50'	4
		SB#4 55'	7.7
SB# 4 SURFACE	0.4		
SB#4 5'	19.2		

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

SIGNATURE: [signature]

DATE: 4-15-14

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
	X	MODEL: PGM 7300	SERIAL NO: 590-000508
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300 X	SERIAL NO: 590-902553

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : THAN -248-100-3	7/12/2017
METER READING ACCURACY: 100PPM	

ACCURACY : +/- 2%

COMPANY
ROC

SITE	UNIT	SECTION	TOWN SHIP	RANGE
BD G-16 E.O.L.	G	16	22-S	37-E

SAMPLE ID	PID	SAMPLE ID	PID
SB# 5 SURFACE	4.2		
SB#5 5'	81		
SB#5 10'	31		
SB#5 15'	12.1		
SB#5 20'	185		
SB#5 25'	291		
SB#5 30'	42.6		
SB#5 35'	19		
SB#5 40'	8.6		
SB#5 45'	4.2		
SB#5 50'	4.6		

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

SIGNATURE: [signature]

DATE: 4-15-14

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
	X	MODEL: PGM 7300 **X**	SERIAL NO: 590-000183
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-902553

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: HAL-248-100-1	7/1/2015
METER READING ACCURACY: 100PPM	

ACCURACY : +/- 2%

COMPANY
ROC

SITE	UNIT	SECTION	TOWN SHIP	RANGE
BD G-16 E.O.L.	G	16	22-S	37-E

SAMPLE ID	PID	SAMPLE ID	PID
SB# 6 SS	0.4	SB# 6 60'	1.9
SB# 6 5'	223.4	SB# 6 65'	3.4
SB# 6 10'	20.8	SB# 6 70'	2.1
SB# 6 15'	16	SB# 6 75'	1.5
SB# 6 20'	46.8	SB# 6 80'	1
SB# 6 25'	4.1	SB# 6 85'	1.8
SB# 6 30'	4.4		
SB# 6 35'	2.1		
SB# 6 40'	1.6		
SB# 6 45'	4.5		
SB# 6 50'	8.7		
SB# 6 55'	2.1		

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

SIGNATURE: [signature]

DATE: 5-16-14

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
	X	MODEL: PGM 7300 X	SERIAL NO: 590-000183
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-902553

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: HAL-248-100-1	7/1/2015
METER READING ACCURACY: 100PPM	

ACCURACY : +/- 2%

COMPANY
ROC

SITE	UNIT	SECTION	TOWN SHIP	RANGE
BD G-16 E.O.L.	G	16	22-S	37-E

SAMPLE ID	PID	SAMPLE ID	PID
SB# 7 SS	0.2	SB# 7 60'	1
SB# 7 5'	126.5	SB# 7 65'	6.2
SB# 7 10'	14.3	SB# 7 70'	7
SB# 7 15'	4.3	SB# 7 75'	5.6
SB# 7 20'	5.2	SB# 7 80'	5.8
SB# 7 25'	3.7	SB# 7 85'	5.1
SB# 7 30'	3.5		
SB# 7 35'	3.2		
SB# 7 40'	2.1		
SB# 7 45'	3.3		
SB# 7 50'	3.1		
SB# 7 55'	1.8		

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

SIGNATURE: [signature] DATE: 5-16-14