1R-427-65

WORKPLANS

Date: 9 - 20 - 13

Hansen, Edward J., EMNRD

From: Sent: To: Cc: Subject: Attachments: Katie Jones <kjones@riceswd.com> Thursday, November 14, 2013 8:01 AM Hansen, Edward J., EMNRD; Lowe, Leonard, EMNRD Hack Conder; Lara Weinheimer; Laura Flores ROC - EME L-25 (1R427-65) ICP Report and CAP Addendum EME L-25 Photo Page.pdf

Mr. Hansen,

The following is an Addendum to the EME L-25 (1R427-65) ICP Report and CAP submitted to the NMOCD on September 20, 2013 and approved on October 9, 2013. Page 2, section Corrective Action Plan: Vadose Zone Remedy. The paragraph with text in blue lettering, below, will replace the Vadose Zone Remedy, text in red lettering marked with a strike-through.

"Vadose Zone Remedy

Currently, the site is excavated to dimensions of 151 ft x 71 ft to a depth of 10 ft bgs, and field personnel began excavating the southeast of the current excavation to depth of 14 ft bgs. A hard sandstone layer was encountered at approximately 13-14 ft bgs, and groundwater was encountered beneath the sandstone layer at 14 ft bgs. The sandstone layer acts as an infiltration barrier preventing the downward migration of residual constituents to groundwater. Once groundwater was encountered, a sample was field tested to determine the chloride concentration, resulting in a concentration of approximately 60 mg/L. A 8 pt bottom composite sample was then collected at the 10 ft depth, and was field tested for chloride and hydrocarbon. This resulted in a chloride concentration of 427 mg/kg and a PID reading of 1.0 ppm. The groundwater sample and bottom composite were sent to a commercial laboratory for confirmation, but ROC has not received the results. Based on the low field chloride concentration at 10 ft bgs, the sandstone layer from 13-14 ft bgs, and the low chloride concentration of groundwater, ROC requests to pad the current excavation with 6 inches of blow sand and install a 20-mil reinforced liner at approximately 9.5 ft bgs. The liner will be padded with an additional 6 inches of blow sand, and the excavation will be backfilled to ground surface. All backfill material will have a chloride concentration below 500 mg/kg and field PID reading below 100 ppm. Any soil requiring disposal will be properly disposed of at a NMOCD approved facility. The site will be contoured to the surrounding area. Soil amendments will be added as necessary and the site will be seeded with a blend of native vegetation. Vegetation will provide an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

In order to prevent the migration of residual chloride, RECS recommends that ROC excavate the site to 151 ft x 71 ft to the depth of 14 ft bgs (Figure 5). This excavation will remove the impacted vadose zone above groundwater and the existing 20 x 20 ft clay layer located at 5 ft bgs. Clean soil will be imported to the site and 5 ft of the clean soil will be placed in the bottom of the excavation, up to 9 ft bgs. At 9 ft bgs, a 20 mil reinforced liner will be installed and properly seated. The excavation above the liner will be backfilled with soil containing a chloride concentration below 500 mg/kg and a field PID reading below 100 ppm. Excavated soil will be evaluated for use as backfill, and any soil requiring disposal will be properly disposed of at a NMOCD approved facility. The site will be contoured to the surrounding area. Soil amendments will be added as necessary and the site will be seeded with a blend of native vegetation. Vegetation will provide an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater."

If you have any questions or require any additional information, please contact me or Hack Conder at (575)393-2967.

Thank you.

Katie Jones Environmental Project Manager RICE Operating Company



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EME L-25 (1R427-65) Unit L, Section 25, T19S, R36E



Excavating the southeast corner to a depth of 14 ft bgs, facing south 11/12/2013



The sandstone layer can be seen in the center of the photo,facing northwest11/12/2013



Closure up of the sandstone layer 11/12/2013

Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241 Phone 575.393.2967 RECENTED COD

CERTIFIED MAIL RETURN RECEIPT NO. 7008 1140 0001 3072 4703

September 20th, 2013

Mr. Edward Hansen

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

RE: ICP Report and Corrective Action Plan (CAP) Rice Operating Company – EME SWD System EME L-25 (1R427-65): UL/L sec. 25 T19S R36E

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) 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 3 miles west of Monument, New Mexico at UL/L sec. 25, T19S R37E as shown on the Site Location Map and Geographical Location Map (Figure 1 and 2). NM OSE records indicated that groundwater would likely be encountered at a depth of approximately $63 \pm -$ feet. However, soil bores drilled at the site found groundwater to be located at $14 \pm -$ feet.

In 2002, ROC initiated work on the former EME L-25 junction box. After the former junction box was removed, the site was delineated using a backhoe to collect soil samples at regular intervals, creating a 20 x 20 x 5 ft deep excavation. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons. Representative samples were collected from the excavation walls and excavation bottom and sent to a commercial laboratory for analysis. The sidewall sample resulted in a chloride concentration of 1,760 mg/kg and concentrations of gasoline range organics (GRO), diesel range organics (DRO) and BTEX below detectable limits. The bottom composite sample resulted in a chloride concentration of 3,830 mg/kg, GRO and BTEX concentrations below detectable limits and a DRO concentration of 24 mg/kg. The excavation was backfilled with the excavated soil to 5 ft below ground surface (bgs). At 5-4 ft bgs, a 1 foot thick clay barrier was installed. The excavation was then backfilled using the remaining excavated soil and contoured to the surrounding area. The clay layer

2010 10 P H3H

will provide a barrier that will inhibit the downward migration of chlorides to groundwater. A new, watertight junction was installed at the site. A Junction Box Closure Report was submitted to NMOCD with all the 2002 junction box closures and disclosures.

To further investigate the depth of chloride concentrations, a soil bore was initiated on February 11th, 2013, at 12 ft northeast of the former junction box site. The boring was advanced to a depth of 10 ft bgs with soil samples collected every 5 ft. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons. The 5 ft and 10 ft samples were sent to a commercial laboratory for analysis. The 5 ft sample resulted in a chloride concentration of 2,160 mg/kg and GRO and DRO concentrations below detectable limits. The 10 ft sample resulted in a chloride concentrations below detectable limits. The 10 ft sample resulted in a chloride concentration of 2,800 mg/kg and GRO and DRO concentrations below detectable limits. The one hole was plugged in total with bentonite to ground surface.

On April 11th, 2013, ROC submitted an Update Report to NMOCD outlining the activities conducted at the site. NMOCD approved the Update Report on May 2nd, 2013 and stipulated that ROC submit an Investigation and Characterization Plan to NMOCD within 180 days.

An Investigation and Characterization Plan (ICP) was submitted to NMOCD on August 6th, 2013 and approved on August 20th, 2013. As part of the ICP, 14 additional soil bores were installed at the site (Figure 3 and 4). As the bores were advanced, samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples were taken to a commercial laboratory for analysis (Appendix A). Laboratory analysis of the bores showed that the interior bores had elevated chloride levels. As the bores were drilled farther away from the abandoned box, the laboratory chloride readings dropped until SB-5, SB-14 and SB-15, the outermost bores, achieved readings below 250 mg/kg at all depths. However, this pattern was not observed in the bores going to the east. As the bores were drilled farther from the abandoned box to the east, the laboratory chloride levels increased. It is evident from this data, that the abandoned box was not the source of the increased chlorides heading to the east, towards an abandoned production well head.

Corrective Action Plan

Vadose Zone Remedy

In order to prevent the migration of residual chloride, RECS recommends that ROC excavate the site to 151 ft x 71 ft to the depth of 14 ft bgs (Figure 5). This excavation will remove the impacted vadose zone above groundwater and the existing 20 x 20 ft clay layer located at 5 ft bgs. Clean soil will be imported to the site and 5 ft of the clean soil will be placed in the bottom of the excavation, up to 9 ft bgs. At 9 ft bgs, a 20-mil reinforced liner will be installed and properly seated. The excavation above the liner will be backfilled with soil containing a chloride concentration below 500 mg/kg and a field PID reading below 100 ppm. Excavated soil will be evaluated for use as backfill, and

any soil requiring disposal will be properly disposed of at a NMOCD approved facility. The site will be contoured to the surrounding area. Soil amendments will be added as necessary and the site will be seeded with a blend of native vegetation. Vegetation will provide an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

Groundwater Remedy

Once the vadose zone remedy has been completed, RECS recommends that ROC install two monitor wells at the site (Figure 5). MW-1, the near-source well, will be installed outside the excavation to determine what, if any affect, the residual chlorides in the vadose zone have had on the groundwater. MW-2 will be installed approximately 100 ft up-gradient of the site to determine if there is an up-gradient source of chlorides impacting the site. Additional monitor wells may need to be installed to adequately evaluate groundwater at the site. The monitor wells will be sampled quarterly and once analyzed for chlorides and TPH readings, ROC will either submit a groundwater remedy to NMOCD to address groundwater quality at the site or submit a 'remediation termination' request for site closure.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

ACW

Lara Weinheimer Project Scientist RECS (575) 441-0431

Attachments:

- Figure 1 Site Location Map
- Figure 2 Geographical Location Map

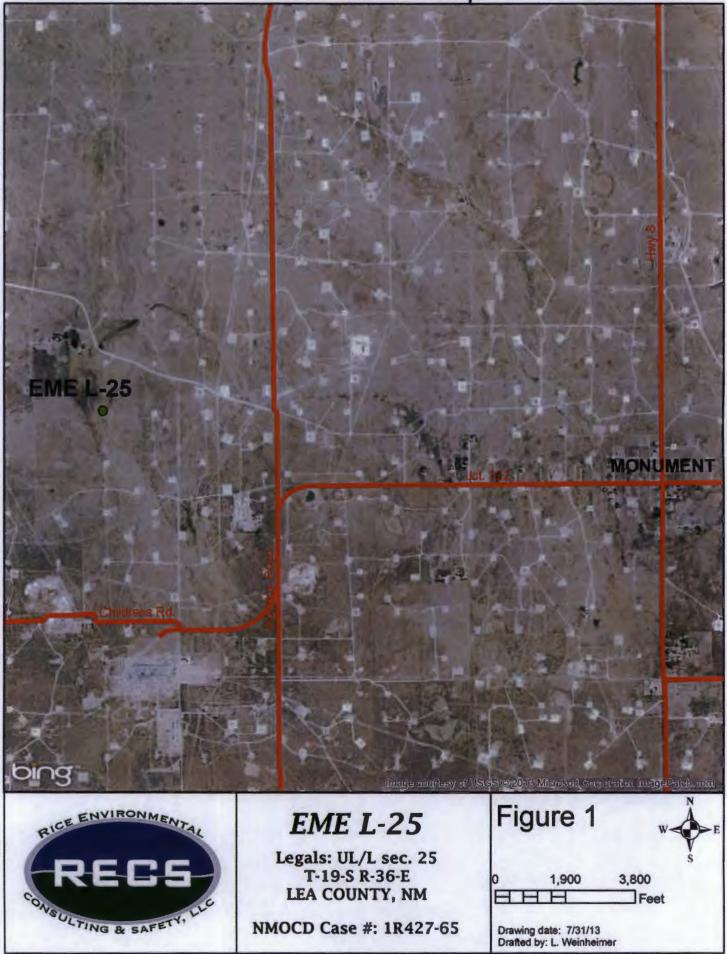
Figure 3 – Detailed Site Map

- Figure 4 Soil Bore Installation Map with proposed liner
- Figure 5 Proposed Excavation and MW Installation
- Appendix A Soil Bore Installation Documentation

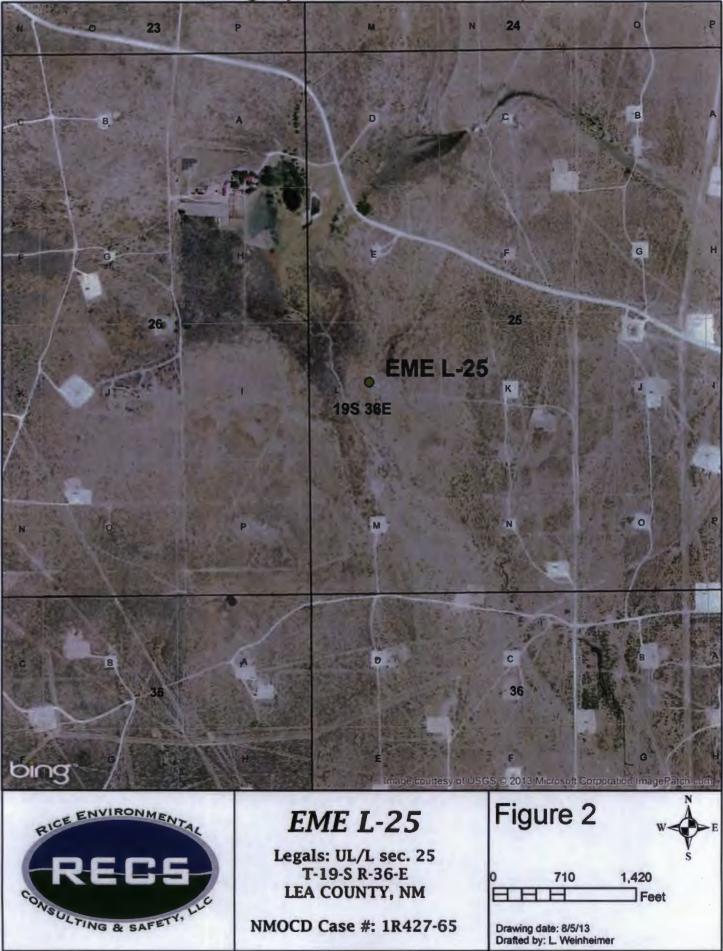
Figures

RICE Environmental Consulting and Safety (RECS) P.O. Box 2948, Hobbs, NM 88241 Phone 575.393.2967

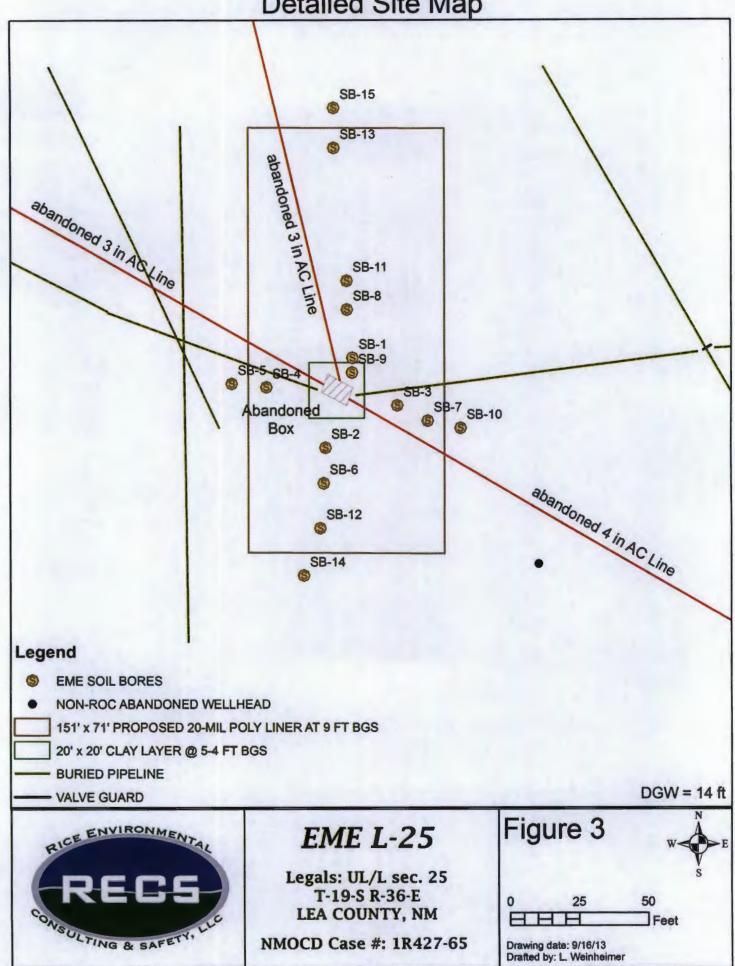
Site Location Map



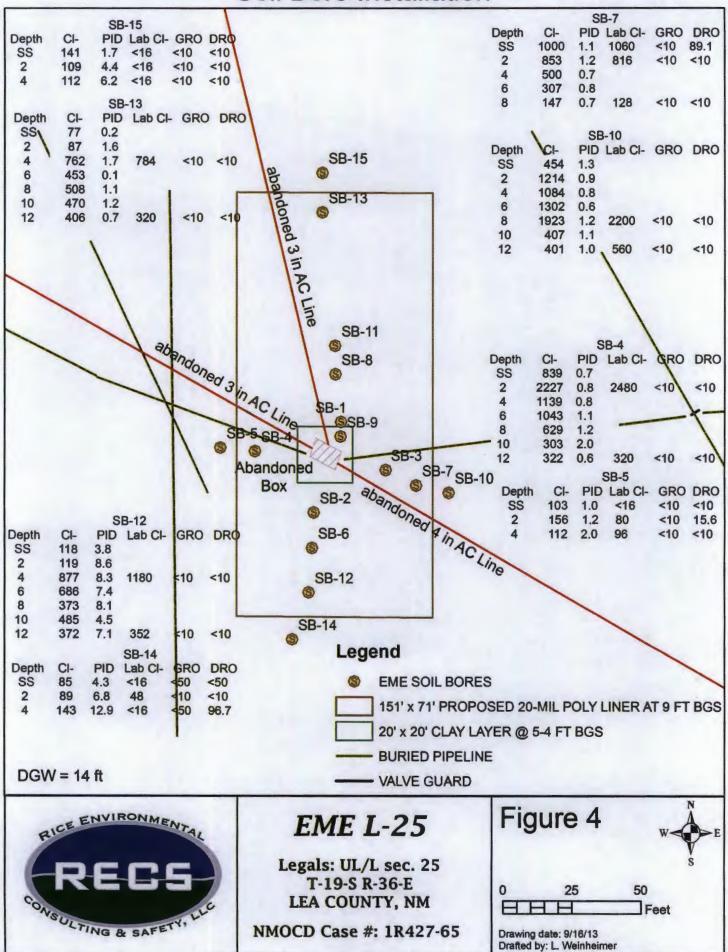
Geographical Location Map

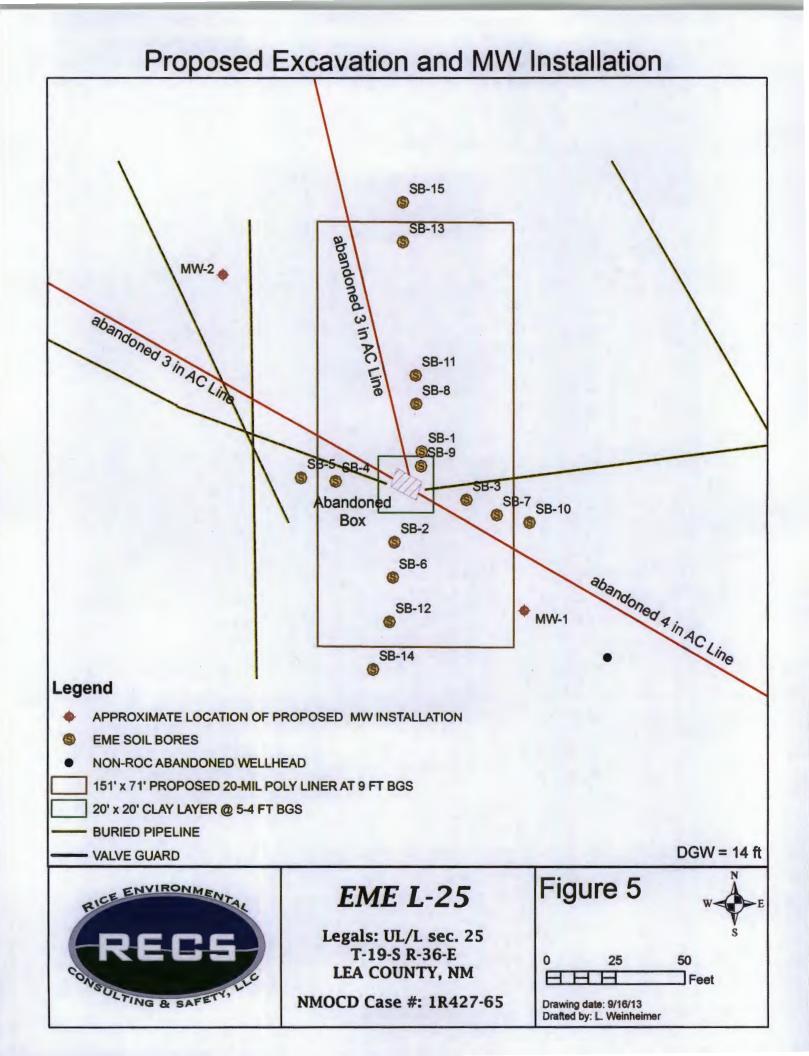


Detailed Site Map



Soil Bore Installation





Appendix A Soil Bore Documentation

RICE Environmental Consulting and Safety (RECS) P.O. Box 2948 Hobbs, NM 88241 Phone 575.393.2967

Logger: Driller:		dward Ces		SB-5-68-4 SB-3 Abandoned SB-3 SB-5-68-4 SB-3 SB-5-68-4 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3	Project Name: Well ID: EME L-25 SB-2 Project Consultant: RECS				
Drilling Method: Start Dat End Date	a:	Air rotar 8/21/201 8/21/201	3 3	Box SB-2 SB-6					
Comme		ned box DRA	. All sar	outh of the center of the mples were from cuttings. : L. Weinheimer GW = 14 ft	Location: UL/L s Lat: 32°37'46.85 Long: 103°18'51				
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction			
SS	1835	Cl- 1920 GRO <10 DRO 33.6	1.2	Brown Sand					
2 ft 4 ft	1794	CI- 1440	2.1	Caliche					
		GRO <10 DRO <10		Caliche With Sandstone	-	bentonite seal			
6 ft	828		1.1						
8 ft	374		0.9						
10 ft	246	CI- 192 GRO <10 DRO <10	0.7	Caliche					

Logger: Driller:	н		ard Cesa 1 & Coop		SB-5-58-3	R	ECS
Drilling M Start Dat			Air rotary		Abandoned Box SB-2 SB-6	Project Name: EME L-2	Well ID: 5 SB-3
End Date	e:	8	/21/2013	3	•	Project Consult	
Comme	abar		d box. DRAF	All sa	ast of the center of the mples were from cuttings. /: L. Weinhelmer GW = 14 ft	Location: UL/L s Lat: 32°37'46.99 Long: 103°18'5	sec. 25 T19S R36E 6"N County: Lea
Depth (feet)	Chlorid field te		LAB	PID	Description	Lithology	Well Construction
SS 2 ft	347			0.4	Brown Sand		
4 ft	927		Cl- 1250	0.7	Caliche		bentonite
			GRO <10 DRO <10		Caliche With Sandstone		seal
6 ft	421			0.5			
8 ft	222		CI- 224 GRO <10	0.6	Caliche		
			DRO <10				

Logger: Driller: Drilling M Start Date End Date Comme	e: e: ents: SI	Harriso B-4 is	ed box.	per, Inc. 9 3 3 26 ft w All sa	Abandoned Box SB-2 SB-6 SB-6 SB-6 SB-6 SB-7 SB-7 SB-10 SB-7 SB-7 SB-10 SB-7 SB-7 SB-10 SB-7 SB-10 SB-7 SB-10 SB-7 SB-10 SB-7 SB-10 SB-7 SB-10 SB-7 SB-7 SB-7 SB-7 SB-7 SB-7 SB-7 SB-7	Project Name: Well ID: EME L-25 SB-4 Project Consultant: RECS Location: UL/L sec. 25 T19S R36E Lat: 32°37'47.073"N County:			
Depth (feet)	TD Chlor field t		ft LAB	PID	GW = 14 ft Description	Long: 103 °18'52	Well Construction		
SS	83		CI-	0.7	Brown Sand				
2 ft 4 ft	113		2480 GRO <10 DRO <10	0.8	Caliche With Sandstone				
6 ft	104	43		1.1	Caliaba		bentonite seal		
8 ft	62	9		1.2	Caliche				
10 ft	30	3		2.0					
12 ft	32	2	CI- 320 GRO <10 DRO <10	0.6	Caliche With Sandstone				

Logger: Driller:	H	_	ard Ces	areo per, Inc.	Sth AC Ling SB-1 SB-5-SB-4 SB-9	R	ECS
Drilling N	Method:	,	Air rotary	,	Abandoned Box SB-2		Well ID:
Start Dat	te:	8	/21/201	3	SB-6	EME L-25	SB-5
End Date	ə:	8	/21/201	3		Project Consulta	nt: RECS
Comme	abar		d box. DRAF	All sa	rest of the center of the mples were from cuttings. : L. Weinheimer GW = 14 ft	Location: UL/L se Lat: 32 °37'47.084 Long: 103 °18'52.	oounty. Lot
Depth (feet)	Chlorid field te		LAB	PID	Description	Lithology	Well Construction
SS	103		Cl- <16 GRO <10	1	Brown Sand		
2 ft	156		DRO <10 CI- 80	1.2			bentonite
19			GRO <10 DRO 15.6				
4 ft	112		CI- 96 GRO <10	2	Caliche		
			DRO <10				

Logger: Driller:	H	Edward Ces arrison & Coo	sareo	SINACLING SB-1 SB-5 CE TO SB-3 SB-3	R	ECS	
Drilling I	Method:	Air rotar	у	Abandoned SB-7 SB-7 SB-10	Project Name:		Well ID:
Start Dat		8/21/201		SB-6	EME L-25		SB-6
End Date		8/21/201		uth of the center of the	Project Consulta		
Comme	aban	doned box.	. All sam	un of the center of the ples were from cuttings. L. Weinheimer GW = 14 ft	Lat: 32°37'46.728	"N	County: Lea State: NM
Depth (feet)	Chloric field tes		PID	Description	Lithology	Well C	Construction
SS	165		0.8	Brown Sand			
2 ft	1796	CI- 1800 GRO <10 DRO <10	0.6	Caliche With Sandstone			
4 ft	972		1.2				bentonite
6ft	581		1.2				seal
8 ft	278		2	Caliche			
10 ft	189	CI- 128 GRO <10	0.7				
		DRO <10)

Logger: Driller:	н	Edward		er, Inc.	SB-5 68 24 (SB-1 SB-5 68 24 (SB-9 SB-5 68 24 (SB-9 SB-5 68 24 (SB-3	R			
Drilling I Start Dat	te:	8/21	rotary 1/2013		Abandoned SB-7 SB-10 Box SB-2 SB-6	Project Name: EME L-25			
End Date	ents: SB- abar	7 is locandoned l	box.	34 ft eas All samp	t of the center of the bles were from cuttings. Weinheimer GW = 14 ft	Project Consultant: RECSLocation: UL/L sec. 25 T19S R36ELat: 32 37'46.95"NLong: 103 98'51.324"WState: N			
Depth (feet)	Chlorid field te		AB	PID	Description	Lithology	Well Construction		
SS 2 ft	1000) 10 Gi < Di 89 C 8	Cl- 060 RO (10 RO 9.1 Cl- 116	1.1	Brown Sand				
4 ft	500	< D	RO :10 RO :10	0.7	Caliche With Sandstone		bentonite		
6 ft	307			0.8					
8 ft	147	1 Gi < Di	CI- 28 RO :10 RO :10	0.7	Caliche				

Logger: Driller: Drilling I Start Date End Date Comme	Method: e: ents: SB- abar	ndoned bo DR	ooper, Inc. ary 013 013 ed 29 ft nor x. All sam	SB-11 SB-8 SB-8 SB-8 SB-9 SB-5SB-9 SB-11 SB-5SB-9 SB-12 SB-5SB-9 SB-12 SB-5SB-9 SB-12 SB-12 SB-13 S	Project Name: Well ID: EME L-25 SB-8 Project Consultant: RECS Location: UL/L sec. 25 T19S R36E Lat: 32°37'47.337"N County: Let				
Depth (feet)	Chlorid field te		PID	GW = 14 ft Description	Lithology	.666"W State: NM Well Construction			
SS 2 ft	192	CI-	1	Brown Sand					
4 ft	1762	GRO <10 DRO <10		Caliche With Sandstone					
6 ft	1069		0.9			bentonite			
8 ft	1247		0.6	Caliche					
10 ft	1066		0.6						
12 ft	869	CI- 992 GRO <10 DRO <10	0.5						

Logger: Driller:		Edward Ces		3 SB-11 SB-8		R	EES	the state	
Drilling I Start Dat End Date		Air rotar 8/21/20 8/21/20	13	SB-5SB-1 SB-5SB-1 SB-5SB-1 SB-5SB-1 SB-5SB-9 SB-5SB-1 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3	Project Name: EME L-25			Well ID: SB-9	
Comme	abano	doned box	. All san	theast of the center of the nples were from cuttings. L. Weinheimer GW = 14 ft	Lo	Project Consultant: RECS Location: UL/L sec. 25 T19S R36E Lat: 32°37'47.121"N County: Long: 103°18'51.64"W State: NM			
Depth (feet)	Chlorid field tes		PID	Description		Lithology	Well	Construction	
SS 2 ft	875	CI- 1500 GRO <10 DRO	0.2						
4 ft	789	<10	1	Regolith				bentonite seal	
6 ft	1350	CI- 2040 GRO <10 DRO	1.2						
8 ft	1440	<10 CI- 2160 GRO <10	0.9						
-		DRO <10							

Logger: Driller: Drilling M Start Date End Date Comme	Method: e: e: ents: SB aba	Harriso	ed box. DRAF	oper, Inc. 3 3 d 46 ft All sa	east of the center of the mples were from cuttings. 7: L. Weinhelmer GW = 14 ft	Project Name: Well ID: EME L-25 SB-10 Project Consultant: RECS Location: UL/L sec. 25 T19S R36E Lat: 32°37'46.922"N Long: 103°18'51.187"W County: Let State: NM				
Depth (feet)	Chlori field te		LAB	PID	Description	Litt	nology	Well	Construction	
SS 2 ft	454			1.3	Brown Sand					
4 ft	1084			0.8	Caliche With Sandstone					
4 ft	1302	2		0.6					bentonite	
8 ft	1923	3	CI- 2200 GRO <10 DRO	1.2	Caliche					
10 ft	407	,	<10	1.1						
12 ft	401		CI- 560 GRO <10 DRO <10	1						

Logger: Driller: Drilling M Start Date End Date:	lethod: e:	Edward Ces rrison & Coo Air rotar 8/22/201 8/22/201	per, Inc. y 3 3	SB-11 SB-8 SB-8 SB-1 SB-5 SB-5 SB-5 SB-1 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3 SB-3	Project Name: Well ID: EME L-25 SB-11 Project Consultant: RECS Location: UL/L sec. 25 T19S R36E Lat: 32°37'47.447"N County: Long: 103°18'51.665"W State: NM				
Comme		oned box. DRAF	All sam	rth of the center of the ples were from cuttings. L. Weinheimer GW = 14 ft					
Depth (feet)	Chloride field test	LAB	PID	Description	Lithology	Well Construction			
SS 2 ft	255 2923	Cl- 2720	31.7	BROWN SAND					
4 ft	2195	GRO <10 DRO <10	10.1	TAN SAND					
6 ft	2316		5.3			bentonite seal			
8 ft	1949		13.6	TAN SAND WITH SOME PEA GRAVEL					
10 ft	1654		12.1						
12 ft	1509	CI- 1490 GRO <10 DRO <10	16.7	TAN SAND					

Logger: Driller:	ŀ		vard Ces n & Coop		Abandoned Box		R	ECS	the second
Start Dat End Date	e :	8	Air rotan 3/23/201 3/23/201	3	SB-2 SB-6 SB-12	Pro	oject Name: EME L-29 oject Consulta	Well ID: SB-12	
Comme	aba		DRAF	All san	outh of the center of the nples were from cuttings. L. Weinheimer GW = 14 ft	Location: UL/L sec. 25 T19S R36E Lat: 32°37'46.571"N County: Lea Long: 103°18'51.786"W State: NM			
Depth (feet)	Chlori field te		LAB	PID	Description		Lithology	Well	Construction
SS	118			3.8	BROWN SAND				
2 ft	119			8.6	BROWN SAND				
4 ft	877		CI- 1180 GRO <10 DRO	8.3					
6 ft	686		<10	7.4					seal
8 ft	373			8.1	TAN SAND WITH PEA STONE				
10 ft	485			4.5	TAN SAND WITH PER STONE				
12 ft	372		CI- 352 GRO	7.1	-				
			<10 DRO <10						

Logger: Driller:			ward Ces on & Coo		SB-15 SB-13 SB-13 SB-11		R	ECS	re	
Drilling Method: Air rotary Start Date: 8/23/2013 End Date: 8/23/2013 Comments: SB-13 is located 86 ft rabandoned box. All sar					SB-11 SB-8	Project Name: Well ID: EME L-25 SB-13 Project Consultant: RECS				
	aba		DRAI	All san	orth of the center of the nples were from cuttings. L. Weinhelmer GW = 14 ft	Location: UL/L sec. 25 T19S R36E Lat: 32°37'47.91"N County: Lea Long: 103°18'51.708"W State: NM				
Depth (feet)	Chlor field t		LAB	PID	Description		Lithology	Well	Construction	
SS	77	7		0.2						
2 ft	87	,		1.6	BROWN SAND					
4 ft	76	2	CI- 784 GRO <10 DRO	1.7						
6 ft	45	3	<10	0.1					bentonite seal	
8 ft	50	8		1.1	TAN SAND WITH PEA STONE					
10 ft	47	0		1.2						
12 ft	40	6	CI- 320 GRO <10	0.7						
			DRO <10							

DRAFTED BY TD = 4 ft			SB-12 SB-14 South of the center of the mples were from cuttings. SE-14 ft		RECS					
		3 3 d 68 ft All sa			Project Name:Well ID:EME L-25SB-14Project Consultant: RECSLocation: UL/L sec. 25 T19S R36ELat: 32°37'46.406"NLong: 103°18'51.858"WState: N					
Depth (feet)	Chlori field te	LAB	PID	Description		Lithology	Well	Construction		
SS	85	CI- <16 GRO <10 DRO	4.3	BROWN SAND						
2 ft	89	<10 CI- 48 GRO <10	6.8					bentonite seal		
4 ft	143	DRO <10 CI- <16 GRO	12.9	BROWN SAND WITH SOME ROCK						
		<10 DRO 96.7								

Logger: Driller:	Driller: Harrison & Cooper, Inc.			sB-15 sbandoned	RECS					
Drilling Method:Air rotaryStart Date:8/26/2013End Date:8/26/2013		3	SB-13 SB-13 SB-13 SB-13 SB-13 SB-11 SB-8	Project Name: Well ID: EME L-25 SB-15 Project Consultant: RECS						
Comme		oned box DRA	. All san	t north of the center of the mples were from cuttings. : L. Weinheimer GW = 14 ft	Lo	cation: UL/L t: 32 37'48.05 ng: 103 18'51	sec. 2	25 T19S R36E County: Lea		
Depth Chloride (feet) field tests LAB PID		Description		Lithology	1	Well Construction				
SS 2 ft	141	CI- <16 GRO <10 DRO <10 CI- <16	1.7	BROWN SAND				bentonite seal		
GRO <10 DRO <10 4 ft 112 CI- CI- 6RO <10 CI- 0 5RO <10 CI- 0 5RO <10 CI- 0 5RO <10 0 5RO <10 0 5RO <10 0 5 7 7	TAN SAND WITH SOME ROCK									
					V					



August 28, 2013

Hack Conder Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: EME L-25

Enclosed are the results of analyses for samples received by the laboratory on 08/22/13 13:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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,

Celeg D. Kune

Celey D. Keene Lab Director/Quality Manager



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

Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 2 @ SURFACE (H302017-01)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1920	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/26/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	33.6	10.0	08/26/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	88.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	91.1	% 63.6-15	4						

Sample ID: SB 2 @ 4' (H302017-02)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1440	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	93.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	97.0	% 63.6-15	4						

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 2 @ 10' (H302017-03)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	08/26/2013	ND	416	104	400	0,00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	93.7	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	98.5	% 63.6-15	4						

Sample ID: SB 3 @ 4' (H302017-04)

Chloride, SM4500Cl-B	mg/kg		Analyze	Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1250	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	89.8	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	93.9	% 63.6-15	4						

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 3 @ 8' (H302017-05)

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	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	89.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	94.8	% 63.6-15	4						

Sample ID: SB 4 @ 2' (H302017-06)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2480	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	94.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	99.6	% 63.6-15	4						

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Celez D. Kune

Celey D. Keene, Lab Director/Quality Manager



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Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 4 @ 12' (H302017-07)

Chloride, SM4500Cl-B	mg,	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	94.8	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	<i>99.2</i>	% 63.6-15	4						

Sample ID: SB 5 @ SURFACE (H302017-08)

Chloride, SM4500CI-B Analyte	mg/kg		Analyzed By: AP						
	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	94.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	97.3	% 63.6-15	4						

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Celey D. Keene, Lab Director/Quality Manager



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Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 5 @ 2' (H302017-09)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg	/kg	Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	15.6	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	87.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	91.2	% 63.6-15	4						

Sample ID: SB 5 @ 4' (H302017-10)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg,	mg/kg		Analyzed By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	191	95.7	200	3.91	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	186	93.0	200	5.56	
Surrogate: 1-Chlorooctane	91.9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	95.9	% 63.6-15	4						

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Celeg D. Kune

Celey D. Keene, Lab Director/Quality Manager



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Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 6 @ 2' (H302017-11)

Chloride, SM4500CI-B	mg,	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1800	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	97.9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	102	% 63.6-15	4						

Sample ID: SB 6 @ 10' (H302017-12)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	08/26/2013	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	89.3	% 65.2-14	0	M					
Surrogate: 1-Chlorooctadecane	96.3	63.6-15	4						

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Celez D. Kune

Celey D. Keene, Lab Director/Quality Manager



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Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 7 @ SURFACE (H302017-13)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP RPD Qualifier Reporting Limit BS True Value QC Analyte Analyzed Method Blank % Recovery Result Chloride 400 400 0.00 1060 16.0 08/27/2013 ND 100 TPH 8015M Analyzed By: AR/ mg/kg RPD Qualifier Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC GRO C6-C10 <10.0 10.0 08/27/2013 ND 188 93.9 200 5.96 DRO >C10-C28 08/27/2013 89.2 200 8.76 89.1 10.0 ND 178 Surrogate: 1-Chlorooctane 95.6% 65.2-140 Surrogate: 1-Chlorooctadecane 105 % 63.6-154

Sample ID: SB 7 @ 2' (H302017-14)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	816	16.0	08/27/2013	ND	400	100	400	0.00	
TPH 8015M	mg	g/kg A		Analyzed By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	102	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	105	63.6-15	4						

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Celeg Di Keine

Celey D. Keene, Lab Director/Quality Manager



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Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 7 @ 8' (H302017-15)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	08/27/2013	ND	400	100	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	94.9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	<i>98.4</i>	% 63.6-15	4						

Sample ID: SB 8 @ 2' (H302017-16)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2480	16.0	08/27/2013	ND	400	100	400	0.00	
ТРН 8015М	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	98.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	101	% 63.6-15	4						

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 8 @ 12' (H302017-17)

Chloride, SM4500CI-B	mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	992	16.0	08/27/2013	ND	400	100	400	0.00	
ТРН 8015М	mg	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	102	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	107	63.6-15	4						

Sample ID: SB 9 @ 2' (H302017-18)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1500	16.0	08/27/2013	ND	400	100	400	0.00	
ТРН 8015М	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	103	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	101	% 63.6-15	4						

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Celeg Di Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 9 @ 6' (H302017-19)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d 8y: AP		-			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2040	16.0	08/27/2013	ND	400	100	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	91.6	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	96.5	% 63.6-15	4						

Sample ID: SB 9 @ 8' (H302017-20)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2160	16.0	08/27/2013	ND	400	100	400	0.00	
TPH 8015M	mg/	'kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	97.6	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	102 9	63.6-15	4						

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Celeg D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/22/2013	Sampling Date:	08/21/2013
Reported:	08/28/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	19S / 36E		

Sample ID: SB 10 @ 8' (H302017-21)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2200	16.0	08/27/2013	ND	400	100	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	95.5	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	99.8	% 63.6-15	4						

Sample ID: SB 10 @ 12' (H302017-22)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	560	16.0	08/27/2013	ND	400	100	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/27/2013	ND	188	93.9	200	5.96	
DRO >C10-C28	<10.0	10.0	08/27/2013	ND	178	89.2	200	8.76	
Surrogate: 1-Chlorooctane	98.4	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	101	% 63.6-15	4						

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Celey D. Kune

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 SM4500CI-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

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Celez D. Kune

Celey D. Keene, Lab Director/Quality Manager

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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RDINAL 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				3004	BI	LL TO	間的特別會保					ANA	YSIS	S RE	QUE	ST			
Project Manage	r: Hack Conder				P.0), #:														
Address:			_		Company:								S	• • • •						
City: Hobbs	State: NM	Zip: 8	8240		Attr	n:							Cations/Anions							
Phone #:	Fax #:				Add	iress:							An							
Project #:	Project Ow	ner:			City	<i>r</i> :		, <u> </u>	ഗ	Σ		I	s/							
Project Name:	•				Sta	te:	Zip:		q e	15	\times	ТРН	Ю							
Project Locatio	" EME L-25 1	95,	36E,	,	Pho	one #:			Chlorides	801	BTEX	S	ati	TDS						
Sampler Name:					Fax				Ĕ		В	exas		-1						
FOR LAB USE ONLY]	MATRIX		PRESERV.	SAMPL	NG	U U	Hd		Te	fe							
Lab I.D.	Sample I.D.	(G)RAB OR (C)OM # CONTAINERS	GROUNDWATER WASTEWATER	Soll. Soll.	OTHER :	ACID/BASE: ICE / COOL OTHER :	DATE	TIME					Complete	-						
01	SB2@ surface	GI					8-21-13		V											
J	SB20 4'	_G'				V	11	8:10	1	\angle										
ග	SB2 @ 10'	<u> </u>					11	830		\angle		<u>.</u>								
04	SB3@ 4'	-G'		K		/	4	8:45	\checkmark	4								\vdash		
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00	SB4@ 2'	<u> </u>			┼╌┠	-4-	11	915		1										
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08	5858 Surface	<u>G</u> 1 G 1			┼┼	_ /,	()	10:00	4	4										
29	SB5@ 2'				┼╌┠	-1/-	1	10:30	4	-								·		
0	SB50 4'	61					<u>d</u>	11:00		9						·				

PLEASE NOTE: Llability and Damages, Cardinal's Eablity and client's exclusive remedy for any claim arising whether based in contract or fort, shall be limited to the amount paid by the elient for the analyses. All claims including those for negligence and any other cause whethervore in the be deemed weived 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 incidential or consequential damages, including without limitation, business interruptions, loss of use, or loss of profils incurved by client, the subsidiaries a service. In no event shall Cardinal be liable for incidential or consequencing and the subsidiaries interruptions, loss of use, or loss of profils incurved by client, the subsidiaries a statistes or successors ensities out of or related to the performance of services hereunder by Cardinal, regardless of whether sudgification is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: Recetive	ked BY:	Phone Result: I Yes Ø Add'l Phone #: Fax Result: I Yes Ø Add'l Fax #:
Relinguished By:	Time 1:55	Vyhlen	REMARKS:
Relinquished By:	Date: Receive	ved By:	email results: zconder@rice-ecs.com
-2"-	Time:		Knorman@rice-ecs.com; lpena@riceswd.com
Delivered By: (Circle One)	<u> </u>	Sample-Condition CHECKED BY:	Kjones@riceswd.com; Bbaker@rice-ecs.com;
		Cool intact (initials)	hconder@rice-ecs.com; Lweinheimer@rice-ecs.com
Sampler - UPS - Bus - Other:	- 5.2 4		

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

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Company Name							BILL TO ANALYSIS REQUEST												
Project Manage	- Hack Conder	Hack Conder					P.O. #:												
Address:							Company:								S				
City: Hobbs	State: N	State: NM Zip: 88240					Attn:								o				
Phone #:	Fax #:						Addre	88:							- Ni		, i		
Project #:	Project O	wner:					City:				6	Σ		I	s/t				
Project Name:							State:		Zip:	:	ĕ	15	BTEX	Ē	ü				
Project Location	: EME 6-25 195.	36E,	,				Phone	e #:			Chlorides	8015		L ^S	Cations/Anions	TDS			
Sampler Name:	Kyle Norman						Fax #	:			음			Texas TPH	Ö	F			1.1
FOR LAB USE ONLY			Π		MATR	X	PR	ESERV	SAMPL	NG	Ū	TPH	—	ିତ	e				
Lab I.D. H302017-	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER WASTEWATER	SOIL	SLUDGE	OTHER : ACID/BASE:	ICE / COOL OTHER :	DATE	TIME		⊢		r	Complete				
- 11	SB6 e 2'	G			/			1	8-21-13	11:30	1	1							
12	SB6 @ 10'	G	1		0				11	11:45	1								
13	SBT @ Surface	6	1						11	12:45	1	1							
14	SB7@ 2'	G	\square	_	1			/	11	1:00	1	1					 		
12	SBT @ 8'	S	1		1			V,	11	1:15	V	K						 	
6	SB8 Q 2'	<u> </u>	14		-1-			 4 -	11	1,30	K	/			· · · · ·		 		
17	SB8@ 12'	(11		<u>/</u>			V/-	1/	2,00	1	~						 	
13	5B9@ 2'	<u> </u>	14		1			1		2:30	V						 · .		
	SB 90 6' SB90 8'	G	1/1		1-			14	11	300	Ľ						 	 	
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		Kjones@riceswd.com; jkamplain@rice-ecs.com
Delivered By: (Circle One)	Sample Condition CHECKED BY:	Nones@nceswu.com, jkampian@nce-ecs.com
	Cool Intact (Initials)	hconder@rice-ecs.com; Lweinheimer@rice-ecs.com
Sampler - UPS - Bus - Other:	-15-7 Gres Gres Con	reconder white-ecs.com, Lweimenner white-ecs.com
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Sampler - UPS - Bus - Other:

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Company Name	Company Name: Rice Project Manager: Hack Conder							BIL TO ANALYSIS REQUEST																			
Project Manage	or: Hack Cand	ler								P.0	; #:																
Address:										Cor	npa	iny:								S					.	-	
City: Hobbs		State: NM	Zip): 88	324	0			_	Attı	n:							1		р							
Phone #:		Fax #:							_	Ado	ires	18 :								5							
Project #:		Project Owner	:						_	City:					<i>"</i>	≥		II	1s							1	
Project Name:	Project Name:					Stat	te:			Zip:		ğ	5	×	E	6			1								
Project Locatio	Project Location: EME 125 795, 36E						Pho	ne	#:				Chlorides	TPH 8015	BTEX	Texas TPH	ati	TDS									
Sampler Name:	Kule Norm	an								Fax						물	Τ	国	N X	Ű							
FOR LAB USE ONLY				Γ		N	ATI	RIX			PRE	SE	RV.	SAMPL	NG	^O	ā		l e	fe							
Lab I.D.	Sample I.	D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	WASTEWATER	F		SLUDGE	OTHER :	ID/BASE:	ICE / COOL	OTHER :							Complete Cations/Anions							
H302017-			9		Б	Š	8	히	5	5	R			DATE	TIME	 			ļ	L	ļ		· .		 		<u> </u>
21	5B10 @ 8 SB10 @ 12		9 S	1	-		/	-+				4		8-21-B	3:30	4	10	 		·							
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Yes

No

Page 16 of 16



September 03, 2013

Hack Conder Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: EME L-25

Enclosed are the results of analyses for samples received by the laboratory on 08/23/13 17:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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 accredited 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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	08/23/2013	Sampling Date:	08/22/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	19S / 36E		

Sample ID: SB 11 @ 2' (H302044-01)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2720	16.0	08/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/30/2013	ND	209	105	200	2.74	
DRO >C10-C28	<10.0	10.0	08/30/2013	ND	209	104	200	4.45	
Surrogate: 1-Chlorooctane	94.6	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	<i>99.7</i>	% 63.6-15	4						

Sample ID: SB 11 @ 12' (H302044-02)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1490	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M	mg,	/kg	Analyze	d By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/30/2013	ND	210	105	200	4.91		
DRO >C10-C28	<10.0	10.0	08/30/2013	ND	205	102	200	5.30		
Surrogate: 1-Chlorooctane	94.9	% 65.2-14	0							
Surrogate: 1-Chlorooctadecane	97.9	% 63.6-15	4							

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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 SM4500CI-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

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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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: ROC		ANALYSIS REQUEST								
Project Manager: Kyle Norman	P.O. #:									
Address:	Company:									
City: Hobbs State: NM Zip: 88240	Attn:									
Phone #: Fax #:	Address:									
Project #: Project Owner:	City:									
Project Name:	State: Zip:	· 희 윤 × 년 8 %								
Project Location: EME L-25	Phone #:	Chlorides PH 8015 N BTEX Texas TPH Texas TPH TDS								
Sampler Name: Kyle Schnaidt	Fax #:									
FOR LABUSE ONLY Sample I.D. MATRIX Lab I.D. Sample I.D. $UO(0)$ to $UO(0$	PRESERV. SAMPLING	K Chlorides Chlorides Chlorides F FPH 8015 M BTEX BTEX F Complete Cations/Anions F Complete Cations/Anions F TDS F TDS F TDS								
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in or analyses. All claims including those for negligence and any other cause whatscover shall be deemed waved unless made in with service. In no event shall Cardinal be liable for incidental or consequents damages, including without limitation, business interrup aritidates or excessions and any other cause whatscover shall be deemed waved unless made in with aritidates or excessions and any other cause whatscover shall be deemed waved unless made in with aritidates or excessions and any other cause whatscover shall be deemed waved unless interrup aritidates or excessions and any other cause whatscover shall be deemed waved unless interrup aritidates or excessions and any other cause whatscover shall be deemed waved unless interrup aritidates or excessions and any other cause whatscover shall be deemed waved unless interrup Relinquished By: Relinquished By: Date: Relinquished By:	g and received by Candinal within 30 days after completion of t one, loss of use, or loss of profile incurred by cilent, its subsidi laim is based upon any of the above stated reasons or otherwise Phone Re Fax Resul REMARKS	he epplicable aries, ss. isult: □ Yes ☑ No Add' Phone #: it: □ Yes ☑ No Add' Fax #:								
Time:	Knorn	nan@rice-ecs.com s@riceswd.com; jkamplain@rice-ecs.com								
Delivered By: (Circle One) Sample Co Cool Intr Sampler - UPS - Bus - Other: IVS No D		conder@rice-ecs.com; Lweinheimer@rice-ecs.com								

51

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



September 03, 2013

KATIE JONES Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: EME L-25

Enclosed are the results of analyses for samples received by the laboratory on 08/23/13 16:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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 accredited 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,

Celez D. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	19S / 36E		

Sample ID: SB #12 4' (H302040-01)

Chloride, SM4500Cl-B	mg/kg		Analyze	Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1180	16.0	08/29/2013	ND	432	108	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/29/2013	ND	179	89.5	200	2.67	
DRO >C10-C28	<10.0	10.0	08/29/2013	ND	193	96.4	200	3.95	
Surrogate: 1-Chlorooctane	105	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	108	% 63.6-15	4						

Sample ID: SB #12 12' (H302040-02)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	352	16.0	08/29/2013	ND	432	108	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/29/2013	ND	179	89.5	200	2.67	
DRO >C10-C28	<10.0	10.0	08/29/2013	ND	193	96.4	200	3.95	
Surrogate: 1-Chlorooctane	104	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	108	% 63.6-15	4						

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*=Accredited Analyte

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	19S / 36E		

Sample ID: SB #13 4' (H302040-03)

Chloride, SM4500CI-B	mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	784	16.0	08/29/2013	ND	432	108	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/29/2013	ND	179	89.5	200	2.67	
DRO >C10-C28	<10.0	10.0	08/29/2013	ND	193	96.4	200	3.95	
Surrogate: 1-Chlorooctane	113 9	65.2-14	0						
Surrogate: 1-Chlorooctadecane	117 9	63.6-15	4						

Sample ID: SB #13 12' (H302040-04)

Chloride, SM4500Cl-B	mg/kg		Analyze	Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	08/29/2013	ND	432	108	400	0.00	
TPH 8015M	mg/	'kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/29/2013	ND	209	105	200	2.74	
DRO >C10-C28	<10.0	10.0	08/29/2013	ND	209	104	200	4.45	
Surrogate: 1-Chlorooctane	93.5	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	<i>99.3</i>	% 63.6-15	4						

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	19S / 36E		

Sample ID: SB #14 SURFACE (H302040-05)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/29/2013	ND	432	108	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	08/29/2013	ND	209	105	200	2.74	
DRO >C10-C28	<50.0	50.0	08/29/2013	ND	209	104	200	4.45	
Surrogate: 1-Chlorooctane	91.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	107	% 63.6-15	4						

Sample ID: SB #14 2' (H302040-06)

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	08/29/2013	ND	432	108	400	0.00	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/29/2013	ND	209	105	200	2.74	
DRO >C10-C28	<10.0	10.0	08/29/2013	ND	209	104	200	4.45	
Surrogate: 1-Chlorooctane	98.5	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	105	% 63.6-15	4						

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	19S / 36E		

Sample ID: SB #14 4' (H302040-07)

mg/kg		Analyze	Analyzed By: DW					
Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<16.0	16.0	08/29/2013	ND	432	108	400	0.00	
M mg/kg		Analyzed By: AR/						
Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<50.0	50.0	08/29/2013	ND	209	105	200	2.74	
96.7	50.0	08/29/2013	ND	209	104	200	4.45	
97.2	% 65.2-14	0						
120	% 63.6-15	4						
	Result <16.0 mg, Result <50.0 96.7 97.2	Result Reporting Limit <16.0	Result Reporting Limit Analyzed <16.0	Result Reporting Limit Analyzed Method Blank <16.0	Result Reporting Limit Analyzed Method Blank BS <16.0	Result Reporting Limit Analyzed Method Blank BS % Recovery <16.0	Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC <16.0	Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD <16.0

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Celez Kune

Celey D. Keene, Lab Director/Quality Manager

Page 5 of 7



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 SM4500CI-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

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager

Page 6 of 7

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 7 of

RDINAL 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								ANALYSIS REQUEST																		
Project Manage	r: Katie Jone	s							P.C). # :				·												
Address: 112	W. Taylor								Cor	mpai	ny:	·							S	н. Т						
City: Hobbs		S	State: NM	Zip	: 88;	240			Att	<u>n:</u>						-			0 U							
Phone #:		Fa	ax #:						Ad	dres	s:		•						Complete Cations/Anions							
Project #:		Pr	roject Owner	;					City:			6	Σ		т	s//										
Project Name:								·	Sta	ite:		Zi	p:		Chlorides	12	×	Texas TPH	ü							
Project Location: EME L-25 FI9.5/R-36-E					Pho	one #	#:		· · · ·		E E	801	BTEX	່ວ	atic	SC		Ι.								
Sampler Name:	Sampler Name: Edward Cesareo					Fax	-			•			Ť	ВТ	xa:	Ö	TD									
FOR LAB USE ONLY				<u>.</u>			MATE	RIX		PRE	SERV	1	SAMPLI	NG	Ū	TPH	_	ିତ	te							
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Delivered By: (Circle One) Sample Condit					tion	C		KED	BY:	kjones	SOUL SOUL	cesv	va.co	om; i	_per	na@	rices	wd.	com;	, ,						
Sampler - UPS - Bus - Other: U.7 Cool Intact						s		/Ħ	閉	<u>ي</u>	knorman@rice-ecs.com; ecesareo@rice-ecs.com															

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-5476



September 03, 2013

KATIE JONES Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: EME SYSTEM/ L-25

Enclosed are the results of analyses for samples received by the laboratory on 08/27/13 10:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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 accredited 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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	08/27/2013	Sampling Date:	08/26/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME SYSTEM/ L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #15 SURFACE (H302062-01)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result Reporting Limit		Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475	
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588	
Surrogate: 1-Chlorooctane	107	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	110	63.6-15	4						

Sample ID: SB #15 2' (H302062-02)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0 16.0		08/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475	
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588	
Surrogate: 1-Chlorooctane	104	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	108	% 63.6-15	4						

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Celey & Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	08/27/2013	Sampling Date:	08/26/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	EME SYSTEM/ L-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #15 4' (H302062-03)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0 16.0		08/30/2013	ND	400	100	400	3.92	
TPH 8015M	mg,	/kg	Analyze	d By: AR/					
Analyte	Result Reporting Limit		Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475	
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588	
Surrogate: 1-Chlorooctane	94,9	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	97.2	% 63.6-15	4						

Cardinal Laboratories

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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 SM4500CI-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

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim ansing, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey Di Keine

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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RDINAL 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	NOL Operating									ANALYSIS REQUEST											
Project Manager					P.O.	#:															
Address: 112					Com	pany:			Т				ည								
City: Hobbs	State	NM Zip:	8824	40	Attn:		•.						ē	1		1		ľ			
Phone #:	Fax #:				Address:								Cations/Anions								
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Project Name:	roject Name:						Zip:		ë	15	\times	TPH	5	0				- 1			
Project Location: EME SYSTEM / L-25 T-19-5/2-36-1					Phone #:				Chlorides	8015	BTEX	່ທ	ati	TDS						11	
Sampler Name:	Edward Cesareo				Fax				Ĕ	I	Ы	Texas								· .	
FOR LAB USE ONLY				MATRIX	PRESERV. SAMPLING				0	Ηd		le	e e								
19 - A.		(C)OMP.	S B									·	픵								
Lab I.D.	Sample I.D.	Ю	# CONTAINERS	GROUNDWATER WASTEWATER SOIL OIL SLUDGE	OTHER :	AULURASE: ICE / COOL OTHER :							Complete	-							
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Phone Result:

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Relinguished By: Date Received By: 26 Relinquished By: Time: Delivered By: (Circle One) Sample Condition CHECKED BY: Cool Intact Thes Ves Sampler - UPS - Bus - Other: No No

 Yes
 Image: No
 Add'l Phone #:

 Yes
 Image: No
 Add'l Fax #:
 Fax Result: **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