	To a	-
District IV 1220 S. St. Francis Dr., Sauta Fe, NM 87505		
1000 Rio Brazos Road, Aztec, NM 87410		
811 S. First St., Artesia, NM 88210 District III		
District II		
District I 1625 N. French Dr., Hobbs, NM 88240		

## State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

HOBBS	OCD
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NISAD1417751726.

OCT 1 0 2013 Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

1220 S. St. Frar	icis Dr., Sauta	a Fe, NM 8750.	5	Sa	inta F	e, NM 875	505	,					
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						<b>OPERA</b> '	ГOR		🗍 Initia	al Report	$\boxtimes$	Final Report	
		pache Corp		······		Contact Larry Bruce Baker							
		9, Eunice NI				Telephone No. (432) 631-6982							
Facility Na	me Lockh	art B13 A S	WD (nea	rest well #1)		Facility Typ	e SWD					]	
Surface Ow	ner Willi	am O Stephe	ins	Mineral C	)wner	BLM/State			API No	. 30-025-0	6555		
				LOCA	TIO	ON OF RELEASE							
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	course recte		Yes 🛛	No			nune impacting t		course.				
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Describe Cau	se of Proble	m and Rame	fial Action	n Taken.* 🗆 The ce	ramic nt	unger broka on	the teinlox numn du	a to franzi	na tempera	turac All flu	id was s	alenced incide	
the containment	it area. Fhiid	was recovered	by vacuum	truck. Initial samp	les have	been taken to d	etermine a remediat	ion plan.	The facility	/ does not hav	e a liner		
release and fiel elevated levels to a NMOCD a and hydrocarbo mg/kg at the br bgs and field te installed near th and hydrocarbo 48 ft bgs. SB-2 encountered at August 31 <sup>st</sup> , 20 total depth of 5 then the entire hydro was imported at I hereby certii regulations al public health should their o or the enviror federal, state,	d tested for c of chlorides t pproved facil pproved facil proved facil proved facil proved facil proved facil set of chlor he vertical to particulate was installed the depth of s 13, the bore v 9.4 ft. Apacl battery area n v to provide a <u>o the site and</u> fy that the in t operators a or the envir- perations ha ment. In ac <u>or local law</u>	hlorides and hy and low levels of lity. On June 5 <sup>5</sup> sentative sample gur. To determine the d thative samples d northwest of the 56 ft bgs. Red the vas checked with the and RECS with the the and RECS with the and the and RECS with the and the and the and the and the and the and the and the and the and the and the and the and the and the and the and the and the and the and t	drocarbons of hydrocar <sup>h</sup> , 2013, the es were tak- kine the verr carbons. A lepth of con- from the bd the battery to bed clay ind th a Solinis et with NM exfilled with with A Solinis et with NM exfilled with were above > report an acceplanc dequately CD accep lations.	ten. * RECS persons. The samples were bons. Based on this initial sampling po- en to a commercial tical extent of the co- t 13 ft bgs, the chlo tramination. The bo- ore were taken to a u- to determine the dep ficates the bottom o- t Water Level Meter IOCD-District 1 on a clean caliche. Beg- clay liner will provi- ttery back to its for- its true and comp- d/or file certain re- e of a C-141 repo- investigate and r- tance of a C-141 repo-	then tak data, the ints were laborato ontamina ride levee for was i commerce oth to gro f the aque r for wat Septemb ginning of de a bar mer depi lete to t clease m rt by the	ten to a commer- e site was hand e augured for de ry for analysis. ation, a vertical els did not decre- nstalled to a dep- cial laboratory f poundwater at the ifer, so the bore er accumulation per 6 <sup>th</sup> , 2013. N on October 3 <sup>rd</sup> , 2 rier that will inh th. he best of my otifications an e NMOCD m e contaminati	reial laboratory for c excavated to a depti ppth through the exc All samples points, was installed on Au ase to below 1,000 in the of 54 ft bgs and s or analysis, which si e site. SB-2 was add was left open for o a within the borehold MOCD verbally sta 2013, clay was impo- libit the downward in knowledge and un ad perform correct arked as "Final Re- on that pose a three	confirmate h of 6 incl avated are except fo gust 15 <sup>th</sup> , mg/kg. O samples w howed the vanced to vanced to the that at orted to the migration inderstand tive actice eport" do eat to gree	bry analysis as to 2.5 ft a. The san r Pt. 4, shou 2013. Sam n August 2. vere taken e c chloride le a depth of 6 urs to allow eter indicate Pt. 4 a 1 fc e site and th of chloride: d that purs purs for relevent to so the site of the si	Laboratory A total of 7: uples were fie wed chlorider i ples were take very 3 fl to fie very 3 fl to fie very 3 fl to fie vers dropping 50 ft bgs and r groundwater d no water fie ot clay layer 1 he area around is to groundwa unant to NMI eases which eve the oper ; surface wa	analysis 2 yards y ld tested readings en to a d il bore ( il bore ( il bore ( il bore ( il bore ( il bore ( il bore ( to accur da accur had to bo l Pt. 4 wa tter. Cle OCD ru may en rator of ter, hur	showed was exported for chlorides below 1,000 epth of 13 ft SB-1) was or chlorides 250 mg/kg at clay was mulate. On wlated to a e installed and as backfilled an caliche les and danger liability man health	
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EXPLORING WHAT'S POSSIBLE

HOBBS OCD OCT 1 0 2013 RECEIVED

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# **APACHE CORPORATION**

P.O.Box 1849 Eunice, NM 88231 Phone 575.394.3159

# Lockhart B13 A SWD Termination Request

API 30-025-06555

Release Date: December 22<sup>nd</sup>, 2012

Unit Letter K, Section 13, Township 21S, Range 37E

# Rice Environmental Consulting & Safety

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

# October 8<sup>th</sup>, 2013

Geoffrey Leking New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau – District 1 1625 N. French Dr. Hobbs, NM 88240-9273

## RE: Termination Request Apache Corporation Lockhart B13 A SWD: UL/K sec. 13 T21S R37E API No. 30-025-06555

Mr. Leking:

Apache Corporation (Apache) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site.

### **Background and Previous Work**

The site is located approximately 3 miles northeast of Eunice, New Mexico at UL/K sec. 13 T21S R37E. NM OSE and BLM records indicate that groundwater will likely be encountered at a depth of approximately 53 +/- feet. However, soil bore installation at the site showed that there is no groundwater beneath the site.

On December 22<sup>nd</sup>, 2012, the ceramic plunger on the triplex pump broke due to freezing temperatures. The pump released a total of 18 barrels of produced water all of which was released inside the containment area. 15 barrels of produced water were recovered by vacuum truck. NMOCD and BLM were notified of the release on December 27<sup>th</sup>, 2012 and a C-141 was sent to both agencies on the same day (Appendix A).

RECS personnel were on site beginning on January 3<sup>rd</sup>, 2013. Initial samples were taken from the surface of the release and field tested for chlorides and hydrocarbons (Figure 1). The samples were then taken to a commercial laboratory for confirmatory analysis (Appendix B). Laboratory analysis showed elevated levels of chlorides and low levels of hydrocarbons. Based on this data, the site was hand excavated to a depth of 6 inches to 2.5 ft (Figure 2). A total of 72 yards was exported to a NMOCD approved facility.

On June 5<sup>th</sup>, 2013, the initial sampling points were augured for depth through the excavated area (Figure 2). The samples were field tested for chlorides and hydrocarbons and representative samples were taken to a commercial laboratory for analysis (Appendix C). All samples points, except for Pt. 4, showed chloride readings below 1,000 mg/kg at the base of each augur. To determine the vertical extent of the contamination, a vertical was installed on August 15<sup>th</sup>, 2013 (Figure 3). Samples were taken to a depth of 13 ft bgs

and field tested for chlorides and hydrocarbons. At 13 ft bgs, the chloride levels did not decrease to below 1,000 mg/kg.

On August 23<sup>rd</sup>, 2013, a soil bore (SB-1) was installed near the vertical to determine the depth of contamination (Figure 3). The bore was installed to a depth of 54 ft bgs and samples were taken every 3 ft to field test for chlorides and hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for analysis, which showed the chloride levels dropping below 250 mg/kg at 48 ft bgs. SB-2 was installed northwest of the battery to determine the depth to groundwater at the site. SB-2 was advanced to a depth of 60 ft bgs and red bed clay was encountered at the depth of 56 ft bgs. Red bed clay indicates the bottom of the aquifer, so the bore was left open for over 48 hours to allow groundwater to accumulate. On August 31<sup>st</sup>, 2013, the bore was checked with a Solinist Water Level Meter for water accumulation within the borehole. The meter indicated no water had accumulated to a total depth of 59.4 ft (Appendix D).

Apache and RECS met with NMOCD-District 1 on September 6<sup>th</sup>, 2013. NMOCD verbally stated that at Pt. 4 a 1 foot clay layer had to be installed and then the entire battery area needed to be backfilled with clean caliche.

Beginning on October 3<sup>rd</sup>, 2013, clay was imported to the site and the area around Pt. 4 was backfilled with 1 ft of clay to provide an infiltration barrier. The clay liner will provide a barrier that will inhibit the downward migration of chlorides to groundwater. Clean caliche was imported to the site and was used to backfill the battery back to its former depth.

Photo documentation of these activities can be found in Appendix E.

Six inches to 2.5 ft of impacted soil was removed from the site. As approved by NMOCD, the area around Pt. 4 was backfilled with clean, imported clay to provide an infiltration barrier and the site was backfilled with clean, imported caliche to its former depth. Therefore, Apache submits the final C-141 and respectfully requests closure of the regulatory file for the site (Appendix F).

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,

JC.W.

Lara Weinheimer Project Scientist RECS (575) 441-0431

### Attachments:

Figure 1 – Initial Sampling Data

Figure 2 – Augur Sampling Data

Figure 3 – Vertical and Soil Bore Sampling Data

Appendix A – Initial C-141

Appendix B – Initial Sampling Lab

Appendix C – Augur Sampling Lab

Appendix D – Soil Bore Installation Documentation

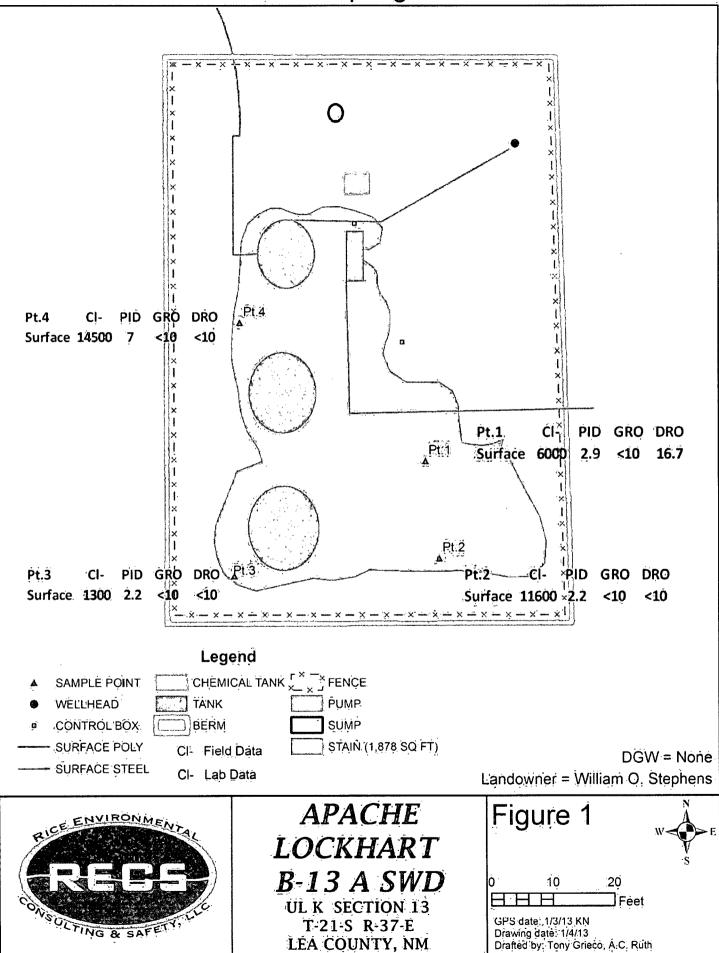
Appendix E – Photo Documentation

Appendix F – Final C-141

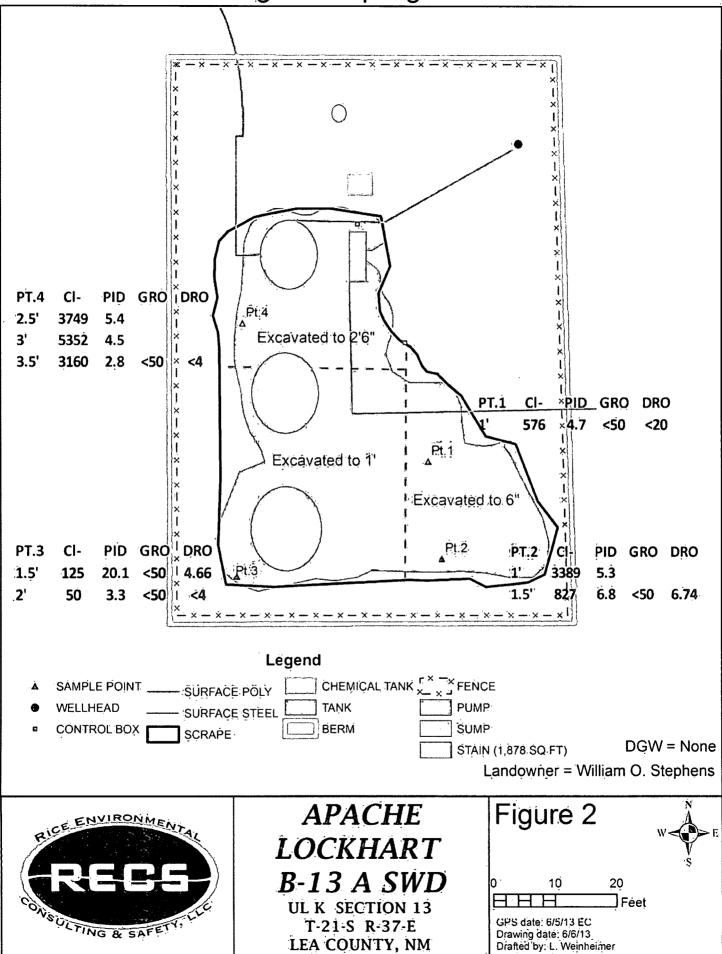
RICE Environmental Consulting and Safety (RECS) P.O. Box 2948, Hobbs, NM 88241 Phone 575.393.2967

Figures

# Initial Sampling Data



# Augur Sampling Data



# Vertical and Soil Bore Sampling Data

<b></b>		· · · · · · · · · · · · · · · · · · ·						
	Vertical					SB-1		
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1'	1360	1.8		3'	831	12.3		
1.5'	1268	0.2		6'	301	6.1		
2'	581	0 Ó		9'	433	5.8		
2.5'	<b>52</b> 8			12'	699	.5		
3'	651	Ó		15'	375	5.6		
3.5'	<b>515</b>	.0		18'	1200	6.4	<10	<10
4	738	0		21'	1073.	6.1		
4.5'	762	Ō	SB-2	24' 27'	810	6.1 7 7		
5'	795	Ō	\$B-2 \$	<u>2</u> 7 30'	545 <sup>-</sup> 888	7.2 5.6		
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# Appendix A Initial C-141

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

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

### State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe. NM 87505 Form C-141 Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

		<u> </u>	Rele	ease Notific	catio	n and Co	orrective A	ction					است. ا
						<b>OPERA</b> '	ГOR		Initia	al Report		Final Rep	ort
Name of Co							talie Gladden						
Address PC							No. 575-390-41	86					
Facility Nar	ne Lockha	art B13 A S	WD (near	rest well #1)		Facility Typ	be SWD			•			
Surface Ow	ner BLM	,		Mineral C	Owner	BLM/State			API No	. 30-025-0	6555		
				LOCA	ATIO	N OF RE	LEASE						
Unit Letter	Section	Township	Range	Feet from the	North	NSouth Line	Feet from the	East/V	Vest Line	County			
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			La	titude		Longitue	le						
				NAT	URF	OF REL	EASE						
Type of Rele	ase Produc	ed water					Release 18		Volume I	Recovered 1	.5		
Source of Re	lease Cerar	mic plunger		<u>.</u>		Date and I 12/22/201	Hour of Occurrence	e e	Date and Same	Hour of Dis	covery		
Was Immedi	ate Notice (					If YES, To	Whom?	i	Same	•			
			Yes 🗵	No 🗌 Not R	equired		.eking/James Am						
By Whom?			•				Hour 12/27/12 61						
Was a Water	course Read		Yes 🗵	No		II YES, V	olume Impacting t	ine wate	ercourse.				
If a Watercou	irse was Im	pacted, Descr	ibe Fully.	*									
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federal, state				otance of a C-141	report	does not reliev	e the operator of	respons	ibility for c	compliance v	vith an	y other	
/		<u> </u>		<b>`</b>			OIL CON	SERV	'ATION	DIVISIO	<u>)N</u>		
Signature:	h	April	(-1(	bode									
1	p~					Approved by	Environmental S	pecialis	t:			• •.	
Printed Name	: Natalie (	Gladden						·					
Title: Sr. En	vironmenta	l Tech	,    .			Approval Da	te:		Expiration	Date:	•	·	
E-mail Addr	ess: natalie.	gladden@apa	checorp.co	om		Conditions o	f Approval:			A	<b></b>		
							11			Attached		•	
Date: 12/27 * Attach Addi		Phone ets If Necess	: 575-390 arv	-4186			····•		<u></u>				

# Appendix B Initial Sampling Lab

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



January 07, 2013

NATALIE GLADDEN

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: LOCKHART B-13 A SWD

Enclosed are the results of analyses for samples received by the laboratory on 01/03/13 11:21.

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 <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> 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



#### Analytical Results For:

APACHE - EUNICE NATALIE GLADDEN P. O. BOX 1849 EUNICE NM, 88231 Fax To: 394-2425

Received:	01/03/2013	Sampling Date:	01/03/2013
Reported:	01/07/2013	Sampling Type:	Soil
Project Name:	LOCKHART B-13 A SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

#### Sample ID: PT. 1 @ SURFACE (H300014-01)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6000	16.0	01/04/2013	ND	432	108	400	3.77	
FPH 8015M	mg	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/03/2013	ND	167	83.3	200	4.82	
DRO >C10-C28	16.7	10.0	01/03/2013	ND	176	87.9	200	6.65	
Surrogate: 1-Chlorooctane	88.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	106	% 63.6-15	4						

#### Sample ID: PT. 2 @ SURFACE (H300014-02)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11600	16.0	01/04/2013	ND	432	108	400	3.77	
TPH 8015M	mg,	/kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/03/2013	ND	167	83.3	200	4.82	
DRO >C10-C28	<10.0	10.0	01/03/2013	ND	176	87.9	200	6.65	
Surrogate: 1-Chlorooctane	88.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	101	% 63.6-15	4						

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within (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 cliain is based upon any of the above stated reasons or otherwise. Results relate only to the sample-sidentified above. This exposites for exposited expresses.

Celeg D. Kune

Celey D. Keene, Lab Director/Quality Manager



#### Analytical Results For:

APACHE - EUNICE NATALIE GLADDEN P. O. BOX 1849 EUNICE NM, 88231 Fax To: 394-2425

Received:	01/03/2013	Sampling Date:	01/03/2013
Reported:	01/07/2013	Sampling Type:	Soil
Project Name:	LOCKHART B-13 A SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

#### Sample ID: PT. 3 @ SURFACE (H300014-03)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1300	16.0	01/04/2013	ND	432	108	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	01/03/2013	ND	167	83.3	200	4.82	
DRO >C10-C28	<10.0	10.0	01/03/2013	ND	176	87.9	200	6.65	
Surrogate: 1-Chlorooctane	82.1	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	93.4	% 63.6-15	4						

#### Sample ID: PT. 4 @ SURFACE (H300014-04)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	, Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	14500	16.0	01/04/2013	ND	432	108	400	3.77	
TPH 8015M	mg,	mg/kg		d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	01/03/2013	ND	167	83.3	200	4.82	
DRO >C10-C28	<10.0	10.0	01/03/2013	ND	176	87.9	200	6.65	
Surrogate: 1-Chlorooctane	88.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	105	% 63.6-15	4						

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claims based by successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claims based by outperform and the table for incidented 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 claims based by by successors arising out of or related to the performance of the services.

Celeg 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 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**

#### \*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

~ARDINAL LABORATORIES

Company Name: Apa	che						÷	ŀ	<u>.</u>			LL TO		*******				ANAL	YSIS	S RE	QUE	ST			
Project Manager: Nata	lie Gladden						P.0: #:				ļ;	1													
Address:								Co	mp	any	<u>.</u>						e				i		. :	:	
City: Hobbs	State: NM	Zip	5: 88	3240	j.			Att	in: -									u o			:				
Phone #::	Fax#:							Ad	dre	sś.						ļ, ¦		Ĩ			ə				
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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

PLEASE NOTE: Liabelity and Denviges, Cardonal's hubby and client's exclusive tementy for any claim articling whether bread in contract or tort, shall be hinded to the amount pakil by the client for the analyses, All claims including those for negligence and any other cause whatsomer shall be decred waked where maked within and received by Caudimit within 30 mays after completion of the upplicable. service: In no event that Caldnat be little for hiddental or consequential carrupter, including without limitation, businesse interruptings, loss of use; or loss of profess beserve by client, its subabilities alliates of successis anshing out of of related to the performance of gervices trefeances by Cardinal, regurdless of whether such chain is based upon any of the above statud leasons or otherwise.

Relinquished By:	Date: 5-3 .	Received By:	Phone Result:         □         Yes         ☑         No.         Add'l Phone #:           Fax Result:         □         Yes
Marthe process	Time: 21	10001 Aunson	REMARKS:
Relinquished By:	Date:	Received By:	email results Natalie.Gladden@usa:apachecorp.com
	Time:		Knorman@rice-ecs.com
Delivered By: (Circle One)	<u></u>	Sample Condition   CHECKED BY:	Bbaker@rice-ecs.com; hconder@rice-ecs.com;
Sampler UPS Bus Other:		1 Ves Ves 	Lweinheimer@rice-ecs.com

f; Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476'.

# Appendix C Augur Sampling Lab

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



# Analytical and Quality Control Report

Steven Fleming Apache Corp.-Midland 303 Veterans Airpark Lane Suite #3000 Midland, TX, 79705

Report Date: June 27, 2013

# Work Order: 13061323

Project Location:Apache Lockhart B 13, NMProject Name:Apache Lockhart B 13Project Number:Apache Lockhart B 13

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
332169	Sample Point #1 @ 1'	soil	2013-06-05	13:50	2013-06-11
332170	Sample Point $#2 @ 1' 6"$	soil	2013 - 06 - 05	13:30	2013-06-11
332171	Sample Point $#3 @ 1' 6"$	soil	2013-06-05	14:10	2013-06-11
332172	Sample Point #3 @ 2'	soil	2013-06-05	15:45	2013-06-11
332173	Sample Point $#4 @ 3' 6"$	soil	2013-06-05	11:50	2013-06-11

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 18 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

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# **Report Contents**

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Sample 332169 (Sample Point #1 @1')	5 5 6 7 8 9
Method Blanks         1           QC Batch 102287 - Method Blank (1)         1           QC Batch 102301 - Method Blank (1)         1           QC Batch 102657 - Method Blank (1)         1	1 1
Laboratory Control Spikes       13         QC Batch 102287 - LCS (1)       14         QC Batch 102301 - LCS (1)       15         QC Batch 102657 - LCS (1)       16         QC Batch 102287 - MS (1)       17         QC Batch 102301 - MS (1)       16         QC Batch 102657 - MS (1)       16	$\frac{2}{3}$
Calibration Standards       14         QC Batch 102287 - CCV (1)       1         QC Batch 102287 - CCV (2)       1         QC Batch 102301 - CCV (1)       1         QC Batch 102301 - CCV (2)       1         QC Batch 102301 - CCV (2)       1         QC Batch 102657 - ICV (1)       1         QC Batch 102657 - ICV (1)       1         QC Batch 102657 - CCV (1)       1	5 5 5 5 5
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# Case Narrative

Samples for project Apache Lockhart B 13 were received by TraceAnalysis, Inc. on 2013-06-11 and assigned to work order 13061323. Samples for work order 13061323 were received intact at a temperature of 2.7 C.

Samples were analyzed for the following tests using their respective methods.

		Prep	Prep	$\rm QC$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (Titration)	SM 4500-Cl B	86958	2013-06-27 at 13:00	102657	2013-06-27 at 14:00
TPH DRO - NEW	S 8015 D	86667	2013-06-13 at 14:00	102301	2013-06-14 at $10:57$
TPH GRO	S 8015 D	86660	2013-06-13 at $15:43$	102287	2013-06-13 at $15:43$

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 13061323 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: June 27, 2013 Apache Lockhart B 13 Work Order: 13061323 Apache Lockhart B 13

# **Analytical Report**

#### Sample: 332169 - Sample Point #1 @ 1'

Laboratory: Analysis: QC Batch: Prep Batch:	alysis: Chloride (Titration) Batch: 102657		cal Method: nałyzed: Preparation:	SM 4500-Cl B 2013-06-27 2013-06-27	Prep Method: Analyzed By: Prepared By:	GS
			$\operatorname{RL}$			
Parameter	Flag	$\operatorname{Cert}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride			576	mg/Kg	1	5.00

#### Sample: 332169 - Sample Point #1 @ 1'

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO - NI 102301 86667	Date	lytical Metho e Analyzed: ple Preparat	2013-0	6-14	Prep Me Analyzec Prepared	ł By: CM	
					RL			
Parameter		Flag	Cert	Res	ult	Units	Dilution	$\operatorname{RL}$
DRO			1	<5	0.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			101	mg/Kg	1	100	101	70 - 130

#### Sample: 332169 - Sample Point #1 @ 1'

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Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 102287 86660		Γ	Date Ana	al Method: alyzed: Preparation	2013-0	6-13		Prep Metho Analyzed E Prepared B	sy: JS
						$\mathbf{RL}$				
Parameter		Flag		Cert	l	Result	Uni	ts	Dilution	RL
GRO	1	Qs		1		<20.0	mg/ŀ	ſg	5	4.00
Surrogate			Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)	Qsr	Qsr		1.21	mg/Kg	5	2.00	60	69.6 - 124
	·						contr	nued		

Report Date: June 27, 2013 Apache Lockhart B 13	. ,							nber: 6 of 18 rt B 13, NM
sample continued						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Amount	Recovery	Limits
4-Bromofluorobenzene (4-BFB)			1.99	mg/Kg	5	2.00	100	77.7 - 120

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## Sample: 332170 - Sample Point #2 @ 1' 6"

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 102657 86958	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-06-27 2013-06-27	Prep Method: Analyzed By: Prepared By:	ĠŚ
			$\operatorname{RL}$			
Parameter	Flag	Cert	Result	Units	Dilution	$\mathbf{RL}$
Chloride			827	mg/Kg	1	5.00

## Sample: 332170 - Sample Point #2 @ 1' 6"

Laboratory:	Lubbock							
Analysis:	TPH DRO - NE	W	Ana	lytical Methe	od: S 8015	i D	Prep Me	thod: N/A
QC Batch:	102301		Date	e Analyzed:	2013-0	6-14	Analyzeo	By: CM
Prep Batch:	86667		Sam	ple Preparat	ion: 2013-0	6-13	Prepared	By: CM
					RL			
Parameter		Flag	$\operatorname{Cert}$	Res	ult	Units	Dilution	$\operatorname{RL}$
DRO		U	1	<5	0.0	mg/Kg	1	50.0
						Spike	Percent	Recovery
Surrogate	Flag	Cert	$\operatorname{Result}$	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			104	mg/Kg	1	100	104	70 - 130

#### Sample: 332170 - Sample Point #2 @ 1' 6"

Analysis: QC Batch:	Lubbock TPH GRO 102287 86660		Analytical M Date Analyz Sample Prep	ed: 2013-06	-13	0 0	S 5035 JS JS
				RL			
Parameter		Flag	Cert	Result	Units	Dilution	RL
GRO		Qs	1	6.74	mg/Kg	1	4.00

Report Date: June 27, 2013 Apache Lockhart B 13	Work Order: Apache Lock					Page Number: 7 of 18 Apache Lockhart B 13, NM			
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)			$\begin{array}{r} 2.12 \\ 2.32 \end{array}$	mg/Kg mg/Kg	1	$2.00 \\ 2.00$	106 116	69.6 - 124 77.7 - 120	

#### Sample: 332171 - Sample Point #3 @ 1' 6"

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 102657 86958	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-06-27 2013-06-27	Prep Method: Analyzed By: Prepared By:	$\mathbf{GS}$
			$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	$\operatorname{Cert}$	$\operatorname{Result}$	Units	Dilution	RL
Chloride			125	mg/Kg	1	5.00

### Sample: 332171 - Sample Point #3 @ 1' 6"

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO - NE 102301 86667	W	Date	lytical Metho e Analyzed: ple Preparat	2013-0	06-14	Prep Me Analyzec Preparec	U
					RL			
Parameter		Flag	$\operatorname{Cert}$	Res	ult	Units	Dilution	$\operatorname{RL}$
DRO		U	1	<5	0.0	m mg/Kg	1	50.0
C				TT */		Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			105	m mg/Kg	1	100	105	70 - 130

#### Sample: 332171 - Sample Point #3 @ 1' 6"

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 102287 86660		Analytical M Date Analyze Sample Prep		06-13	Prep Method: Analyzed By: Prepared By:	$_{\rm JS}$
				$\operatorname{RL}$			
Parameter		Flag	$\operatorname{Cert}$	Result	Units	Dilution	RL
GRO		Qs	. 1	4.66	mg/Kg	1	4.00

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Report Date: June 27, 2013 Apache Lockhart B 13		Work Order: 13061323 Apache Lockhart B 13				Page Number: 8 of 18 Apache Lockhart B 13, NM		
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.97	mg/Kg	1	2.00	98	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.23	mg/Kg	1	2.00	112	77.7 - 120

#### Sample: 332172 - Sample Point #3 @ 2'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 102657	Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2013-06-27 2013-06-27	Prep Method: Analyzed By: Prepared By:	GS	
			RL				
Parameter	$\operatorname{Flag}$	Cert	$\operatorname{Result}$	Units	Dilution	$\mathbf{RL}$	,
Chloride			50.0	mg/Kg	1	5.00	

#### Sample: 332172 - Sample Point #3 @ 2'

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO - NE 102301 86667	W	Dat	lytical Methe e Analyzed: ple Preparat	2013-0	6-14	Prep Me Analyze Preparec	*
Parameter		Flag	Cert	Res		Units	Dilution	RL
DRO		U	1	<5	0.0	mg/Kg	1	50.0
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			102	mg/Kg	1	100	102	70 - 130

#### Sample: 332172 - Sample Point #3 @ 2'

GRO		Qs	1	<4.00	mg/Kg	1	4.00
Parameter		Flag	Cert	$\operatorname{RL}$ Result	Units	Dilution	RL
Prep Batch:	86660		Sample Prep	paration: 2013-00	5-13	Prepared By:	JS
QC Batch:	102287		Date Analyz	ed: 2013-00	5-13	Analyzed By:	$_{\rm JS}$
Analysis:	TPH GRO		Analytical M	fethod: S 8015	D	Prep Method:	S $5035$
Laboratory:	Lubbock						

.

Report Date: June 27, 2013 Apache Lockhart B 13			ork Order: 13061323 oache Lockhart B 13			Page Number: 9 Apache Lockhart B 1		
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)			$\begin{array}{c} 1.84\\ 2.18\end{array}$	mg/Kg mg/Kg	1 1	$2.00 \\ 2.00$	92 109	69.6 - 124 77.7 - 120

#### Sample: 332173 - Sample Point #4 @ 3' 6"

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 102657 86958	Date A	ical Method: małyzed: Preparation:	SM 4500-Cl B 2013-06-27 2013-06-27	Prep Method: Analyzed By: Prepared By:	$\mathbf{GS}$
_		-	RL			
Parameter	Flag	Cert	$\operatorname{Result}$	Units	Dilution	RL
Chloride			3160	mg/Kg	1	5.00

### Sample: 332173 - Sample Point #4 @ 3' 6"

Laboratory:	Lubbock							
Analysis:	TPH DRO - NE	W	Ana	lytical Methe	od: S 8015	5 D	Prep Me	thod: N/A
QC Batch:	102301		Date	e Analyzed:	2013-0	6-14	Analyzed	By: CM
Prep Batch:	86667		Sam	ple Preparat	ion: 2013-0	6-13	Prepared	l By: CM
					RL			
Parameter		Flag	Cert	Res	ult	Units	Dilution	$\operatorname{RL}$
DRO		U	1	1 <50.0		mg/Kg	1	50.0
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			104	mg/Kg	1	100	104	70 - 130

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### Sample: 332173 - Sample Point #4 @ 3' 6"

Laboratory: Analysis: QC Batch: Prep Batch:	TPH GRO 102287		Analytical Mo Date Analyze Sample Prepa	d: 2013-06-	-13 -	0 0	S 5035 JS JS
				$\operatorname{RL}$			
Parameter		Flag	$\operatorname{Cert}$	$\mathbf{Result}$	Units	Dilution	$\operatorname{RL}$
GRO		Qs	1	<4.00	mg/Kg	1	4.00

Report Date: June 27, 2013 Apache Lockhart B 13			ork Order: ache Lock	Page Number: 10 of 18 Apache Lockhart B 13, NM				
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	<u>_</u>		1.97	mg/Kg	1	2.00	98	69.6 - 124
4-Bromofluorobenzene (4-BFB)			2.06	ing/Kg	1	2.00	103	77.7 - 120

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Report Date: June 27, 2013 Apache Lockhart B 13 Work Order: 13061323 Apache Lockhart B 13 Page Number: 11 of 18 Apache Lockhart B 13, NM

# Method Blanks

Method Blank (1)	QC Batch: 102287							
QC Batch: 102287		Date 4	Analyzed:	2013-06-3	13		Analyz	ed By: JS
Prep Batch: 86660		QC Pi	reparation:	2013-06-	13		ed By: JS	
					MDL			
Parameter	Flag		Cert		Result		Units	RL
GRO			1		< 0.230		mg/Kg	4
						Spike	Percent	Recovery
Surrogate	Flag	$\operatorname{Cert}$	Result	Units	Dilution	$\operatorname{Amount}$	Recovery	Limits
Trifluorotoluene (TFT)			2.08	mg/Kg	1	2.00	104	69.6 - 124
4-Bromofluorobenzene (4-l	3FB)		2.15	mg/Kg	1	2.00	108	77.7 - 120

## Method Blank (1) QC Batch: 102301

QC Batch: Prep Batch:	$\frac{102301}{86667}$				nalyzed: eparation:	$\begin{array}{c} 2013 \text{-} 06 \text{-} 14 \\ 2013 \text{-} 06 \text{-} 13 \end{array}$		Analyze Prepare	•
							MDL		Ÿ
Parameter			Flag		$\operatorname{Cert}$		Result	Units	$\operatorname{RL}$
DRO					1		<5.22	mg/Kg	50
							Spike	Percent	Recovery
Surrogate		Flag	Cert '	Result	Units	Dilutio	n Amount	Recovery	Limits
n-Tricosane				115	mg/Kg	1	100	115	70 - 130

#### Method Blank (1) QC Batch: 102657

QC Batch: 102657 Prep Batch: 86958		Date Analyzed: QC Preparation:	2013-06-27 2013-06-27	Analyzed By Prepared By	
			MDL		
Parameter	Flag	Cert	Result	Units	$\mathbf{RL}$
Chloride			<3.05	mg/Kg	5

Report Date: June 27, 2013 Apache Lockhart B 13

# Laboratory Control Spikes

#### Laboratory Control Spike (LCS-1)

QC Batch: 102287 Prep Batch: 86660				e Analyz Preparat		13-06-13 13-06-13				Analyze Preparec	
Param GRO	<u>I</u>		C R	LCS esult 16.6	Units mg/Kg	Dil.	Spike Amount 20.0	Mat Res <0.	sult 230	Rec. 83	Rec. Limit 66.9 - 120
Percent recovery is based on the sp	oike :	resu		is based	on the s	-		ate res			
Param	F	С	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limi		RPD PD Limit
GRO	1.	1	16.9	mg/Kg	1	20.0	<0.230		66.9 - 1		
Percent recovery is based on the sp	ike :	resu			on the s						
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (LC	S-1)	)	LCS Resu 2.04 2.30	lt Res 4 2.0	ult U D7 m	g/Kg	Spik Dil. Amou 1 2.00 1 2.00	nt I	LCS 1 Rec. 102 115	LCSD Rec. 104 116	Rec. Limit 69.6 - 124 77.7 - 120
	,		D.		1 00	0.00.14					D (U)
QC Batch: 102301 Prep Batch: 86667				Analyze Preparati		l3-06-14 l3-06-13				nalyzed repared	
Param DRO		F	-	LCS Result 236	Units mg/Kg	Dil.	Spike Amount 250	R	atrix esult	Rec.	Rec. Limit 70 - 130
Percent recovery is based on the sp	ike -	resu	-							V-1	10 100
i creent recovery is based on the sp	, nr.c	1050		15 154504	on the s	-		105			
Danam	F	C	LCSD Descult	TT	יים	Spike	Matrix	Dee	Rec		RPD
Param DRO	г	$\frac{C}{1}$	Result 234	Units mg/Kg	$\frac{\text{Dil.}}{1}$	Amount 250	Result <5.22	Rec. 94	Lim 70 - 1		
Percent recovery is based on the sp	ike :										. 20

Surrogate	$\begin{array}{c} \mathrm{LCS} \\ \mathrm{Result} \end{array}$	$\begin{array}{c} \mathrm{LCSD} \\ \mathrm{Result} \end{array}$	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	102	100	mg/Kg	1	100	102	100	70 - 130

Report Date: June 27, 2013 Apache Lockhart B 13		Work Order: 13061323 Apache Lockhart B 13						Page Number: 13 of 18 Apache Lockhart B 13, NM			
Laboratory Control Spike (LC	S-1)										
QC Batch: 102657 Prep Batch: 86958		Analyzed By: C Prepared By: C									
Param	F	С	LCS Result	Units	Dil.	Spike Amount		atrix esult	Rec.	Rec. Limit	
Chloride			101	mg/Kg	1	100	<	3.05	101	85 - 115	
Percent recovery is based on the sp	ike res	ult. RPD	is based of	on the sp	oike and sp	ike duplic	ate resi	ult.			
		LCSD			Spike	Matrix		Rec.		RPD	
Param	F C	Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\operatorname{Limit}$	
Chloride		102	mg/Kg	1	100	<3.05	102	85 - 11	5 1	20	

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

#### Matrix Spike (MS-1) Spiked Sample: 331466

QC Batch:	102287	Date Analyzed:	2013-06-13	Analyzed By:	$_{\rm JS}$
Prep Batch:	86660	QC Preparation:	2013-06-13	Prepared By:	$_{\rm JS}$

				MS			Spike	Matrix		Rec.
Param		$\mathbf{F}$	С	Result	Units	Dil.	$\operatorname{Amount}$	Result	Rec.	$\operatorname{Limit}$
GRO	Qs	Qs	1	2240	mg/Kg	20	20.0	1870	1850	38.8 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

				MSD			Spike	Matrix		Rec.		RPD
Param		$\mathbf{F}$	С	$\operatorname{Result}$	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\operatorname{Limit}$
GRO	Qs	Qs	1	2260	mg/Kg	20	20.0	1870	11300	38.8 - 120	1	20
Percent recovery is based on	the s	pike	resu	lt. RPD	is based o	on the	spike and :	spike dup	licate res	sult.		

		MS	MSD		Spike	MS	MSD	Rec.
~		D 1.	D 1.	 <b>TR</b> • 1				<b>.</b>

Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	$\operatorname{Limit}$
Trifluorotoluene (TFT)	1.91	1.23	mg/Kg	20	2	96	62	69.6 - 124
4-Bromofluorobenzene (4-BFB) Qsr Qsr	86.7	84.5	$\mathrm{mg/Kg}$	20	2	4335	4225	77.7 - 120

Matrix Spike (MS-1)	Spiked Sample: 332169
- 、 /	

QC Batch:	102301	Date Analyzed:	2013-06-14	Analyzed By:	CM
Prep Batch:	86667	QC Preparation:	2013-06-13	Prepared By:	CM

Report Date: June 27, 2013 Apache Lockhart B 13					der: 1306 Lockhart	A	Page Number: 14 of 18 Apache Lockhart B 13, NM				
Param		F	С	MS Result	Units	Dil.	Spike Amoum	t Re		Rec.	Rec. Limit
DRO			1	217	mg/Kg	1	250	7	7.92	84	70 - 130
Percent recovery is based on the	e spike	e resu	ılt. RPE	) is based	l on the s	pike and s	pike duplie	cate res	ult.		
Param DRO	F		MSD Result 212	: Unit mg/k	-	Spike Amount 250	Matrix Result 7.92	Rec.	Rec. Limit 70 - 130	$\frac{\text{RPI}}{2}$	RPD Limit 20
Percent recovery is based on the	spiko									· _	20
reitent recovery is based on the	; spike	resu	III. NEL	J IS Daset	I OII THE S	pike and s	pike uupin	sate res	uit.		
Surrogate		AS sult	MS Res		Units	Dil.	Spike Amount	M Re		SD .ec.	Rec. Limit
n-Tricosane	1	.08	1(	)4	mg/Kg	1	100	1(	)8 1	04	70 - 130
Matrix Spike (MS-1) Spik QC Batch: 102657 Prep Batch: 86958	ed Sa	mple		te Analy: Prepara		13-06-27 13-06-27				alyzed l epared l	U C
Param		F	С	MS Result	Units	Dil.	Spike Amount	Ma Res	sult R	ec.	Rec. Limit
Chloride				536	mg/Kg	1	500	5	0 9	)7 (	3.6 - 131
Percent recovery is based on the	e spike	e resu	ılt. RPE	) is based	l on the s	pike and s	pike duplie	cate res	ult.		
_	-	~	MSD	<b>.</b>	5.1	Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units		Amount	Result	Rec.	Limit	RPI	
Chloride			652	mg/K	g 1	500	50	120	63.6 - 13	1 20	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

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Report Date: June 27, 2013 Apache Lockhart B 13

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Work Order: 13061323 Apache Lockhart B 13 Page Number: 15 of 18 Apache Lockhart B 13, NM

# **Calibration Standards**

#### Standard (CCV-1)

QC Batch:	102287		Date	Analyzed:	2013-06-13		Analyzed By: JS		
				CCVs	CCVs	$\mathrm{CCVs}$	Percent		
				True	Found	Percent	Recovery	$\operatorname{Date}$	
Param	$\operatorname{Flag}$	$\operatorname{Cert}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
GRO		1	m mg/Kg	1.00	1.00	100	80 - 120	2013-06-13	

## Standard (CCV-2)

QC Batch:	102287		Date	Analyzed:	2013-06-13		Analyzed By: JS		
		•		CCVs	$\rm CCVs$	CCVs	Percent		
				True	Found	Percent	Recovery	Date	
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	$\operatorname{Limits}$	Analyzed	
GRO		1	mg/Kg	1.00	0.960	96	80 - 120	2013-06-13	

# Standard (CCV-1)

.

QC Batch:	102301		Date	Analyzed:	2013-06-14		Analyzed By: CM		
				CCVs	CCVs Form d	$\operatorname{CCVs}$	Percent	Date	
				True	Found	Percent	Recovery	Date	
Param	$\mathbf{F}$ lag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed	
DRO		1	mg/Kg	250	240	96	80 - 120	2013-06-14	

## Standard (CCV-2)

QC Batch:	102301		Date	Analyzed:	2013-06-14		Analyzed By: CM	
				CCVs True	$\operatorname{CCVs}$ Found	$\dot{\mathrm{CCVs}}$	Percent Recovery	Date
D	El	Cont	Units	Conc.	Conc.	Recoverv	Limits	Analyzed
Param	Flag	Cert		Conc.	Conc.	necovery		· · · · · · · · · · · · · · · · · · ·
DRO		1	mg/Kg	250	242	97.	80 - 120	2013-06-14

Report Date: Apache Lockha		ork Order: pache Lock	Page Number: 16 of 18 Apache Lockhart B 13, NM								
Standard (ICV-1)											
QC Batch: 10	2657		Date .	Date Analyzed: 2013-06-27			Analyzed By: GS				
Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed			
Chloride			mg/Kg	100	100	100	85 - 115	2013-06-27			
Standard (CC	CV-1)										
QC Batch: 10	2657		Date .	Analyzed:	2013-06-27		Analy	zed By: GS			
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed			
Chloride	· · · · · · · · · · · · · · · · · · ·		mg/Kg	100	100	100	85 - 115	2013-06-27			

Work Order: 13061323 Apache Lockhart B 13 Page Number: 17 of 18 Apache Lockhart B 13, NM

# Appendix

## **Report Definitions**

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

## Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704219-13-9	Lubbock

## Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je  $\;$  Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

## **Result Comments**

Report Date: June 27, 2013 Apache Lockhart B 13 Work Order: 13061323 Apache Lockhart B 13

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Page Number: 18 of 18 Apache Lockhart B 13, NM

1 Dilution due to turbidity.

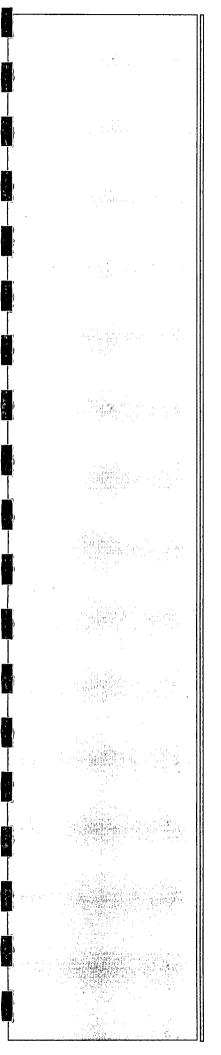
## Attachments

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The scanned attachments will follow this page. Please note, each attachment may consist of more than one page.

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LAB # AB USE\	FIELD COD	E	# CONTAINERS	Volume / Amount	WATER			SLUDGE				I		Щ		ш			8	19	La La	Totat Metals Ag As	Metals Ag	TCLP Volatiles	TCLP Serie Volaties	10000	GC/MS' Vol. 8	GC/MS Semi. 1	s 8082 /	Pesticides 8081 / 608 BOD_TSS_pH	Ture Con	CI F, SO4, NO3-N, NO2-N, PO4 -P, Alkalinity	Ca, Mg, K, TDS,				Turn Around Time if different from standard
ONLY )	LOCKHART B	_13	50 #	Nolu	TAW	SOIL	AIR	SLU	P	HNO	H <sub>2</sub> SO4	NaOH	ŭ	NONE		DATE	TIME	MTBE	BTEX	TPH (	MA	Total	TCLP	TCLP		ROL 1	GCA	GC/A	PCB PCB	BOD	Nois	6	Na, O				Turn
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## Appendix D Soil Bore Documentation

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

Logger: Driller:	F		ard Ces & Cooj	areo per, Inc.				SCHONMENTAL SCES					
Drilling N	Method:	Air rotary				Ар	Apache Lockhart B13 A Well ID.						
Start Dat	e:	8/	/23/201	3			SWD	SB-1					
End Date	»:	8/	/23/201	3	SB-16								
Comme	ents: All s	ample	s wer	e from o	cuttings.	Lo	cation: UL/K se	ec. 13 T21S R37E					
*****	TD :	<u>= 54 ft</u>		TED BY:	L. Weinheimer GW = None		: 32°28'37.123 ng: 103°7'7.78	••••••••••					
Depth (feet)	Chlorid		LAB	PID	Description		Lithology	Well Construction					
						Τ							
					TAN SAND								
SS	6351		Cl- 6160	7.1									
	0001		GRO										
			<10 DRO										
			<256										
3 ft	831			12.3									
6 ft	301			6.1									
					TAN SAND WITH SOME ROCK								
9 ft	433			5.8									
12 ft	699			5									
45 51	075												
15 ft	375			5.6	······································	-							
				$\mid$			eren ander						
			CI-		RED SAND								
18 ft	1221		1200	6.4		1							
			GRO <10										
			DRO <10		TAN SAND								
01 4	1070		<u> </u>										
21 ft	1073			6.1									

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
24 ft	810		6.1	TAN SAND		
27 ft	545		7.2	· .		bentonite
30 ft	888		5.6			seal
33 ft	980		4.5			
36 ft	704		5.3	RED SAND		
39 ft	420		9.2			
42 ft	476		9.1			
45 ft	421		15.9	, ,		
48 ft	288	CI- 240	12.1			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
		GRO <10				
		DRO <10				
51 ft	199	Cl- 128	17.5			
		GRO <10		RED SAND		
		DRO <10				
54 ft	263	Cl- 240	7.1			
		GRO <10				
		DRO <10				

.

Logger:		Ed	ward Ces	areo	ട്ര ട്ര		BLCE	NVIRONMENTAL				
Driller:		Harriso	on & Coo	per, Inc.			CONSULT	NG & SAFETY.	<b>,</b>			
Drilling N			Air rotar			Ap	ache Lockhar SWD	t B13 A <sub>W</sub>	/ell ID:			
Start Date		•	8/29/201			SB-2						
End Date	Date:     8/29/2013     Immediate       nments: All samples were from cuttings. The bore was sampled						cation: UL/K se		9 D275			
Comme	mis. All		hology	only as	it was being installed. : L. Weinheimer		t: 32°28'38.179		County: Lea			
		0 = 60	ft	· · · · ·	GW = None	Lo	<b>ng:</b> 103°7'8.52	7"W	State: NM			
Depth (feet)	Chlo field t		LAB	PID	Description		Lithology	Well C	Well Construction			
					BROWN SAND WITH SOME ROCK							
SS												
					TAN SAND WITH SOME CALICHE							
5 ft												
					BROWN SAND WITH SOME CALICHE							
10 ft					CALICHE							
					GREY SAND WITH SOME CALICHE							
15 ft					ONLIGHT	ļ						
20 ft												
	· ·											
25 ft			v		TAN SAND				hontonita			
									bentonite seal			
30 ft												
35 ft												

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Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft						
				TAN / RED SAND		
45 ft						
50 ft						
				CLAY WITH SAND		
55 ft						
				· · · · · · · · · · · · · · · · · · ·		
				RED BED @ 56'		
60 ft						

.



August 30, 2013

BRUCE BAKER

APACHE - EUNICE

P. O. BOX 1849

EUNICE, NM 88231

RE: LOCKHART B-13 A SWD

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 <a href="https://www.tceq.texas.gov/field/ga/lab">www.tceg.texas.gov/field/ga/lab</a> 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



## Analytical Results For:

APACHE - EL	JNICE						
BRUCE BAKE	ĒR						
P. O. BOX 1849							
EUNICE NM,	88231						
Fax To:	394-2425						

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	08/30/2013	Sampling Type:	Soil
Project Name:	LOCKHART B-13 A SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

## Sample ID: SB #1 SURFACE (H302039-01)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: DW					•
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6160	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	256	10.0	08/29/2013	ND	193	96.4	200	3.95	
Surrogate: 1-Chlorooctane	101	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	115	% 63.6-15	4						

## Sample ID: SB #1 18' (H302039-02)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1200	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	109	% 65.2-14	0			· · · · · · · · · · · · · · · · · · ·			
Surrogate: 1-Chlorooctadecane	115 :	% 63.6-15	4						

#### Cardinal Laboratories

#### \*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and chent's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of 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 D. Kune

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

APACHE - EUNICE							
BRUCE BAKER							
P. O. BOX 184	49						
EUNICE NM, 8	88231						
Fax To:	394-2425						

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	08/30/2013	Sampling Type:	Soil
Project Name:	LOCKHART B-13 A SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

### Sample ID: SB #1 48' (H302039-03)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	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	107	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	113	% 63.6-15	4						

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## Sample ID: SB #1 51' (H302039-04)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: DW		· · · · · · · · · · · · · · · · · · ·			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	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	109	% 63.6-15	4						

#### **Cardinal Laboratories**

## \*=Accredited Analyte

PLEASE NOTE: Liabulity and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of 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 Laboratores.

Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



## Analytical Results For:

APACHE - EUNICE BRUCE BAKER P. O. BOX 1849 EUNICE NM, 88231 Fax To: 394-2425

Received:	08/23/2013	Sampling Date:	08/23/2013
Reported:	08/30/2013	Sampling Type:	Soil
Project Name:	LOCKHART B-13 A SWD	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

## Sample ID: SB #1 54' (H302039-05)

Chloride, SM4500CI-B	OCI-B mg/kg			d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	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	113	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	118	% 63.6-15	4						

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Celey D. Keine

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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PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, bushess interruptions, loss of use, or loss of profits neurred by clent, 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.

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager

**CARDINAL** Laboratories

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

age 6 of 6

101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Company Name	APACHE										BI	LLTO			•	•		ANA	LYSI	S RE	QUE	ST		-	
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Project #:		Project Owner	:	·			. •		City				·				l .	1	Ч. Т.					ŀ	
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Project Locatio		B-13 A							Pho	ne #	:			ES						1				· .	
Sampler Name:	EDWARD C	ESALO							Fax									· .	ŀ.,	· ·				ľ.	
FOR LAB USE ONLY	Sample I.1 SB#1 Sucta SB#1 18" SB#1 18" SB#1 48' SB#1 51' SB#1 51'	· · · · · ·	いしいでした。 (G)RAB OR (C)OMP		GROUNDWATER	VASIEVAIEK SOIL		SLUDGE	ļ			DATE	TIME	NNN CHLORID	Yall INNN										
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analyses. All claims includir service. In no event shall C affiliates or successors aris	d Damages. Cardinal's liability and clien vg those for negligence and any other ca ardinal be liable for incidental or consequ on out of or related to the performance of	use whatsoever shall be iental damages, including f services hereunder by C	leemed withou ardinal	d waive A limitz , regar	ed unless ation, bus cliess of	s made i Iness ir Whethe	in writir nterrupt	ig and r ions, los	eceived ss of us	d by Ca se, or la	ardinal w oss of pr	vithin 30 days aft rofits incurred by	er campletion of t client, its subsidia asons or otherwi	he applicat aries, sc.			i					<u> </u>		· .	· · · · · · · · · · · · · · · · · · ·
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† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

Arc Envíronmental

P. O. Box 1772 Lovington, New Mexico 88260 (575) 631-9310 Rozanne Johnson ~ rozanne@valornet.com

September 3, 2013

Mr. Hack Conder RICE Environmental Consulting and Safety 112 West Taylor Hobbs, New Mexico 88240

## Re: Apache Lockhart B #13A SWD

Mr. Conder,

On Saturday August 31, 2013 soil bore #2 at the Apache Lockhart B #13A SWD, Lea County T21S, R37E, Sec 13 Unit Letter K was checked with a Solinist Water Level Meter for water accumulation within the borehole. The meter indicated no water accumulation within the borehole at the total depth of 59.4 feet.

Sincerely, Arc Environmental

*Rozanne Johnson* Rozanne Johnson

*Electronic Copy:* 

Hack Conder Katie Jones Lara Weinheimer

## Appendix E Photo Documentation

Sug 2 36

110

1 A ....

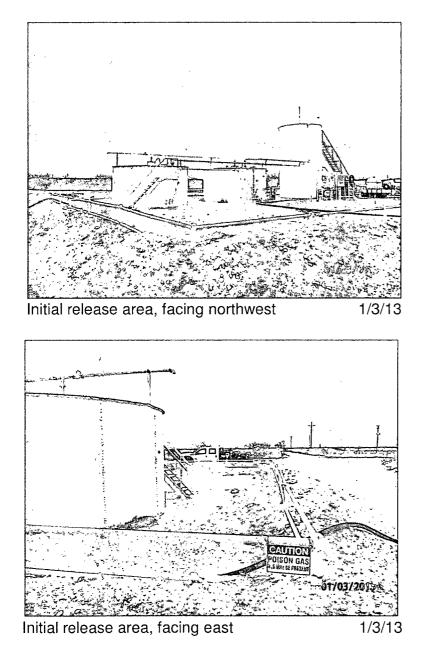
1.2.2

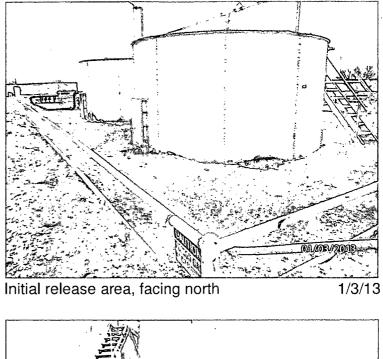
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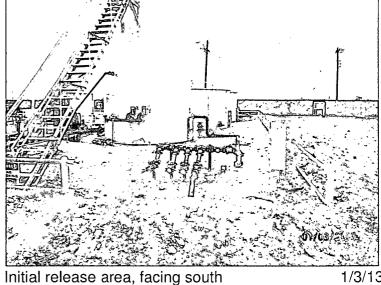
RICE Environmental Consulting and Safety (RECS) P.O. Box 2948 Hobbs, NM 88241 Phone 575.393.2967

## Apache Lockhart B-13 A-SWD AD

Unit Letter K, Section 13, T21S, R37E

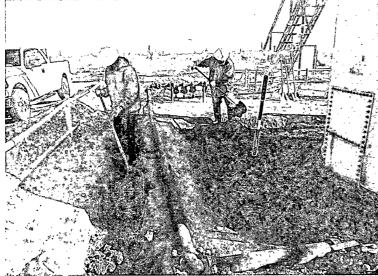






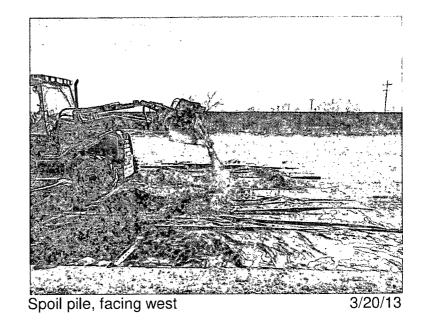
1/3/13

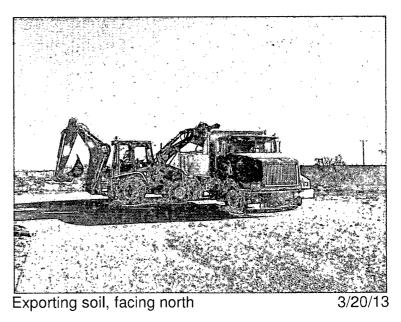


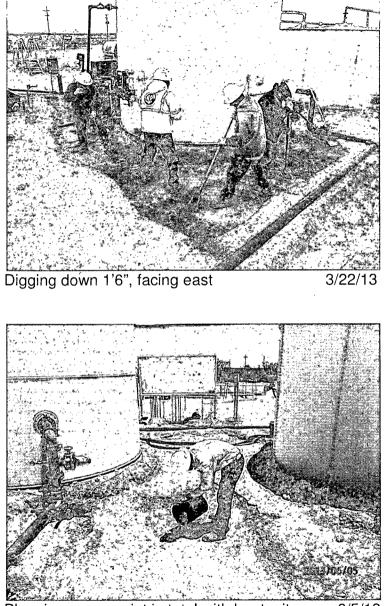


Scraping release area, facing north

3/21/13

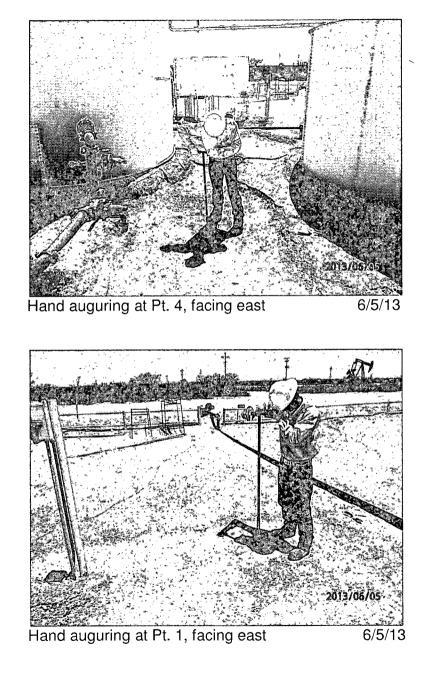


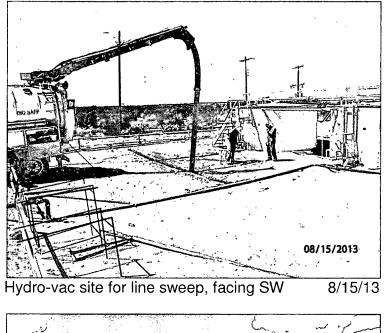


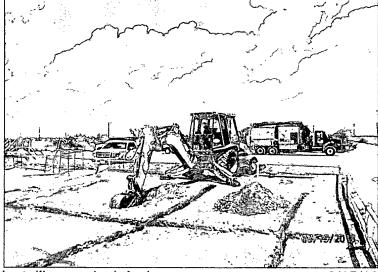


Plugging augur point in total with bentonite

6/5/13

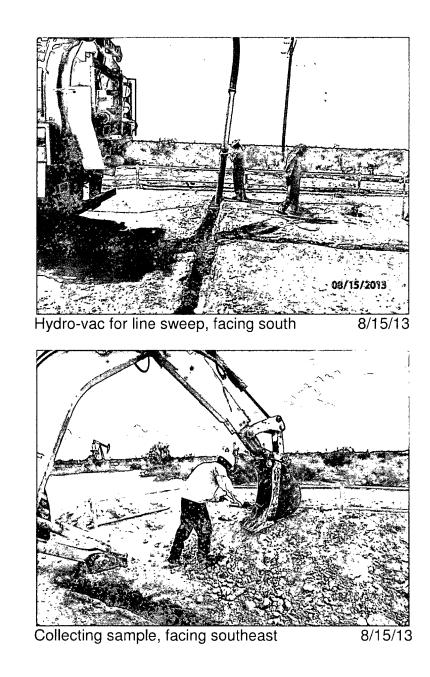


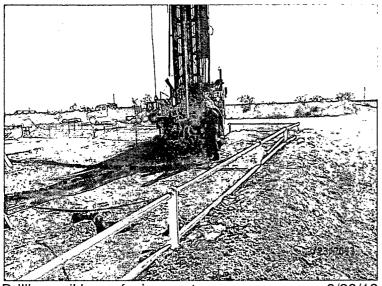




Installing vertical, facing east

8/15/13





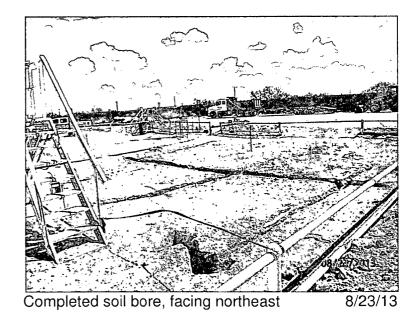
Drilling soil bore, facing east

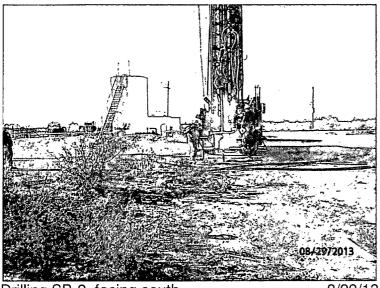
8/23/13





Field testing samples, facing southeast 8/23/13



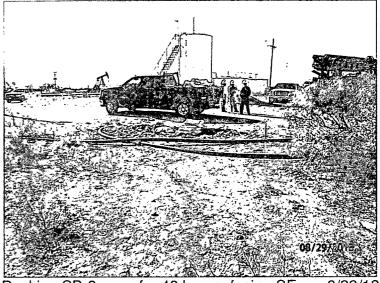


Drilling SB-2, facing south

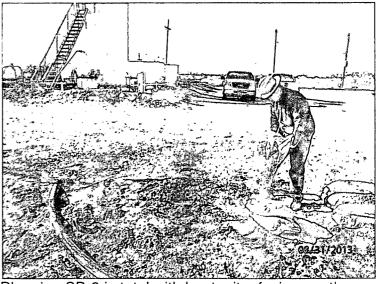
8/29/13



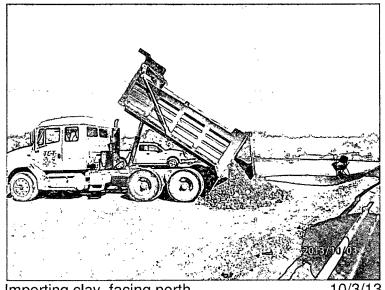
Checking groundwater depth at site, facing north 8/31/13



Packing SB-2 open for 48 hours, facing SE 8/29/13

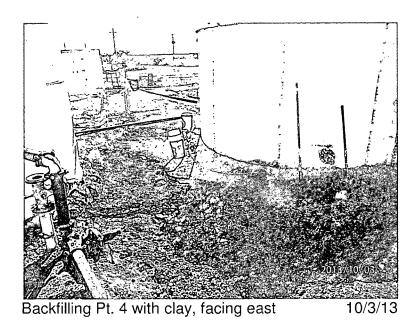


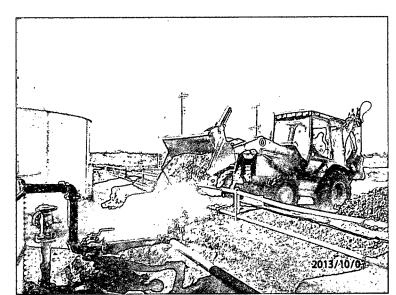
Plugging SB-2 in total with bentonite, facing south 8/31/13



Importing clay, facing north

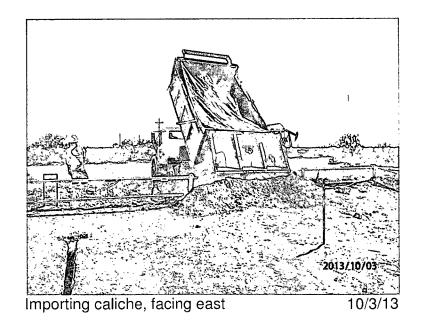
10/3/13





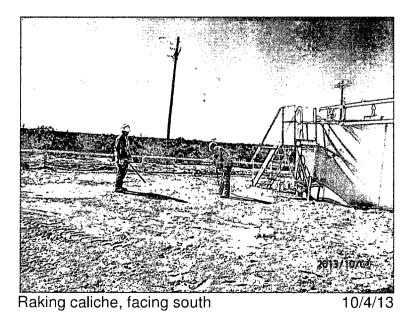
Backfilling Pt. 4 with clay, facing south

10/3/13



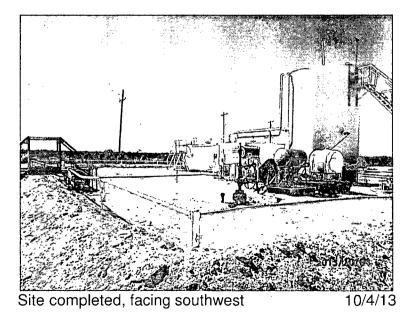


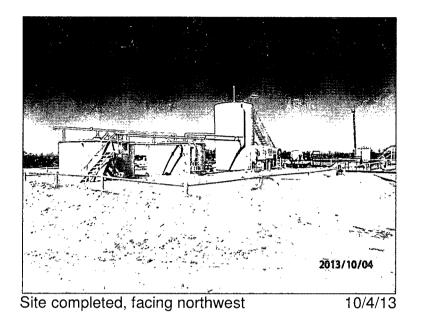
Backfilling site with caliche, facing south

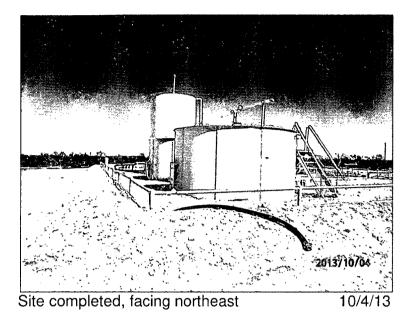




Backfilling site with caliche, facing southeast 10/4/13







# Appendix F Final C-141

the states

1. A. .

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

## HOBBS OCD

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

## State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe. NM 87505 Form C-141

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Santa	ı Fe, NM	87505	
and the second			

#### **Release Notification and Corrective Action OPERATOR** Initial Report Final Report Name of Company Apache Corporation Contact Larry Bruce Baker Address PO Box 1849, Eunice NM 88231 Telephone No. (432) 631-6982 Facility Name Lockhart B13 A SWD (nearest well #1) Facility Type SWD Surface Owner William O Stephens Mineral Owner BLM/State API No. 30-025-06555 LOCATION OF RELEASE Unit Letter Section Township Feet from the North/South Line Feet from the East/West Line Range County **21S** М 13 37E 660 FSL 660 FWL Lea Latitude Longitude **NATURE OF RELEASE** Type of Release Produced Water Volume of Release 18 bbls Volume Recovered 15 bbls Source of Release Ceramic Plunger Date and Hour of Discovery Date and Hour of Occurrence 12/22/12 10:30 am Same If YES, To Whom? Was Immediate Notice Given? Yes X No Not Required Geoffrey Leking/James Amos By Whom? Natalie Gladden Date and Hour 12/27/12 6:15 am Was a Watercourse Reached? If YES, Volume Impacting the Watercourse. 🗍 Yes 🛛 No If a Watercourse was Impacted, Describe Fully.\* Describe Cause of Problem and Remedial Action Taken.\* The ceramic plunger broke on the triplex pump due to freezing temperatures. All fluid was released inside the containment area. Fluid was recovered by vacuum truck. Initial samples have been taken to determine a remediation plan. The facility does not have a liner. Describe Area Affected and Cleanup Action Taken.\* D RECS personnel were on site beginning on January 3rd, 2013. Initial samples were taken from the surface of the release and field tested for chlorides and hydrocarbons. The samples were then taken to a commercial laboratory for confirmatory analysis. Laboratory analysis showed elevated levels of chlorides and low levels of hydrocarbons. Based on this data, the site was hand excavated to a depth of 6 inches to 2.5 ft. A total of 72 yards was exported to a NMOCD approved facility. On June 5th, 2013, the initial sampling points were augured for depth through the excavated area. The samples were field tested for chlorides and hydrocarbons and representative samples were taken to a commercial laboratory for analysis. All samples points, except for Pt. 4, showed chloride readings below 1,000 mg/kg at the base of each augur. To determine the vertical extent of the contamination, a vertical was installed on August 15th, 2013. Samples were taken to a depth of 13 ft bgs and field tested for chlorides and hydrocarbons. At 13 ft bgs, the chloride levels did not decrease to below 1,000 mg/kg. On August 23rd, 2013, a soil bore (SB-1) was installed near the vertical to determine the depth of contamination. The bore was installed to a depth of 54 ft bgs and samples were taken every 3 ft to field test for chlorides and hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for analysis, which showed the chloride levels dropping below 250 mg/kg at 48 R bgs. SB-2 was installed northwest of the battery to determine the depth to groundwater at the site. SB-2 was advanced to a depth of 60 R bgs and red bed clay was encountered at the depth of 56 fl bgs. Red bed clay indicates the bottom of the aquifer, so the bore was left open for over 48 hours to allow groundwater to accumulate. On August 31<sup>st</sup>, 2013, the bore was checked with a Solinist Water Level Meter for water accumulation within the borehole. The meter indicated no water had accumulated to a total depth of 59.4 R. Apache and RECS met with NMOCD-District 1 on September 6th, 2013. NMOCD verbally stated that at Pt. 4 a 1 foot clay layer had to be installed and then the entire battery area needed to be backfilled with clean caliche. Beginning on October 3rd, 2013, clay was imported to the site and the area around Pt. 4 was backfilled with 1 ft of clay to provide an infiltration barrier. The clay liner will provide a barrier that will inhibit the downward migration of chlorides to groundwater. Clean caliche was imported to the site and was used to backfill the battery back to its former depth. I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. OI ION DIA Larry Buce Baher A. Signature: Approved by Environmental Specialist Printed Name: Larry Bruce Baker Title: Environmental Tech Approval Date: 10/10/13 **Expiration Date:** E-mail Address: larry.baker@apachecorp.com Conditions of Approval: Attached 🔲 10-8-13 IRP-06-14-3076 Date: Phone: (432) 631-6982 \* Attach Additional Sheets If Necessary