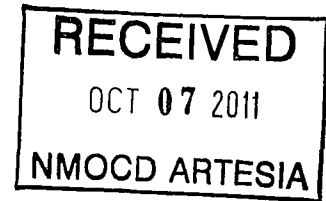




EXPLORING WHAT'S POSSIBLE



# APACHE CORPORATION

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

## Empire Abo Unit C49 SWD

---

### Closure Report

2RP-722

API 30-015-03184

Release Date: March 29, 2011

Unit Letter K, Section 29, Township 17S, Range 29E

# Rice Environmental Consulting & Safety

P.O. Box 5630 Hobbs, NM 88241

Phone 575.393.4411 Fax 575.393.0293

**September 22, 2011**

Mike Bratcher

New Mexico Energy, Minerals, & Natural Resources

Oil Conservation Division, Environmental Bureau – District 2

811 S. First Street

Artesia, NM 88210

**RE: TERMINATION REQUEST**

**Apache – Empire Abo Unit C-49 SWD AD**

**UL/L sec. 29 T17S R29E**

Mr. Bratcher:

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

**Background and Previous Work**

The site is an accidental discharge of fluids from a tank overflow within the battery firewall at the Apache Empire Abo C-49 SWD when an automation failure caused the tanks to overflow. Standing fluids were recovered with a vacuum truck, and an initial form C-141 was submitted by Apache Corporation on March 29, 2011 (Appendix A). The site is located less than one mile south of U.S. Highway 82 west of Loco Hills, NM in unit letter 'L', section 29, T17S, R29E in Eddy County, New Mexico.

On April 11, 2011, RECS personnel initiated work on the Empire Abo C-49 SWD (See Site Photographs in Appendix C). The leak affected the east, northeast, and south portions of the containment floor from which soil samples were collected. Samples were taken from near surface and at depth and were screened for chlorides. Headspace measurements were also taken in the field using a Photo Ionization Detector (PID) (Figure). Soil samples from Pt. 1, Pt. 4, and Pt. 6 were sent to a commercial laboratory for analysis of chloride.

On April 15, 2011, a soil bore was drilled at the southwest end of the leak area to delineate vertical impact near Pt. 6 which showed the highest concentrations of chloride with 18,000 ppm (parts per million or mg/kg) at 6" bgs (below ground surface) and 2,120 ppm at 1.5 ft. bgs. From the soil bore, 5 samples were sent to a commercial laboratory for analysis of chloride, BTEX, and TPH including GRO (Gasoline Range Organics) and DRO (Diesel Range Organics). All samples were non-detect for BTEX. TPH was only present in the SB1 @ 6" sample as DRO at 43.0 ppm. Chloride in the SB1 @ 6" sample was 2,800 ppm, SB1 @ 6 ft. was 288 ppm, SB1 @ 9 ft. was 208, SB1 @ 12 ft. was 160 ppm, and SB1 @ 18 ft. was 64 ppm (Appendix D).

The impacted area was excavated using a shovel crew due to proximity and array of equipment and underground utilities. The area of Pt.1 was excavated to 1.5 ft. bgs and the remaining area from 6 inches to 1 ft. bgs. A total of 72 cubic yards of impacted soil was removed from the leak area and transported to a NMOCD approved facility for disposal. The excavation was backfilled with 125 cubic yards of clean imported caliche and contoured to the battery floor.

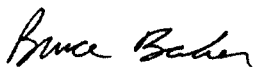
On May 26, 2011, a temporary monitor well was drilled northwest of the leak site to verify the existence of groundwater (Appendix B). A red bed clay formation was encountered from 40 ft. to 55 ft. bgs and drilling ceased at 100 ft. bgs. The temporary well was set with 2 inch PVC casing and screen from 80 ft. to 100 ft. bgs to allow potential groundwater to accumulate. On June 28, 2011, RECS personnel used a Solinst Water Level Meter to verify any accumulation of groundwater. No water was detected within the borehole at the total depth of 99.12 ft. bgs. On July 7, 2011, RECS personnel removed the monitoring well casing and plugged the borehole with bentonite.

### **Conclusion**

Due to confirmed nonexistence of groundwater, the removal of soils of highest impact, and rate of chloride decline, Apache submits the final C-141 (Appendix E) and respectfully requests the closure of the regulatory file for this site.

Apache Corporation appreciates the opportunity to work with you on this project. Please call Natalie Gladden (575) 390-4186 if you have any questions or comments.

Sincerely,



Bruce Baker  
Head Foreman  
RECS  
(575) 631-5157

### **Attachments:**

- Figure: Site Diagram with Sample Summary
- Appendix A: Initial Form C-141
- Appendix B: Soil Bore and Temporary Monitoring Well Logs, Letter of Groundwater Verification, and Plugging Report
- Appendix C: Site Photographs
- Appendix D: Laboratory Results
- Appendix E: Final Form C-141

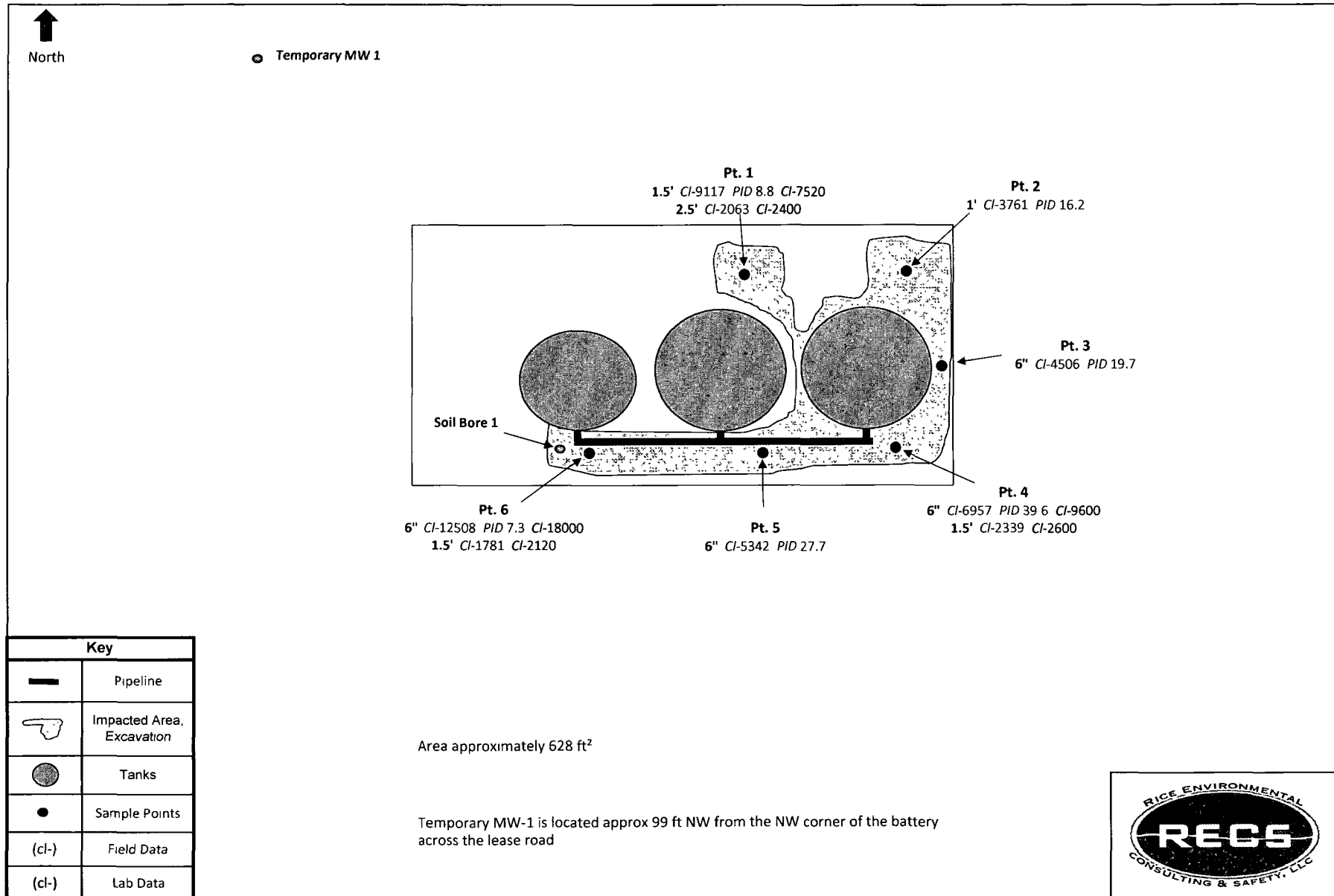


Figure

**RICE Environmental Consulting and Safety (RECS)**

P.O. Box 5630 Hobbs, NM 88241  
Phone 575.393.4411 Fax 575.393.0293

**Figure: Site Diagram with Sample Summary**  
**Apache Empire Abo C-49 SWD**



# Appendix A

Initial Form C-141

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 5630 Hobbs, NM 88241  
Phone 575.393.4411 Fax 575.393.0293

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

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

Form C-141  
Revised October 10, 2003

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

**Release Notification and Corrective Action**

**OPERATOR**

☒ Initial Report ☒ Final Report

Name of Company Apache Corporation	Contact Natalie Gladden
Address PO Box 1849 Eunice, NM 88231	Telephone No. 575-390-4186
Facility Name Empire Abo Unit C49 SWD (nearest well EAU C50)	Facility Type SWD

Surface Owner BLM	Mineral Owner OCD	Lease No. 30-015-03184
-------------------	-------------------	------------------------

**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	29	17S	29E	2310'	FSL	1650'	FWL	Eddy

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

**NATURE OF RELEASE**

Type of Release Produced Water	Volume of Release 525	Volume Recovered 500
Source of Release Automation failure	Date and Hour of Occurrence 03/29/11 8am	Date and Hour of Discovery 03/29/11 8am
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Randy Dade	
By Whom? Natalie Gladden	Date and Hour 03/29/11 @ 3:11pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.\*

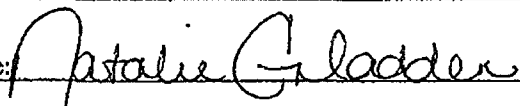
Describe Cause of Problem and Remedial Action Taken.\*

Automation failure caused tanks to overflow. Standing fluid was vacuumed up immediately and soil was pushed up towards metal berms to keep fluid from exiting the containment walls.

Describe Area Affected and Cleanup Action Taken.\*

8-10" of contaminated soil will be hand dug to keep from compromising the integrity of the tanks and vessals. The arca excavated will be backfilled with caliche and pea gravel. The metal containment walls will be taken out and caliche firewalls will be installed to meet the SPCC requirements.

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

Signature: 	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Natalie Gladden	Approved by District Supervisor:	
Title: EHS Environmental Tech	Approval Date:	Expiration Date:
E-mail Address: natalie.gladden@apachecorp.com	Conditions of Approval:	Attached <input type="checkbox"/>
Date: 03/29/11 Phone: 575-3904186		

\* Attach Additional Sheets If Necessary

# Appendix B

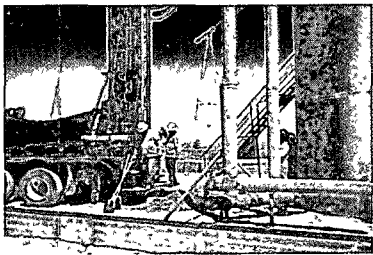

Soil Bore and Temporary Monitoring Well Logs, Letter  
of Groundwater Verification, and Plugging Report

**RICE Environmental Consulting and Safety (RECS)**


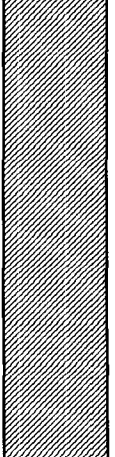
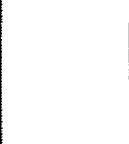
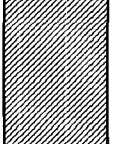
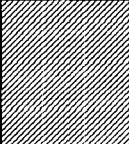
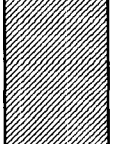
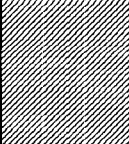
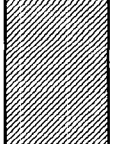
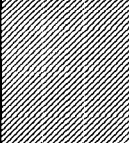
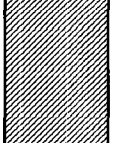
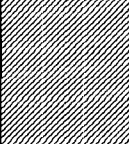
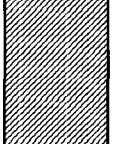

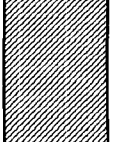
P.O. Box 5630 Hobbs, NM 88241


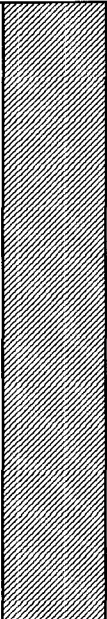

Phone 575.393.4411 Fax 575.393.0293

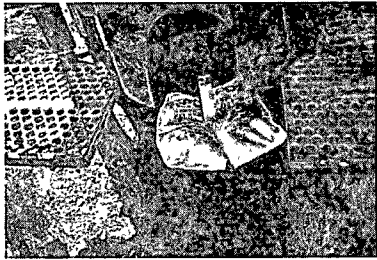



<b>Logger:</b>	Jordan Woodfin			
<b>Driller:</b>	Harrison & Cooper, Inc			
<b>Drilling Method:</b>	Air rotary		<b>Company:</b> Apache	
<b>Start Date:</b>	4/15/2011		<b>Project Name:</b> Empire Abo Unit C-49 SWD	<b>Well ID:</b> SB-1
<b>End Date:</b>	4/15/2011		<b>Project Consultant:</b> RECS	
<b>Comments:</b>			<b>Location:</b> UL/L sec 29 T17S R29E	
All samples were from cuttings. The soil bore was located 12 ft west of the tank and 9 ft south of the ladder.				
DRAFTED BY: L. Weinheimer			Lat: N32°48' 277"	
TD = 30 ft			Long: W104°06.300'	
GW = none			County Eddy State NM	

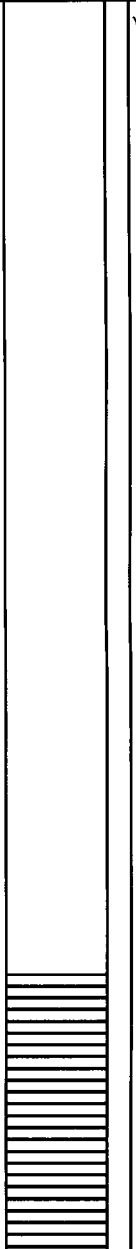
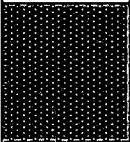

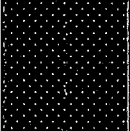

  

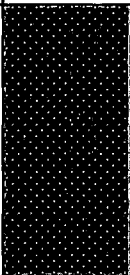


Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown medium sand with caliche mix		
6 in	2454	Cl-2800	5			
	B <0.05 T<0.05	GRO <10				
	E <0.05 X <0.15	DRO 43.0		Brown fine sand with caliche mix		
1 ft	863		5.2			
1.5 ft	1223		4.6			
				Tan medium silty sand with caliche mix		
3 ft	668		3.3			
6 ft	376	Cl-288	3.8			
	B <0.05 T<0.05	GRO <10				
	E <0.05 X <0.15	DRO <10		Tan fine silty sand with caliche mix		
9 ft	232	Cl-208	2.1			
	B <0.05 T<0.05	GRO <10				
	E <0.05 X <0.15	DRO <10				
12 ft	217	Cl-160	0.7			
	B <0.05 T<0.05	GRO <10				
	E <0.05 X <0.15	DRO <10				
15 ft	173		0.5			

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
18 ft	148	Cl- 64	0 4	Brown fine sand with caliche mix  NO SAMPLES TAKEN BELOW 18 ft		
	B <0.05 T <0 05	GRO <10				
	E <0.05 X <0 15	DRO <10				
21 ft						
24 ft						
27 ft						
30 ft				RED BED CLAY		

<b>Logger:</b> Jordan Woodfin  <b>Driller:</b> Harrison & Cooper, Inc  <b>Drilling Method:</b> Air rotary <b>Start Date:</b> 4/15/2011 <b>End Date:</b> 4/15/2011				
<b>Comments:</b> No sampling occurred on this well Well was set as a temporary well			<b>Company:</b> Apache <b>Project Name:</b> Empire Abo Unit C-49 SWD <b>Project Consultant:</b> RECS	<b>Well ID:</b> MW-1 temp
TD = 55 ft DRAFTED BY: L. Weinheimer GW = none			<b>Location:</b> UL/L sec 29 T17S R29E  <b>Lat:</b> N32°48.294' <b>Long:</b> W104°06.310'	<b>County:</b> Eddy <b>State:</b> NM

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				NO SAMPLES TAKEN		 <div style="position: absolute; right: 0; top: 50%; transform: translateY(-50%);">           annular space left open         </div>
5 ft						
10 ft						
15 ft						
20 ft						
25 ft						
30 ft						
35 ft						
				RED BED CLAY MIXED WITH SAND		
40 ft						
45 ft				RED BED CLAY		

Depth (feet)	chloride field tests	LAB	PID	Description		Lithology		Well Construction		
										
50 ft										
55 ft										

## Rice Environmental Consulting & Safety

P.O. Box 5630 Hobbs, NM 88241

Phone 575.393.4411 Fax 575.393.0293

July 11<sup>th</sup>, 2011

Natalie Gladden

Apache Corp.

P.O. Box 1849

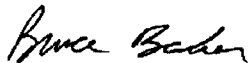
Eunice, New Mexico 88231

**Re: Empire Abo Unit C-49 SWD**

Ms. Gladden,

On May 26<sup>th</sup>, 2011, RECS personnel drilled an observational well at the Empire Abo Unit C-49 SWD. On June 28<sup>th</sup>, I supervised RECS personnel checking for water accumulation within the borehole using a Solinst Water Level Meter. The meter indicated no water had accumulated within the borehole at the total depth of 99.12 ft.

Sincerely,



Bruce Baker

Head Foreman

Rice Environmental Consulting & Safety



P.O. Box 5630  
Hobbs, NM 88241  
Phone: 575-393-4411

## Monitor Well Plugging Report

Client	Apache Corp.
Contractor	RECS
Date Completed	7/7/2011
Site	Empire Abo Unit C-49 SWD
County	Eddy
Legal Description	UL/L sec. 29 T17S R29E
Well ID	Temp. MW-1
Casing Diameter	2"
Well Depth	100'
Casing Material	PVC
Plugging Material	Bentonite

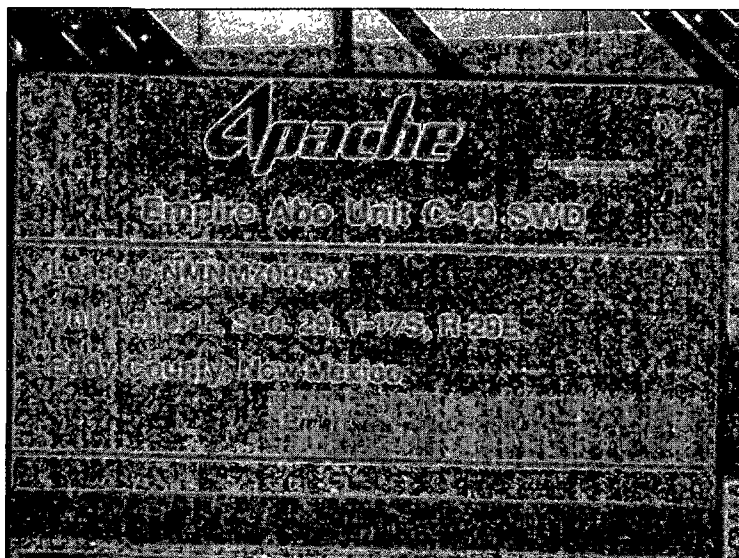
# Appendix C

## Site Photographs

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 5630 Hobbs, NM 88241  
Phone 575.393.4411 Fax 575.393.0293

# Empire Abo Unit C-49 SWD

Unit L, Section 29, T17S, R29E



Site Location Sign

4/11/2011



Initial Impacted Area Excavation, Facing W 4/11/2011

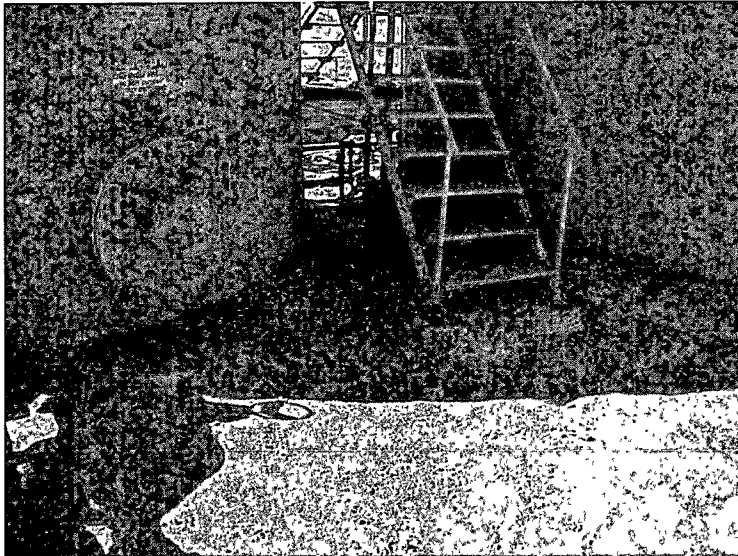


Initial Impacted Area Excavation, Facing S 4/11/2011



Initial Impacted Area Excavation, Facing W 4/11/2011



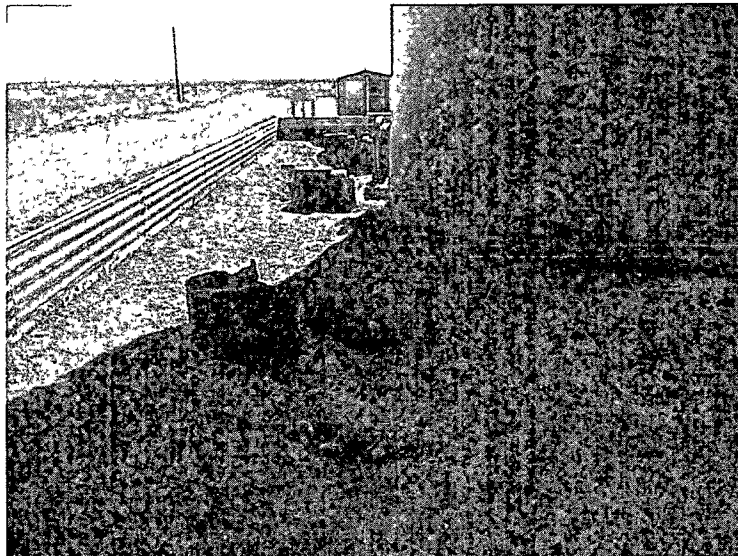


Between Tanks, Facing SW

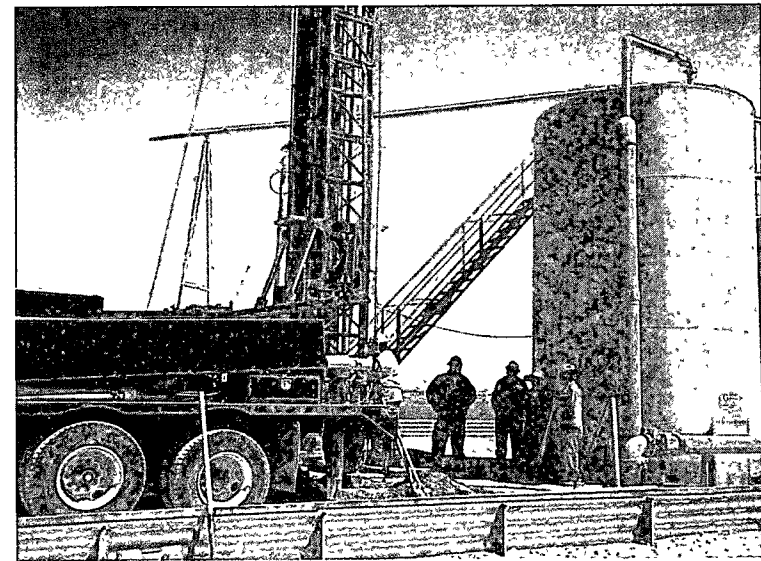
4/11/2011



Initial Impacted Area Excavation, Facing E 4/11/2011

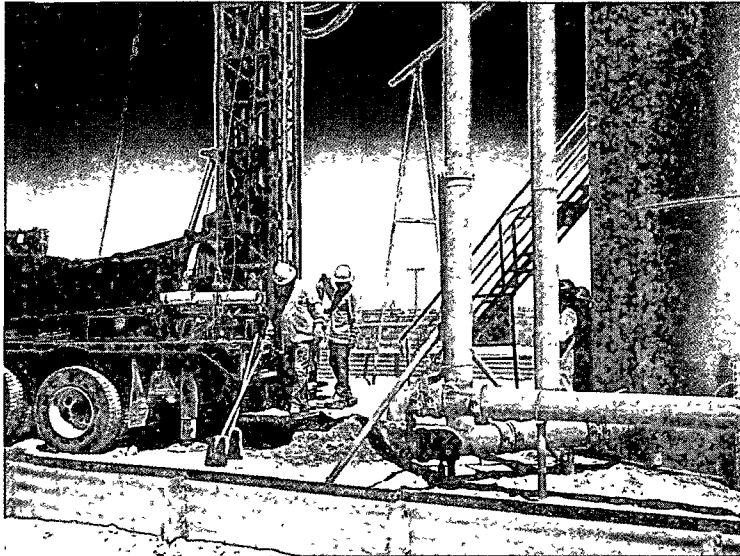


Initial Impacted Area Excavation, Facing E 4/11/2011



Drilling Soil Bore 1, Facing N

4/15/2011



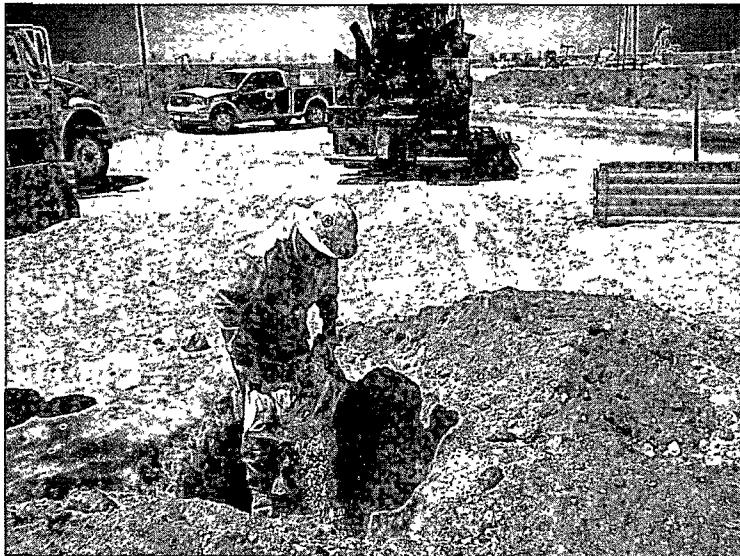
Drilling Soil Bore 1, Facing NW

4/15/2011



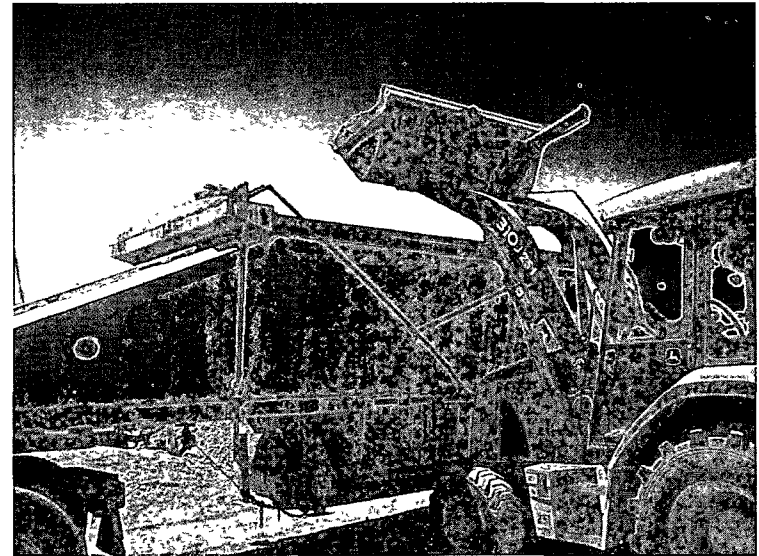
Field Testing Soil Samples, Facing E

4/15/2011



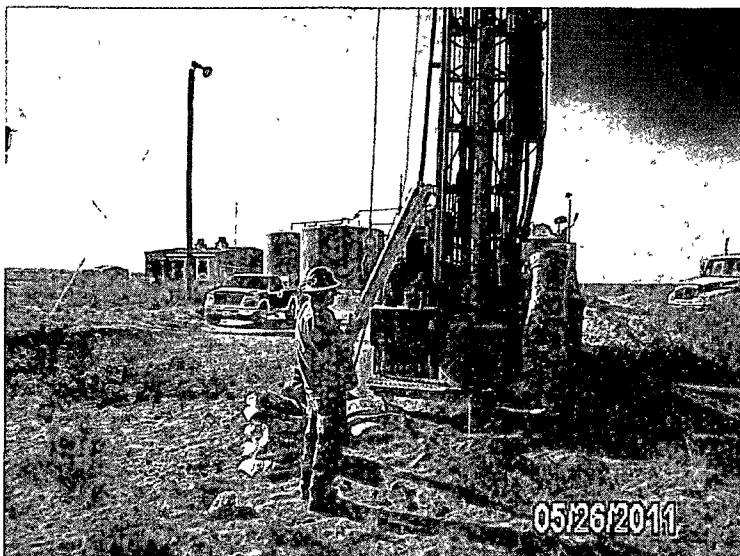
Plugging Soil Bore, Facing W

4/15/2011



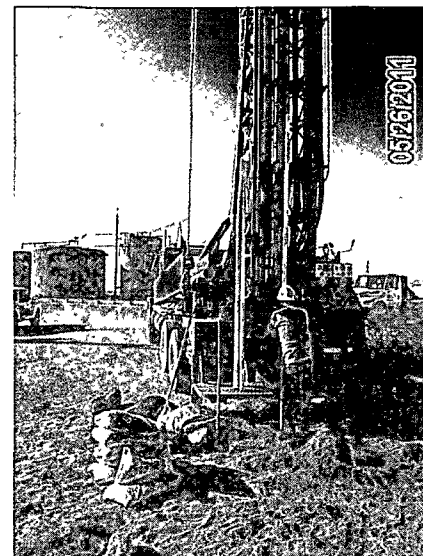
Removing Soil, Facing SW

4/15/2011



Drilling Temporary MW, Facing SE

5/26/2011



Installing Casing, Facing SE

5/26/2011



Removing Casing, Facing S

7/7/2011



Plugged and Staked, Facing SE

7/7/2011



# Appendix D

## Laboratory Results

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 5630 Hobbs, NM 88241  
Phone 575.393.4411 Fax 575.393.0293

**Analytical Results For:**

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

 Received: 04/19/2011  
 Reported: 04/20/2011  
 Project Name: EMPIRE APO C-49 SWD AD  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 04/11/2011  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Jodi Henson

**Sample ID: PT. 1 @ 1.5' (H100789-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7520	16.0	04/20/2011	ND	400	100	400	0.00	

**Sample ID: PT. 4 @ 6" (H100789-02)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9600	16.0	04/20/2011	ND	400	100	400	0.00	

**Sample ID: PT. 6 @ 6" (H100789-03)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18000	16.0	04/20/2011	ND	400	100	400	0.00	

**Sample ID: PT. 1 @ 2.5' (H100789-04)**

Chloride, SM4500Cl-B		mg/kg	Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2400	16.0	04/20/2011	ND	400	100	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages: Cardinal's liability and clients 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. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 04/19/2011  
Reported: 04/20/2011  
Project Name: EMPIRE APO C-49 SWD AD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 04/14/2011  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Jodi Henson

**Sample ID: PT. 4 @ 1.5' (H100789-05)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2600	16.0	04/20/2011	ND	400	100	400	0.00	

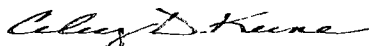
**Sample ID: PT. 6 @ 1.5' (H100789-06)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2120	16.0	04/20/2011	ND	400	100	400	0.00	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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



**Analytical Results For:**

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

 Received: 04/15/2011  
 Reported: 04/20/2011  
 Project Name: EMPIRE ABO UNIT C-49 SWD  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 04/15/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 6" (H100776-01)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2800	16.0	04/19/2011	ND	448	112	400	3.64	
TPH 8015M		mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/18/2011	ND	206	103	200	1.31	
DRO >C10-C28	43.0	10.0	04/18/2011	ND	207	104	200	1.30	
Surrogate 1-Chlorooctane		93.1 %	70-130						
Surrogate 1-Chlorooctadecane		103 %	70-130						

**Sample ID: SB 1 @ 6 FT (H100776-02)**

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	04/19/2011	ND	448	112	400	3.64	
TPH 8015M		mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/19/2011	ND	206	103	200	1.31	
DRO >C10-C28	<10.0	10.0	04/19/2011	ND	207	104	200	1.30	
Surrogate 1-Chlorooctane	93.0 %	70-130							
Surrogate 1-Chlorooctadecane	95.3 %	70-130							

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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: 04/15/2011  
 Reported: 04/20/2011  
 Project Name: EMPIRE ABO UNIT C-49 SWD  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 04/15/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 9 FT (H100776-03)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	04/19/2011	ND	448	112	400	3.64	
TPH 8015M		mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/19/2011	ND	206	103	200	1.31	
DRO >C10-C28	<10.0	10.0	04/19/2011	ND	207	104	200	1.30	
Surrogate 1-Chlorooctane		88.5 %	70-130						
Surrogate 1-Chlorooctadecane		87.8 %	70-130						

**Sample ID: SB 1 @ 12 FT (H100776-04)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	04/19/2011	ND	448	112	400	3.64	
TPH 8015M		mg/kg		Analyzed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/19/2011	ND	206	103	200	1.31	
DRO >C10-C28	<10.0	10.0	04/19/2011	ND	207	104	200	1.30	
Surrogate 1-Chlorooctane		95.1 %	70-130						
Surrogate 1-Chlorooctadecane		97.4 %	70-130						

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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: 04/15/2011  
Reported: 04/20/2011  
Project Name: EMPIRE ABO UNIT C-49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 04/15/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 18 FT (H100776-05)****Chloride, SM4500Cl-B****mg/kg****Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>64.0</b>	16.0	04/19/2011	ND	448	112	400	3.64	

**TPH 8015M****mg/kg****Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/19/2011	ND	206	103	200	1.31	
DRO >C10-C28	<10.0	10.0	04/19/2011	ND	207	104	200	1.30	

Surrogate 1-Chlorooctane 93.0 % 70-130

Surrogate 1-Chlorooctadecane 96.6 % 70-130

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Celey D. Keene, Lab Director/Quality Manager



## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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**Analytical Results For:**

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

 Received: 04/15/2011  
 Reported: 04/20/2011  
 Project Name: EMPIRE ABO UNIT C-49 SWD  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 04/15/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB 1 @ 6" (H100776-01)**

BTEX 8021B			mg/kg		Analyzed By: CMS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/20/2011	ND	2.35	118	2.00	15.9		
Toluene*	<0.050	0.050	04/20/2011	ND	2.32	116	2.00	16.4		
Ethylbenzene*	<0.050	0.050	04/20/2011	ND	2.31	115	2.00	14.4		
Total Xylenes*	<0.150	0.150	04/20/2011	ND	6.84	114	6.00	14.1		

Surrogate 4-Biomofluorobenzene (PIL) 87.9 % 70-130

**Sample ID: SB 1 @ 6 FT (H100776-02)**

BTEX 8021B			mg/kg		Analyzed By: CMS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/20/2011	ND	2.35	118	2.00	15.9		
Toluene*	<0.050	0.050	04/20/2011	ND	2.32	116	2.00	16.4		
Ethylbenzene*	<0.050	0.050	04/20/2011	ND	2.31	115	2.00	14.4		
Total Xylenes*	<0.150	0.150	04/20/2011	ND	6.84	114	6.00	14.1		

Surrogate 4-Biomofluorobenzene (PIL) 95.3 % 70-130

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**APACHE - EUNICE  
NATALIE GLADDEN  
P. O. BOX 1849  
EUNICE NM, 88231  
Fax To: 394-2425Received: 04/15/2011  
Reported: 04/20/2011  
Project Name: EMPIRE ABO UNIT C-49 SWD,  
Project Number: NONE GIVEN  
Project Location: NOT GIVENSampling Date: 04/15/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson**Sample ID: SB 1 @ 9 FT (H100776-03)**

BTEX 8021B			mg/kg		Analyzed By: CMS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/20/2011	ND	2.35	118	2.00	15.9		
Toluene*	<0.050	0.050	04/20/2011	ND	2.32	116	2.00	16.4		
Ethylbenzene*	<0.050	0.050	04/20/2011	ND	2.31	115	2.00	14.4		
Total Xylenes*	<0.150	0.150	04/20/2011	ND	6.84	114	6.00	14.1		

Surrogate 4-Bromofluorobenzene (PIL) 94.1% 70-130

**Sample ID: SB 1 @ 12 FT (H100776-04)**

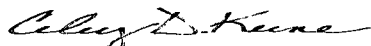
BTEX 8021B			mg/kg		Analyzed By: CMS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/20/2011	ND	2.35	118	2.00	15.9		
Toluene*	<0.050	0.050	04/20/2011	ND	2.32	116	2.00	16.4		
Ethylbenzene*	<0.050	0.050	04/20/2011	ND	2.31	115	2.00	14.4		
Total Xylenes*	<0.150	0.150	04/20/2011	ND	6.84	114	6.00	14.1		

Surrogate 4-Bromofluorobenzene (PIL) 94.7% 70-130

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**APACHE - EUNICE  
NATALIE GLADDEN  
P. O. BOX 1849  
EUNICE NM, 88231  
Fax To: 394-2425Received: 04/15/2011  
Reported: 04/20/2011  
Project Name: EMPIRE ABO UNIT C-49 SWD  
Project Number: NONE GIVEN  
Project Location: NOT GIVENSampling Date: 04/15/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson**Sample ID: SB 1 @ 18 FT (H100776-05)****BTEX 8021B****mg/kg****Analyzed By: CMS**

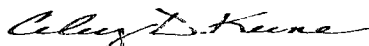
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/20/2011	ND	2.35	118	2.00	15.9	
Toluene*	<0.050	0.050	04/20/2011	ND	2.32	116	2.00	16.4	
Ethylbenzene*	<0.050	0.050	04/20/2011	ND	2.31	115	2.00	14.4	
Total Xylenes*	<0.150	0.150	04/20/2011	ND	6.84	114	6.00	14.1	

Surrogate 4-Bromofluorobenzene (PIL) 93.8 % 70-130

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Celey D. Keene, Lab Director/Quality Manager



# **CARDINAL LABORATORIES**

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

## **CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

Company Name: Apache				<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>											
Project Manager: Natalie Gladden				P.O. #:				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Chlorides</div> <div>TPH 8015 M</div> <div>BTEX <i>* Added 4/12/11</i></div> <div>Texas TPH</div> <div>Complete Cations/Anions</div> <div>TDS</div> </div>											
Address:				Company:															
City: State: NM Zip:				Attn:															
Phone #: Fax #:				Address:															
Project #: Project Owner:				City:															
Project Name: Empire Abo Unit C-49 SWD				State: Zip:															
Project Location:				Phone #:															
Sampler Name: Jordan Woodfin				Fax #:															
FOR LAB USE ONLY																			
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX					PRESERV.		SAMPLING								
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER	ACID/BASE:	ICE / COOL	OTHER	DATE	TIME					
H100776-1	SB 1 @ 6"	3	1			✓				✓			4/15/11	1130	✓	✓	✓		
2	SB 1 @ 6ft	9	1			✓				✓			"	1135	✓	✓	✓		
3	SB 1 @ 9ft	3	1			✓				✓			"	1138	✓	✓	✓		
4	SB 1 @ 12ft	9	1			✓				✓			"	1140	✓	✓	✓		
5	SB 1 @ 18ft	9	1			✓				✓			"	1206	✓	✓	✓		

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Relinquished By: <i>Jordan Woodfin</i>	Date: <i>4/15/11</i> Time: <i>4:45</i>	Received By: <i>Jodi Benson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
Relinquished By:	Date:	Received By:	Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: <i>3.52</i>			REMARKS: email results Natalie.Gladden@usa.apachecorp.com; Zconder@rice-ecs.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com <i>*Lara added BTEX, report on separate report. ch</i>	
Sample Condition Cool Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			CHECKED BY: <i>JH</i>	

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

#26

4/20/11



# Appendix E

Final Form C-141

**RICE Environmental Consulting and Safety (RECS)**  
P.O. Box 5630 Hobbs, NM 88241  
Phone 575.393.4411 Fax 575.393.0293



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

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

RECEIVED

OCT 07 2011

NMOCD ARTESIA

Form C-141  
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	Apache Corp.	Contact	Natalie Gladden
Address	P.O. Box 1849, Eunice, NM, 88231	Telephone No.	(575) 390-4186
Facility Name	Empire Abo Unit C49 SWD (nearest well EAUC50)	Facility Type	SWD

Surface Owner	BLM	Mineral Owner	OCD	Lease No.	30-015-03184
---------------	-----	---------------	-----	-----------	--------------

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
K	29	17S	29E	2310'	FSL	1650'	FWL	Eddy

Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

NATURE OF RELEASE

Type of Release	Produced Water	Volume of Release	525	Volume Recovered	500
Source of Release	Automation Failure		03/29/11 8am		07/15/11 1030am
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Randy Dade		
By Whom?	Date and Hour 03/29/11 @ 3:11pm				
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

If a Watercourse was Impacted, Describe Fully.\*


Describe Cause of Problem and Remedial Action Taken.\*

Automation failure caused tanks to overflow. Standing fluid was vacuumed up immediately and soil was pushed up towards metal berms to keep fluid from exiting the containment walls.

Describe Area Affected and Cleanup Action Taken.\*

The leak affected the south, east, and northeast areas of the containment floor. The impacted area was excavated to 10 in. to 1.5 ft. below ground surface, and 72 cubic yards of impacted soil were taken to a NMOCD approved disposal facility. Samples were collected from the excavation and tested. A soil bore was drilled to determine depth of impact and then plugged. Samples were sent to a NMOCD approved laboratory. A temporary monitoring well was installed on location to a depth of 100 ft below ground surface, and no water was detected. The temporary well was plugged, and the excavation was backfilled with clean caliche.

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

Signature: 	OIL CONSERVATION DIVISION		
Printed Name: Natalie Gladden	Approved by District Supervisor:		
Title: EII&S Environmental Tech	Approval Date:	Expiration Date:	
E-mail Address: Natalie.gladden@apachecorp.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 10/5/11	Phone: (575) 390-4186		

\* Attach Additional Sheets If Necessary