

Imagine the result

Apache Corporation

**State SWD Flowline
Remediation
Plan Proposal**

Eddy County, New Mexico

August 6, 2016

Jennifer Van Curen
Environmental Project Scientist

STATE SWD FLOWLINE

Remediation Plan Proposal

Prepared for:
Apache
Corporation
Eddy County, New Mexico

Prepared by:
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Our Ref.:
MT001200.0000.0000

Date:
August 6, 2016

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STATE SWD FLOWLINE

Remediation Plan Proposal

Apache
Corporation
Eddy County, New Mexico

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Attachment 1

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Initial C-141
Release Area
Soil Sampling Results

Appendix B

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Soil Sampling Results Table

STATE SWD FLOWLINE

Remediation Plan Proposal

Apache
Corporation
Eddy County, New Mexico

Appendix C

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Figure 5

Figure 6

Figure 7

Figure 8

Vicinity Map

Surface and Mineral Map

Archaeology Map

Hydrology Map

Karst Potential Map

Range Map

Soils, Geology, and Vegetation Map

Wildlife and Special Status Species Map

1. INTRODUCTION

The subject site is a well pad site located east of Loco Hills, New Mexico. The site is operated by Apache Corporation.

Five vertical samples were taken within the release area at the subject site. Elevated chloride concentrations were detected in soil samples collected from verticals. Elevated chlorides were detected down gradient from release point with the stained area encompassing 695 square feet.

2. SUMMARY OF SITE INVESTIGATION ACTIVITIES

New Mexico Oil Conservation Division (NMOCD) was notified of the 7 bbl. release at the site via form C-141, submitted on October 7, 2015 by Bruce Baker with Apache Corporation.

The release was reported to have had a 3 inch metal transition in the flowline developed a hole resulting in the release. The flow line was isolated and repaired. The release affected a total of 695 square feet with 100 square feet in pasture and 595 square feet on lease road and NM state pit 337. The release site was mapped and initial field sampling was conducted. The state land office was notified due to the contamination inside caliche pit. (Attachment 1 in Appendix A)

Initial release site investigation activities were conducted in May of 2016 with follow-up sampling completed in June of 2016. Soil sampling activities included soil sampling of five verticals to a varied depth to reach the NMOCD delineation guidelines for chlorides utilizing a hand auger. (Attachment 2 in Appendix A)

A table was prepared for all depths of the soil sampling activities and includes both field and lab results. (Table 1 of Appendix B)

3. ENVIRONMENTAL ASSESSMENT

3.1 Surface and Mineral Ownership

The 100 square foot area at the source falls inside BLM managed lands and on an existing ROW and lease road. The 595 square feet area where fluid ran down slope into the caliche pit is state managed lands. Apache will work with the BLM and OCD to

remediate the area around the ROW and lease road, and the State will address the portion of the state caliche pit. (Figure 2 in Appendix C)

3.2 Arch and Paleo

The release site falls within the boundaries of the Permian Participating Area. Apache could pay into this program instead of hiring an archaeologist to complete a survey. This release site falls within a previously arched area of a ROW and inside a state caliche pit. No areas outside these two areas will be disturbed. (Figure 3 in Appendix C)

This release site falls into PFYC 2, which means that there is little chance of paleontology to be discovered.

3.3 Hydrology

Water depths were not located in the area. There are storm water drainages and collection areas within a quarter mile, but will not be affected by this release site. There are no bodies of water, lakes, or streams near this release site. (Figure 4 in Appendix C)

3.4 Karst

The area surrounding this release site has a low karst potential. There are no known karst features in this area. (Figure 5 in Appendix C)

3.5 Range

The range allotment is in the Cedar Lake, 77008 and cattle are sometimes in the area. All open trenches or excavations will be fenced to prevent injury to cattle if left unattended. All equipment left overnight will be positioned to prevent injury to cattle. (Figure 6 in Appendix C)

3.6 Soils, Geology, and Vegetation

KM – Kermit-Berino fine sands, 0-3 percent slopes. The natural drainage is excessively drained to well-drained. Water movement is very high to moderately high. Shrink – swell potential is low to medium. The soils in the area is sandy to loamy sand soils with caliche found in some areas from very shallow to deeper zones. The underlying

**Remediation
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Apache
Corporation
Eddy County, New Mexico

geology is eolian deposits with piedmont alluvial deposits. The vegetation in the area consist of mesquite, sage, four-wing saltbush, cacti, yucca, and grasses found in sandy soils. All areas on the ROW will be seeded with the BLM LPC seed mix. (Figure 7 in Appendix C)

3.7 Wildlife and Special Status Species

This area falls inside the BLM mapped Lesser Prairie Chicken area, but will not be affected as the timing stipulation ended on June 15th, and Apache is a CCA participator. No wildlife will be affected by the remediation activity at the release site. (Figure 8 in Appendix C)

4. REMEDIATION PLAN

After review of various remedial options, we propose the following Remediation Plan for this release site due to the positioning of the release on an active lease road and state caliche pit.

4.1 Soil Remediation Plan

The selected remedial option will be the following:

The 100 square foot area on the Federal ROW will be further delineated while the track hoe is onsite excavating the caliche pit. The anticipated depth of excavation will be based on assessment activities (laboratory analysis and release located on an active ROW). Every effort will be made to delineate this area to show chloride levels reach less than 1,000 ppm or are continuously falling. All contaminants removed will be disposed of at an NMOCD approved disposal facility. If chlorides cannot be safely excavated, the 100 foot area will be lined with a reinforced liner and backfilled with native soils.

The 595 square feet inside the caliche pit will be excavated to a depth required to reach 250 ppm or less of chlorides or to base of caliche bed at sample points 2 and 5. Caliche with greater than 1,000 ppm of chlorides will be disposed of at an NMOCD approved disposal facility. Apache would like to purchase the caliche within the release site containing less than 1,000 ppm of chlorides to build or repair roads, well pads, and berm material for pads and facilities in the Cedar Lake area where ground water will not be affected. Apache will use caliche from the state pit to backfill

excavated areas in order to allow access to caliche in southern cell to the east of the release site.

4.2 Seeding Plan

The ROW area will be seeded with the Lesser Prairie Chicken (LPC) seed mixture. This is an area of 100 square feet plus any other areas disturbed during the remediation of the release site. The seed bed will be prepared by placing topsoil lightly over the area, treading area by walking across to make pockets to catch seed, broadcast seeding, and raking lightly to cover seed.

5. REMEDIATION WORK SCHEDULE

Soil remediation activities are expected to be completed in 10 working days (Monday through Friday) with work commencing after receiving approval and funding of this Remediation Plan.

6. FOLLOW-UP SCHEDULE

A Closure Report with Form C-141 will be completed and mailed within 30 days of remediation work being completed. This report will have the map of actual excavation and photos of excavation, liner in place, and final product. No further follow-up should be required due to this site being an active ROW, lease road, and caliche pit.



Appendix A

Attachments

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
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.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	Apache Corporation	Contact	Bruce Baker
Address	2350 W Marland Street, Hobbs, NM 88240	Telephone No.	(432) 631-6982
Facility Name	Apache State SWD # 3	Facility Type	SWD
Surface Owner	State	Mineral Owner	API No. 30-015-38978

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	19	17S	31E					Eddy

Latitude 32.816536 Longitude -103.916730

NATURE OF RELEASE

Type of Release	Produced water	Volume of Release	7 barrels of produce water	Volume Recovered	0 bbls
Source of Release	flow line	Date and Hour of Occurrence	10/2/2015	Date and Hour of Discovery	10/2/2015
Was Immediate Notice Given?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?			
By Whom?		Date and Hour			
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.*

A 3 inch metal transition developed a hole resulting in the release. The flow line was isolated and repaired.

Describe Area Affected and Cleanup Action Taken.*

The release affected total of 695 square feet with 100 square feet of pasture and 595 square feet on lease road and NM state pit 337. The area was mapped and initial field sampling was conducted. The state land office was notified due to contamination in pit 337.

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: <u>Bruce Baker</u>	OIL CONSERVATION DIVISION		
Printed Name: Bruce Baker	Approved by Environmental Specialist:		
Title: Environmental Technician	Approval Date:	Expiration Date:	
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval:		Attached <input type="checkbox"/>
Date: 10/7/2015	Phone: (432) 631-6982		

* Attach Additional Sheets If Necessary

State SWD #3

Legend

- SWD spill path
- State SWD



May 13, 2016

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: SWD #3 FLOWLINE

Enclosed are the results of analyses for samples received by the laboratory on 05/11/16 15:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 APACHE CORP - HOBBS
 BRUCE BAKER
 2350 W. MARLAND BLVD.
 HOBBS NM, 88240
 Fax To: (575) 393-2432

 Received: 05/11/2016
 Reported: 05/13/2016
 Project Name: SWD #3 FLOWLINE
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 05/11/2016
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Jodi Henson

Sample ID: SAMPLE PT. 5 @ 4' (H601037-01)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2560	16.0	05/12/2016	ND	416	104	400	3.77	

Sample ID: SAMPLE PT. 5 @ 5' (H601037-02)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	05/12/2016	ND	416	104	400	3.77	

Sample ID: SAMPLE PT. 5 @ 6' (H601037-03)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	448	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 7' (H601037-04)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	512	16.0	05/13/2016	ND	416	104	400	0.00	

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

APACHE CORP - HOBBS
BRUCE BAKER
2350 W. MARLAND BLVD.
HOBBS NM, 88240
Fax To: (575) 393-2432

Received: 05/11/2016
Reported: 05/13/2016
Project Name: SWD #3 FLOWLINE
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 05/11/2016
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: SAMPLE PT. 5 @ 8' (H601037-05)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	384	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 9' (H601037-06)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	480	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 10' (H601037-07)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	432	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 11' (H601037-08)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	608	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 12' (H601037-09)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	720	16.0	05/13/2016	ND	416	104	400	0.00	

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APACHE CORP - HOBBS
BRUCE BAKER
2350 W. MARLAND BLVD.
HOBBS NM, 88240
Fax To: (575) 393-2432

Received: 05/11/2016
Reported: 05/13/2016
Project Name: SWD #3 FLOWLINE
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 05/11/2016
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: SAMPLE PT. 5 @ 13' (H601037-10)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	464	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 14' (H601037-11)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 5 @ 15' (H601037-12)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	640	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 3 @ SURFACE (H601037-13)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 3 @ 1' (H601037-14)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	05/13/2016	ND	416	104	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

APACHE CORP - HOBBS
BRUCE BAKER
2350 W. MARLAND BLVD.
HOBBS NM, 88240
Fax To: (575) 393-2432

Received: 05/11/2016
Reported: 05/13/2016
Project Name: SWD #3 FLOWLINE
Project Number: NONE GIVEN
Project Location: NOT GIVEN

Sampling Date: 05/11/2016
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: SAMPLE PT. 3 @ 2' (H601037-15)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	05/13/2016	ND	416	104	400	0.00	

Sample ID: SAMPLE PT. 3 @ 3' (H601037-16)

Chloride, SM4500Cl-B

mg/kg

Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/13/2016	ND	416	104	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Apache				P.O. #:		
Project Manager: Bruce Baker				Company:		
Address:				City:		
State:				Zip:		
Phone #:				Fax #:		
Project #:				Address:		
Project Owner:				City:		
Project Name: Apache				State:	Zip:	
Project Location: Sub #3 Toulon				Phone #:		
Sampler Name: Chris Evans				Fax #:		

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							DATE	TIME	Chlorides							
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:										ICE / COOL
H001037	Sample Point 5	(G)	1									5/11/2016	10:30 AM	X						
	Sample Point 5	(G)	1									10:40 AM	X							
	Sample Point 5	(G)	1									10:50 AM	X							
	Sample Point 5	(G)	1									11:00 AM	X							
	Sample Point 5	(G)	1									11:20 AM	X							
	Sample Point 5	(G)	1									11:30 AM	X							
	Sample Point 5	(G)	1									11:40 AM	X							
	Sample Point 5	(G)	1									11:50 AM	X							
	Sample Point 5	(G)	1									12:00 PM	X							
	Sample Point 5	(G)	1									12:10 PM	X							

PLEASE NOTE: Lability and Damages. Contractor liability and claims recapture terming for any other wrong whether based in contract or tort, shall be limited to the amount paid by the client for and services. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Client within 30 days after completion of the applicable service. In no event shall Contractor be liable for incidental or consequential damages, including vehicle accidents, business interruptions, loss of sales, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Client. Signature of contractor and date a hard copy of this form must receive to Client.

Relinquished By:	Date: 5/11/2016	Received By:	Date: 5/11/2016
Relinquished By:	Date: 5/15	Received By:	Date: 5/15

Delivered By: (Circle One) **Sampler - UPS** **Bus** **Cother:**

Sample Condition: Cool ☒ Yes ☐ No Intact ☒ Yes ☐ No

CHECKED BY: [Signature]

REMARKS: CMail to: Larry Baker Capital Construction Inc. 10000 Waverly Blvd Suite 100 Dallas TX 75243-1000



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: <u>Huckle</u> Project Manager: <u>Bruce Baker</u>		P.O. #: Company:	
Address: City:		State:	
Phone #:		Fax #:	
Project #:		Project Owner:	
Project Name: <u>Huckle</u>		State:	
Project Location: <u>3 and H3 Fieldline</u>		City:	
Sample Name: <u>1005 F10005</u>		Phone #:	
FOR LAB USE ONLY		Fax #:	

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV	SAMPLING	DATE	TIME	ANALYSIS REQUEST
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
11	Sample Point 5 (C14)	(G)	1								5/11/2016	12:30 PM	X	Chloride
12	Sample Point 5 (C15)	(G)	1								5/11/2016	1:10 PM	X	
13	Sample Point 3 (C16)	(G)	1								5/11/2016	1:30 PM	X	
14	Sample Point 3 (C17)	(G)	1								5/11/2016	1:40 PM	X	
15	Sample Point 3 (C18)	(G)	1								5/11/2016	1:48 PM	X	
16	Sample Point 3 (C19)	(G)	1								5/11/2016	1:48 PM	X	

Requisitioned By: Date: 5/11/2016 Received By: <u>John Anderson</u>	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #: Remarks: <u>email to: Larry Baker (Capacitor Corp. com makes Capacitor tests) com</u>
Relinquished By: Date: 5/11/2016 Received By: <u>John Anderson</u>	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #: Remarks:
Delivered By: (Circle One) Delivered By: <input checked="" type="checkbox"/> UPS <input type="checkbox"/> Bus <input type="checkbox"/> Other	Sample Condition: Cool <input type="checkbox"/> Intact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>
28.40	CHARGE BY: <u>[Signature]</u>



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

June 21, 2016

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: SWD #3 FLOWLINE

Enclosed are the results of analyses for samples received by the laboratory on 06/15/16 16:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-15-7. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

 APACHE CORP - HOBBS
 BRUCE BAKER
 2350 W. MARLAND BLVD.
 HOBBS NM, 88240
 Fax To: (575) 393-2432

 Received: 06/15/2016
 Reported: 06/21/2016
 Project Name: SWD #3 FLOWLINE
 Project Number: NONE GIVEN
 Project Location: NOT GIVEN

 Sampling Date: 06/15/2016
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Jodi Henson

Sample ID: SAMPLE PT. 5 @ 16' (H601326-01)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	06/20/2016	ND	416	104	400	3.77	

Sample ID: SAMPLE PT. 5 @ 17' (H601326-02)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	06/20/2016	ND	416	104	400	3.77	

Sample ID: SAMPLE PT. 5 @ 18' (H601326-03)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1010	16.0	06/20/2016	ND	416	104	400	3.77	

Cardinal Laboratories

* = Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and shall be 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

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



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ANALYSIS REQUEST

† Cardinal cannot accept verbal changes. Please fax written changes.

Appendix B

Tables

STATE SWD FLOWLINE

Date	Sample #	Depth (feet)	Lab Data			Field Data for CL's
			BTEX	TPH	CL's	
4/5/2016	PT.1	0				116
		1				218
		2				1646
		3				2899
		4				12960
		5				7309
		6				9993
		7				13694
		8				11921
		9				12670
		10				12481
		11				9095
		12				8301
		13				6517
		14				8380
		15				9108
		16				9468
		17				11306
4/5/2016	PT.2	0				112
		1				789
		2				4235
		3				11623
		4				8427
		5				9032
		6				8893
		7			7400	7008
		8				3776
		9				4161
		10				1163
		11				1658
		12				347
		13			43	161
		14			330	454
6/15/2016	PT.3	0			64	116
		1			ND	139
		2			ND	149
		3			32	111

STATE SWD FLOWLINE

Date	Sample #	Depth (feet)	Lab Data			Field Data for CL's
			BTEX	TPH	CL's	
4/5/2016	PT.4	0				111
		1				112
		2				624
		3				684
		4				1762
5/11/2016	PT. 5	0				168
		1				1278
		2				194
		3				1146
		4			2560	
		5			240	
		6			448	
		7			512	
		8			384	
		9			480	
		10			432	
		11			608	
		12			720	
		13			464	
		14			304	
		15			640	
		16			288	
		17			320	
		18			1010	

Appendix C

Figures









