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November 1, 2019

Mr. Bradford Billings  
State of New Mexico Oil Conservation Division  
1220 South St Francis Drive  
Santa Fe, NM 87505

RE: 1RP-4637 NEDU CTB

Mr. Billings,

In compliance with 19.15.29.15(B) NMAC and the agreement submitted by Apache Corporation on November 8, 2018, Apache Corporation is submitting information related to deferment request for the release occurring March 1, 2017. Apache is respectfully submitting the deferment request for your approval. Unless further information is requested by NMOCD, Apache Corporation considers this release deferred.

If there are any questions, please feel free to contact me by telephone at 432-818-1615 or by e-mail at David.Feather@ApacheCorp.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Feather'.

David Feather  
Environmental Supervisor  
Apache Corporation - Permian Basin Region

Attachment: Deferment Report Dated August 2, 2019

**1RP-4637**  
**DELINEATION AND DEFERRAL REPORT**  
**NEDU CTB**  
**Produced Water Release**  
**Lea County, New Mexico**

Latitude: N 32.48756°  
Longitude: W 103.1445°

LAI Project No. 19-0112-03

August 2, 2019

Prepared for:  
Apache Corporation  
2350 W. Marland Blvd  
Hobbs, New Mexico 88240

Prepared by:  
Larson & Associates, Inc.  
507 North Marienfeld Street, Suite 205  
Midland, Texas 79701



Mark J. Larson, P.G.  
Certified Professional Geologist #10490



Rachel E. Owen  
Sr. Geoscientist

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1RP-4637  
Deferral Report  
NEDU CTB  
August 2, 2019

## 1.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this delineation and deferral report on behalf of Apache Corporation (Apache) for submittal to the New Mexico Oil Conservation (OCD) District I for a produced water release at the Northeast Drinkard Unit (NEDU) Central Tank Battery (CTB) located in Unit P, Section 10, Township 21 South, Range 37 East in Lea County, New Mexico. The geodetic position is North 32.48756° and West -103.14450°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

### 1.1 Background

The release occurred on March 1, 2017, due to the deterioration and failure of a four (4) inch ball valve at the bottom of a produced water tank. The failure allowed for approximately 170 barrels (bbls) of produced water to be released. The released fluid traveled from the tank and accumulated near the southeast corner of the facility. The fluid was contained inside the earthen berm around the east side of the Facility. A vacuum truck was dispatched the same day to recover standing fluid and the ball valve was replaced. Approximately 150 bbls were recovered. Notice was given to OCD District 1 (Ms. Olivia Yu) on March 2, 2017, at 15:30 by phone. The initial C-141 was submitted on March 10, 2017 and assigned remediation permit number of 1RP-4637.

Initial sampling was conducted by ARCADIS U.S., INC (Arcadis) on March 9, 2017. Two (2) soil samples were collected from a point located near the southeast corner of the Facility (SP-1) at ground surface and at 0.5 feet below ground surface (bgs). The samples were delivered to Cardinal Laboratories located in Hobbs, New Mexico and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH) by EPA SW-846 Methods 8021B and 8015M, respectively, and chloride by titration method SM4500 CL-B. Chloride was reported above the delineation level of 600 milligrams per kilogram (mg/Kg) in sample SP-1, 0 feet bgs (13,200 mg/Kg) and SP-1, 0.5 feet bgs (4,240 mg/Kg). Benzene, BTEX and TPH were reported below remediation action levels of 10 mg/Kg, 50 mg/Kg and 100 mg/Kg, respectively, in both samples. Arcadis submitted a remediation deferral request to OCD, on January 18, 2018. On January 30, 2018, the OCD denied the remediation deferral request until further delineation was completed. Appendix B presents the Arcadis remediation deferral request. Appendix C presents OCD communications.

On October 18, 2018, Mr. Larry Baker with Apache submitted a letter to OCD proposing to drill a soil boring west (up-gradient) of the Facility to determine depth to groundwater. Appendix C presents OCD communications.

### 1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,443 feet above mean sea level (msl);
- The topography slopes gently towards the southeast;
- There are no surface water features within 1,000 feet of the Site;
- The soils are designated as "Simona-Upton Association, 0 to 3 percent slopes", consisting of 0 to 16 inches of a sandy loam underlain by 16 to 26 inches of a cemented material (caliche);
- The surface geology consists of Eolian and piedmont deposits (Holocene to middle Pleistocene) - interlayered eolian sands and piedmont-slope deposits;

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- Groundwater occurs in the Ogallala formation at 28.5 feet below ground surface (bgs) based on a boring drilled about 100 feet northwest (up gradient) of the Facility on February 26, 2019;
- According to the New Mexico Office of the State Engineer (OSE) website the nearest groundwater well is located in Unit L, Section 14, Township 21 South, Range 37 East, approximately 0.7 miles or about 3,790 feet south of the Site.

### 1.3 Remediation Levels

The following remediation standards are based on closure criteria for soils impacted by a release as presented in Table 1 of 19.15.29 NMAC:

- |            |           |
|------------|-----------|
| • Benzene  | 10 mg/Kg  |
| • BTEX     | 50 mg/Kg  |
| • TPH      | 100 mg/Kg |
| • Chloride | 600 mg/Kg |

Further, 19.15.29.13 NMAC (Restoration, Reclamation and Re-Vegetation) requires the operator to restore the impacted surface area that existed prior to the release or their final land use.

## 2.0 CONFIRMATION

On February 26, 2019, Scarborough Drilling, Inc. (SDI), under supervision from LAI, drilled a soil boring approximately 100 feet northwest of the Facility (BH-1) to determine depth to groundwater. The boring was drilled to approximately 55 feet bgs using an air rotary drilling rig. An initial reading determined groundwater at 49.5 feet bgs. A second reading (February 28, 2019) recorded groundwater at 28.5 feet bgs.

On February 28, 2019, a second boring (BH-2) was drilled near soil sample SP-1 to approximately 5 feet bgs where a soil sample was collected for chloride delineation. The sample was collected with a jam tube sampler and delivered under chain of custody to Permian Basin Environmental Laboratory (PBEL) in Midland, Texas which analyzed the sample for BTEX, TPH, including gasoline range organics (C6-C12), diesel range organics (>C12-C28) and oil range organics (>C28-C35) by EPA SW-846 Methods 8021B and 8015M, respectively, and chloride by EPA Method 300. The laboratory reported benzene, BTEX, TPH and chloride below the remediation action levels of 10 mg/Kg, 50 mg/kg, 100 mg/Kg and 600 mg/Kg, respectively. Table 1 presents the soil sample analytical data summary for boring BH-2.

Figure 2 presents the soil boring locations. Appendix C presents the laboratory report. Appendix D presents the boring log and depth to groundwater measurements.

## 3.0 DEFERRAL REQUEST

Apache has delineated chloride below the delineation limit of 600 mg/Kg. Due to the spill area being in close proximity to production equipment, and cemented material (caliche) present at approximately 16 inches bgs, Apache respectfully requests a deferral to complete remediation at the NEDU CTB (1RP-4637) until abandonment.

**Tables**

**Table 1**  
**Confirmation Soil Sample Analytical Data Summary**  
**Apache Corporation, NEDU CTB 1**  
**Lea County, New Mexico**  
**32.487564 North -103.144525 West**

Page 1 of 1

Sample	Depth (Feet)	Collection Date	Status	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
<b>Remediation Level:</b>				<b>10</b>	<b>50</b>				<b>100</b>	<b>600</b>
BH-2	5	02/28/2019	In-Situ	<0.00110	<0.0066	<27.5	<27.5	<27.5	<27.5	12.1

Notes: analysis performed by Permian Basin Environmental Lab, Midland, Texas by EPA SW-846 Methods 8021B (BTEX), 8015M (TPH) and 300 (chloride)

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

<: denotes concentration less than analytical method reporting limit



## Figures

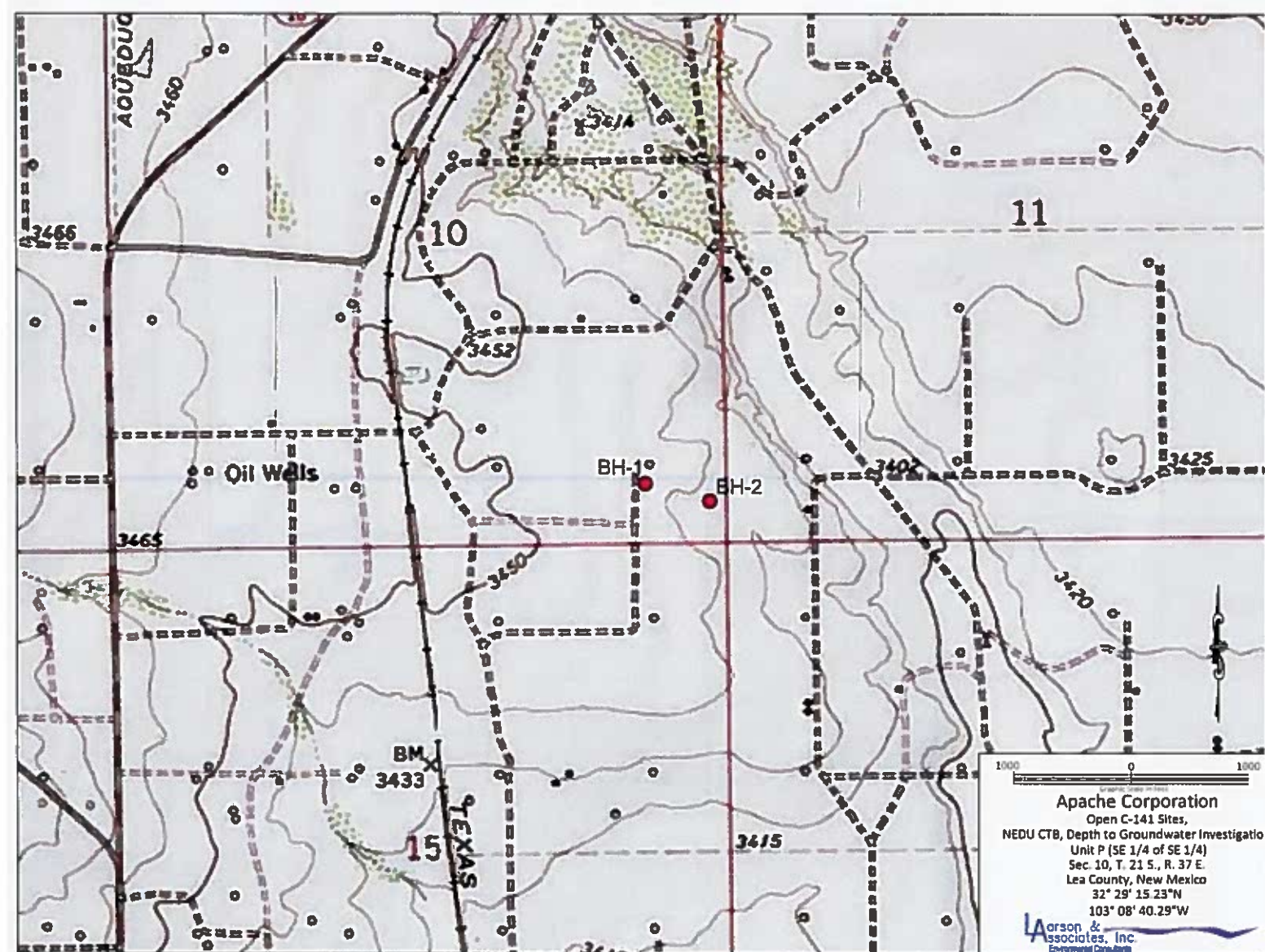


Figure 1 - Topographic Map

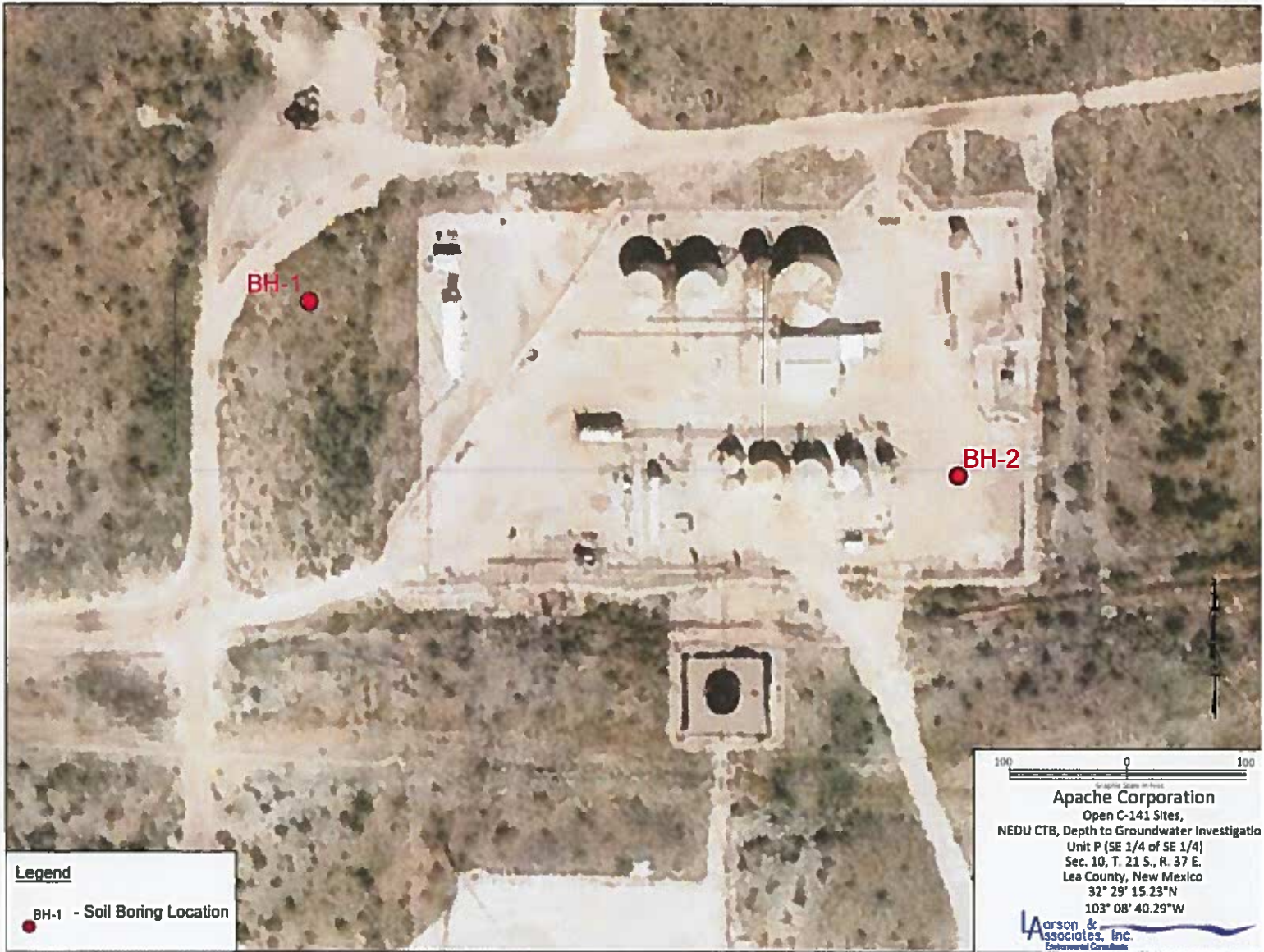


Figure 2 - Aerial Map



**Appendix A**

**Initial C-141**

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.

### 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 NEDU Central Tank Battery	Facility Type Battery
Surface Owner State	Mineral Owner
API No. 30-025-34602 (nearest well)	

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	10	21S	37E					Lea

Latitude 32.487146 Longitude -103.14672

#### NATURE OF RELEASE

Type of Release Produced water	Volume of Release 170 barrels of produced water	Volume Recovered 150 barrels of produced water
Source of Release valve on water tank	Date and Hour of Occurrence 3/1/2017	Date and Hour of Discovery 3/1/2017
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Olivia Yu (NMOCD)	
By Whom? Bruce Baker	Date and Hour 3/2/2016 at 3:30 p.m. via phone	
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 small hole developed on the four inch flanged ball valve on the bottom of the tank. Vacuum trucks were dispatched to pick-up standing fluid and the valve was replaced.

Describe Area Affected and Cleanup Action Taken.\*

The entire release was contained to the facility.

**RECEIVED**

By Olivia Yu at 8:49 am, Mar 10, 2017

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.

#### OIL CONSERVATION DIVISION

Signature: <i>Bruce Baker</i>	Approved by Environmental Specialist: <i>WY</i>	
Printed Name: Bruce Baker	Approval Date: 3/10/2017	Expiration Date:
Title: Environmental Technician	Conditions of Approval: see attached directive	
E-mail Address: larry.baker@apachecorp.com	Attached <input checked="" type="checkbox"/>	
Date: 3/10/2017	Phone: (432) 631-6982	

\* Attach Additional Sheets If Necessary

1RP-4637

nOY1706931789

pOY1706933252

**Operator/Responsible Party,**

The OCD has received the form C-141 you provided on 3/10/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1R-4637 has been assigned. Please refer to this case number in all future correspondence.

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 4/10/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold  
OCD Environmental Bureau Chief  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505-476-3465  
jim.griswold@state.nm.us



State of New Mexico  
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

## Site Assessment/Characterization

*This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

What is the shallowest depth to groundwater beneath the area affected by the release?	28.5 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

**Characterization Report Checklist:** *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within 1/2-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.



Form C-141  
Page 4

State of New Mexico  
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Bruce Baker Title: Sr. Environmental Tech  
Signature: Bruce Baker Date: 8/2/2019  
email: Larry.Baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Form C-141

Page 5

State of New Mexico  
Oil Conservation Division

Incident ID	nOY1706931789
District RP	1RP-4637
Facility ID	
Application ID	

## Remediation Plan

**Remediation Plan Checklist:** *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only:** *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☒ Extents of contamination must be fully delineated.
- ☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD 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 OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD 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.

Printed Name: Bruce Baker

Title: Sr. Environmental Tech

Signature: Bruce Baker

Date: 8/2/2019

email: Larry.Baker@apachecorp.com

Telephone: 432-631-6982

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

☐ Approved ☒ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Bradford Billings Date: 07/16/2021

**Appendix B**  
**Arcadis Remediation Deferral Request**



Imagine the result

## INFORMATION ONLY

Remediation deferral request for 1RP-4637  
denied until delineation is completed.

Apache Corporation

NEDU CTB  
Remediation  
Deferment  
1RP-4637

Lea County, New Mexico

January 18, 2018

Korey Kennedy  
Staff Scientist

**NEDU CTB  
1RP4637  
Remediation  
Deferment**

Prepared for:  
Apache  
Corporation  
Lea County, New Mexico

Prepared by:  
ARCADIS U.S., Inc.  
1004 North Big Spring Street  
Suite 300  
Midland  
Texas 79701  
Tel 432 687 5400  
Fax 432 687 5401

Our Ref.:  
MT001200.0000.0000

Date:  
January 18, 2018

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NEDU CTB  
1RP4637

Remediation  
Deferment

Apache  
Corporation  
Lea County, New Mexico

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    Depth to Groundwater Report

Appendix B  
Laboratory Analyticals

Appendix C  
Photos

NEDU CTB  
1RP4637

**Remediation  
Deferment**

Apache  
Corporation  
Lea County, New Mexico

## 1. INTRODUCTION

The subject site is located on the facility pad at 32.487146 and -103.14672 in Unit O, Section 10, T21S, R37E in Lea County. The site is operated by Apache Corporation.

## 2. SUMMARY OF SITE INVESTIGATION ACTIVITIES

The New Mexico Oil Conservation Division (NMOCD), Olivia Yu, and the State Land Office (SLO), Amber Groves, were notified of a release that occurred on March 2, 2017 where 170 barrels (bbls.) of produced water were released, and 150 barrels (bbl.) of produced water were recovered at the site via form C-141, submitted on March 10, 2016 by Bruce Baker with Apache Corporation. The surface is managed by the state for this area.

The release was reported to have had a small hole develop in the flanged ball valve on the bottom side of the storage tank. A vacuum truck was dispatched to pick-up the standing fluid and the valve was replaced. All standing fluid was contained on the well pad area (482 square yards) inside of a solid bermed containment to prevent fluid from leaving the site.

Initial sampling and mapping of site took place on March 9, 2017 with the surface analyzed at 13,200 mg/kg and 4240 mg/kg at 6-inches bgs. where a solid calcified soil type was encountered. The soil sampling point is shown on Figure 1. The laboratory results are attached in Appendix C.

NEDU CTB  
1RP4637

Remediation  
Deferment

Apache  
Corporation  
Lea County, New Mexico



Figure 1: Sample Point Locations

### 3. ENVIRONMENTAL ASSESSMENT

#### 3.1 Hydrology

Groundwater depths are not found within the direct area (Waters Map), but can be found in neighboring sections using a 2,000-meter area and averaging depth at 50 feet bgs. There is no surface water near this release site or water wells within 1,000 ft.

The site ranking for this site is a 20 based on the following:

Depth to ground water	~50' = 20
Wellhead Protection Area	>1000' = 0
Distance to surface water body	>1000' = 0



NEDU CTB  
1RP4637

**Remediation  
Deferment**

Apache  
Corporation  
Lea County, New Mexico

#### **4. REMEDIATION PLAN**

After review of various remedial options, the following Remediation Plan was completed for this release site:

##### **4.1 Soil Remediation Plan**

The site where the release occurred is setting upon a very solid hardpan of calcium carbonate. Samples were taken at surface and some scrapings of the calcium carbonate located at 6-inches bgs. were taken to Cardinal Laboratories to be analyzed. The release occurred inside a large facility. The fluid from the release ran to the southeast corner of the facility area where the fluid was recovered due to the hard calcium carbonate subsurface. There was 20 bb. that was not picked up, which covered an area of 482 square yards. This area has a 4 ft. bermed area and no fluids, even during terrestrial rains, could leave the facility area. The surface area of contamination has been scraped to remove any contaminated surface soils.

#### **5. FOLLOW-UP SCHEDULE**

It is requested that this site will be re-evaluated at time of decommissioning. Apache requests deferment of the site until abandonment.



**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**  
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.

### 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 NEDU Central Tank Battery	Facility Type Battery
Surface Owner State	Mineral Owner
API No. 30-025-34602 (nearest well)	

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	10	21S	37E					Lea

Latitude 32.487146 Longitude -103.14672

#### NATURE OF RELEASE

Type of Release Produced water	Volume of Release 170 barrels of produced water	Volume Recovered 150 barrels of produced water
Source of Release valve on water tank	Date and Hour of Occurrence 3/1/2017	Date and Hour of Discovery 3/1/2017
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Olivia Yu (NMOCD)	
By Whom? Bruce Baker	Date and Hour 3/2/2016 at 3:30 p.m. via phone	
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 small hole developed on the four inch flanged ball valve on the bottom of the tank. Vacuum trucks were dispatched to pick-up standing fluid and the valve was replaced.

Describe Area Affected and Cleanup Action Taken.\*

The entire release was contained to the facility.

**RECEIVED**

By Olivia Yu at 8:49 am, Mar 10, 2017

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: <i>Bruce Baker</i>	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Bruce Baker	Approved by Environmental Specialist: <i>WY</i>	
Title: Environmental Technician	Approval Date: 3/10/2017	Expiration Date:
E-mail Address: larry.baker@apachecorp.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: 3/10/2017	Phone: (432) 631-6982	

\* Attach Additional Sheets If Necessary

1RP-4637

nOY1706931789

pOY1706933252

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 3/10/2017 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 1R-4637 has been assigned. Please refer to this case number in all future correspondence.

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 1 office in Hobbs on or before 4/10/2017. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold  
OCD Environmental Bureau Chief  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505-476-3465  
jim.griswold@state.nm.us





# New Mexico Office of the State Engineer

## Water Column/Average Depth to Water

(A CLW##### in the  
POD suffix indicates the  
POD has been replaced  
& no longer serves a  
water right file.)

(R=POD has been  
replaced,  
O=orphaned,  
C=the file is  
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
<a href="#">CP 00554</a>		CP	LE	2	2	16	21S	37E		672744	3595610*	1270	80	70	10
<a href="#">CP 00286 POD1</a>		CP	LE	2	1	2	10	21S	37E	674019	3597338*	1307	70		
<a href="#">CP 00729 POD1</a>		CP	LE	4	1	3	15	21S	37E	673259	3594711*	1488	8015		
<a href="#">CP 01185 POD1</a>		CP	LE	1	3	14	21S	37E		674598	3594689	1495	70		
<a href="#">CP 01185 POD2</a>		CP	LE	1	3	14	21S	37E		674623	3594674	1519	70		
<a href="#">CP 01110 POD1</a>		CP	LE	1	3	14	21S	37E		674586	3594648	1526	70		
<a href="#">CP 01110 POD2</a>		CP	LE	1	3	14	21S	37E		674586	3594648	1526	70		
<a href="#">CP 01110 POD3</a>		CP	LE	1	3	14	21S	37E		674586	3594648	1526	70		
<a href="#">CP 01110 POD4</a>		CP	LE	1	3	14	21S	37E		674586	3594648	1526	20		
<a href="#">CP 01110 POD5</a>		CP	LE	1	3	14	21S	37E		674586	3594648	1526	20		
<a href="#">CP 01185 POD3</a>		CP	LE	1	3	14	21S	37E		674592	3594620	1555	70		
<a href="#">CP 01574 POD1</a>		CP	LE	2	4	4	15	21S	37E	674559	3594598	1561	68	57	11
<a href="#">CP 01185 POD4</a>		CP	LE	1	3	14	21S	37E		674633	3594610	1581	70		
<a href="#">CP 01574 POD2</a>		CP	LE	1	3	3	14	21S	37E	674666	3594578	1624	68	57	11
<a href="#">CP 01141 POD3</a>		CP	LE				15	21S	37E	673520	3594272	1810	40		
<a href="#">CP 01141 POD2</a>		CP	LE				15	21S	37E	673543	3594250	1826	40		
<a href="#">CP 01141 POD4</a>		CP	LE				15	21S	37E	673556	3594239	1834	45		
<a href="#">CP 01575 POD1</a>		CP	LE	1	2	1	22	21S	37E	673544	3594204	1870	40	35	5
<a href="#">CP 01575 POD2</a>		CP	LE	2	2	1	22	21S	37E	673615	3594181	1880	35	35	0

Average Depth to Water: 50 feet  
Minimum Depth: 35 feet  
Maximum Depth: 70 feet

Record Count: 19

UTM NAD83 Radius Search (in meters):

Easting (X): 673942

Northing (Y): 3596033

Radius: 2000

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

6/22/17 7:02 AM

WATER COLUMN/ AVERAGE DEPTH TO  
WATER



## Appendix B

### Laboratory Analyticals



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

March 16, 2017

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU CENTRAL TANK BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 03/09/17 14:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. 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](http://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,

A handwritten signature in black ink that reads "Coley D. Keene".

Coley D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

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

Received:	03/09/2017	Sampling Date:	03/09/2017
Reported:	03/16/2017	Sampling Type:	Soil
Project Name:	NEDU CENTRAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

**Sample ID: SP 1 0' (H700616-01)**

BTEX 80218			mg/kg		Analyzed By: MS				
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/14/2017	ND	2.16	108	2.00	0.812	
Toluene*	<0.050	0.050	03/14/2017	ND	2.01	101	2.00	1.18	
Ethylbenzene*	<0.050	0.050	03/14/2017	ND	2.00	100	2.00	1.33	
Total Xylenes*	<0.150	0.150	03/14/2017	ND	5.72	95.4	6.00	1.43	
Total BTEX	<0.300	0.300	03/14/2017	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 101 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13200	16.0	03/10/2017	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/10/2017	ND	186	93.0	200	0.653	
DRO >C10-C28	<10.0	10.0	03/10/2017	ND	196	97.9	200	1.20	

Surrogate: 1-Chlorooctane 88.9 % 25.1-158

Surrogate: 1-Chlorooctadecane 78.9 % 26.8-170

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 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



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

**Analytical Results For:**

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

Received: 03/09/2017  
 Reported: 03/16/2017  
 Project Name: NEDU CENTRAL TANK BATTERY  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

Sampling Date: 03/09/2017  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SP 1 6" (H700616-02)**

BTEX 80218 mg/kg			Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/14/2017	ND	2.16	108	2.00	0.812	
Toluene*	<0.050	0.050	03/14/2017	ND	2.01	101	2.00	1.18	
Ethylbenzene*	<0.050	0.050	03/14/2017	ND	2.00	100	2.00	1.33	
Total Xylenes*	<0.150	0.150	03/14/2017	ND	5.72	95.4	6.00	1.43	
Total BTEX	<0.300	0.300	03/14/2017	ND					

Surrogate: 4-Bromofluorobenzene (PIC) 102 % 72-148

Chloride, SM4500Cl-B mg/kg			Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4240	16.0	03/10/2017	ND	416	104	400	3.77	

TPH 8015M mg/kg			Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	03/10/2017	ND	186	93.0	200	0.653	
DRO >C10-C28	<10.0	10.0	03/10/2017	ND	196	97.9	200	1.20	

Surrogate: 1-Chlorooctane 91.6 % 25.1-158

Surrogate: 1-Chlorooctadecane 78.5 % 26.8-170

## Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Notes and Definitions**

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

\*\* Samples not received at proper temperature of 6°C or below.

\*\*\* Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=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 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



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

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> <u>Seaver Van Lusen</u>		<b>P.O. #:</b>		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>	
<b>Project Manager:</b>		<b>Company:</b> <u>Wells</u>					
<b>Address:</b>		<b>State:</b>		<b>City:</b>		<b>Address:</b>	
<b>Phone #:</b>		<b>Fax #:</b>		<b>Attn:</b>		<b>State:</b>	
<b>Project #:</b>		<b>Project Owner:</b>		<b>City:</b>		<b>Address:</b>	
<b>Project Name:</b> <u>NEOU CTB</u>		<b>State:</b>		<b>City:</b>		<b>Address:</b>	
<b>Project Location:</b>		<b>Phone #:</b>		<b>State:</b>		<b>City:</b>	
<b>Sample Name:</b> <u>Seaver Van Lusen</u>		<b>Fax #:</b>		<b>State:</b>		<b>City:</b>	

FOR LAB USE ONLY		MATRIX		PRESERV		SAMPLING	
Lab I.D.		Sample I.D.		DATE		TIME	
H100046		1 SP1		3/17/17		11:00	
2 SP1		60		3/17/17		11:05	
(G)RAB OR (C)OMP		# CONTAINERS		GROUNDWATER		WASTEWATER	
X 1		X 1		X		X	
SOIL		OIL		SLUDGE		OTHER :	
X		X		X		X	
ACID/BASE		ICE / COOL		OTHER :		TPH	
X		X		X		BTEx	
X		X		X		Chloride	

<b>Delivered By:</b> (Circle One) <u>#75</u>		<b>Sample Condition:</b>		<b>Checked By:</b>	
<b>Sampler - UPS - Bus - Other:</b>		<b>Cool</b> <input checked="" type="checkbox"/> <b>Intact</b> <input checked="" type="checkbox"/>		<b>Remarks:</b>	
<b>Received By:</b> <u>Scott Jensen</u>		<b>Phone Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Adapt Phone #:</b>	
<b>Time:</b> <u>3:17</u>		<b>Fax Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		<b>Adapt Fax #:</b>	
<b>Date:</b> <u>3/17</u>		<b>REMARKS:</b>			



## Appendix C

### Photos



## PHOTOGRAPH LOG

Apache Corporation  
NEDU CTB 1RP4637



**Photograph: 1**

**Description:**  
Spill path

**Location:**  
NEDU CTB; Lea  
County, NM

**Photograph taken by:**  
Jennifer Van Curen

**Date:** 6/22/2017



**Photograph: 2**

**Description:**  
Spill path

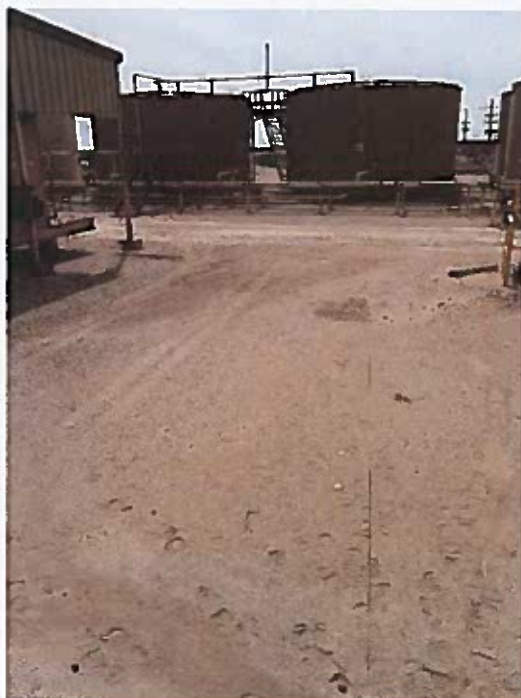
**Location:**  
NEDU CTB; Lea  
County, NM

**Photograph taken by:**  
Jennifer Van Curen

**Date:** 6/22/2017

## PHOTOGRAPH LOG

Apache Corporation  
NEDU CTB 1RP4637



**Photograph: 3**

**Description:**  
Spill path

**Location:**  
NEDU CTB; Lea  
County, NM

**Photograph taken by:**  
Jennifer Van Curen

**Date:** 6/22/2017



**Photograph: 4**

**Description:**  
Spill path

**Location:**  
NEDU CTB; Lea  
County, NM

**Photograph taken by:**  
Jennifer Van Curen

**Date:** 6/22/2017

## PHOTOGRAPH LOG

Apache Corporation  
NEDU CTB 1RP4637



**Photograph: 5**

**Description:**  
Spill path

**Location:**  
NEDU CTB; Lea  
County, NM

**Photograph taken by:**  
Jennifer Van Curen

**Date: 6/22/2017**



**Photograph: 6**

**Description:**  
Spill path

**Location:**  
NEDU CTB; Lea  
County, NM

**Photograph taken by:**  
Jennifer Van Curen

**Date: 6/22/2017**



**Appendix C**  
**OCD Communications**

**From:** [Yu, Olivia, EMNRD](#)  
**To:** ["Kennedy, Korey"; Naranjo, Mark](#)  
**Cc:** [Baker, Larry; Mueller, Ryan](#)  
**Subject:** RE: Apache NEDU CTB Deferment  
**Date:** Tuesday, January 30, 2018 7:50:00 AM  
**Attachments:** image001.png

---

Mr. Kennedy:

NMOCD does not accept the deferment request for 1RP-4637. Deferral of remedial activities will not be addressed until release characterization/delineation is completed.

Please be advised that this release occurred on State surface. Mark Naranjo will be the correspondent for NMSLO in the interim.

Thanks,

Olivia Yu  
Environmental Specialist  
NMOCD, District I  
[Olivia.yu@state.nm.us](mailto:Olivia.yu@state.nm.us)  
575-393-6161 x113

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

---

**From:** Kennedy, Korey [mailto:[Korey.Kennedy@arcadis.com](mailto:Korey.Kennedy@arcadis.com)]  
**Sent:** Thursday, January 18, 2018 1:19 PM  
**To:** Yu, Olivia, EMNRD <[Olivia.Yu@state.nm.us](mailto:Olivia.Yu@state.nm.us)>  
**Cc:** Baker, Larry <[Larry.Baker@apachecorp.com](mailto:Larry.Baker@apachecorp.com)>; Mueller, Ryan <[Ryan.Mueller@arcadis.com](mailto:Ryan.Mueller@arcadis.com)>  
**Subject:** Apache NEDU CTB Deferment

Hello Olivia,

Attached is the remediation deferment request documents for Apache Corporation's NEDU CTB facility.

Please let me know if you have any questions, concerns, or if I can provide any further information.

Thanks so much,  
Korey

Korey Kennedy | Environmental Scientist | [korey.kennedy@arcadis.com](mailto:korey.kennedy@arcadis.com)  
Arcadis | Arcadis U.S., Inc.]  
1004 N. Big Spring Street, Suite 300 Midland TX | 79701 | USA  
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2350 W Marland Blvd Hobbs, NM 88240  
**Path Forward**

October 18, 2018

Re: NEDU CTB  
API# 30-025-38198  
Case # 1RP-4637  
1RP-4945

To: Olivia Yu  
Environmental Specialist-New Mexico Oil Conservation Division Energy, Minerals and  
Natural Resources Department 1625 N. French Drive Hobbs, New Mexico 88240

**Background:**

On March 3, 2017 (1RP-4637) a release occurred due to a small hole developed on the four inch flanged ball valve on the bottom of the tank. The NEDU CTB (GPS Coordinates: 32.487146 -103.14672) is located in unit letter O section 10 township 21S range 37E. On January 20, 2018 a release occurred due to a steel line failed. Initial C-141s for both releases were submitted to NMOCD.

The groundwater in the area is uncertain due to the CTB is near monument draw and the USGS water well data suggest the possibility of a perched aquifer on the west side of the draw. Apache Corporation proposes that a soil bore be placed up-gradient of the CTB to investigate the actual depth of groundwater under the CTB battery location. Once the depth of groundwater is verified Apache will conduct remediation activities in accordance with 19.15.29 NMAC.

*Enclosed: Initial C-141s, release area map, proposed location of soil bore*

Submitted by;

*Bruce Baker*

**Environmental Technician**  
larry.baker@apachecorp.com  
**Cell# 432-631-6982**  
**Off# 575-393-7106**

**Appendix D**  
**Boring Logs**

BORING RECORD																							
GEOLOGIC UNIT	DEPTH	Start: 10:05 Finish: 12:02  DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING												SAMPLE		REMARKS				
					PPM X 1												NUMBER	PID READING	RECOVERY	DEPTH	BACKGROUND PID READING		
					2	4	6	8	10	12	14	16	18										
	0	Silty Clay, 2.5YR, 3/3, Dark Brown, Very Fine Grained Quartz Sand, Dry	CL																				
	3																						
	5																						
		5	Caliche, 7.5YR, 7/3, to 6/3, Pink to Light Brown, Very Fine Grained Quartz Sand, Moderately Hard, Indurated Sub-rounded to Angular, Dry	Caliche																			
	10																						
	15																						
	20																						
	22																						
		25	Sandstone, 2.5YR, 6/3 to 7/3, Reddish Brown, Very Fine to Fine Grained Quartz Sand and Quartzite sandstone, Moderately Well to Very Well Cemented, Silica Cement, Hard, Dry 7.5YR, 7/2, Light Gray, Below 25'	Sandstone																			
	30																						
31																							
	35	Shale, 2.5YR, 4/6, Red, Very Fine Graded Quartz Sand, Massive Bedding, Low Moisture	Shale																				
40																							
45																							
50																							
55																							
	55	5YR, 5/6, Yellowish Red, Below 50'																					
	55	TD : 55'																					

2/28/2019 28.5'

2/26/2019 49.5'

JOB NUMBER : Apache/ 19-0112-03

HOLE DIAMETER : 5"

LOCATION : W of CTB (90'S & 102'W of NW Conner)

LAI GEOLOGIST : M. Larson

DRILLING CONTRACTOR : SDC

DRILLING METHOD : Air Rotary

ONE CONTINUOUS AUGER SAMPLER

STANDARD PENETRATION TEST

UNDISTURBED SAMPLE

WATER TABLE ( 24 HRS )

WATER TABLE ( TIME OF BORING )

LABORATORY TEST LOCATION

PENETROMETER ( TONS/ SQ. FT )

NO RECOVERY

**Larson & Associates, Inc.**  
Environmental Consultants

DRILL DATE : 02-26-2019

BORING NUMBER : BH-1



[illegible]

**Appendix E**  
**Laboratory Report**

**PERMIAN BASIN  
ENVIRONMENTAL LAB, LP  
1400 Rankin Hwy  
Midland, TX 79701**



## Analytical Report

**Prepared for:**

Mark Larson  
Larson & Associates, Inc.  
P.O. Box 50685  
Midland, TX 79710

Project: NEDU CTB1/ APACHE

Project Number: 19-0112-03

Location:

Lab Order Number: 9C01007



NELAP/TCEQ # T104704516-18-9

Report Date: 03/11/19

Larson & Associates, Inc. P.O. Box 50685 Midland TX, 79710	Project: NEDU CTBI/ APACHE Project Number: 19-0112-03 Project Manager: Mark Larson	Fax: (432) 687-0456
--	--	---------------------

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-2 (5')	9C01007-01	Soil	02/28/19 12:35	03-01-2019 09:08

Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTB1/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax (432) 687-0456

**BH-2 (5')  
9C01007-01 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Permian Basin Environmental Lab, L.P.**

**Organics by GC**

Benzene	ND	0.00110	mg/kg dry	1	P9C0610	03/06/19	03/07/19	EPA 8021B	
Toluene	ND	0.00110	mg/kg dry	1	P9C0610	03/06/19	03/07/19	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P9C0610	03/06/19	03/07/19	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P9C0610	03/06/19	03/07/19	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P9C0610	03/06/19	03/07/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		113 %	75-125		P9C0610	03/06/19	03/07/19	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		84.8 %	75-125		P9C0610	03/06/19	03/07/19	EPA 8021B	

**General Chemistry Parameters by EPA / Standard Methods**

Chloride	12.1	1.10	mg/kg dry	1	P9C0711	03/07/19	03/08/19	EPA 300.0	
% Moisture	9.0	0.1	%	1	P9C0514	03/05/19	03/05/19	ASTM D2216	

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M**

C6-C12	ND	27.5	mg/kg dry	1	P9C0518	03/05/19	03/05/19	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P9C0518	03/05/19	03/05/19	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P9C0518	03/05/19	03/05/19	TPH 8015M	
Surrogate: 1-Chlorooctane		94.1 %	70-130		P9C0518	03/05/19	03/05/19	TPH 8015M	
Surrogate: o-Terphenyl		108 %	70-130		P9C0518	03/05/19	03/05/19	TPH 8015M	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	03/05/19	03/05/19	calc	

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTB1/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax: (432) 687-0456

**Organics by GC - Quality Control  
Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P9C0610 - General Preparation (GC)**

**Blank (P9C0610-BLK1)**

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	0.0440		"	0.0600		73.4	75-125			S-09
Surrogate: 4-Bromofluorobenzene	0.0366		"	0.0600		94.3	75-125			

**LCS (P9C0610-BS1)**

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.117	0.00100	mg/kg wet	0.100		117	70-130			
Toluene	0.119	0.00100	"	0.100		119	70-130			
Ethylbenzene	0.105	0.00100	"	0.100		105	70-130			
Xylene (p/m)	0.218	0.00200	"	0.200		109	70-130			
Xylene (o)	0.117	0.00100	"	0.100		117	70-130			
Surrogate: 4-Bromofluorobenzene	0.0580		"	0.0600		96.6	75-125			
Surrogate: 1,4-Difluorobenzene	0.0580		"	0.0600		96.6	75-125			

**LCS Dup (P9C0610-BSD1)**

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.119	0.00100	mg/kg wet	0.100		119	70-130	1.24	20	
Toluene	0.115	0.00100	"	0.100		115	70-130	3.27	20	
Ethylbenzene	0.102	0.00100	"	0.100		102	70-130	2.98	20	
Xylene (p/m)	0.219	0.00200	"	0.200		110	70-130	0.581	20	
Xylene (o)	0.114	0.00100	"	0.100		114	70-130	2.62	20	
Surrogate: 1,4-Difluorobenzene	0.0606		"	0.0600		101	75-125			
Surrogate: 4-Bromofluorobenzene	0.0600		"	0.0600		100	75-125			

**Calibration Blank (P9C0610-CCB1)**

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 1,4-Difluorobenzene	0.0484		"	0.0600		80.7	75-125			
Surrogate: 4-Bromofluorobenzene	0.0675		"	0.0600		113	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTBI/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax: (432) 687-0456

**Organics by GC - Quality Control**  
**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P9C0610 - General Preparation (GC)**

**Calibration Blank (P9C0610-CCB2)**

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.00		mg/kg wet							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	0.0575		"	0.0600		95.9	75-125			
Surrogate: 1,4-Difluorobenzene	0.0458		"	0.0600		76.3	75-125			

**Calibration Check (P9C0610-CCV2)**

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.115	0.00100	mg/kg wet	0.100		115	80-120			
Toluene	0.111	0.00100	"	0.100		111	80-120			
Ethylbenzene	0.115	0.00100	"	0.100		115	80-120			
Xylene (p/m)	0.213	0.00200	"	0.200		106	80-120			
Xylene (o)	0.116	0.00100	"	0.100		116	80-120			
Surrogate: 4-Bromofluorobenzene	0.0598		"	0.0600		99.7	75-125			
Surrogate: 1,4-Difluorobenzene	0.0564		"	0.0600		94.1	75-125			

**Matrix Spike (P9C0610-MS1)**

Source: 9C01005-05

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.0819	0.00103	mg/kg dry	0.103	ND	79.4	80-120			QM-05
Toluene	0.0623	0.00103	"	0.103	ND	60.4	80-120			QM-05
Ethylbenzene	0.0545	0.00103	"	0.103	ND	52.9	80-120			QM-05
Xylene (p/m)	0.0843	0.00206	"	0.206	ND	40.9	80-120			QM-05
Xylene (o)	0.0396	0.00103	"	0.103	ND	38.4	80-120			QM-05
Surrogate: 1,4-Difluorobenzene	0.0641		"	0.0619		104	75-125			
Surrogate: 4-Bromofluorobenzene	0.0648		"	0.0619		105	75-125			

**Matrix Spike Dup (P9C0610-MSD1)**

Source: 9C01005-05

Prepared: 03/06/19 Analyzed: 03/07/19

Benzene	0.0766	0.00103	mg/kg dry	0.103	ND	74.3	80-120	6.69	20	QM-05
Toluene	0.0496	0.00103	"	0.103	ND	48.1	80-120	22.7	20	QM-05
Ethylbenzene	0.0449	0.00103	"	0.103	ND	43.6	80-120	19.2	20	QM-05
Xylene (p/m)	0.0686	0.00206	"	0.206	ND	33.3	80-120	20.5	20	QM-05
Xylene (o)	0.0341	0.00103	"	0.103	ND	33.0	80-120	15.0	20	QM-05
Surrogate: 1,4-Difluorobenzene	0.0677		"	0.0619		109	75-125			
Surrogate: 4-Bromofluorobenzene	0.0659		"	0.0619		107	75-125			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTB1/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax: (432) 687-0456

**General Chemistry Parameters by EPA / Standard Methods - Quality Control**  
**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P9C0514 - *** DEFAULT PREP ***</b>										
<b>Blank (P9C0514-BLK1)</b>										Prepared & Analyzed: 03/05/19
% Moisture	ND	0.1	%							
<b>Duplicate (P9C0514-DUP1)</b>										Source: 9C01003-25 Prepared & Analyzed: 03/05/19
% Moisture	16.0	0.1	%		16.0			0.00	20	
<b>Duplicate (P9C0514-DUP2)</b>										Source: 9C01007-02 Prepared & Analyzed: 03/05/19
% Moisture	10.0	0.1	%		8.0			22.2	20	
<b>Batch P9C0711 - *** DEFAULT PREP ***</b>										
<b>Blank (P9C0711-BLK1)</b>										Prepared: 03/07/19 Analyzed: 03/08/19
Chloride	ND	1.00	mg/kg wet							
<b>LCS (P9C0711-BS1)</b>										Prepared: 03/07/19 Analyzed: 03/08/19
Chloride	412	1.00	mg/kg wet	400		103	80-120			
<b>LCS Dup (P9C0711-BSD1)</b>										Prepared: 03/07/19 Analyzed: 03/08/19
Chloride	403	1.00	mg/kg wet	400		101	80-120	2.10	20	
<b>Duplicate (P9C0711-DUP1)</b>										Source: 9C01005-05 Prepared: 03/07/19 Analyzed: 03/08/19
Chloride	352	1.03	mg/kg dry		364			3.34	20	
<b>Duplicate (P9C0711-DUP2)</b>										Source: 9C01011-03 Prepared: 03/07/19 Analyzed: 03/09/19
Chloride	9450	57.5	mg/kg dry		9500			0.613	20	
<b>Matrix Spike (P9C0711-MS1)</b>										Source: 9C01005-05 Prepared: 03/07/19 Analyzed: 03/08/19
Chloride	940	1.03	mg/kg dry	515	364	112	80-120			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTB1/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax: (432) 687-0456

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control**  
**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P9C0518 - TX 1005</b>										
<b>Blank (P9C0518-BLK1)</b>				Prepared & Analyzed: 03/05/19						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	97.4		"	100		97.4	70-130			
Surrogate: o-Terphenyl	55.5		"	50.0		111	70-130			
<b>LCS (P9C0518-BS1)</b>				Prepared & Analyzed: 03/05/19						
C6-C12	892	25.0	mg/kg wet	1000		89.2	75-125			
>C12-C28	1040	25.0	"	1000		104	75-125			
Surrogate: 1-Chlorooctane	112		"	100		112	70-130			
Surrogate: o-Terphenyl	51.9		"	50.0		104	70-130			
<b>LCS Dup (P9C0518-BSD1)</b>				Prepared & Analyzed: 03/05/19						
C6-C12	885	25.0	mg/kg wet	1000		88.5	75-125	0.802	20	
>C12-C28	1040	25.0	"	1000		104	75-125	0.0723	20	
Surrogate: 1-Chlorooctane	113		"	100		113	70-130			
Surrogate: o-Terphenyl	54.0		"	50.0		108	70-130			
<b>Calibration Blank (P9C0518-CCB1)</b>				Prepared & Analyzed: 03/05/19						
C6-C12	23.7		mg/kg wet							
>C12-C28	9.77		"							
Surrogate: 1-Chlorooctane	97.6		"	100		97.6	70-130			
Surrogate: o-Terphenyl	55.2		"	50.0		110	70-130			
<b>Calibration Blank (P9C0518-CCB2)</b>				Prepared & Analyzed: 03/05/19						
C6-C12	17.6		mg/kg wet							
>C12-C28	8.95		"							
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	58.9		"	50.0		118	70-130			

Permian Basin Environmental Lab, L.P.

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Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTBI/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax: (432) 687-0456

**Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control**  
**Permian Basin Environmental Lab, L.P.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P9C0518 - TX 1005</b>										
<b>Calibration Check (P9C0518-CCV1)</b>				<b>Prepared &amp; Analyzed 03/05/19</b>						
C6-C12	464	25.0	mg/kg wet	500		92.9	85-115			
>C12-C28	508	25.0	"	500		102	85-115			
Surrogate: 1-Chlorooctane	104		"	100		104	70-130			
Surrogate: o-Terphenyl	53.9		"	50.0		108	70-130			
<b>Calibration Check (P9C0518-CCV2)</b>				<b>Prepared &amp; Analyzed 03/05/19</b>						
C6-C12	484	25.0	mg/kg wet	500		96.8	85-115			
>C12-C28	564	25.0	"	500		113	85-115			
Surrogate: 1-Chlorooctane	110		"	100		110	70-130			
Surrogate: o-Terphenyl	55.1		"	50.0		110	70-130			
<b>Calibration Check (P9C0518-CCV3)</b>				<b>Prepared 03/05/19 Analyzed 03/06/19</b>						
C6-C12	482	25.0	mg/kg wet	500		96.5	85-115			
>C12-C28	569	25.0	"	500		114	85-115			
Surrogate: 1-Chlorooctane	110		"	100		110	70-130			
Surrogate: o-Terphenyl	56.5		"	50.0		113	70-130			
<b>Matrix Spike (P9C0518-MS1)</b>				<b>Source: 9C01007-02 Prepared 03/05/19 Analyzed 03/06/19</b>						
C6-C12	984	27.2	mg/kg dry	1090	13.9	89.3	75-125			
>C12-C28	1110	27.2	"	1090	ND	102	75-125			
Surrogate: 1-Chlorooctane	124		"	109		114	70-130			
Surrogate: o-Terphenyl	58.0		"	54.3		107	70-130			
<b>Matrix Spike Dup (P9C0518-MSD1)</b>				<b>Source: 9C01007-02 Prepared 03/05/19 Analyzed 03/06/19</b>						
C6-C12	948	27.2	mg/kg dry	1090	13.9	86.0	75-125	3.76	20	
>C12-C28	1100	27.2	"	1090	ND	101	75-125	1.51	20	
Surrogate: 1-Chlorooctane	122		"	109		113	70-130			
Surrogate: o-Terphenyl	57.6		"	54.3		106	70-130			

Permian Basin Environmental Lab, L.P.

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Permian Basin Environmental Lab

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Larson & Associates, Inc.  
P.O. Box 50685  
Midland TX, 79710

Project: NEDU CTBI/ APACHE  
Project Number: 19-0112-03  
Project Manager: Mark Larson

Fax: (432) 687-0456

### Notes and Definitions

S-09 Surrogate recovery limits have been exceeded.

QM-05 The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.

BULK Samples received in Bulk soil containers

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

LCS Laboratory Control Spike

MS Matrix Spike

Dup Duplicate

Report Approved By:



Date: 3/11/2019

Brent Barron, Laboratory Director/Technical Director

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-686-7235.

Permian Basin Environmental Lab, L.P.

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

CONDITIONS  
  
Action 2202

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 2202
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bbillings	Incident deferred until P&A or other logistical door opens, such as BATT moved.	7/16/2021