

Incident ID	nRM2031146817
District RP	1RP-313
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?	<u>49.55</u> (ft bgs)
Did this release impact groundwater or surface water?	☒ Yes ☐ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ 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)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ 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?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☐ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas not on an exploration, development, production, or storage site?	☒ Yes ☐ 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 ½-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.

State of New Mexico
Oil Conservation Division

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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: Environmental Tech Sr.

Signature: Larry Baker Date: 7/30/2021

email: larry.baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: _____ Date: _____

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Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Bruce Baker Title: Environmental Tech Sr.

Signature: Larry Baker Date: 7/30/2021

email: larry.baker@apachecorp.com Telephone: 432-631-6982

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Nelson Velez Date: 05/12/2023

Printed Name: Nelson Velez Title: Environmental Specialist - Adv

Apache requested no further action for the soil remediation. OCD approval applied to this specific request only.

1RP-313
CLOSURE REPORT
Northeast Drinkard Unit #829, 830, 922, 928, and 929
Produced Water Release

Lea County, New Mexico

Latitude: 32.462947°

Longitude: -103.151539°

LAI Project No. 19-0112-22

July 27, 2021

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

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld St., Suite 202
Midland, Texas 79701



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



Robert Nelson
Sr. Geoscientist

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Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021

1.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this closure report for submittal to the New Mexico Oil Conservation Division (OCD) in Santa Fe and Hobbs, New Mexico, on behalf of Apache Corporation (Apache). This report presents remediation activities of trenches associated with drilling pits at the Northeast Drinkard Unit (NEDU) #829, 830, 922, 928, and 929 (Sites) located in Section 22, Township 21 South, Range 37 East, in Lea County, New Mexico. The geodetic position is North 32.462947 and West - 103.151539. Figure 1 presents a topographic map.

1.1 Background

The trenches were discovered on April 6, 2001, when the landowner reported to the OCD that the drilling pits were being closed by disposing pit fluid in trenches adjacent to the drilling pits. Apache was notified and submitted the initial C-141 on April 23, 2001. OCD assigned the trenches remediation permit 1RP-313. On April 23, 2001, Apache submitted a work plan for the remediating the trenches. OCD approved the work plan on May 8, 2001. The work plan stated that the trenches at wells #829, #830 and #929 would be excavated to approximately 19 feet bgs and to approximately 13 feet bgs at #928. There is no evidence that the trench was excavated at #922. An Apache contractor collected bottom and composite samples from the excavations and found chloride above the remediation closure limits in all excavations. Total petroleum hydrocarbons (TPH) was reported above the OCD closure limits in the excavation at #928. No documentation is available in OCD files to confirm the remediation.

On October 31, 2019, Apache submitted an administrative summary and path forward for remediating and closing the trenches. The plan requested approval from the OCD for a variance to excavate soil to a depth of approximately four (4) feet below ground surface (bgs) at each trench and install a 20-mil polyethylene liner in the bottom of the excavations. Additionally, Apache committed to installing monitoring wells hydraulically down gradient (east - southeast) approximately 50 feet from the trench. On May 19, 2021, OCD approved the administrative summary and path forward for remediation but stated that "preapproval for Monitor Well locations on map before installation" was required. On July 14, 2021, OCD approved the monitor well locations. Appendix A presents the OCD approved work plan on May 8, 2001. Appendix B presents the OCD approved path forward on May 13, 2021. Appendix C presents the OCD approved monitor well locations.

1.2 Physical Setting

The physical setting is as follows:

- The surface elevation ranges from approximately 3,416 feet above mean sea level (msl) at Well #829 to 3,401 feet above msl at Well #929.
- The topography slopes gently towards the southeast towards Monument Draw.
- There are no surface water features within 1,000 feet of the Site.
- Karst Data provided by the USGS describes the Sites as "Low Potential" risk.
- The soils are designated as "Pyote maljamar fine sands", consisting of 24 inches of fine sand and underlain by 26 inches of a sandy clay loam.

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- The surface geology consists of Eolian and piedmont deposits (Holocene to middle Pleistocene) interlayered eolian sands and piedmont-slope deposits.
- Groundwater occurs in the Ogallala formation between approximately 49.55 feet bgs at NEDU #929 and 53.98 feet bgs at NEDU #830 based on the gauging depth to groundwater from borings.

Appendix D presents the Karst Potential Map

1.3 Remediation Levels

The following remediation standards are based on closure criteria for soil 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 DELINATION

From September 23 to 27, 2019, Scarborough Drilling Inc. (SDI), under supervision from LAI, used an air rotary drilling rig to drill soil borings and collect soil samples to delineate the trenches associated with the drilling pits of NEDU Wells #829, #830, #922, #928 and #929 to confirm remediation. All soil samples were delivered under chain of custody and preservation to Xenco Laboratories (Xenco) in Midland, Texas. The samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), including gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO) and chloride by EPA SW-846 Methods 8021B and 8015M, and M300, respectively. Figures 2a through 2e present aerial showing soil sample locations for NEDU #829, #830, #922, #928 and #929, respectively. Tables 1a through 1e present the laboratory analytical data summaries for NEDU #829, #830, #922, #928 and #929, respectively. Appendix E presents the delineation sample laboratory reports.

3.0 SOIL REMEDIATION

Between July 14 through July 19, 2021, Apache contractors excavated contaminated soil to approximately four (4) feet bgs from the trenches at NEDU # 830, 922, 928, and 928. Excavated soil was stockpiled adjacent to the excavations. LAI Personnel collected confirmation soil samples from the excavation walls (sidewalls) and the soil piles. The samples were delivered under chain of custody and preservation to Cardinal Laboratories in Hobbs, New Mexico, which analyzed the samples for BTEX by EPA SW-846

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Method 8021B, TPH, including gasoline range organics (C6-C12), diesel range organics (>C12-C28), and oil range organics (<C28-C35) by EPA SW-846 Method 8015M and chloride by titration method SM4500 CL-B. The confirmation samples were five-point composites collected no more than every 200 square feet of the excavation sidewalls and approximately every 250 to 300 cubic yards in the soil pile.

All sidewall samples reported benzene, BTEX, and TPH below the OCD closure criteria of 10 milligrams per kilogram (mg/Kg), 50 mg/Kg, and 100 mg/Kg, respectively. Chloride was reported above the remediation level of 600 mg/Kg in the following samples:

Sample ID	<u>NEDU #928</u>	Chloride (mg/Kg)
	Depth (Feet)	
W-SW	0 – 4	1,380
S-SW	<u>NEDU #929</u>	
	0 – 4	976
	Soil Pile -2	3,840
	Soil Pile -3	1,280

On July 22 and 23, 2021, Apache contractors excavated contaminated soil encompassing sample locations W-SW and S-SW at NEDU #928 and NEDU #929, respectively. The excavated soil from NEDU #928 (W-SW) and NEDU #929 (S-SW 1 and S-SW 2) was commingled with soil from Pile 3 to form Pile #4 where a five-point composite soil sample was collected (Soil Pile 4). Subsequent laboratory results indicated the three (3) sidewalls (W-SW, S-SW 1, and S-SW 2) and Soil Pile 4 below the OCD closure criteria for chloride (600 mg/Kg). Contaminated soil above 600 mg/Kg (Pile # 2 was hauled to the Sundance Disposal, a OCD permitted disposal facility located east of Eunice, New Mexico.

Between July 22 and July 23, 2021, Apache contractors excavated contaminated soil to approximately four (4) feet bgs from the trench at NEDU #829. The excavated soil was stockpiled adjacent to the excavation. Apache personnel collected confirmation soil samples from the excavation walls (sidewalls). Cardinal analyzed the samples for BTEX by EPA SW-846 Method 8021B, TPH, including GRO (C6-C12), DRO (>C12-C28), and ORO (<C28-C35) by EPA SW-846 Method 8015M and chloride by titration method SM4500 CL-B. Laboratory analysis reported benzene, BTEX, TPH, and chloride below the OCD remediation levels in all sidewalls samples at NEDU #829. Tables 2a through 2e present the confirmation soil sample laboratory analytical data summaries for NEDU #829, #830, #922, #928 and #929, respectively. Figures 2a through 2e present maps showing confirmation sample locations. Appendix E presents the confirmation sample laboratory reports. Appendix F presents a drawing for confirmation sample locations for NEDU #829.

On July 27, 2021, Apache contractors installed a 20-mil polyethylene synthetic liner within the bottom of the excavations at NEDU #829, #830, #922, #928, and #929 and backfilled above the liners with the excavated soil containing chloride less than 600 mg/Kg.

Closure Report

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NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021

4.0 GROUNDWATER INVESTIGATION

On July 19 through July 20, 2021, SDI drilled four (4) monitor wells (MW-1 through MW-4) utilizing an air rotary rig at locations approved by OCD on July 14, 2021. The wells were completed with 2-inch schedule 40 threaded casing and about 20 feet of 0.010-inch factory slotted screen that was positioned above and below the groundwater observed at the time of drilling. Graded silica sand was placed around the screen to about two (2) feet above the screen. The annular space above the sand was filled with bentonite chips to about 1-foot bgs. The wells will be secured with locking steel protectors anchored in concrete. Table 3 presents the monitoring well completion and gauging summary. Appendix Apache will continue to monitor the wells on a quarterly (4 times per year) basis, providing seven (7) working days notification to the OCD prior to each sampling event. Additionally, Apache will provide OCD with quarterly groundwater monitoring reports, demonstrating the finds of each sampling event. Figure 2b through 2e presents aerial maps showing the monitor well locations. Appendix G presents the geologic boring logs and monitoring well completion records.

On July 27, 28, and 29, 2021, LAI personnel developed the monitoring wells using a mechanical (foot valve) pump with polyethylene tubing to remove drilling water and sediment disturbed during drilling. The purged groundwater was contained in 55-gallon drums. On July 29, 2021, LAI personnel collected groundwater samples by the low stress or low flow method according to EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the water column and the well is pumped at a low rate until environmental parameters stabilize. Groundwater samples were collected from discharge through dedicated disposable Tygon tubing. The tubing was discarded after each use and the pump was thoroughly cleaned with a solution of potable water and laboratory grade detergent (Alconox) and rinsed with distilled water. The samples were carefully transferred to laboratory containers that were labeled, packed in an ice chest filled with ice, and delivered under chain of custody control to Xenco Eurofins Laboratory (Xenco), a National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratory, located in Midland, Texas. No laboratory results were available and will be submitted in the forthcoming groundwater investigation report.

5.0 CLOSURE REQUEST

Apache requests no further action for the soil remediation.

Tables

Table 1a
Xenco Analytical Data Summary
Apache Corp., NEDU 829, 1RP-313
Lea County, New Mexico

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Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				2,500	10,000
SP-1	5	09/26/2019	In-situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	97.7
	10		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	51.2
	15		In-situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	323
	20		In-situ	<0.00201	<0.00201	<50.0	<50.0	<50.0	<50.0	4,880
	25		In-situ	<0.00200	<0.00200	<49.9	56.1	<49.9	56.1	5,200
	30		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	2,210
	35		In-situ	<0.00202	<0.00202	<49.8	<49.8	<49.8	<49.8	968
	40		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	2,710
	45		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	2,100
	50		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	2,080
	55		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	592
	60		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	361
SP-4	5	09/26/2019	In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	1,630
	10		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	375
	15		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	149
	20		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	285
SP-5	5	09/26/2019	In-situ	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	498
	10		In-situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	224
	15		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	345
	20		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	217
	25		In-situ	<0.00202	<0.00202	<50.0	99.4	92.6	192	324
SP-6	5	09/26/2019	In-situ	<0.00200	<0.00200	<49.9	58.3	60.1	118	1,240
	10		In-situ	<0.00198	<0.00198	<50.0	68.7	<50.0	68.7	120
	15		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	83.3
	20		In-situ	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	230
	25		In-situ	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	258
SP-7	5	09/26/2019	In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	102
	10		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	339
	15		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	170
	20		In-situ	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	139
	25		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	238

Notes: analysis performed by Xenoco Labs, Midland, Texas, by EPA Method 300

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

Highlighted denotes concentration exceeds OCD surface restoration limit (19.15.13 NMAC)

Table 1b
Xenco Analytical Data Summary
Apache Corp., NEDU 830, 1RP-313
Lea County, New Mexico

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Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				2,500	10,000
SP-2	0	09/25/2019	<0.00200	<0.00200	<0.00199	<49.9	<49.9	<49.9	<49.9	294
	5		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	5,150
	10		In-situ	<0.00200	<0.00200	<49.8	137	<49.8	137	45,400
	15		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	2,460
	20		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	3,740
	25		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	4,080
	30		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	14,300
	35		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	8,920
	40		In-situ	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	3,240
	45		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	1,270
	50		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	1,220
	55		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	928
	60		In-situ	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	857
SP-4	5	09/25/2019	In-situ	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	63.6
	10		In-situ	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	93.6
SP-5	5	09/26/2019	In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	11.3
	10		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	81.8
SP-7	5	09/26/2019	In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	54.1
	10		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	89.5
SP-8	5	09/26/2019	In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	32.2
	10		In-situ	<0.00199	<0.00199	<50.0	87.0	<50.0	87.0	288

Notes: analysis performed by Xenoco Labs, Midland, Texas, by EPA Method 300

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

Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Highlighted denotes concentration exceeds OCD delineation limit (19.15.11(5)(c) NMAC)

Table 1c
Xenco Analytical Data Summary
Apache Corp., NEDU 922, 1RP-313
Lea County, New Mexico

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Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				2,500	10,000
SP-2	5	09/27/2019	In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	46.8
	10		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	1.43
	15		In-situ	<0.00199	<0.00199	<49.9	155	86.9	242	1,680
	20		In-situ	<0.00199	<0.00199	<49.9	139	<49.9	139	2,450
	25		In-situ	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	5,150
	30		In-situ	<0.00199	<0.00199	<50.0	66.5	<50.0	66.5	12,700
	35		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	17,800
	40		In-situ	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	23,700
	45		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	7,770
	50		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	5,290
	55		In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	2,170
	60		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	1,500
	65		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	661
SP-3	5	09/27/2019	In-situ	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	58.6
	10		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	0.654
	15		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	0.83
	20		In-situ	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	42
	25		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	125
SP-4	5	09/27/2019	<0.00200	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	61.2
	10		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	2.65
	15		In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	<0.500
	20		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	20.3
	25		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	48.8
SP-5	5	09/27/2019	In-situ	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	32.4
	10		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	7.37
	15		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	26.4
	20		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	5.11
	25		In-situ	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	13.8
	30		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	9.49
	35		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	37.4
SP-6	5	09/27/2019	In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	89.3
	10		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	18.6
	15		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	14.1
	20		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	42.9
	25		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	14.1
	30		In-situ	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	146.0
	35		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	39.2

Notes: analysis performed by Xenoco Labs, Midland, Texas, by EPA Method 300

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

Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Highlighted denotes concentration exceeds OCD delineation limit (19.15.11(5)(c) NMAC)

Table 1d
Xenco Analytical Data Summary
Apache Corp., NEDU 928, 1RP-313
Lea County, New Mexico

Page 1 of 1

Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				100	600
SP-2	5	09/23/2019	In-situ	--	--	--	--	--	--	--
	10		In-situ	--	--	--	--	--	--	--
	15		In-situ	--	--	--	--	--	--	--
	20		In-situ	--	--	--	--	--	--	--
	25		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	9,440
	30		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	6,940
	35		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	573
	40		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	349
SP-3	5	09/23/2019	In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	45.1
	10		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	1,940
	15		In-situ	<0.00199	<0.00199	<49.9	122	<49.9	122	757
	20		In-situ	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	1,420
SP-4	5	09/23/2019	<0.00200	<0.00201	<0.00201	<49.9	<49.9	<49.9	<49.9	345
	10		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	1,020
	15		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	5,320
	20		In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	6,810
SP-5	5	09/23/2019	In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	176
	10		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	248
	15		In-situ	<0.00202	<0.00202	<50.0	<50.0	<50.0	<50.0	726
	20		In-situ	<0.00201	<0.00201	<49.8	<49.8	<49.8	<49.8	601
SP-6	5	09/23/2019	<0.00200	<0.00199	<0.00199	<49.8	<49.8	<49.8	<49.8	94.4
	10		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	149
	15		In-situ	<0.00199	<0.00199	<49.9	<49.9	<49.9	<49.9	394
	20		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	224
SP-8	5	09/24/2019	In-situ	<0.001999	<0.00199	<49.9	<49.9	<49.9	<49.9	1,570
	10		In-situ	<0.00202	<0.00202	<49.9	<49.9	<49.9	<49.9	955
	15		In-situ	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	398
	20		In-situ	<0.001999	<0.00199	<50.0	<50.0	<50.0	<50.0	260

Notes: analysis performed by Xenoco Labs, Midland, Texas, by EPA Method 300
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

Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Highlighted denotes concentration exceeds OCD delineation limit (19.15.11(5)(c) NMAC)

Table 1e
Xenco Analytical Data Summary
Apache Corp., NEDU 929, 1RP-313
Lea County, New Mexico

Page 1 of 1

Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50				100	600
SP-1	5	09/24/2019	In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	198
	10		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	63.3
SP-3	5	09/24/2019	In-situ	<0.00199	<0.00199	<49.9	454	<49.9	454	23,500
	10		In-situ	<0.00202	<0.00202	<50.0	308	<50.0	308	20,400
	15		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	8,020
	20		In-situ	<0.00198	<0.00198	<49.9	454	<49.9	454	9,170
	25		In-situ	<0.00198	<0.00198	<49.8	<49.8	<49.8	<49.8	3,460
	30		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	3,590
	35		In-situ	<0.00199	<0.00199	<50.0	<50.0	<50.0	<50.0	3,740
	40		In-situ	<0.00200	<0.00200	<50.0	<50.0	<50.0	<50.0	2,040
	45		In-situ	<0.00200	<0.00200	<49.9	<49.9	<49.9	<49.9	1,230
	50		In-situ	<0.00198	<0.00198	<49.9	<49.9	<49.9	<49.9	899
	55		In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	429
SP-4	5	09/24/2019	In-situ	<0.00200	<0.00200	<49.8	<49.8	<49.8	<49.8	51.6
	10		In-situ	<0.00198	<0.00198	<50.0	<50.0	<50.0	<50.0	255
SP-5	5	09/24/2019	In-situ	<0.00201	<0.00201	<50.0	409	124	533	2,630
	10		In-situ	<0.00199	<0.00199	<49.9	95.8	<49.9	95.8	6,030

Notes: analysis performed by Xenoco Labs, Midland, Texas, by EPA Method 300

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

Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Highlighted denotes concentration exceeds OCD delineation limit (19.15.11(5)(c) NMAC)

Confirmation Soil Sample Analytical Data Summary

Apache Corp., NEDU 829, 1RP-313

Lea County, New Mexico

Page 1 of 1

Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100				600
W-1	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
W-2	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	16.0
W-3	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
W-4	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
W-5	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	112
W-6	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	16.0
W-7	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
W-8	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
W-9	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	208
W-10	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
W-11	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	16.0
W-12	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	48.0
W Wall	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	256
E Wall	1 - 4	7/23/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	368

Notes: analysis performed by Cardinal Labs, Hobbs, New Mexico, by EPA Method 8021B (BTEX), 8015M (TPH), and SM4500 (Chloride)

Depth in feet below ground surface (bgs)

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

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Confirmation Soil Sample Analytical Data Summary

Apache Corp., NEDU 830, 1RP-313

Lea County, New Mexico

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Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100				600
Soil Pile -1	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	256
Soil Pile -2	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	176
SW-N	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
SW-S	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
SW-E	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
SW-W	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0

Notes: analysis performed by Cardinal Labs, Hobbs, New Mexico, by EPA Method 8021B (BTEX), 8015M (TPH), and SM4500 (Chloride)

Depth in feet below ground surface (bgs)

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

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Confirmation Soil Sample Analytical Data Summary

Apache Corp., NEDU 922, 1RP-313

Lea County, New Mexico

Page 1 of 1

Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100				600
Soil Pile	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	48.0
S&W-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
N&E-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0

Notes: analysis performed by Cardinal Labs, Hobbs, New Mexico, by EPA Method 8021B (BTEX), 8015M (TPH), and SM4500 (Chloride)

Depth in feet below ground surface (bgs)

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

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Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Confirmation Soil Sample Analytical Data Summary

Apache Corp., NEDU 928, 1RP-313

Lea County, New Mexico

Page 1 of 1

Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100				600
S-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
N-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
E-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
W-SW	0 - 4	7/19/2021	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	1,380
		7/22/2021	Excavated	--	--	--	--	--	--	880
		7/23/2021	In-Situ	--	--	--	--	--	--	160
N Trench E-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	16.0
N trench W-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
S Trench E-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
S Trench W-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	48.0
Soil Pile-1	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	64.0
Trenches Soil Pile	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	64.0

Notes: analysis performed by Cardinal Labs, Hobbs, New Mexico, by EPA Method 8021B (BTEX), 8015M (TPH), and SM4500 (Chloride)

Depth in feet below ground surface (bgs)

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

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Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Confirmation Soil Sample Analytical Data Summary

Apache Corp., NEDU 929, 1RP-313

Lea County, New Mexico

Page 1 of 1

Sample ID	Depth (Feet)	Collection Date	Status (mg/Kg)	Benzene (mg/Kg)	BTEX (mg/Kg)	C6 - C12 (mg/Kg)	C12 - C28 (mg/Kg)	C28 - C35 (mg/Kg)	TPH (mg/Kg)	Chloride (mg/Kg)
Remediation Level:				10	50	100				600
Soil Pile -1	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	320
Soil Pile -2	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	3,840
N-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	48.0
S-SW	0 - 4	7/19/2021	Excavated	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	976
S-SW 1		7/22/2021	In-Situ	--	--	--	--	--	--	416
S-SW 2		7/22/2021	In-Situ	--	--	--	--	--	--	48.0
E1-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<16.0
E2-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	32.0
W1-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	480
W2-SW	0 - 4	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	336
Soil Pile-3	--	7/19/2021	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	1,280

Notes: analysis performed by Cardinal Labs, Hobbs, New Mexico, by EPA Method 8021B (BTEX), 8015M (TPH), and SM4500 (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

Highlighted denotes concentration exceeds OCD closure criteria in Table 1 (19.15.12 NMAC)

Figures

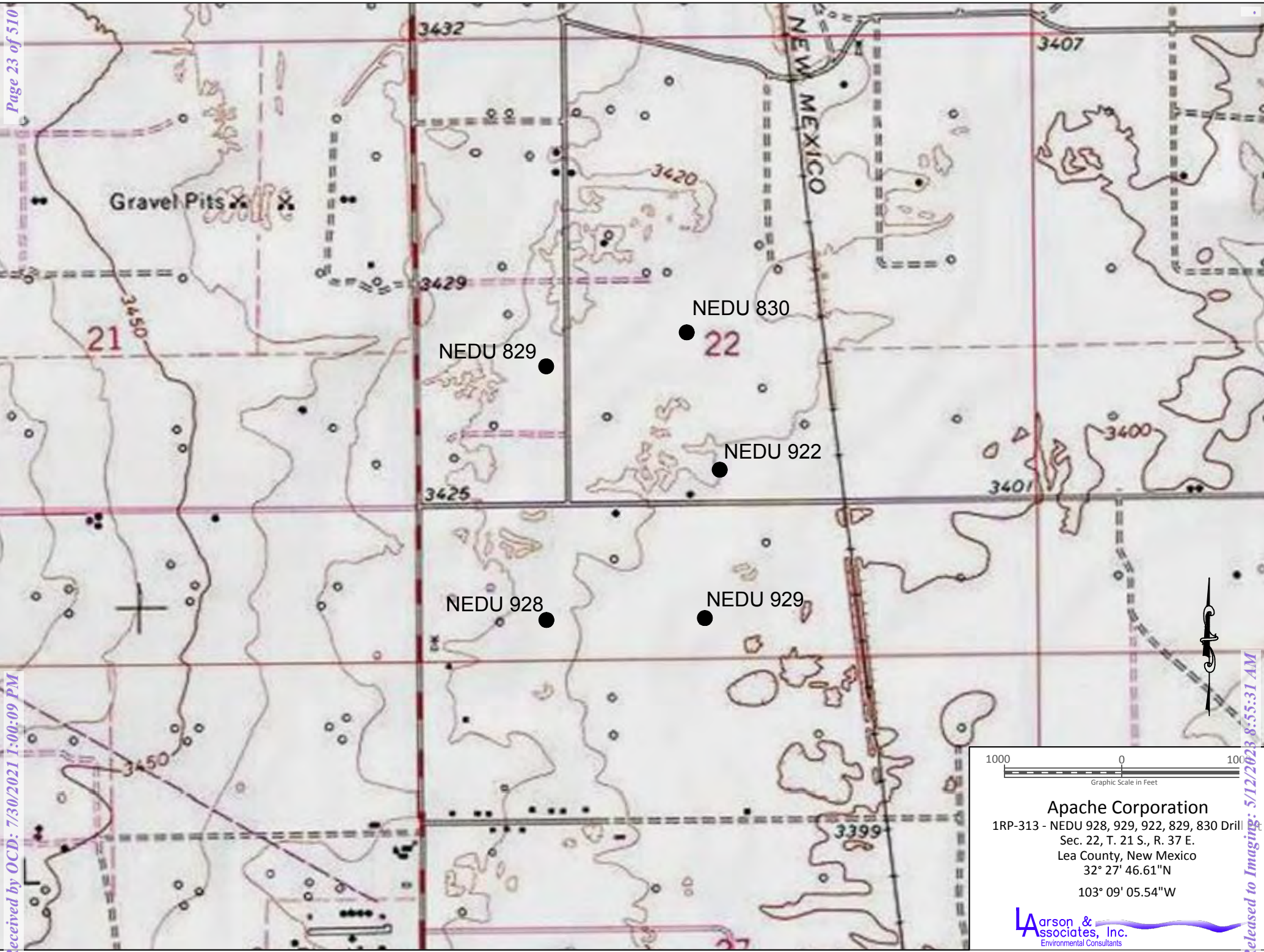
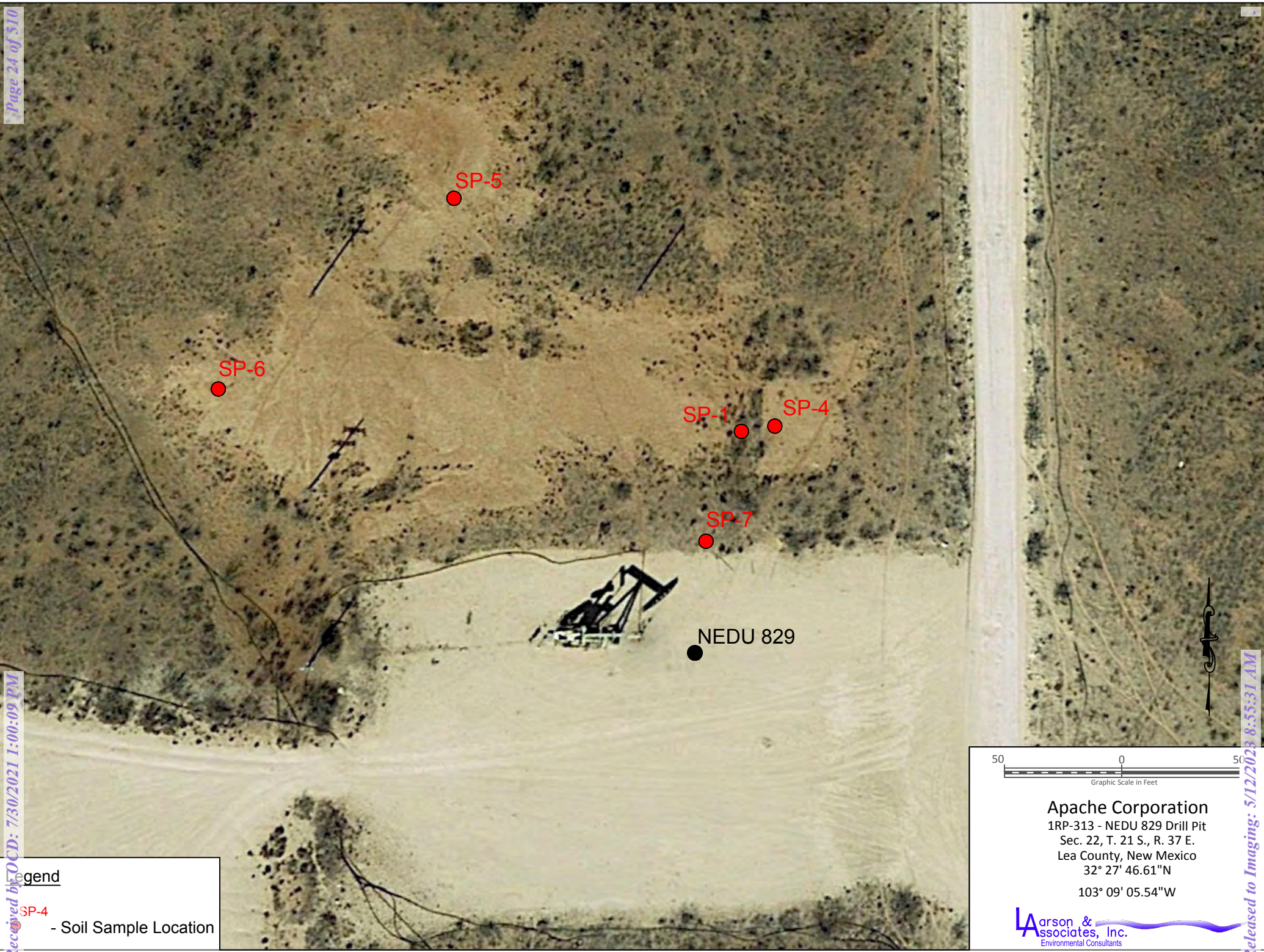


Figure 1 - Topographic Map



Legend

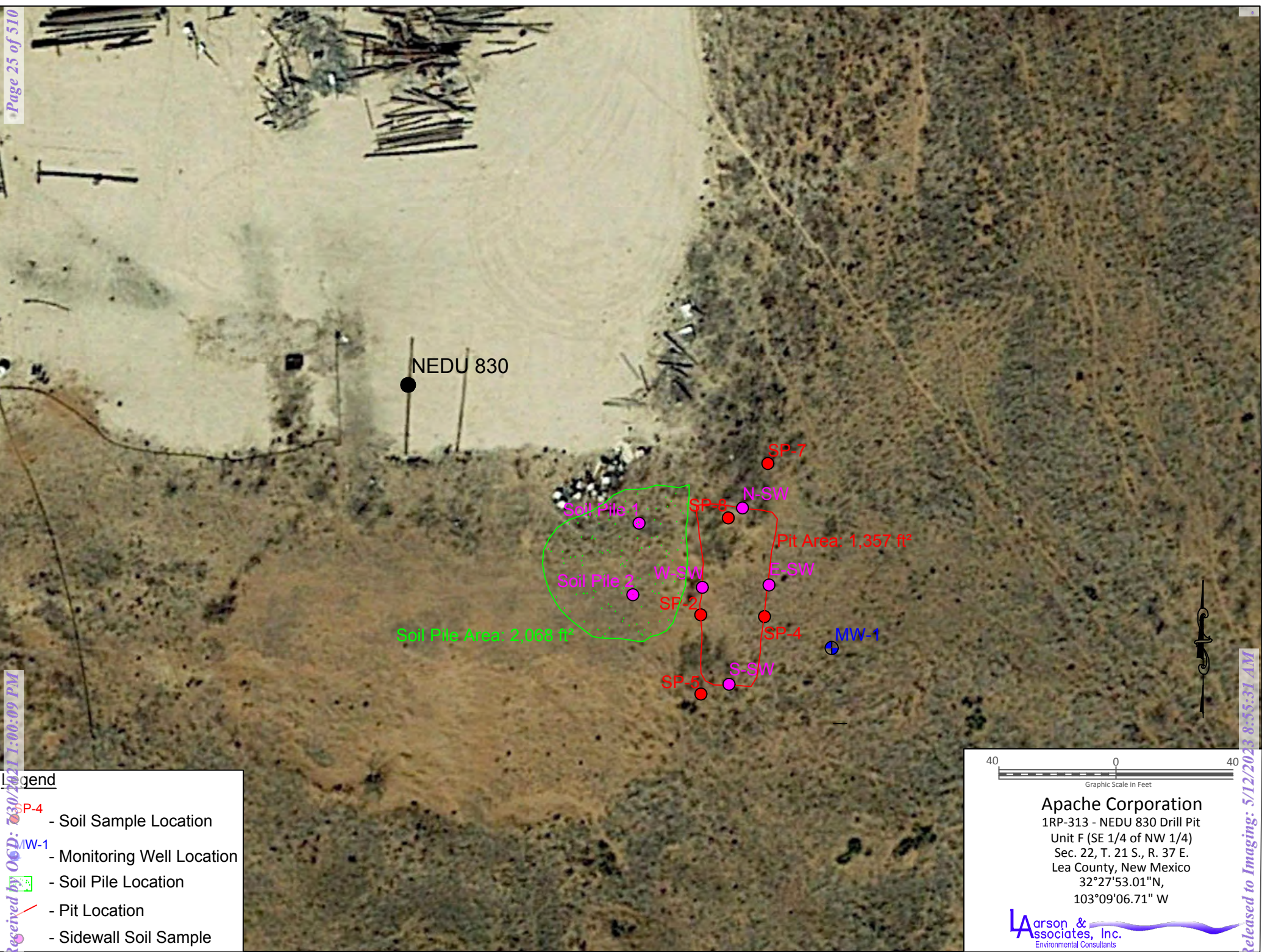
SP-4 - Soil Sample Location

50 0 50
Graphic Scale in Feet

Apache Corporation
1RP-313 - NEDU 829 Drill Pit
Sec. 22, T. 21 S., R. 37 E.
Lea County, New Mexico
32° 27' 46.61"N
103° 09' 05.54"W

Larson & Associates, Inc.
Environmental Consultants

Figure 2 - Aerial Map



Legend

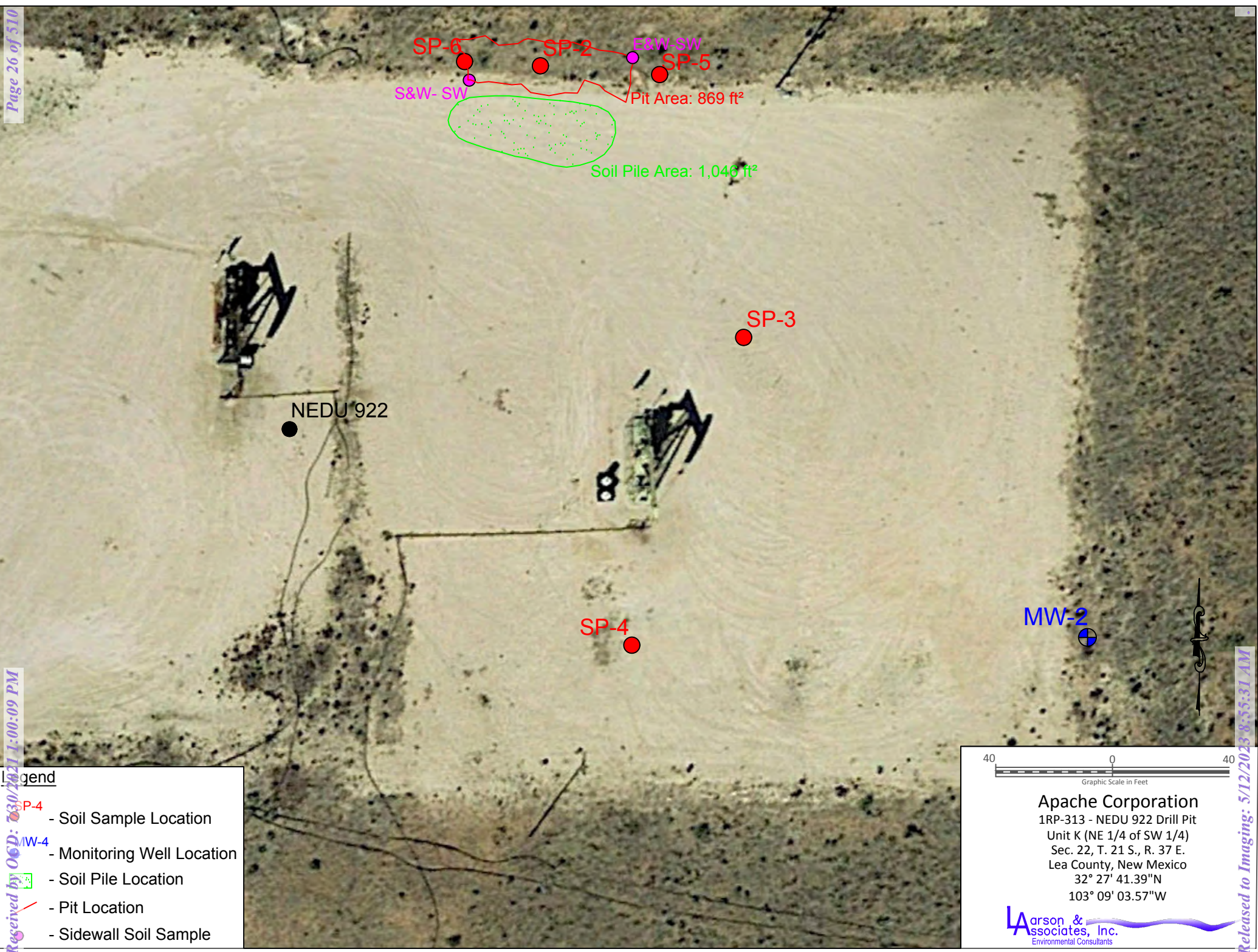
- SP-4 - Soil Sample Location
- MW-1 - Monitoring Well Location
- Soil Pile Location
- Pit Location
- Sidewall Soil Sample

40 0 40
Graphic Scale in Feet

Apache Corporation
1RP-313 - NEDU 830 Drill Pit
Unit F (SE 1/4 of NW 1/4)
Sec. 22, T. 21 S., R. 37 E.
Lea County, New Mexico
32°27'53.01"N,
103°09'06.71" W

Larson & Associates, Inc.
Environmental Consultants

Figure 2b - Aerial Map Showing NEDU 830



Legend

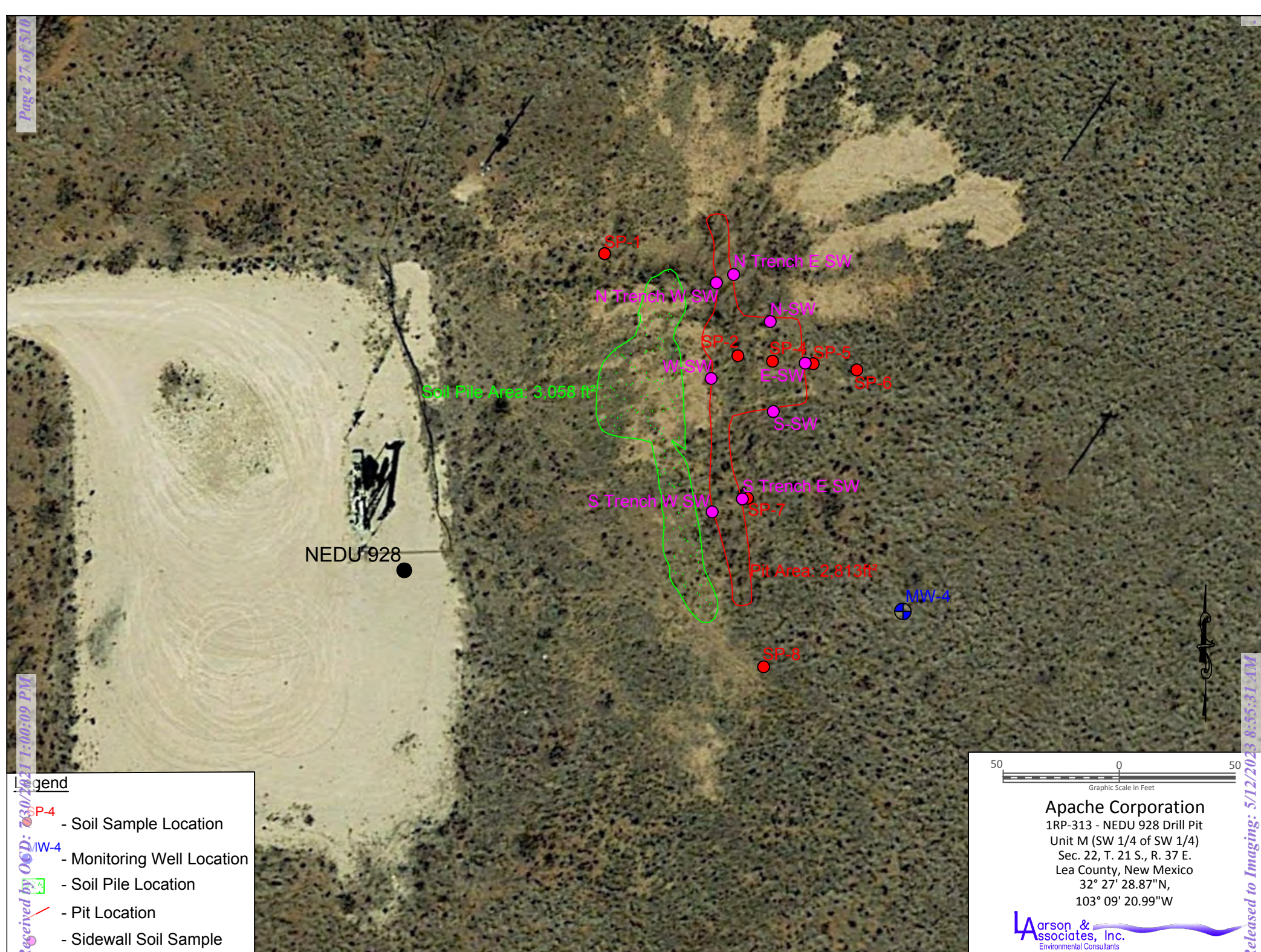
- SP-1 - Soil Sample Location
- MW-2 - Monitoring Well Location
- Soil Pile Location
- Pit Location
- Sidewall Soil Sample

40 0 40
Graphic Scale in Feet

Apache Corporation
1RP-313 - NEDU 922 Drill Pit
Unit K (NE 1/4 of SW 1/4)
Sec. 22, T. 21 S., R. 37 E.
Lea County, New Mexico
32° 27' 41.39"N
103° 09' 03.57"W

Larson & Associates, Inc.
Environmental Consultants

Figure 2c - Aerial Map Showing NEDU 922



Legend

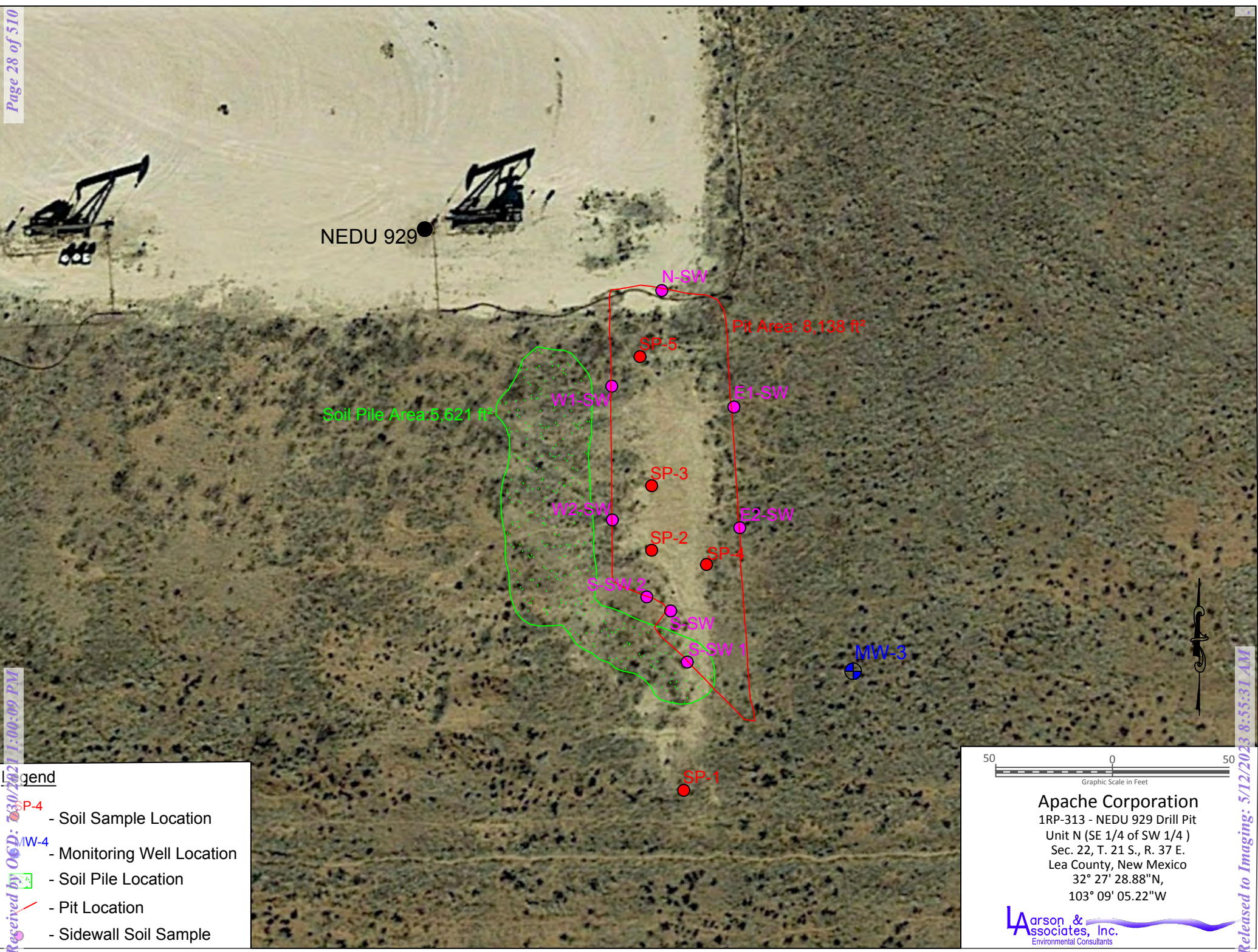
- SP-4 - Soil Sample Location
- MW-4 - Monitoring Well Location
- Soil Pile Location
- Pit Location
- Sidewall Soil Sample

50 0 50
Graphic Scale in Feet

Apache Corporation
1RP-313 - NEDU 928 Drill Pit
Unit M (SW 1/4 of SW 1/4)
Sec. 22, T. 21 S., R. 37 E.
Lea County, New Mexico
32° 27' 28.87"N,
103° 09' 20.99"W

Larson & Associates, Inc.
Environmental Consultants

Figure 2d - Aerial Map Showing NEDU 928



Legend

- SP-4 - Soil Sample Location
- MW-4 - Monitoring Well Location
- Soil Pile Location
- Pit Location
- Sidewall Soil Sample

50 0 50
Graphic Scale in Feet

Apache Corporation
 1RP-313 - NEDU 929 Drill Pit
 Unit N (SE 1/4 of SW 1/4)
 Sec. 22, T. 21 S., R. 37 E.
 Lea County, New Mexico
 32° 27' 28.88"N,
 103° 09' 05.22"W

Larson & Associates, Inc.
 Environmental Consultants

Figure 2e - Aerial Map Showing NEDU 929

Appendix A

OCD Approved Work Plan on May 8, 2001

1R - 313

APPROVALS

YEAR(S):

2001



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON

Governor

Jennifer A. Salisbury

Cabinet Secretary

Lori Wrotenbery

Director

Oil Conservation Division

1R0313

May 8, 2001

CERTIFIED MAIL

RETURN RECEIPT NO. 5051 0395

Mr. David E. Urbanski
Apache Corporation
2000 Post Oak Boulevard, Suite 100
Houston, Texas 77056-4400

**RE: Closure Plan Approval
Drill Pit Spills
Wells #928, #929, #922, #829, #830
Northeast Drinkard Unit
Lea County, New Mexico**

Dear Mr. Urbanski:

The New Mexico Oil Conservation Division (OCD) has received the Apache Corporation's closure plan dated April 23, 2001 signed by Mr. Urbanski. The NMOCD hereby approve the workplan submitted for closure of the the above captioned drill pits. The conditions outlined below shall serve as basis for approval of the pit closure process already underway at the subject pits.

1. All wastes shall be disposed of at an OCD approved facility.
2. Apache Corporation will document any/all contaminant levels in the soils.
3. Apache Corporation will submit a final closure report within 30 days of completion of work so that OCD may approve the closure process as being final. This report shall include result from all sampling activities and the actions taken to complete the pit closure.
4. All original documents concerning the closure process shall be sent to the Santa Fe OCD office, with copies provided to the Hobbs district OCD office.

Mr. David E. Urbanski
May 8, 2001
Page 2

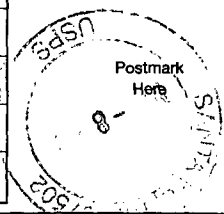
Note, that OCD approval does not relieve Apache Corporation of liability should it later be found that contamination exists which is beyond the scope of this work plan. In addition, OCD approval does not relieve Apache Corporation of responsibility for compliance with any other Federal, State or other local laws and/or regulations. If you have any questions regarding this matter feel free to call me at (505)-476-3489.

Sincerely,



W. Jack Ford, C.P.G.
Environmental Bureau OCD

XC: Hobbs OCD District office

U.S. Postal Service CERTIFIED MAIL RECEIPT (Domestic Mail Only; No Insurance Coverage Provided)		<i>Ford OCD</i>
Article Sent To:		
Postage	\$	
Certified Fee		
Return Receipt Fee (Endorsement Required)		
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$	
Name (Please Print Clearly) (To be completed by mailer)		
<i>D. Urbanski</i>		
Street, Apt. No.; or PO Box No.		
<i>Apache</i>		
City, State, ZIP+ 4		
<i>Drill Pits</i>		
PS Form 3800, July 1999 See Reverse for Instructions		

7099 3220 0000 5051 0395

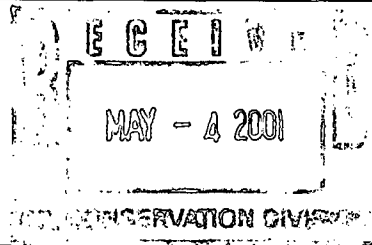
2000 POST OAK BOULEVARD / SUITE 100 / HOUSTON, TEXAS 77056-4400



WWW.APACHECORP.COM
[713] 296-6000

April 23, 2001

Mr. Jack Ford
NMOCD
1220 S. Saint Francis Dr.
Santa Fe, NM 87505



Re: Delineation and Remediation Proposal for Drill Pit Spills
Wells #928, #929, #922, #829, #830
Northeast Drinkard Unit, Eunice, NM

Dear Mr. Ford:

Apache Corporation respectfully submits the attached proposal regarding remediation of the above referenced property. Apache will initiate cleanup operations shortly after receiving written approval from your office.

Should you have any questions or comments concerning the proposal, please contact me at 713-296-6555, or email me a David.Urbanski@apachecorp.com.

Thank you in advance for your assistance in this matter.

Sincerely,
APACHE CORPORATION

A handwritten signature in cursive script that reads "David E. Urbanski".

David E. Urbanski
Environmental Coordinator

Attachment

cc: Chris Williams, NMOCD Hobbs
Doug O'Neil, Southern Region Manager
Dennis Bickford, Drilling Superintendent
Paul Griesedieck, Manager EH&S

**Remediation Proposal for Drill Pit Spills
Wells #928, #929, #922, #829, #830
Northeast Drinkard Unit, Eunice, NM
Section 22-T21S-R37E**

Overview

On April 6, 2001, the New Mexico Oil Conservation Division (NMOCD) was contacted by an Eunice area landowner. The landowner stated that Apache Corporation appeared to be attempting to prematurely deep bury some of their new drill pits. Buddy Hill, NMOCD Hobbs, visited the site on April 9, 2001 and photographed the drill pits at wells #928, #929, #922, #829 and #830. Mr. Hill reported to Chris Williams, also with the NMOCD Hobbs, that in his opinion, fluids had been drained from the drill pits into the deep trenches at the subject sites. The trench adjacent to the #928 well had standing fluid in the bottom at the time of his inspection. Apache immediately dispatched a vacuum truck to remove the fluids from the #928 deep trench. The fluids were hauled to an injection well for disposal.

Everett Ouzts, Apache Field Drilling Foreman, was contacted and questioned about the pit closures. Mr. Ouzts said that he had personally checked each of the subject pits the week before and none contained fluids at the time of his inspection. He stated that he walked on the dried crust in the well #928 pit and, since he did not observe any fluids, he instructed the contractor, L. Ramirez Trucking & Backhoe Service, to deep bury the pits.

When the berms of the pits were broken open to begin the process of deep burying, fluids trapped under the dried crusts drained from the pits into the trenches. Moreover, contractor employees told Apache personnel that they had witnessed vacuum trucks releasing fluids into the subject drill pits that had been left open to dry. Some of this dumping occurred during the time period between Mr. Ouzts' inspection and the initiation of the deep bury activities. Apache has forewarned all the location-building/closure contractors to never allow drilling fluids to escape the pits, but the message may not have been reiterated to this contractor immediately before he began his closure operation. The illegal dumping, the miscommunication, and the fluids trapped beneath the crust were all key factors in the release of the drilling fluids into the deep trench.

David Urbanski, Apache Environmental Coordinator, contacted the NMOCD and asked to meet with one of their representatives at the NEDU field. Mr. Urbanski and Dennis Bickford, Apache Drilling Superintendent, met with Gary Wink, NMOCD Hobbs, on April 10, 2001 at Apache's Eunice field office. Mr. Wink presented the photographs taken and discussed the need for delineation of the drilling fluid impacts in the deep trenches.

Bob Allen of Safety and Environmental Solutions, Inc., was contacted to assist in the delineation of drill fluid impacts. The deep trenches adjacent to the subject wells had been inadvertently backfilled due to a miscommunication between Apache and L. Ramirez; therefore, it would now be necessary to excavate through the fill material to the original bottom of the trench to obtain samples. The sampling exercise at each well site was conducted as follows:

1. Fill material was excavated from the deep trench until the original bottom of the trench was reached at three different locations.
2. Soil samples were collected at each of the three locations and combined into one composite sample.
3. A portion of the composite sample was placed in glass jars and preserved and transported to Cardinal Laboratories according to proper protocol.
4. The samples were submitted to Cardinal Labs in a timely manner, and were analyzed for TPH, CI and BTEX impacts (A detailed summary of activities and the analytical results are presented in Appendix A).

The deep trench adjacent to Well #922 was not sampled during the sampling exercise, but Apache has agreed to treat this location in the same manner as the other drilling fluid impacted sites.

Jack Ford, NMOCD Santa Fe, was contacted by Mr. Urbanski on April 23, 2001 and was made aware of the Apache drill pit situation and the subsequent analytical results. Mr. Ford requested that Apache propose a procedure to further delineate and remediate the impacts of drill fluids in the deep trenches.

Delineation and Remediation of Impacts

Apache's approach to the delineation of the impacts will assist in the remediation of the soils as well. Rather than coring or excavating for soil samples, Apache proposes to remove the contents of the deep trenches and the adjacent soils by utilizing a bulldozer (dozer). The dozer operator will center the blade over the end of each deep trench and proceed to remove 1' to 2' of soil with each pass across the length of the deep trench. The dozer will continue to remove soil with each pass until it has excavated to a depth below the original deep trench floor. The resulting trench will be one dozer blade wide and slightly deeper than the original deep trench. The soils removed from the trench area will be stockpiled on site to be sampled later.

Once the dozer has reached a depth at which human visual and olfactory senses indicate that the extent of the impacts have been surpassed, samples will be collected on the floor and walls of the excavation and submitted for analysis to include TPH, BTEX and chloride content. The analytical results will be evaluated and presented to the NMOCD to determine if further excavation will be required. When the analytical results indicate that the levels of impact are below NMOCD acceptable levels, the delineation of impacts from the deep trench will be

considered completed. The newly excavated trenches will be cordoned off from the open pastures with fencing materials.

The soils excavated from the trenches will be blended and stockpiled on site. Samples of each stockpile will be collected and analyzed for TPH, BTEX and chloride content. The analytical results will be evaluated and presented to the NMOCD to determine if additional blending or tilling will be required, or if the soil can be utilized in some other capacity.

The newly excavated trenches will remain open and the stockpiled soil will remain on site until such time that the drill pit contents have dried sufficiently to be deep buried as allowed by federal standards. The lined drill pits will be rolled into the trenches, and the stockpiled soil will be placed in the trench on top of the lined pit contents. Apache will place 3'-4' of clean topsoil in the trench to bring the elevation up to natural grade. The pit liner on the bottom will provide a barrier to preclude the downward migration of any drill pit constituents. Due to the extremely low precipitation rates in the Eunice area, the depth of the topsoil will act as a barrier to stop any rainfall from infiltrating into the pit contents.

Apache Corporation will contract an environmental consultant to monitor the work and collect samples. The NMOCD will be notified of the project start date and will be contacted throughout the process with updates of progress. Should the need arise to remove some of the impacted soil from the site, the NMOCD will be contacted to obtain approval of Apache's intended use or disposal of the soil.

Closure

Upon conclusion of the delineation and remediation of the drill pits at NEDU wells #928, #929, #922, #829 and #830, Apache will submit a request for closure to the NMOCD which will include a summary of site activities and any pertinent analytical test results.

Preventative Measures

Apache regrets that the miscommunication between the contractor and Apache personnel resulted in the release of drilling fluids. Apache is taking the following measures to ensure that a repeat of this type of incident does not occur.

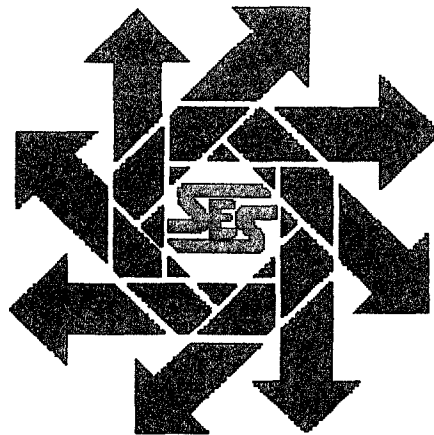
1. Contracts for building well locations will contain verbiage warning the contractor to not initiate any deep bury process without an Apache representative on site.
2. Well location contractors will be instructed to never let fluids escape from the drill pit into the deep trench, and if fluids are discovered when the deep bury process is started, they should immediately take measures to prevent the fluid from reaching the deep trench.

3. An Apache employee or representative will be on site to initiate the deep burying process and to verify that the pit contents are sufficiently dry to be buried.
4. Apache will post signs at field entrances and on the drill pit fence warning that anyone caught placing anything in the drill pits will be prosecuted.
5. Apache will implement a drill pit tracking system that will record when the drill pit was last used and the date it should be closed so that the pits can maximize the drying time without exceeding the NMOCD time limit to closure.

APPENDIX A

**Apache Corporation
Sampling Report
NEDU Well # 830, #829, #928, #929
Section 22, T21S, R37E
Lea County, New Mexico**

April 13, 2001



Prepared For:

**Apache Corporation
2000 Post Oak Blvd., Suite 100
Houston, Texas 77056
(713) 296-6555**

Prepared By:

**Safety & Environmental Solutions, Inc.
703 E. Clinton Suite 102
Hobbs, New Mexico 88240
(505) 397-0510**

TABLE OF CONTENTS

I. Background.....2

II. Work Performed2

IV. Analytical Results.....2

VI. Maps and Figures.....3

NEDU #829, #830, #928, #929 Sampling Report
April 13, 2001

Apache Corporation
Lea County, New Mexico

I. Background

Safety & Environmental Solutions, Inc. (SESI) was engaged by Apache Corporation to perform soil sampling at the NEDU #829, #830, #928, and #929 well locations. The subject sites are located in Section 22, Township 21S, Range 37E in Lea County, New Mexico (See Vicinity Map).

II. Work Performed

A technician with SESI arrived at the NEDU #829 location on April 13, 2001. A trackhoe was used to excavate to the bottom of the deep trench area in three separate locations to a depth of 19-20 feet for sampling (See Site Plan). A composite sample was taken from the bottom of the holes.

On April 13, 2001 SESI also delineated and collected a sample at the NEDU #830 site. The trench area was again excavated in three separate locations to a depth of 19 feet (See Site Plan). A composite sample was collected from the bottom of each hole.

SESI arrived at the NEDU # 928 location on April 15, 2001. The trench area, where sampling was to be conducted, was already excavated. A composite sample was collected from three different locations of the trench at depths between 12-13 feet (See Site Plan).

On April 15, 2001, SESI also collected a composite sample from the NEDU #929 location after a trackhoe was used to delineate the trench area. Three separate excavations were made ranging from 19.5 to 20 feet. Samples taken from the bottom hole of the three excavations made up the composite sample.

The composite samples collected from the four sites were preserved in appropriate containers and transported under chain of custody to Cardinal Laboratories in Hobbs, New Mexico for analysis. The analysis performed on these samples was to detect elevated levels of Chlorides, Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethyl Benzene, and Total Xylenes (BTEX).

III. Analytical Results

The analysis of the composite samples are summarized as follows:

NEDU #829, #830, #928, #929 Sampling Report
April 13, 2001

Apache Corporation
Lea County, New Mexico

COMPOSITE SAMPLE ID	TPH (mg/Kg)	CHLORIDE (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
NEDU #829	41.8	25,600	<0.005	<0.005	0.006	0.021
NEDU #830	<10.0	25,600	<0.005	<0.005	0.005	0.020
NEDU #928	1340	22,400	0.006	0.048	0.058	0.150
NEDU #929	262	16,800	0.006	0.049	0.054	0.138

IV. Maps and Figures
Vicinity Map
Site Plans
Analytical Results

***NEDU #829, #830, #928, #929 Sampling Report
April 13, 2001***

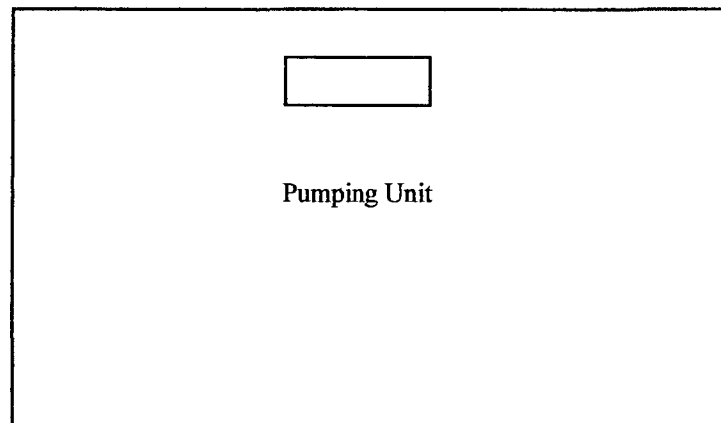
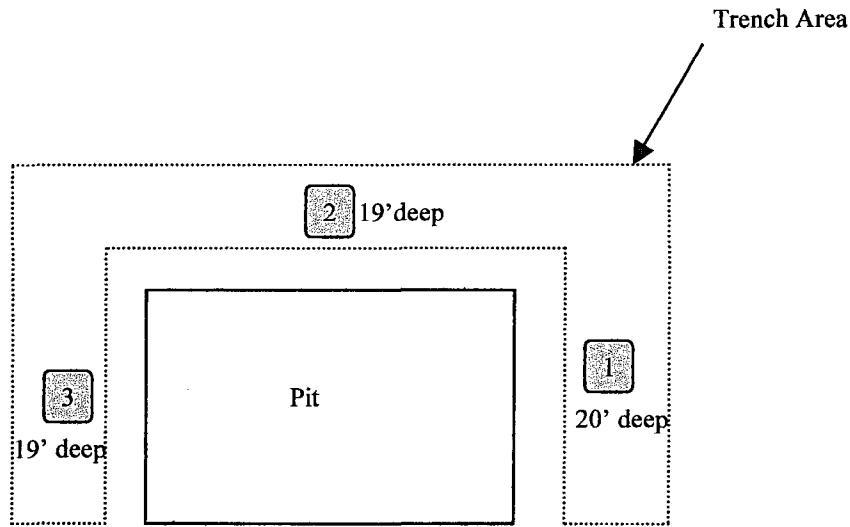
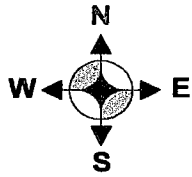
***Apache Corporation
Lea County, New Mexico***

**Figure 1
Vicinity Map**

***NEDU #829, #830, #928, #929 Sampling Report
April 13, 2001***

***Apache Corporation
Lea County, New Mexico***

**Figure 2
Site Plans**



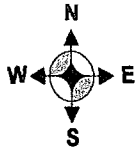
4-13-2001

Apache Corporation

Site Plan
NEDU #829
Unit L, Section 22, T21S,
R37E

Safety & Environmental Solutions, Inc.





Pumping Unit



Pit

Trench Area

1

19' deep

2

19' deep

3

19' deep

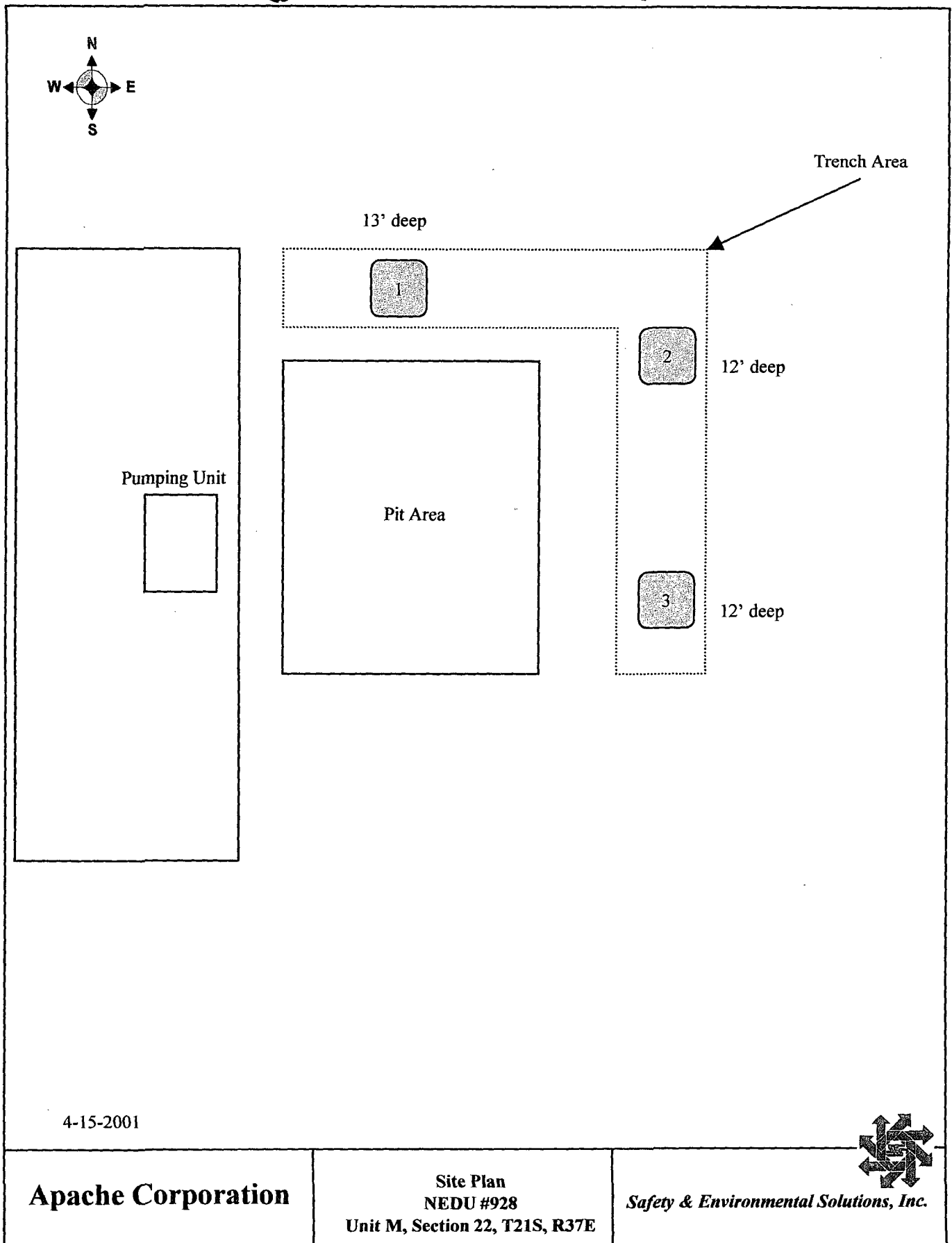
4-13-2001

Apache Corporation

Site Plan
NEDU #830
Section 22, T21S, R37E

Safety & Environmental Solutions, Inc.







Pumping Unit



Trench Area

20' deep

3

20' deep

2

19.5' deep

1

Pit Area

4-15-2001

Apache Corporation**Site Plan**
NEDU #929
Unit M, Section 22, T21S, R37E**Safety & Environmental Solutions, Inc.**

***NEDU #829, #830, #928, #929 Sampling Report
April 13, 2001***

***Apache Corporation
Lea County, New Mexico***

**Figure 3
Analytical Results**



PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603

PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, #103
HOBBS, NM 88240
FAX TO: (505) 393-4388

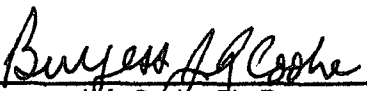
Receiving Date: 04/16/01
Reporting Date: 04/17/01
Project Number: NOT GIVEN
Project Name: APACHE SAMPLING
Project Location: EUNICE, NM

Sampling Date: 04/13/01 (#1, #2)
04/15/01 (#3, #4)
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	TPH (mg/Kg)	CI* (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)
ANALYSIS DATE:		04/16/01	04/17/01	04/16/01	04/16/01	04/16/01	04/16/01
H5789-1	#830	<10.0	25600	<0.005	<0.005	0.005	0.020
H5789-2	#829	41.8	25600	<0.005	<0.005	0.006	0.021
H5789-3	#928	1340	22400	0.006	0.048	0.058	0.150
H5789-4	#929	262	16800	0.006	0.049	0.054	0.138
Quality Control		244	960	0.107	0.100	0.101	0.301
True Value QC		240	1000	0.100	0.100	0.100	0.300
% Recovery		102	96.0	107	99.9	101	100
Relative Percent Difference		0.1	6.3	11.0	8.9	10.8	8.5

METHODS: TRPHC-EPA 600/4-79-020 418.1; CI-Std. Methods 4500-CIB; BTEX-EPA SW-846 8260

*Analyses performed on 1:4 w:v aqueous extracts.


Burgess J. A. Cooke, Ph. D.

4/17/01
Date

PLEASE REPLY TO: **Cardinal Laboratories**
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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

Appendix B

OCD Approved Path Forward on May 13, 2021

From: [Baker, Larry](#)
To: [Robert Nelson](#)
Subject: FW: [EXTERNAL] The Oil Conservation Division (OCD) has approved the application, Application ID: 10932
Date: Tuesday, July 13, 2021 3:24:03 PM

From: OCDOnline@state.nm.us [mailto:OCDOnline@state.nm.us]
Sent: Thursday, May 13, 2021 3:00 PM
To: Baker, Larry <Larry.Baker@apachecorp.com>
Subject: [EXTERNAL] The Oil Conservation Division (OCD) has approved the application, Application ID: 10932

To whom it may concern (c/o Larry Baker for APACHE CORPORATION),

The OCD has approved the submitted *Application for administrative approval of a release notification and corrective action* (C-141), for incident ID (n#) nRM2031146817, with the following conditions:

- **Using new Rule make sure sidewall data and bottom data are correct. Requested variances for excavation and liner are approved. Get pre-approval for Monitor Well locations on map before installations.**

The signed C-141 can be found in the OCD Online: Imaging under the incident ID (n#).

If you have any questions regarding this application, please contact me.

Thank you,
Bradford Billings
Hydrologist/E.Spec.A
505-670-6549
bradford.billings@state.nm.us

New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505

WARNING EXTERNAL EMAIL: This email is from an external source. Do not click links or open attachments without positive sender verification of purpose. Never enter Username, Password or sensitive information on linked pages from this email. If you are unsure about the message, please contact the Apache IT ServiceDesk for assistance.

Appendix C

OCD Approved Monitor Wells Locations

From: [Billings, Bradford, EMNRD](#)
To: [Robert Nelson](#)
Cc: [Mark Larson](#); [Baker, Larry](#)
Subject: RE: Apache Corp. (1RP-0313/nRM2031146817) Monitor Well Location Approval
Date: Wednesday, July 14, 2021 12:13:08 PM
Attachments: [image001.png](#)

07/14/2021

Hello,

Locations as indicated in attached PDF's are APPROVED. Question, one might consider some soil samples for same analytes, at least in the vicinity of anticipated/encountered groundwater. Thank you for your efforts.

Sincerely,

Bradford Billings
EMNRD/OCD

From: Robert Nelson <rnelson@laenvironmental.com>
Sent: Wednesday, July 14, 2021 7:12 AM
To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>
Cc: Mark Larson <Mark@laenvironmental.com>; Baker, Larry <Larry.Baker@apachecorp.com>
Subject: Apache Corp. (1RP-0313/nRM2031146817) Monitor Well Location Approval

Hello Bradford,

On October 31, 2019, Larson & Associates, Inc. (LAI) submitted a summary of work and path forward for remediation and closure of trenches associated with drillings pits at the Northeast Drinkard Unit (NEDU) Wells 829, 830, 922, 928, & 929 (1RP-0313). The trenches were discovered on April 6, 2001 when a landowner reported the drilling pits were being closed by disposing pit fluid in trenches adjacent to the drilling pits. Apache was notified and submitted the initial C-141 on April 23, 2001. OCD assigned the wells (trenches) remediation permit 1RP-313. On May 13, 2021, Apache received notification from OCD with approval for the submitted application for administrative approval of a release notification and corrective action (C-141), for incident ID (n#) nRM2031146817. OCD stated “**Using new Rule make sure sidewall data and bottom data are correct. Requested variance for excavation and liner are approved. Get pre- approval for Monitor Well locations on map before installations**”.

The summary of work and path forward stated that monitor wells be installed approximately 50 feet hydraulically down gradient (east-southeast) from the trenches and complete with 15 feet of 2-inch schedule 40 screen to gauge depth to groundwater and collect groundwater samples for laboratory analysis (BTEX, chloride and total dissolved solids (TDS)). Please find attached the topographic map and proposed monitor well locations. The drilling rig is currently scheduled to complete the

installation of these monitor wells on Tuesday – Thursday (July 20th through July 22nd, 2021). Your approval of these monitor well locations is requested and greatly appreciated. Please feel free to contact Bruce Baker with Apache at (432) 631-6982 or Larry.Baker@apache.com, Mark Larson at (432) 687-0901 or mark@laenvironmental.com or me if you have any questions.

Thank you,

Robert Nelson

Sr. Geologist

Office – 432-687-0901

Cell – 432-664-4804

rnelson@laenvironmental.com



Appendix D

Karst Risk Potential

An aerial photograph of a residential neighborhood. The houses are mostly single-story with light-colored roofs, set back from a network of streets. A road runs vertically on the left side of the image. A horizontal road crosses the middle of the image. The word "Low" is printed in black text in the center of the image, over a house. In the top left corner, there is a small oval-shaped feature, possibly a pool or a sports field. The overall color palette is dominated by the greens of the lawns and the greys/browns of the roofs and streets.

Appendix E
Laboratory Reports



Certificate of Analysis Summary 638333

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 829



Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638333-001	638333-002	638333-003	638333-004	638333-005	638333-006
	<i>Field Id:</i>	SP-1 (5')	SP-1 (10')	SP-1 (15')	SP-1 (20')	SP-1 (25')	SP-1 (30')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-26-19 09:20	Sep-26-19 09:21	Sep-26-19 09:22	Sep-26-19 09:23	Sep-26-19 09:24	Sep-26-19 09:25
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00
	<i>Analyzed:</i>	Oct-02-19 06:04	Oct-02-19 06:24	Oct-02-19 06:44	Oct-02-19 07:05	Oct-02-19 07:25	Oct-02-19 07:45
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198
Toluene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198
Ethylbenzene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198
m,p-Xylenes		<0.00398 0.00398	<0.00396 0.00396	<0.00398 0.00398	<0.00402 0.00402	<0.00399 0.00399	<0.00397 0.00397
o-Xylene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198
Total Xylenes		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198
Total BTEX		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00200 0.00200	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 10:30
	<i>Analyzed:</i>	Sep-30-19 16:10	Sep-30-19 16:16	Sep-30-19 16:34	Sep-30-19 16:39	Sep-30-19 17:22	Sep-30-19 17:28
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		97.7 4.96	51.2 5.00	323 5.02	4880 50.5	5200 50.5	2210 25.0
TPH by SW8015 Mod	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00
	<i>Analyzed:</i>	Oct-01-19 23:11	Oct-02-19 00:14	Oct-02-19 00:35	Oct-02-19 00:56	Oct-02-19 01:17	Oct-02-19 01:38
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.8 49.8	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9	<50.0 50.0
Diesel Range Organics (DRO)		<49.8 49.8	<49.9 49.9	<49.8 49.8	<50.0 50.0	56.1 49.9	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.8 49.8	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9	<50.0 50.0
Total TPH		<49.8 49.8	<49.9 49.9	<49.8 49.8	<50.0 50.0	56.1 49.9	<50.0 50.0

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Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638333

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 829



Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638333-007	638333-008	638333-009	638333-010	638333-011	638333-012
	<i>Field Id:</i>	SP-1 (35')	SP-1 (40')	SP-1 (45')	SP-1 (50')	SP-1 (55')	SP-1 (60')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-26-19 09:26	Sep-26-19 09:30	Sep-26-19 09:31	Sep-26-19 09:50	Sep-26-19 09:51	Sep-26-19 10:00
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00
	<i>Analyzed:</i>	Oct-02-19 08:05	Oct-02-19 08:25	Oct-02-19 08:45	Oct-02-19 09:05	Oct-02-19 10:24	Oct-02-19 10:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Toluene		<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Ethylbenzene		<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
m,p-Xylenes		<0.00404 0.00404	<0.00398 0.00398	<0.00398 0.00398	<0.00399 0.00399	<0.00398 0.00398	<0.00401 0.00401
o-Xylene		<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Total Xylenes		<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Total BTEX		<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 10:30	Sep-30-19 11:00	Sep-30-19 08:15
	<i>Analyzed:</i>	Sep-30-19 17:34	Sep-30-19 17:40	Sep-30-19 17:46	Sep-30-19 17:51	Sep-30-19 14:11	Sep-30-19 08:39
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		968 5.00	2710 25.0	2100 25.2	2080 24.8	592 5.00	361 5.02
TPH by SW8015 Mod	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00
	<i>Analyzed:</i>	Oct-02-19 01:59	Oct-02-19 02:20	Oct-02-19 02:41	Oct-02-19 03:02	Oct-02-19 03:44	Oct-02-19 04:05
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.9 49.9
Total TPH		<49.8 49.8	<50.0 50.0	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.9 49.9

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Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638333

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 829



Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638333-013	638333-014	638333-015	638333-016	638333-017	638333-018
	<i>Field Id:</i>	SP-4 (5')	SP-4 (10')	SP-4 (15')	SP-4 (20')	SP-5 (5')	SP-5 (10')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-26-19 11:30	Sep-26-19 11:31	Sep-26-19 11:32	Sep-26-19 11:33	Sep-26-19 12:30	Sep-26-19 12:31
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:00
	<i>Analyzed:</i>	Oct-02-19 11:04	Oct-02-19 11:24	Oct-02-19 11:44	Oct-02-19 12:04	Oct-02-19 12:25	Oct-02-19 12:45
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202	<0.00199 0.00199
m,p-Xylenes		<0.00400 0.00400	<0.00399 0.00399	<0.00397 0.00397	<0.00396 0.00396	<0.00403 0.00403	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00202 0.00202	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15
	<i>Analyzed:</i>	Sep-30-19 08:58	Sep-30-19 09:05	Sep-30-19 09:11	Sep-30-19 09:18	Sep-30-19 09:37	Sep-30-19 09:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1630 24.8	375 4.99	149 4.95	285 4.95	498 5.05	224 5.05
TPH by SW8015 Mod	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00
	<i>Analyzed:</i>	Oct-02-19 04:25	Oct-02-19 04:46	Oct-02-19 05:07	Oct-02-19 05:28	Oct-02-19 05:49	Oct-02-19 06:10
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.8 49.8
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.8 49.8
Total TPH		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.8 49.8

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Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638333

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 829



Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638333-019	638333-020	638333-021	638333-022	638333-023	638333-024
	<i>Field Id:</i>	SP-5 (15')	SP-5 (20')	SP-5 (25')	SP-6 (5')	SP-6 (10')	SP-6 (15')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-26-19 12:32	Sep-26-19 12:33	Sep-26-19 12:34	Sep-26-19 13:14	Sep-26-19 13:15	Sep-26-19 13:16
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-27-19 14:00	Sep-27-19 14:00	Sep-27-19 14:30	Sep-27-19 14:30	Sep-27-19 14:30	Sep-27-19 14:30
	<i>Analyzed:</i>	Oct-02-19 13:05	Oct-02-19 13:25	Sep-30-19 23:33	Oct-01-19 00:51	Oct-01-19 01:11	Oct-01-19 01:31
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Toluene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Ethylbenzene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
m,p-Xylenes		<0.00397 0.00397	<0.00399 0.00399	<0.00404 0.00404	<0.00399 0.00399	<0.00396 0.00396	<0.00398 0.00398
o-Xylene		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Total Xylenes		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Total BTEX		<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15
	<i>Analyzed:</i>	Sep-30-19 09:50	Sep-30-19 09:57	Sep-30-19 10:03	Sep-30-19 10:09	Sep-30-19 10:29	Sep-30-19 10:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		345 5.05	217 4.98	324 5.02	1240 4.96	120 5.00	83.3 5.04
TPH by SW8015 Mod	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Oct-04-19 09:00	Oct-04-19 09:00	Oct-04-19 08:00	Oct-04-19 16:00
	<i>Analyzed:</i>	Oct-02-19 06:31	Oct-02-19 06:52	Oct-04-19 19:20	Oct-04-19 19:41	Oct-04-19 20:22	Oct-05-19 00:54
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	99.4 50.0	58.3 49.9	68.7 50.0	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	92.6 50.0	60.1 49.9	<50.0 50.0	<50.0 50.0
Total TPH		<49.9 49.9	<50.0 50.0	192 50.0	118 49.9	68.7 50.0	<50.0 50.0

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638333

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 829



Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638333-025	638333-026	638333-027	638333-028	638333-029	638333-030
	<i>Field Id:</i>	SP-6 (20')	SP-6 (25')	SP-7 (5')	SP-7 (10')	SP-7 (15')	SP-7 (20')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-26-19 13:17	Sep-26-19 13:18	Sep-26-19 14:00	Sep-26-19 14:01	Sep-26-19 14:02	Sep-26-19 14:03
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-27-19 14:30	Sep-27-19 14:30	Sep-27-19 14:30	Sep-27-19 14:30	Sep-27-19 14:30	Sep-27-19 14:30
	<i>Analyzed:</i>	Oct-01-19 01:52	Oct-01-19 02:12	Oct-01-19 02:32	Oct-01-19 02:52	Oct-01-19 03:12	Oct-01-19 03:32
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Toluene		<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Ethylbenzene		<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
m,p-Xylenes		<0.00404 0.00404	<0.00402 0.00402	<0.00401 0.00401	<0.00399 0.00399	<0.00398 0.00398	<0.00403 0.00403
o-Xylene		<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Total Xylenes		<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Total BTEX		<0.00202 0.00202	<0.00201 0.00201	<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15	Sep-30-19 08:15
	<i>Analyzed:</i>	Sep-30-19 10:55	Sep-30-19 11:01	Sep-30-19 11:07	Sep-30-19 11:14	Sep-30-19 11:20	Sep-30-19 11:27
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		230 4.98	258 4.97	102 5.00	339 5.04	170 4.97	139 5.00
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00
	<i>Analyzed:</i>	Oct-05-19 00:54	Oct-05-19 01:15	Oct-05-19 01:36	Oct-05-19 01:56	Oct-05-19 02:38	Oct-05-19 02:59
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.9%

Jessica Kramer

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638333

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 829



Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

Analysis Requested	Lab Id:	638333-031					
	Field Id:	SP-7 (25')					
	Depth:						
	Matrix:	SOIL					
	Sampled:	Sep-26-19 14:04					
BTEX by EPA 8021B	Extracted:	Sep-27-19 14:30					
	Analyzed:	Oct-01-19 03:52					
	Units/RL:	mg/kg RL					
Benzene		<0.00198 0.00198					
Toluene		<0.00198 0.00198					
Ethylbenzene		<0.00198 0.00198					
m,p-Xylenes		<0.00397 0.00397					
o-Xylene		<0.00198 0.00198					
Total Xylenes		<0.00198 0.00198					
Total BTEX		<0.00198 0.00198					
Chloride by EPA 300	Extracted:	Sep-30-19 08:15					
	Analyzed:	Sep-30-19 11:33					
	Units/RL:	mg/kg RL					
Chloride		238 5.03					
TPH by SW8015 Mod	Extracted:	Oct-04-19 16:00					
	Analyzed:	Oct-05-19 03:20					
	Units/RL:	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0					
Diesel Range Organics (DRO)		<50.0 50.0					
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0					
Total TPH		<50.0 50.0					

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Version: 1.0%

Jessica Kramer

Jessica Kramer
Project Assistant

Analytical Report 638333

for
Larson and Associates, Inc.

Project Manager: Mark Larson

Apache Corp. NEDU 829

19-0112-22

08-OCT-19

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Tampa: Florida (E87429), North Carolina (483)



08-OCT-19

Project Manager: **Mark Larson**

Larson and Associates, Inc.

P. O. Box 50685

Midland, TX 79710

Reference: XENCO Report No(s): **638333**

Apache Corp. NEDU 829

Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 638333. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 638333 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads 'Jessica Kramer'.

Jessica Kramer

Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Cross Reference 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-1 (5')	S	09-26-19 09:20		638333-001
SP-1 (10')	S	09-26-19 09:21		638333-002
SP-1 (15')	S	09-26-19 09:22		638333-003
SP-1 (20')	S	09-26-19 09:23		638333-004
SP-1 (25')	S	09-26-19 09:24		638333-005
SP-1 (30')	S	09-26-19 09:25		638333-006
SP-1 (35')	S	09-26-19 09:26		638333-007
SP-1 (40')	S	09-26-19 09:30		638333-008
SP-1 (45')	S	09-26-19 09:31		638333-009
SP-1 (50')	S	09-26-19 09:50		638333-010
SP-1 (55')	S	09-26-19 09:51		638333-011
SP-1 (60')	S	09-26-19 10:00		638333-012
SP-4 (5')	S	09-26-19 11:30		638333-013
SP-4 (10')	S	09-26-19 11:31		638333-014
SP-4 (15')	S	09-26-19 11:32		638333-015
SP-4 (20')	S	09-26-19 11:33		638333-016
SP-5 (5')	S	09-26-19 12:30		638333-017
SP-5 (10')	S	09-26-19 12:31		638333-018
SP-5 (15')	S	09-26-19 12:32		638333-019
SP-5 (20')	S	09-26-19 12:33		638333-020
SP-5 (25')	S	09-26-19 12:34		638333-021
SP-6 (5')	S	09-26-19 13:14		638333-022
SP-6 (10')	S	09-26-19 13:15		638333-023
SP-6 (15')	S	09-26-19 13:16		638333-024
SP-6 (20')	S	09-26-19 13:17		638333-025
SP-6 (25')	S	09-26-19 13:18		638333-026
SP-7 (5')	S	09-26-19 14:00		638333-027
SP-7 (10')	S	09-26-19 14:01		638333-028
SP-7 (15')	S	09-26-19 14:02		638333-029
SP-7 (20')	S	09-26-19 14:03		638333-030
SP-7 (25')	S	09-26-19 14:04		638333-031

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 829**Project ID: 19-0112-22
Work Order Number(s): 638333Report Date: 08-OCT-19
Date Received: 09/27/2019**Sample receipt non conformances and comments:**

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3102891 BTEX by EPA 8021B

Lab Sample ID 638333-021 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638333-021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.

Samples in the analytical batch are: 638333-021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031

Batch: LBA-3102920 Chloride by EPA 300

Lab Sample ID 638333-022 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638333-012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 829**Project ID: 19-0112-22
Work Order Number(s): 638333Report Date: 08-OCT-19
Date Received: 09/27/2019

Batch: LBA-3103029 TPH by SW8015 Mod

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638333-001 SD,638333-010,638333-012,638333-007.

Lab Sample ID 638333-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Diesel Range Organics (DRO), Gasoline Range Hydrocarbons (GRO) recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are:

638333-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.

The Laboratory Control Sample for Gasoline Range Hydrocarbons (GRO), Diesel Range Organics (DRO) is within laboratory Control Limits, therefore the data was accepted.

MS/MSD not spiked in error; BKS/BSD shows recovery for the batch.

Batch: LBA-3103086 BTEX by EPA 8021B

Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.

Samples in the analytical batch are: 638333-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Lab Sample ID 638333-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638333-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3103522 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687564-1-BKS,638333-022,638333-021.

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 829**Project ID: 19-0112-22
Work Order Number(s): 638333Report Date: 08-OCT-19
Date Received: 09/27/2019

Batch: LBA-3103523 TPH by SW8015 Mod

Gasoline Range Hydrocarbons (GRO) recovered above QC limits Analyte was not detected in any of the associated samples and therefore the data was accepted. Diesel Range Organics (DRO) recovered above QC limits in the Blank Spike and Duplicate. Analyte was not detected in any of the associated samples and therefore the data was accepted. Samples in the analytical batch are: 638333-024. The MS/MSD shows recovery for the batch.

Surrogate 1-Chlorooctane, Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687566-1-BKS, 7687566-1-BSD.

Batch: LBA-3103535 TPH by SW8015 Mod

Surrogate 1-Chlorooctane, Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687563-1-BLK.

Batch: LBA-3103538 TPH by SW8015 Mod

Diesel Range Organics (DRO), Gasoline Range Hydrocarbons (GRO) recovered above QC limits in the laboratory control sample. Samples in the analytical batch are: 638333-025, -026, -027, -028, -029, -030, -031.

Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687567-1-BKS, 638118-011 SD, 638333-030, 638333-031.

Surrogate 1-Chlorooctane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687567-1-BKS, 7687567-1-BSD, 638118-011 S, 638118-011 SD, 638333-027, 638333-026, 638333-025, 638333-028, 638333-031, 638333-030, 638333-029.

MS/MSD shows recovery for the batch.

Diesel Range Organics (DRO), Gasoline Range Hydrocarbons (GRO) RPD was outside laboratory control limits.

Samples in the analytical batch are: 638333-025, -026, -027, -028, -029, -030, -031



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (5')**
 Lab Sample Id: 638333-001

Matrix: Soil
 Date Collected: 09.26.19 09.20

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	97.7	4.96	mg/kg	09.30.19 16.10		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.01.19 23.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.01.19 23.11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.01.19 23.11	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.01.19 23.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.01.19 23.11		
o-Terphenyl	84-15-1	120	%	70-135	10.01.19 23.11		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (5')**
 Lab Sample Id: 638333-001

Matrix: Soil
 Date Collected: 09.26.19 09.20

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 06.04	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 06.04	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 06.04	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 06.04	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 06.04	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 06.04	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 06.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.02.19 06.04		
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.02.19 06.04		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (10')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-002

Date Collected: 09.26.19 09.21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	51.2	5.00	mg/kg	09.30.19 16.16		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 00.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 00.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 00.14	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 00.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	112	%	70-135	10.02.19 00.14		
o-Terphenyl	84-15-1	116	%	70-135	10.02.19 00.14		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-002

Date Collected: 09.26.19 09.21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 06.24	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 06.24	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 06.24	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.02.19 06.24	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 06.24	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 06.24	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 06.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.02.19 06.24		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.02.19 06.24		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (15')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-003

Date Collected: 09.26.19 09.22

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	323	5.02	mg/kg	09.30.19 16.34		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.02.19 00.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.02.19 00.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.02.19 00.35	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.02.19 00.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	107	%	70-135	10.02.19 00.35		
o-Terphenyl	84-15-1	117	%	70-135	10.02.19 00.35		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-003

Date Collected: 09.26.19 09.22

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 06.44	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 06.44	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 06.44	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 06.44	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 06.44	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 06.44	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 06.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.02.19 06.44		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.02.19 06.44		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-004

Date Collected: 09.26.19 09.23

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4880	50.5	mg/kg	09.30.19 16.39		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 00.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 00.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 00.56	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 00.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	119	%	70-135	10.02.19 00.56	
o-Terphenyl	84-15-1	129	%	70-135	10.02.19 00.56	



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-004

Date Collected: 09.26.19 09.23

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.02.19 07.05	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.02.19 07.05	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.02.19 07.05	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.02.19 07.05	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.02.19 07.05	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.02.19 07.05	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.02.19 07.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.02.19 07.05		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.02.19 07.05		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-005

Date Collected: 09.26.19 09.24

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5200	50.5	mg/kg	09.30.19 17.22		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 01.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	56.1	49.9	mg/kg	10.02.19 01.17		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 01.17	U	1
Total TPH	PHC635	56.1	49.9	mg/kg	10.02.19 01.17		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	121	%	70-135	10.02.19 01.17	
o-Terphenyl	84-15-1	133	%	70-135	10.02.19 01.17	



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (25')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-005

Date Collected: 09.26.19 09.24

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 07.25	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 07.25	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 07.25	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.02.19 07.25	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 07.25	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 07.25	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 07.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.02.19 07.25		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.02.19 07.25		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (30')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-006

Date Collected: 09.26.19 09.25

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2210	25.0	mg/kg	09.30.19 17.28		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 01.38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 01.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 01.38	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 01.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.02.19 01.38		
o-Terphenyl	84-15-1	129	%	70-135	10.02.19 01.38		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-006

Date Collected: 09.26.19 09.25

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 07.45	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 07.45	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 07.45	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.02.19 07.45	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 07.45	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 07.45	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 07.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	70-130	10.02.19 07.45		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.02.19 07.45		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (35')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-007

Date Collected: 09.26.19 09.26

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	968	5.00	mg/kg	09.30.19 17.34		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.02.19 01.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.02.19 01.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.02.19 01.59	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.02.19 01.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	127	%	70-135	10.02.19 01.59		
o-Terphenyl	84-15-1	139	%	70-135	10.02.19 01.59	**	



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (35')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-007

Date Collected: 09.26.19 09.26

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.02.19 08.05	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.02.19 08.05	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.02.19 08.05	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	10.02.19 08.05	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.02.19 08.05	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.02.19 08.05	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.02.19 08.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.02.19 08.05		
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.02.19 08.05		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-008

Date Collected: 09.26.19 09.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2710	25.0	mg/kg	09.30.19 17.40		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 02.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 02.20	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 02.20	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 02.20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	10.02.19 02.20	
o-Terphenyl	84-15-1	120	%	70-135	10.02.19 02.20	



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-008

Date Collected: 09.26.19 09.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 08.25	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 08.25	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 08.25	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 08.25	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 08.25	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 08.25	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 08.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.02.19 08.25		
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.02.19 08.25		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (45')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-009

Date Collected: 09.26.19 09.31

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2100	25.2	mg/kg	09.30.19 17.46		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 02.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 02.41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 02.41	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 02.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	10.02.19 02.41	
o-Terphenyl	84-15-1	127	%	70-135	10.02.19 02.41	



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (45')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-009

Date Collected: 09.26.19 09.31

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 08.45	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 08.45	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 08.45	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 08.45	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 08.45	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 08.45	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 08.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.02.19 08.45		
4-Bromofluorobenzene	460-00-4	667	%	70-130	10.02.19 08.45	**	



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (50')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-010

Date Collected: 09.26.19 09.50

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 10.30

Basis: Wet Weight

Seq Number: 3102921

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2080	24.8	mg/kg	09.30.19 17.51		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 03.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 03.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 03.02	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 03.02	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	10.02.19 03.02		
o-Terphenyl	84-15-1	140	%	70-135	10.02.19 03.02	**	



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (50')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-010

Date Collected: 09.26.19 09.50

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 09.05	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 09.05	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 09.05	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.02.19 09.05	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 09.05	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 09.05	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 09.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.02.19 09.05		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.02.19 09.05		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (55')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-011

Date Collected: 09.26.19 09.51

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	592	5.00	mg/kg	09.30.19 14.11		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 03.44	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 03.44	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 03.44	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 03.44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	121	%	70-135	10.02.19 03.44	
o-Terphenyl	84-15-1	134	%	70-135	10.02.19 03.44	



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (55')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-011

Date Collected: 09.26.19 09.51

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 10.24	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 10.24	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 10.24	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 10.24	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 10.24	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 10.24	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 10.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	10.02.19 10.24		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.02.19 10.24		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-1 (60')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-012

Date Collected: 09.26.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	361	5.02	mg/kg	09.30.19 08.39		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 04.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 04.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 04.05	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 04.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	125	%	70-135	10.02.19 04.05		
o-Terphenyl	84-15-1	137	%	70-135	10.02.19 04.05	**	



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-1 (60')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-012

Date Collected: 09.26.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 10.44	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 10.44	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 10.44	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.02.19 10.44	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 10.44	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 10.44	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 10.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	10.02.19 10.44		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.02.19 10.44		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (5')**
 Lab Sample Id: 638333-013

Matrix: Soil
 Date Collected: 09.26.19 11.30

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3102920

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.30.19 08.15

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1630	24.8	mg/kg	09.30.19 08.58		5

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: DVM

Seq Number: 3103029

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 09.30.19 11.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 04.25	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 04.25	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 04.25	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 04.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	10.02.19 04.25		
o-Terphenyl	84-15-1	120	%	70-135	10.02.19 04.25		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (5')**
 Lab Sample Id: 638333-013

Matrix: Soil
 Date Collected: 09.26.19 11.30

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 11.04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 11.04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 11.04	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.02.19 11.04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 11.04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 11.04	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 11.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.02.19 11.04		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.02.19 11.04		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-014

Date Collected: 09.26.19 11.31

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	375	4.99	mg/kg	09.30.19 09.05		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 04.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 04.46	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 04.46	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 04.46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	116	%	70-135	10.02.19 04.46	
o-Terphenyl	84-15-1	126	%	70-135	10.02.19 04.46	



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-014

Date Collected: 09.26.19 11.31

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 11.24	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 11.24	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 11.24	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.02.19 11.24	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 11.24	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 11.24	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 11.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.02.19 11.24		
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.02.19 11.24		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-015

Date Collected: 09.26.19 11.32

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	149	4.95	mg/kg	09.30.19 09.11		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 05.07	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 05.07	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 05.07	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 05.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	115	%	70-135	10.02.19 05.07		
o-Terphenyl	84-15-1	126	%	70-135	10.02.19 05.07		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-015

Date Collected: 09.26.19 11.32

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 11.44	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 11.44	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 11.44	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.02.19 11.44	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 11.44	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 11.44	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 11.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.02.19 11.44		
1,4-Difluorobenzene	540-36-3	84	%	70-130	10.02.19 11.44		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (20')**
Lab Sample Id: 638333-016

Matrix: Soil
Date Collected: 09.26.19 11.33

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	285	4.95	mg/kg	09.30.19 09.18		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 05.28	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 05.28	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 05.28	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 05.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	114	%	70-135	10.02.19 05.28		
o-Terphenyl	84-15-1	125	%	70-135	10.02.19 05.28		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-4 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-016

Date Collected: 09.26.19 11.33

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 12.04	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 12.04	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 12.04	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.02.19 12.04	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 12.04	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 12.04	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 12.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.02.19 12.04		
4-Bromofluorobenzene	460-00-4	102	%	70-130	10.02.19 12.04		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-5 (5')
Lab Sample Id: 638333-017

Matrix: Soil
Date Collected: 09.26.19 12.30

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	498	5.05	mg/kg	09.30.19 09.37		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 05.49	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 05.49	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 05.49	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 05.49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.02.19 05.49		
o-Terphenyl	84-15-1	119	%	70-135	10.02.19 05.49		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-5 (5')**
Lab Sample Id: 638333-017

Matrix: Soil
Date Collected: 09.26.19 12.30

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.02.19 12.25	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.02.19 12.25	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.02.19 12.25	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.02.19 12.25	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.02.19 12.25	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.02.19 12.25	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.02.19 12.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	10.02.19 12.25		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.02.19 12.25		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-018

Date Collected: 09.26.19 12.31

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	224	5.05	mg/kg	09.30.19 09.44		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.02.19 06.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.02.19 06.10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.02.19 06.10	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.02.19 06.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	10.02.19 06.10		
o-Terphenyl	84-15-1	121	%	70-135	10.02.19 06.10		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-018

Date Collected: 09.26.19 12.31

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 12.45	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 12.45	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 12.45	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 12.45	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 12.45	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 12.45	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 12.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	95	%	70-130	10.02.19 12.45		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.02.19 12.45		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-5 (15')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-019

Date Collected: 09.26.19 12.32

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	345	5.05	mg/kg	09.30.19 09.50		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 06.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 06.31	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 06.31	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 06.31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	113	%	70-135	10.02.19 06.31		
o-Terphenyl	84-15-1	122	%	70-135	10.02.19 06.31		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-5 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-019

Date Collected: 09.26.19 12.32

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 13.05	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 13.05	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 13.05	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.02.19 13.05	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 13.05	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 13.05	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 13.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.02.19 13.05		
4-Bromofluorobenzene	460-00-4	102	%	70-130	10.02.19 13.05		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-5 (20')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-020

Date Collected: 09.26.19 12.33

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	217	4.98	mg/kg	09.30.19 09.57		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3103029

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 06.52	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 06.52	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 06.52	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 06.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	107	%	70-135	10.02.19 06.52		
o-Terphenyl	84-15-1	116	%	70-135	10.02.19 06.52		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-5 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-020

Date Collected: 09.26.19 12.33

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.00

Basis: Wet Weight

Seq Number: 3103086

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 13.25	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 13.25	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 13.25	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.02.19 13.25	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 13.25	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 13.25	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 13.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.02.19 13.25		
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.02.19 13.25		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-5 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-021

Date Collected: 09.26.19 12.34

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	324	5.02	mg/kg	09.30.19 10.03		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 09.00

Basis: Wet Weight

Seq Number: 3103522

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 19.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	99.4	50.0	mg/kg	10.04.19 19.20		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	92.6	50.0	mg/kg	10.04.19 19.20		1
Total TPH	PHC635	192	50.0	mg/kg	10.04.19 19.20		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	148	%	70-135	10.04.19 19.20	**	
o-Terphenyl	84-15-1	133	%	70-135	10.04.19 19.20		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-5 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-021

Date Collected: 09.26.19 12.34

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	09.30.19 23.33	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	09.30.19 23.33	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	09.30.19 23.33	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	09.30.19 23.33	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	09.30.19 23.33	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	09.30.19 23.33	U	1
Total BTEX		<0.00202	0.00202	mg/kg	09.30.19 23.33	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	09.30.19 23.33		
4-Bromofluorobenzene	460-00-4	110	%	70-130	09.30.19 23.33		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (5')**
 Lab Sample Id: 638333-022

Matrix: Soil
 Date Collected: 09.26.19 13.14

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1240	4.96	mg/kg	09.30.19 10.09		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 09.00

Basis: Wet Weight

Seq Number: 3103522

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 19.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	58.3	49.9	mg/kg	10.04.19 19.41		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	60.1	49.9	mg/kg	10.04.19 19.41		1
Total TPH	PHC635	118	49.9	mg/kg	10.04.19 19.41		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	141	%	70-135	10.04.19 19.41	**	
o-Terphenyl	84-15-1	126	%	70-135	10.04.19 19.41		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (5')**
Lab Sample Id: 638333-022

Matrix: Soil
Date Collected: 09.26.19 13.14

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.01.19 00.51	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.01.19 00.51	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.01.19 00.51	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.01.19 00.51	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.01.19 00.51	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.01.19 00.51	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.01.19 00.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.01.19 00.51		
4-Bromofluorobenzene	460-00-4	104	%	70-130	10.01.19 00.51		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-023

Date Collected: 09.26.19 13.15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	120	5.00	mg/kg	09.30.19 10.29		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 20.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	68.7	50.0	mg/kg	10.04.19 20.22		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 20.22	U	1
Total TPH	PHC635	68.7	50.0	mg/kg	10.04.19 20.22		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	10.04.19 20.22	
o-Terphenyl	84-15-1	124	%	70-135	10.04.19 20.22	



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-023

Date Collected: 09.26.19 13.15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.01.19 01.11	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.01.19 01.11	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.01.19 01.11	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.01.19 01.11	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.01.19 01.11	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.01.19 01.11	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.01.19 01.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.01.19 01.11		
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.01.19 01.11		



Certificate of Analytical Results 638333

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-024

Date Collected: 09.26.19 13.16

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	83.3	5.04	mg/kg	09.30.19 10.35		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 00.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 00.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 00.54	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 00.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	102	%	70-135	10.05.19 00.54		
o-Terphenyl	84-15-1	110	%	70-135	10.05.19 00.54		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-024

Date Collected: 09.26.19 13.16

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.01.19 01.31	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.01.19 01.31	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.01.19 01.31	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.01.19 01.31	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.01.19 01.31	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.01.19 01.31	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.01.19 01.31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.01.19 01.31		
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.01.19 01.31		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (20')**
Lab Sample Id: 638333-025

Matrix: Soil
Date Collected: 09.26.19 13.17

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	230	4.98	mg/kg	09.30.19 10.55		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 00.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 00.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 00.54	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 00.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	144	%	70-135	10.05.19 00.54	**	
o-Terphenyl	84-15-1	133	%	70-135	10.05.19 00.54		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-025

Date Collected: 09.26.19 13.17

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.01.19 01.52	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.01.19 01.52	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.01.19 01.52	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	10.01.19 01.52	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.01.19 01.52	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.01.19 01.52	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.01.19 01.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	70-130	10.01.19 01.52		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.01.19 01.52		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (25')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-026

Date Collected: 09.26.19 13.18

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	258	4.97	mg/kg	09.30.19 11.01		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 01.15	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 01.15	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 01.15	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 01.15	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	138	%	70-135	10.05.19 01.15	**	
o-Terphenyl	84-15-1	127	%	70-135	10.05.19 01.15		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-6 (25')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-026

Date Collected: 09.26.19 13.18

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.01.19 02.12	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.01.19 02.12	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.01.19 02.12	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.01.19 02.12	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.01.19 02.12	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.01.19 02.12	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.01.19 02.12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	124	%	70-130	10.01.19 02.12		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.01.19 02.12		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (5')**
Lab Sample Id: 638333-027

Matrix: Soil
Date Collected: 09.26.19 14.00

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	102	5.00	mg/kg	09.30.19 11.07		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.05.19 01.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.05.19 01.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.05.19 01.36	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.05.19 01.36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	143	%	70-135	10.05.19 01.36	**	
o-Terphenyl	84-15-1	130	%	70-135	10.05.19 01.36		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (5')**
Lab Sample Id: 638333-027

Matrix: Soil
Date Collected: 09.26.19 14.00

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.01.19 02.32	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.01.19 02.32	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.01.19 02.32	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.01.19 02.32	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.01.19 02.32	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.01.19 02.32	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.01.19 02.32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.01.19 02.32		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.01.19 02.32		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-028

Date Collected: 09.26.19 14.01

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	339	5.04	mg/kg	09.30.19 11.14		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 01.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 01.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 01.56	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 01.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	147	%	70-135	10.05.19 01.56	**	
o-Terphenyl	84-15-1	132	%	70-135	10.05.19 01.56		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-028

Date Collected: 09.26.19 14.01

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.01.19 02.52	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.01.19 02.52	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.01.19 02.52	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.01.19 02.52	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.01.19 02.52	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.01.19 02.52	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.01.19 02.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.01.19 02.52		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.01.19 02.52		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-029

Date Collected: 09.26.19 14.02

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	170	4.97	mg/kg	09.30.19 11.20		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 02.38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 02.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 02.38	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 02.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	145	%	70-135	10.05.19 02.38	**	
o-Terphenyl	84-15-1	128	%	70-135	10.05.19 02.38		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-029

Date Collected: 09.26.19 14.02

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.01.19 03.12	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.01.19 03.12	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.01.19 03.12	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.01.19 03.12	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.01.19 03.12	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.01.19 03.12	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.01.19 03.12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	70-130	10.01.19 03.12		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.01.19 03.12		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-030

Date Collected: 09.26.19 14.03

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	139	5.00	mg/kg	09.30.19 11.27		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 02.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 02.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 02.59	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 02.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	154	%	70-135	10.05.19 02.59	**	
o-Terphenyl	84-15-1	137	%	70-135	10.05.19 02.59	**	



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-030

Date Collected: 09.26.19 14.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.01.19 03.32	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.01.19 03.32	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.01.19 03.32	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.01.19 03.32	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.01.19 03.32	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.01.19 03.32	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.01.19 03.32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	124	%	70-130	10.01.19 03.32		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.01.19 03.32		



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: SP-7 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-031

Date Collected: 09.26.19 14.04

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 08.15

Basis: Wet Weight

Seq Number: 3102920

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	238	5.03	mg/kg	09.30.19 11.33		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 03.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 03.20	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 03.20	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 03.20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	153	%	70-135	10.05.19 03.20	**
o-Terphenyl	84-15-1	141	%	70-135	10.05.19 03.20	**



Certificate of Analytical Results 638333



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 829

Sample Id: **SP-7 (25')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638333-031

Date Collected: 09.26.19 14.04

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.27.19 14.30

Basis: Wet Weight

Seq Number: 3102891

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.01.19 03.52	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.01.19 03.52	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.01.19 03.52	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.01.19 03.52	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.01.19 03.52	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.01.19 03.52	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.01.19 03.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.01.19 03.52		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.01.19 03.52		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Larson and Associates, Inc.
Apache Corp. NEDU 829

Analytical Method: Chloride by EPA 300

Seq Number: 3102920

MB Sample Id: 7687095-1-BLK

Matrix: Solid

LCS Sample Id: 7687095-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687095-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	256	102	257	103	90-110	0	20	mg/kg	09.30.19 08:26	

Analytical Method: Chloride by EPA 300

Seq Number: 3102921

MB Sample Id: 7687137-1-BLK

Matrix: Solid

LCS Sample Id: 7687137-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687137-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	244	98	244	98	90-110	0	20	mg/kg	09.30.19 14:43	

Analytical Method: Chloride by EPA 300

Seq Number: 3102924

MB Sample Id: 7687138-1-BLK

Matrix: Solid

LCS Sample Id: 7687138-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687138-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	266	106	267	107	90-110	0	20	mg/kg	09.30.19 13:58	

Analytical Method: Chloride by EPA 300

Seq Number: 3102920

Parent Sample Id: 638333-012

Matrix: Soil

MS Sample Id: 638333-012 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638333-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	361	251	606	98	603	96	90-110	0	20	mg/kg	09.30.19 08:46	

Analytical Method: Chloride by EPA 300

Seq Number: 3102920

Parent Sample Id: 638333-022

Matrix: Soil

MS Sample Id: 638333-022 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638333-022 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	1240	248	1430	77	1440	81	90-110	1	20	mg/kg	09.30.19 10:16	X

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 829

Analytical Method: Chloride by EPA 300

Seq Number: 3102921

Parent Sample Id: 638225-047

Matrix: Soil

MS Sample Id: 638225-047 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638225-047 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	626	252	848	88	844	87	90-110	0	20	mg/kg	09.30.19 15:01	X

Analytical Method: Chloride by EPA 300

Seq Number: 3102921

Parent Sample Id: 638333-002

Matrix: Soil

MS Sample Id: 638333-002 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638333-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	51.2	250	302	100	301	100	90-110	0	20	mg/kg	09.30.19 16:22	

Analytical Method: Chloride by EPA 300

Seq Number: 3102924

Parent Sample Id: 638333-011

Matrix: Soil

MS Sample Id: 638333-011 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638333-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	592	250	861	108	861	108	90-110	0	20	mg/kg	09.30.19 14:17	

Analytical Method: Chloride by EPA 300

Seq Number: 3102924

Parent Sample Id: 638334-010

Matrix: Soil

MS Sample Id: 638334-010 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638334-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	248	253	510	104	512	104	90-110	0	20	mg/kg	09.30.19 16:00	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103029

MB Sample Id: 7687146-1-BLK

Matrix: Solid

LCS Sample Id: 7687146-1-BKS

Prep Method: SW8015P

Date Prep: 09.30.19

LCSD Sample Id: 7687146-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1000	100	1040	104	70-135	4	20	mg/kg	10.01.19 22:29	
Diesel Range Organics (DRO)	<15.0	1000	1030	103	1080	108	70-135	5	20	mg/kg	10.01.19 22:29	

Surrogate

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	116		108		114		70-135	%	10.01.19 22:29
o-Terphenyl	128		114		119		70-135	%	10.01.19 22:29

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 829

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103535

MB Sample Id: 7687563-1-BLK

Matrix: Solid

LCS Sample Id: 7687563-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687563-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1150	115	997	100	70-135	14	20	mg/kg	10.04.19 11:57	
Diesel Range Organics (DRO)	26.0	1000	1300	130	1190	119	70-135	9	20	mg/kg	10.04.19 11:57	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103522

MB Sample Id: 7687564-1-BLK

Matrix: Solid

LCS Sample Id: 7687564-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687564-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1230	123	1040	104	70-135	17	20	mg/kg	10.04.19 11:57	
Diesel Range Organics (DRO)	<15.0	1000	1330	133	1100	110	70-135	19	20	mg/kg	10.04.19 11:57	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	111		155	**	129		70-135	%	10.04.19 11:57
o-Terphenyl	104		132		111		70-135	%	10.04.19 11:57

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103523

MB Sample Id: 7687566-1-BLK

Matrix: Solid

LCS Sample Id: 7687566-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687566-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1380	138	1150	115	70-135	18	20	mg/kg	10.04.19 21:25	H
Diesel Range Organics (DRO)	<15.0	1000	1670	167	1450	145	70-135	14	20	mg/kg	10.04.19 21:25	H

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		176	**	153	**	70-135	%	10.04.19 21:25
o-Terphenyl	110		180	**	158	**	70-135	%	10.04.19 21:25

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103538

MB Sample Id: 7687567-1-BLK

Matrix: Solid

LCS Sample Id: 7687567-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687567-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1570	157	1160	116	70-135	30	20	mg/kg	10.04.19 21:25	HF
Diesel Range Organics (DRO)	<15.0	1000	1710	171	1200	120	70-135	35	20	mg/kg	10.04.19 21:25	HF

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	134		202	**	145	**	70-135	%	10.04.19 21:25
o-Terphenyl	123		174	**	124		70-135	%	10.04.19 21:25

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 829

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103029

Parent Sample Id: 638333-001

Matrix: Soil

MS Sample Id: 638333-001 S

Prep Method: SW8015P

Date Prep: 09.30.19

MSD Sample Id: 638333-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	<50.0	0	<49.9	0	70-135	NC	20	mg/kg	10.01.19 23:32	X
Diesel Range Organics (DRO)	<15.0	999	15.5	2	16.0	2	70-135	3	20	mg/kg	10.01.19 23:32	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	121		126		70-135	%	10.01.19 23:32
o-Terphenyl	131		136	**	70-135	%	10.01.19 23:32

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103535

Parent Sample Id: 638335-001

Matrix: Soil

MS Sample Id: 638335-001 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638335-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1100	110	1090	109	70-135	1	20	mg/kg	10.04.19 13:00	
Diesel Range Organics (DRO)	31.1	999	1130	110	1130	110	70-135	0	20	mg/kg	10.04.19 13:00	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	117		116		70-135	%	10.04.19 13:00
o-Terphenyl	116		117		70-135	%	10.04.19 13:00

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103522

Parent Sample Id: 638118-001

Matrix: Soil

MS Sample Id: 638118-001 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638118-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1260	126	1260	126	70-135	0	20	mg/kg	10.04.19 13:00	
Diesel Range Organics (DRO)	15.9	999	1190	118	1210	119	70-135	2	20	mg/kg	10.04.19 13:00	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	133		133		70-135	%	10.04.19 13:00
o-Terphenyl	116		118		70-135	%	10.04.19 13:00

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.

Apache Corp. NEDU 829

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103523

Parent Sample Id: 638334-008

Matrix: Soil

MS Sample Id: 638334-008 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638334-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	829	83	826	83	70-135	0	20	mg/kg	10.04.19 22:27	
Diesel Range Organics (DRO)	<15.0	997	1010	101	997	100	70-135	1	20	mg/kg	10.04.19 22:27	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	112		110		70-135	%	10.04.19 22:27
o-Terphenyl	119		119		70-135	%	10.04.19 22:27

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103538

Parent Sample Id: 638118-011

Matrix: Soil

MS Sample Id: 638118-011 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638118-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	1080	108	1150	115	70-135	6	20	mg/kg	10.04.19 22:27	
Diesel Range Organics (DRO)	24.0	998	1140	112	1250	123	70-135	9	20	mg/kg	10.04.19 22:27	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	169	**	155	**	70-135	%	10.04.19 22:27
o-Terphenyl	128		137	**	70-135	%	10.04.19 22:27

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103086

MB Sample Id: 7687073-1-BLK

Matrix: Solid

LCS Sample Id: 7687073-1-BKS

Prep Method: SW5030B

Date Prep: 09.27.19

LCSD Sample Id: 7687073-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0995	100	0.113	113	70-130	13	35	mg/kg	10.02.19 04:05	
Toluene	<0.00200	0.100	0.0928	93	0.111	111	70-130	18	35	mg/kg	10.02.19 04:05	
Ethylbenzene	<0.00200	0.100	0.0967	97	0.124	124	70-130	25	35	mg/kg	10.02.19 04:05	
m,p-Xylenes	<0.00400	0.200	0.190	95	0.249	125	70-130	27	35	mg/kg	10.02.19 04:05	
o-Xylene	<0.00200	0.100	0.100	100	0.129	129	70-130	25	35	mg/kg	10.02.19 04:05	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		98		96		70-130	%	10.02.19 04:05
4-Bromofluorobenzene	109		116		119		70-130	%	10.02.19 04:05

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 829

Analytical Method: BTEX by EPA 8021B

Seq Number: 3102891

MB Sample Id: 7687074-1-BLK

Matrix: Solid

LCS Sample Id: 7687074-1-BKS

Prep Method: SW5030B

Date Prep: 09.27.19

LCSD Sample Id: 7687074-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.118	118	0.103	103	70-130	14	35	mg/kg	09.30.19 18:32	
Toluene	<0.00200	0.100	0.109	109	0.0962	96	70-130	12	35	mg/kg	09.30.19 18:32	
Ethylbenzene	<0.00200	0.100	0.116	116	0.102	102	70-130	13	35	mg/kg	09.30.19 18:32	
m,p-Xylenes	<0.00400	0.200	0.228	114	0.200	100	70-130	13	35	mg/kg	09.30.19 18:32	
o-Xylene	<0.00200	0.100	0.116	116	0.103	103	70-130	12	35	mg/kg	09.30.19 18:32	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		101		101		70-130	%	09.30.19 18:32
4-Bromofluorobenzene	96		107		107		70-130	%	09.30.19 18:32

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103086

Parent Sample Id: 638333-001

Matrix: Soil

MS Sample Id: 638333-001 S

Prep Method: SW5030B

Date Prep: 09.27.19

MSD Sample Id: 638333-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0992	0.0757	76	0.0342	34	70-130	76	35	mg/kg	10.02.19 04:45	XF
Toluene	<0.00198	0.0992	0.0728	73	0.0148	15	70-130	132	35	mg/kg	10.02.19 04:45	XF
Ethylbenzene	<0.00198	0.0992	0.0732	74	0.00725	7	70-130	164	35	mg/kg	10.02.19 04:45	XF
m,p-Xylenes	<0.00397	0.198	0.147	74	0.0129	6	70-130	168	35	mg/kg	10.02.19 04:45	XF
o-Xylene	<0.00198	0.0992	0.0759	77	0.00860	9	70-130	159	35	mg/kg	10.02.19 04:45	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		97		70-130	%	10.02.19 04:45
4-Bromofluorobenzene	112		112		70-130	%	10.02.19 04:45

Analytical Method: BTEX by EPA 8021B

Seq Number: 3102891

Parent Sample Id: 638333-021

Matrix: Soil

MS Sample Id: 638333-021 S

Prep Method: SW5030B

Date Prep: 09.27.19

MSD Sample Id: 638333-021 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0850	85	0.0543	54	70-130	44	35	mg/kg	09.30.19 19:12	XF
Toluene	<0.00200	0.100	0.0754	75	0.0274	27	70-130	93	35	mg/kg	09.30.19 19:12	XF
Ethylbenzene	<0.00200	0.100	0.0765	77	0.0129	13	70-130	142	35	mg/kg	09.30.19 19:12	XF
m,p-Xylenes	<0.00400	0.200	0.148	74	0.0207	10	70-130	151	35	mg/kg	09.30.19 19:12	XF
o-Xylene	<0.00200	0.100	0.0781	78	0.0138	14	70-130	140	35	mg/kg	09.30.19 19:12	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		100		70-130	%	09.30.19 19:12
4-Bromofluorobenzene	110		105		70-130	%	09.30.19 19:12

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Varson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: **Bruce Baker / Rachel Carter**

DATE: **9/23/2019** PO#: **1038333**
PROJECT LOCATION OR NAME: **Apache Corp, NEDU 829**
LAB PROJECT #: **19-012-22** COLLECTOR: **BN/EC**

CHAIN-OF-CUSTODY

Nº 07.80

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO ₃	H ₂ SO ₄ ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES		FIELD NOTES
SP-1 (5)		9/26/19	9:20	S	1							BTEX ☒ TPH 1005 ☒ TPH 1006 ☒	
SP-1 (15)		9:21										TRPH 418.1 ☒ TPH 1005 ☒ TPH 1006 ☒	
SP-1 (15)		9:22										GASOLINE MOD 8015 ☒	
SP-1 (20)		9:23										DIESEL - MOD 8015 ☒	
SP-1 (25)		9:24										OIL - MOD 8015 ☒	
SP-1 (30)		9:25										VOC 8260 ☒	
SP-1 (35)		9:26										SVOC 8270 ☒	
SP-1 (40)		9:30										8081 PESTICIDES ☒	
SP-1 (45)		9:31										8082 PCBs ☒	
SP-1 (50)		9:50										TBLP - METALS (RCRA) ☒	
SP-1 (55)		9:51										TCLP - METALS (RCRA) ☒	
SP-1 (100)		10:50										TCLP - PEST ☒	
SP-4 (5)		11:30										TCLP - PEST ☒	
SP-4 (10)		11:31										TCLP - PEST ☒	
SP-4 (15)		11:32										TCLP - PEST ☒	
TOTAL	15												

RELINQUISHED BY: (Signature) **Donna** DATE/TIME **9/23/19 11:30** RECEIVED BY: (Signature) **[Signature]**

RELINQUISHED BY: (Signature) DATE/TIME DATE/TIME RECEIVED BY: (Signature)

LABORATORY: **Yenco**

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: **13/1** THERM#: **12**
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # ☐ HAND DELIVERED

507 N. Marientfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 9/27/2019 PAGE 2 OF 3
PO#: _____ LAB WORK ORDER#:
PROJECT LOCATION OR NAME: Apache Camp, N3DU 829
LAI PROJECT #: 19-012-22 COLLECTOR: PN/c

NO 0781
OF-CUSTO
PAGE 2 OF 3

CHAIN-OF-CUSTODY

Final 1.000

Released to Imaging: 5/12/2023 8:55:31 AM



Certificate of Analysis Summary 638335

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 830

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638335-001	638335-002	638335-003	638335-004	638335-005	638335-006
	<i>Field Id:</i>	SP-2 (0')	SP-2 (5')	SP-2 (10')	SP-2 (15')	SP-2 (20')	SP-2 (25')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-25-19 09:55	Sep-25-19 10:04	Sep-25-19 10:10	Sep-25-19 10:15	Sep-25-19 10:20	Sep-25-19 10:23
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-02-19 13:00	Oct-02-19 13:00	Oct-04-19 14:59	Oct-04-19 14:59	Oct-04-19 14:59	Oct-02-19 13:00
	<i>Analyzed:</i>	Oct-04-19 05:37	Oct-04-19 05:57	Oct-04-19 14:59	Oct-04-19 14:59	Oct-04-19 14:59	Oct-03-19 07:29
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Toluene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
m,p-Xylenes		<0.00399 0.00399	<0.00398 0.00398	<0.00400 0.00400	<0.00400 0.00400	<0.00400 0.00400	<0.00397 0.00397
o-Xylene		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Total Xylenes		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Total BTEX		<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25
	<i>Analyzed:</i>	Sep-30-19 18:54	Sep-30-19 19:01	Sep-30-19 19:07	Sep-30-19 19:14	Sep-30-19 19:20	Sep-30-19 19:46
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		294 5.01	5150 49.9	45400 250	2460 24.9	3740 25.1	4080 25.2
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00
	<i>Analyzed:</i>	Oct-04-19 12:39	Oct-04-19 13:42	Oct-04-19 14:03	Oct-04-19 14:24	Oct-04-19 14:45	Oct-04-19 15:06
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9	<50.0 50.0
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	137 49.8	<50.0 50.0	<49.9 49.9	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0	<49.9 49.9	<50.0 50.0
Total TPH		<49.9 49.9	<50.0 50.0	137 49.8	<50.0 50.0	<49.9 49.9	<50.0 50.0

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638335

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 830

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638335-007	638335-008	638335-009	638335-010	638335-011	638335-012
	<i>Field Id:</i>	SP-2 (30')	SP-2 (35')	SP-2 (40')	SP-2 (45')	SP-2 (50')	SP-2 (55')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-25-19 10:30	Sep-25-19 10:38	Sep-25-19 11:09	Sep-25-19 11:10	Sep-25-19 11:15	Sep-25-19 11:32
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00
	<i>Analyzed:</i>	Oct-03-19 07:50	Oct-03-19 08:10	Oct-03-19 08:30	Oct-03-19 08:50	Oct-04-19 11:23	Oct-04-19 11:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Toluene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Ethylbenzene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
m,p-Xylenes		<0.00398 0.00398	<0.00398 0.00398	<0.00397 0.00397	<0.00400 0.00400	<0.00399 0.00399	<0.00396 0.00396
o-Xylene		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Total Xylenes		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Total BTEX		<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25
	<i>Analyzed:</i>	Sep-30-19 19:52	Sep-30-19 20:12	Sep-30-19 20:18	Sep-30-19 20:25	Sep-30-19 20:31	Sep-30-19 20:38
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		14300 100	8920 50.3	3240 25.2	1270 4.97	1220 4.95	928 5.00
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00
	<i>Analyzed:</i>	Oct-04-19 15:27	Oct-04-19 15:47	Oct-04-19 16:08	Oct-04-19 16:29	Oct-04-19 17:11	Oct-04-19 17:36
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638335

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 830

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638335-013	638335-014	638335-015	638335-016	638335-017	638335-020
	<i>Field Id:</i>	SP-2 (60')	SP-4 (5')	SP-4 (10')	SP-5 (5')	SP-5 (10')	SP-7 (5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-25-19 12:01	Sep-25-19 13:20	Sep-25-19 13:25	Sep-25-19 13:45	Sep-25-19 13:47	Sep-25-19 15:09
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00
	<i>Analyzed:</i>	Oct-04-19 12:04	Oct-04-19 12:24	Oct-04-19 12:44	Oct-04-19 13:04	Oct-04-19 13:24	Oct-04-19 13:44
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00201 0.00201	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Toluene		<0.00201 0.00201	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Ethylbenzene		<0.00201 0.00201	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
m,p-Xylenes		<0.00402 0.00402	<0.00398 0.00398	<0.00403 0.00403	<0.00399 0.00399	<0.00399 0.00399	<0.00396 0.00396
o-Xylene		<0.00201 0.00201	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Total Xylenes		<0.00201 0.00201	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Total BTEX		<0.00201 0.00201	<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55
	<i>Analyzed:</i>	Sep-30-19 20:44	Sep-30-19 20:51	Sep-30-19 19:27	Sep-30-19 18:32	Sep-30-19 18:50	Sep-30-19 19:54
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		857 5.04	63.6 4.99	93.6 5.02	11.3 4.96	81.8 4.95	54.1 4.96
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00	Oct-04-19 08:00
	<i>Analyzed:</i>	Oct-04-19 17:57	Oct-04-19 18:18	Oct-04-19 18:39	Oct-04-19 19:00	Oct-04-19 19:20	Oct-04-19 19:41
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.8 49.8	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<49.9 49.9	<49.8 49.8	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.8 49.8	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		<49.9 49.9	<49.8 49.8	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638335

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 830

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638335-021	638335-022	638335-023			
	<i>Field Id:</i>	SP-7 (10')	SP-8 (5')	SP-8 (10')			
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL			
	<i>Sampled:</i>	Sep-25-19 15:15	Sep-25-19 15:20	Sep-25-19 15:25			
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00			
	<i>Analyzed:</i>	Oct-04-19 14:04	Oct-04-19 14:46	Oct-04-19 18:48			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199			
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199			
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199			
m,p-Xylenes		<0.00398 0.00398	<0.00399 0.00399	<0.00398 0.00398			
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199			
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199			
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00199 0.00199			
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55			
	<i>Analyzed:</i>	Sep-30-19 18:55	Sep-30-19 19:01	Sep-30-19 19:07			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		89.5 5.04	32.2 4.99	288 25.1			
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 08:00	Oct-01-19 17:00	Oct-01-19 17:00			
	<i>Analyzed:</i>	Oct-04-19 20:02	Oct-02-19 19:04	Oct-02-19 19:26			
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL			
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.8 49.8	<50.0 50.0			
Diesel Range Organics (DRO)		<49.9 49.9	<49.8 49.8	87.0 50.0			
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.8 49.8	<50.0 50.0			
Total TPH		<49.9 49.9	<49.8 49.8	87.0 50.0			

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Jessica Kramer
Project Assistant

Analytical Report 638335

for
Larson and Associates, Inc.

Project Manager: Mark Larson

Apache Corp. NEDU 830

19-0112-22

08-OCT-19

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Tampa: Florida (E87429), North Carolina (483)



08-OCT-19

Project Manager: **Mark Larson**

Larson and Associates, Inc.

P. O. Box 50685

Midland, TX 79710

Reference: XENCO Report No(s): **638335**

Apache Corp. NEDU 830

Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 638335. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 638335 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads 'Jessica Kramer'.

Jessica Kramer

Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

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Sample Cross Reference 638335

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-2 (0')	S	09-25-19 09:55		638335-001
SP-2 (5')	S	09-25-19 10:04		638335-002
SP-2 (10')	S	09-25-19 10:10		638335-003
SP-2 (15')	S	09-25-19 10:15		638335-004
SP-2 (20')	S	09-25-19 10:20		638335-005
SP-2 (25')	S	09-25-19 10:23		638335-006
SP-2 (30')	S	09-25-19 10:30		638335-007
SP-2 (35')	S	09-25-19 10:38		638335-008
SP-2 (40')	S	09-25-19 11:09		638335-009
SP-2 (45')	S	09-25-19 11:10		638335-010
SP-2 (50')	S	09-25-19 11:15		638335-011
SP-2 (55')	S	09-25-19 11:32		638335-012
SP-2 (60')	S	09-25-19 12:01		638335-013
SP-4 (5')	S	09-25-19 13:20		638335-014
SP-4 (10')	S	09-25-19 13:25		638335-015
SP-5 (5')	S	09-25-19 13:45		638335-016
SP-5 (10')	S	09-25-19 13:47		638335-017
SP-7 (5')	S	09-25-19 15:09		638335-020
SP-7 (10')	S	09-25-19 15:15		638335-021
SP-8 (5')	S	09-25-19 15:20		638335-022
SP-8 (10')	S	09-25-19 15:25		638335-023
SP-6 (5')	S	09-25-19 14:13		Not Analyzed
SP-6 (10')	S	09-25-19 14:14		Not Analyzed

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 830**Project ID: 19-0112-22
Work Order Number(s): 638335Report Date: 08-OCT-19
Date Received: 09/27/2019**Sample receipt non conformances and comments:**

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3103183 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638225-042 SD.

Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687303-1-BLK, 638335-022, 638335-023.

Batch: LBA-3103378 BTEX by EPA 8021B

Ethylbenzene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.

Samples in the analytical batch are: 638335-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -020, -021, -022

Lab Sample ID 638335-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638335-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -020, -021, -022.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3103535 TPH by SW8015 Mod

Lab Sample ID 638335-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Motor Oil Range Hydrocarbons (MRO) Relative Percent Difference (RPD) between matrix spike and duplicate was above quality control limits.

Samples in the analytical batch are: 638335-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -020, -021

Outlier/s are due to possible matrix interference.

Surrogate 1-Chlorooctane, Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687563-1-BLK.



CASE NARRATIVE

Client Name: Larson and Associates, Inc.

Project Name: Apache Corp. NEDU 830

Project ID: 19-0112-22
Work Order Number(s): 638335

Report Date: 08-OCT-19
Date Received: 09/27/2019

Batch: LBA-3103594 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (0')**
Lab Sample Id: 638335-001

Matrix: Soil
Date Collected: 09.25.19 09.55

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	294	5.01	mg/kg	09.30.19 18.54		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 12.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 12.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 12.39	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 12.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	99	%	70-135	10.04.19 12.39		
o-Terphenyl	84-15-1	107	%	70-135	10.04.19 12.39		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (0')**
Lab Sample Id: 638335-001

Matrix: Soil
Date Collected: 09.25.19 09.55

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 05.37	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 05.37	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 05.37	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.04.19 05.37	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 05.37	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 05.37	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 05.37	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	70-130	10.04.19 05.37		
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.04.19 05.37		



Certificate of Analytical Results 638335

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (5')
 Lab Sample Id: 638335-002

Matrix: Soil
 Date Collected: 09.25.19 10.04

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5150	49.9	mg/kg	09.30.19 19.01		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 13.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 13.42	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 13.42	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 13.42	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	105	%	70-135	10.04.19 13.42		
o-Terphenyl	84-15-1	111	%	70-135	10.04.19 13.42		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (5')**
Lab Sample Id: 638335-002

Matrix: Soil
Date Collected: 09.25.19 10.04

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 05.57	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 05.57	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 05.57	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 05.57	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 05.57	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 05.57	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 05.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	70-130	10.04.19 05.57		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.04.19 05.57		



Certificate of Analytical Results 638335

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (10')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-003

Date Collected: 09.25.19 10.10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	45400	250	mg/kg	09.30.19 19.07		50

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.04.19 14.03	U	1
Diesel Range Organics (DRO)	C10C28DRO	137	49.8	mg/kg	10.04.19 14.03		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.04.19 14.03	U	1
Total TPH	PHC635	137	49.8	mg/kg	10.04.19 14.03		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	111	%	70-135	10.04.19 14.03	
o-Terphenyl	84-15-1	118	%	70-135	10.04.19 14.03	

Analytical Method: BTEX by EPA 8021B

Tech: KTL

% Moisture:

Analyst: KTL

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.04.19 14.59	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (15')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-004

Date Collected: 09.25.19 10.15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2460	24.9	mg/kg	09.30.19 19.14		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 14.24	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 14.24	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 14.24	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 14.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	10.04.19 14.24		
o-Terphenyl	84-15-1	115	%	70-135	10.04.19 14.24		

Analytical Method: BTEX by EPA 8021B

Tech: KTL

% Moisture:

Analyst: KTL

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.04.19 14.59	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1



Certificate of Analytical Results 638335

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (20')
Lab Sample Id: 638335-005

Matrix: Soil
Date Collected: 09.25.19 10.20

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3740	25.1	mg/kg	09.30.19 19.20		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 14.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 14.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 14.45	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 14.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	10.04.19 14.45		
o-Terphenyl	84-15-1	114	%	70-135	10.04.19 14.45		

Analytical Method: BTEX by EPA 8021B

Tech: KTL

% Moisture:

Analyst: KTL

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.04.19 14.59	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 14.59	U	1



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-006

Date Collected: 09.25.19 10.23

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	4080	25.2	mg/kg	09.30.19 19.46		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 15.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 15.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 15.06	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 15.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	104	%	70-135	10.04.19 15.06		
o-Terphenyl	84-15-1	111	%	70-135	10.04.19 15.06		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-006

Date Collected: 09.25.19 10.23

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.03.19 07.29	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.03.19 07.29	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.03.19 07.29	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.03.19 07.29	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.03.19 07.29	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.03.19 07.29	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.03.19 07.29	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 07.29		
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.03.19 07.29		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-007

Date Collected: 09.25.19 10.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14300	100	mg/kg	09.30.19 19.52		20

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 15.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 15.27	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 15.27	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 15.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	111	%	70-135	10.04.19 15.27	
o-Terphenyl	84-15-1	117	%	70-135	10.04.19 15.27	



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-007

Date Collected: 09.25.19 10.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.03.19 07.50	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.03.19 07.50	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.03.19 07.50	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.03.19 07.50	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.03.19 07.50	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.03.19 07.50	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.03.19 07.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 07.50		
4-Bromofluorobenzene	460-00-4	121	%	70-130	10.03.19 07.50		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (35')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-008

Date Collected: 09.25.19 10.38

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8920	50.3	mg/kg	09.30.19 20.12		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 15.47	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 15.47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 15.47	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 15.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	10.04.19 15.47		
o-Terphenyl	84-15-1	112	%	70-135	10.04.19 15.47		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (35')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-008

Date Collected: 09.25.19 10.38

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.03.19 08.10	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.03.19 08.10	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.03.19 08.10	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.03.19 08.10	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.03.19 08.10	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.03.19 08.10	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.03.19 08.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.03.19 08.10		
4-Bromofluorobenzene	460-00-4	118	%	70-130	10.03.19 08.10		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-009

Date Collected: 09.25.19 11.09

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3240	25.2	mg/kg	09.30.19 20.18		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.04.19 16.08	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.04.19 16.08	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.04.19 16.08	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.04.19 16.08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	107	%	70-135	10.04.19 16.08		
o-Terphenyl	84-15-1	114	%	70-135	10.04.19 16.08		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-009

Date Collected: 09.25.19 11.09

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.03.19 08.30	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.03.19 08.30	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.03.19 08.30	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.03.19 08.30	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.03.19 08.30	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.03.19 08.30	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.03.19 08.30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.03.19 08.30		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 08.30		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (45')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-010

Date Collected: 09.25.19 11.10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1270	4.97	mg/kg	09.30.19 20.25		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 16.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 16.29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 16.29	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 16.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-135	10.04.19 16.29	
o-Terphenyl	84-15-1	115	%	70-135	10.04.19 16.29	



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (45')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-010

Date Collected: 09.25.19 11.10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.03.19 08.50	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.03.19 08.50	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.03.19 08.50	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.03.19 08.50	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.03.19 08.50	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.03.19 08.50	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.03.19 08.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.03.19 08.50		
4-Bromofluorobenzene	460-00-4	117	%	70-130	10.03.19 08.50		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (50')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-011

Date Collected: 09.25.19 11.15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1220	4.95	mg/kg	09.30.19 20.31		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 17.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 17.11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 17.11	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 17.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	108	%	70-135	10.04.19 17.11		
o-Terphenyl	84-15-1	114	%	70-135	10.04.19 17.11		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (50')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-011

Date Collected: 09.25.19 11.15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 11.23	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 11.23	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 11.23	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.04.19 11.23	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 11.23	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 11.23	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 11.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.04.19 11.23		
4-Bromofluorobenzene	460-00-4	101	%	70-130	10.04.19 11.23		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (55')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-012

Date Collected: 09.25.19 11.32

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	928	5.00	mg/kg	09.30.19 20.38		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 17.36	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 17.36	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 17.36	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 17.36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	107	%	70-135	10.04.19 17.36		
o-Terphenyl	84-15-1	113	%	70-135	10.04.19 17.36		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: SP-2 (55')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-012

Date Collected: 09.25.19 11.32

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.04.19 11.44	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.04.19 11.44	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.04.19 11.44	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.04.19 11.44	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.04.19 11.44	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.04.19 11.44	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.04.19 11.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	102	%	70-130	10.04.19 11.44		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.04.19 11.44		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (60')**
Lab Sample Id: 638335-013

Matrix: Soil
Date Collected: 09.25.19 12.01

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	857	5.04	mg/kg	09.30.19 20.44		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 17.57	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 17.57	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 17.57	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 17.57	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	10.04.19 17.57		
o-Terphenyl	84-15-1	113	%	70-135	10.04.19 17.57		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-2 (60')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-013

Date Collected: 09.25.19 12.01

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.04.19 12.04	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.04.19 12.04	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.04.19 12.04	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.04.19 12.04	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.04.19 12.04	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.04.19 12.04	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.04.19 12.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	105	%	70-130	10.04.19 12.04		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.04.19 12.04		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-4 (5')**
Lab Sample Id: 638335-014

Matrix: Soil
Date Collected: 09.25.19 13.20

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102927

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	63.6	4.99	mg/kg	09.30.19 20.51		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103535

Prep Method: SW8015P

% Moisture:

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.04.19 18.18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.04.19 18.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.04.19 18.18	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.04.19 18.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	103	%	70-135	10.04.19 18.18		
o-Terphenyl	84-15-1	104	%	70-135	10.04.19 18.18		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-4 (5')**
Lab Sample Id: 638335-014

Matrix: Soil
Date Collected: 09.25.19 13.20

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 12.24	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 12.24	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 12.24	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 12.24	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 12.24	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 12.24	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 12.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.04.19 12.24		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.04.19 12.24		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-4 (10')**
Lab Sample Id: 638335-015

Matrix: Soil
Date Collected: 09.25.19 13.25

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102927

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	93.6	5.02	mg/kg	09.30.19 19.27		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103535

Prep Method: SW8015P

% Moisture:

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 18.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 18.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 18.39	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 18.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.04.19 18.39		
o-Terphenyl	84-15-1	123	%	70-135	10.04.19 18.39		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-4 (10')**
Lab Sample Id: 638335-015

Matrix: Soil
Date Collected: 09.25.19 13.25

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.04.19 12.44	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.04.19 12.44	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.04.19 12.44	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.04.19 12.44	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.04.19 12.44	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.04.19 12.44	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.04.19 12.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.04.19 12.44		
4-Bromofluorobenzene	460-00-4	105	%	70-130	10.04.19 12.44		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-5 (5')**
Lab Sample Id: 638335-016

Matrix: Soil
Date Collected: 09.25.19 13.45

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102929

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.30.19 11.55

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	11.3	4.96	mg/kg	09.30.19 18.32		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103535

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 10.04.19 08.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 19.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 19.00	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 19.00	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 19.00	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	10.04.19 19.00		
o-Terphenyl	84-15-1	113	%	70-135	10.04.19 19.00		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-5 (5')**
Lab Sample Id: 638335-016

Matrix: Soil
Date Collected: 09.25.19 13.45

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 13.04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 13.04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 13.04	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.04.19 13.04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 13.04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 13.04	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 13.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.04.19 13.04		
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.04.19 13.04		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-017

Date Collected: 09.25.19 13.47

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	81.8	4.95	mg/kg	09.30.19 18.50		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 19.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 19.20	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 19.20	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 19.20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	112	%	70-135	10.04.19 19.20	
o-Terphenyl	84-15-1	122	%	70-135	10.04.19 19.20	



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-017

Date Collected: 09.25.19 13.47

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 13.24	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 13.24	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 13.24	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.04.19 13.24	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 13.24	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 13.24	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 13.24	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.04.19 13.24		
4-Bromofluorobenzene	460-00-4	107	%	70-130	10.04.19 13.24		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-7 (5')**
Lab Sample Id: 638335-020

Matrix: Soil
Date Collected: 09.25.19 15.09

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	54.1	4.96	mg/kg	09.30.19 19.54		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Seq Number: 3103535

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 19.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 19.41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 19.41	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 19.41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	111	%	70-135	10.04.19 19.41		
o-Terphenyl	84-15-1	119	%	70-135	10.04.19 19.41		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-7 (5')**
Lab Sample Id: 638335-020

Matrix: Soil
Date Collected: 09.25.19 15.09

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.04.19 13.44	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.04.19 13.44	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.04.19 13.44	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.04.19 13.44	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.04.19 13.44	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.04.19 13.44	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.04.19 13.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.04.19 13.44		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.04.19 13.44		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-7 (10')**
Lab Sample Id: 638335-021

Matrix: Soil
Date Collected: 09.25.19 15.15

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102929

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	89.5	5.04	mg/kg	09.30.19 18.55		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103535

Prep Method: SW8015P

% Moisture:

Date Prep: 10.04.19 08.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 20.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 20.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 20.02	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 20.02	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	109	%	70-135	10.04.19 20.02		
o-Terphenyl	84-15-1	118	%	70-135	10.04.19 20.02		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-7 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-021

Date Collected: 09.25.19 15.15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 14.04	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 14.04	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 14.04	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 14.04	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 14.04	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 14.04	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 14.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.04.19 14.04		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.04.19 14.04		



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-8 (5')**
Lab Sample Id: 638335-022

Matrix: Soil
Date Collected: 09.25.19 15.20

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102929

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.2	4.99	mg/kg	09.30.19 19.01		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: DVM

Seq Number: 3103183

Prep Method: SW8015P

% Moisture:

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.02.19 19.04	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.02.19 19.04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.02.19 19.04	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.02.19 19.04	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	10.02.19 19.04		
o-Terphenyl	84-15-1	140	%	70-135	10.02.19 19.04	**	



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-8 (5')**
Lab Sample Id: 638335-022

Matrix: Soil
Date Collected: 09.25.19 15.20

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103378

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 14.46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 14.46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 14.46	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.04.19 14.46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 14.46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 14.46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 14.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.04.19 14.46		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.04.19 14.46		



Certificate of Analytical Results 638335

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-8 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-023

Date Collected: 09.25.19 15.25

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	288	25.1	mg/kg	09.30.19 19.07		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 19.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	87.0	50.0	mg/kg	10.02.19 19.26		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 19.26	U	1
Total TPH	PHC635	87.0	50.0	mg/kg	10.02.19 19.26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	132	%	70-135	10.02.19 19.26	
o-Terphenyl	84-15-1	141	%	70-135	10.02.19 19.26	**



Certificate of Analytical Results 638335



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 830

Sample Id: **SP-8 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638335-023

Date Collected: 09.25.19 15.25

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 18.48	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 18.48	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 18.48	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 18.48	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 18.48	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 18.48	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 18.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	10.04.19 18.48		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.04.19 18.48		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Larson and Associates, Inc.
Apache Corp. NEDU 830

Analytical Method: Chloride by EPA 300

Seq Number: 3102927

MB Sample Id: 7687139-1-BLK

Matrix: Solid

LCS Sample Id: 7687139-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687139-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	274	110	271	108	90-110	1	20	mg/kg	09.30.19 17:43	

Analytical Method: Chloride by EPA 300

Seq Number: 3102929

MB Sample Id: 7687141-1-BLK

Matrix: Solid

LCS Sample Id: 7687141-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687141-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	244	98	90-110	0	20	mg/kg	09.30.19 18:21	

Analytical Method: Chloride by EPA 300

Seq Number: 3102927

Parent Sample Id: 638334-020

Matrix: Soil

MS Sample Id: 638334-020 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638334-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	224	251	497	109	498	109	90-110	0	20	mg/kg	09.30.19 18:03	

Analytical Method: Chloride by EPA 300

Seq Number: 3102927

Parent Sample Id: 638335-015

Matrix: Soil

MS Sample Id: 638335-015 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638335-015 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	93.6	251	370	110	367	109	90-110	1	20	mg/kg	09.30.19 19:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3102929

Parent Sample Id: 638335-016

Matrix: Soil

MS Sample Id: 638335-016 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638335-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	11.3	248	261	101	260	100	90-110	0	20	mg/kg	09.30.19 18:38	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 830

Analytical Method: Chloride by EPA 300

Seq Number: 3102929

Parent Sample Id: 638335-020

Matrix: Soil

MS Sample Id: 638335-020 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638335-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	54.1	248	299	99	296	98	90-110	1	20	mg/kg	09.30.19 19:59	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103183

MB Sample Id: 7687303-1-BLK

Matrix: Solid

LCS Sample Id: 7687303-1-BKS

Prep Method: SW8015P

Date Prep: 10.01.19

LCSD Sample Id: 7687303-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	941	94	1090	109	70-135	15	20	mg/kg	10.02.19 10:55	
Diesel Range Organics (DRO)	<15.0	1000	987	99	1180	118	70-135	18	20	mg/kg	10.02.19 10:55	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		103		132		70-135	%	10.02.19 10:55
o-Terphenyl	142	**	105		127		70-135	%	10.02.19 10:55

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103535

MB Sample Id: 7687563-1-BLK

Matrix: Solid

LCS Sample Id: 7687563-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687563-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1150	115	997	100	70-135	14	20	mg/kg	10.04.19 11:57	
Diesel Range Organics (DRO)	26.0	1000	1300	130	1190	119	70-135	9	20	mg/kg	10.04.19 11:57	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103183

Parent Sample Id: 638225-042

Matrix: Soil

MS Sample Id: 638225-042 S

Prep Method: SW8015P

Date Prep: 10.01.19

MSD Sample Id: 638225-042 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1160	116	1120	112	70-135	4	20	mg/kg	10.02.19 11:58	
Diesel Range Organics (DRO)	<15.0	999	1240	124	1190	119	70-135	4	20	mg/kg	10.02.19 11:58	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		140	**	70-135	%	10.02.19 11:58
o-Terphenyl	131		128		70-135	%	10.02.19 11:58

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 830

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103535

Parent Sample Id: 638335-001

Matrix: Soil

MS Sample Id: 638335-001 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638335-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1100	110	1090	109	70-135	1	20	mg/kg	10.04.19 13:00	
Diesel Range Organics (DRO)	31.1	999	1130	110	1130	110	70-135	0	20	mg/kg	10.04.19 13:00	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	117		116		70-135	%	10.04.19 13:00
o-Terphenyl	116		117		70-135	%	10.04.19 13:00

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103378

MB Sample Id: 7687328-1-BLK

Matrix: Solid

LCS Sample Id: 7687328-1-BKS

Prep Method: SW5030B

Date Prep: 10.02.19

LCSD Sample Id: 7687328-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.101	101	0.100	100	70-130	1	35	mg/kg	10.04.19 03:37	
Toluene	<0.00200	0.100	0.0987	99	0.0998	100	70-130	1	35	mg/kg	10.04.19 03:37	
Ethylbenzene	<0.00200	0.100	0.108	108	0.110	110	70-130	2	35	mg/kg	10.04.19 03:37	
m,p-Xylenes	<0.00400	0.200	0.215	108	0.219	110	70-130	2	35	mg/kg	10.04.19 03:37	
o-Xylene	<0.00200	0.100	0.111	111	0.115	115	70-130	4	35	mg/kg	10.04.19 03:37	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		97		96		70-130	%	10.04.19 03:37
4-Bromofluorobenzene	102		114		115		70-130	%	10.04.19 03:37

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103594

MB Sample Id: 7687327-1-BLK

Matrix: Solid

LCS Sample Id: 7687327-1-BKS

Prep Method: SW5030B

Date Prep: 10.02.19

LCSD Sample Id: 7687327-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.107	107	0.111	111	70-130	4	35	mg/kg	10.04.19 16:48	
Toluene	<0.00200	0.100	0.101	101	0.106	106	70-130	5	35	mg/kg	10.04.19 16:48	
Ethylbenzene	<0.00200	0.100	0.107	107	0.114	114	70-130	6	35	mg/kg	10.04.19 16:48	
m,p-Xylenes	<0.00400	0.200	0.209	105	0.226	113	70-130	8	35	mg/kg	10.04.19 16:48	
o-Xylene	<0.00200	0.100	0.108	108	0.116	116	70-130	7	35	mg/kg	10.04.19 16:48	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		100		99		70-130	%	10.04.19 16:48
4-Bromofluorobenzene	99		104		110		70-130	%	10.04.19 16:48

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 830

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103378

Parent Sample Id: 638335-001

Matrix: Soil

MS Sample Id: 638335-001 S

Prep Method: SW5030B

Date Prep: 10.02.19

MSD Sample Id: 638335-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.00782	8	0.00602	6	70-130	26	35	mg/kg	10.04.19 04:17	X
Toluene	<0.00200	0.0998	0.00793	8	0.00577	6	70-130	32	35	mg/kg	10.04.19 04:17	X
Ethylbenzene	<0.00200	0.0998	0.0101	10	0.00546	5	70-130	60	35	mg/kg	10.04.19 04:17	XF
m,p-Xylenes	<0.00399	0.200	0.0197	10	0.0108	5	70-130	58	35	mg/kg	10.04.19 04:17	XF
o-Xylene	<0.00200	0.0998	0.0118	12	0.00637	6	70-130	60	35	mg/kg	10.04.19 04:17	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	97		95		70-130	%	10.04.19 04:17
4-Bromofluorobenzene	122		109		70-130	%	10.04.19 04:17

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103594

Parent Sample Id: 638335-023

Matrix: Soil

MS Sample Id: 638335-023 S

Prep Method: SW5030B

Date Prep: 10.02.19

MSD Sample Id: 638335-023 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0992	0.116	117	0.121	122	70-130	4	35	mg/kg	10.04.19 17:28	
Toluene	<0.00198	0.0992	0.112	113	0.115	116	70-130	3	35	mg/kg	10.04.19 17:28	
Ethylbenzene	<0.00198	0.0992	0.121	122	0.124	125	70-130	2	35	mg/kg	10.04.19 17:28	
m,p-Xylenes	<0.00397	0.198	0.205	104	0.214	108	70-130	4	35	mg/kg	10.04.19 17:28	
o-Xylene	<0.00198	0.0992	0.129	130	0.129	130	70-130	0	35	mg/kg	10.04.19 17:28	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		103		70-130	%	10.04.19 17:28
4-Bromofluorobenzene	124		112		70-130	%	10.04.19 17:28

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

0770



XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 09/27/2019 01:00:00 PM

Work Order #: 638335

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Date: 09/27/2019

Checklist reviewed by:

Holly Taylor

Date: 09/27/2019



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
Contact: Mark Larson
Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
Report Date: 10-OCT-19
Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638428-001	638428-002	638428-003	638428-004	638428-005	638428-006
	<i>Field Id:</i>	SP-3 (5')	SP-3 (10')	SP-3 (15')	SP-3 (20')	SP-3 (25')	SP-4 (5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-19 08:48	Sep-27-19 08:51	Sep-27-19 08:53	Sep-27-19 08:56	Sep-27-19 09:06	Sep-27-19 09:38
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00
	<i>Analyzed:</i>	Oct-04-19 21:49	Oct-04-19 23:07	Oct-04-19 23:27	Oct-04-19 23:47	Oct-05-19 00:08	Oct-05-19 00:28
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00201 0.00201	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199
Toluene		<0.00201 0.00201	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199
Ethylbenzene		<0.00201 0.00201	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199
m,p-Xylenes		<0.00402 0.00402	<0.00400 0.00400	<0.00398 0.00398	<0.00396 0.00396	<0.00399 0.00399	<0.00398 0.00398
o-Xylene		<0.00201 0.00201	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199
Total Xylenes		<0.00201 0.00201	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199
Total BTEX		<0.00201 0.00201	<0.00200 0.00200	<0.00199 0.00199	<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Oct-01-19 10:00			Oct-01-19 10:00	Oct-01-19 10:00	Oct-01-19 10:00
	<i>Analyzed:</i>	Oct-01-19 15:28	Oct-02-19 09:54	Oct-02-19 10:01	Oct-01-19 16:00	Oct-01-19 16:07	Oct-01-19 16:13
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		58.6 4.99	0.654 0.500	0.827 0.500	42.0 4.97	125 4.96	61.2 4.95
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00
	<i>Analyzed:</i>	Oct-07-19 16:52	Oct-07-19 17:56	Oct-07-19 18:17	Oct-07-19 18:38	Oct-07-19 18:59	Oct-07-19 19:19
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<49.9 49.9	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9
Total TPH		<49.9 49.9	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0	<49.9 49.9

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Holly Taylor
Project Manager



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
Contact: Mark Larson
Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
Report Date: 10-OCT-19
Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638428-007	638428-008	638428-009	638428-010	638428-011	638428-012
	<i>Field Id:</i>	SP-4 (10')	SP-4 (15')	SP-4 (20')	SP-4 (25')	SP-2 (5')	SP-2 (10')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-19 09:41	Sep-27-19 09:44	Sep-27-19 09:47	Sep-27-19 09:52	Sep-27-19 10:19	Sep-27-19 10:22
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-02-19 13:00	Oct-04-19 12:00
	<i>Analyzed:</i>	Oct-05-19 00:48	Oct-05-19 01:08	Oct-05-19 01:28	Oct-05-19 01:48	Oct-05-19 02:08	Oct-05-19 05:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Toluene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Ethylbenzene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
m,p-Xylenes		<0.00397 0.00397	<0.00401 0.00401	<0.00398 0.00398	<0.00399 0.00399	<0.00397 0.00397	<0.00397 0.00397
o-Xylene		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Total Xylenes		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Total BTEX		<0.00198 0.00198	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>			Oct-01-19 10:00	Oct-01-19 10:00	Oct-01-19 10:00	
	<i>Analyzed:</i>	Oct-02-19 10:07	Oct-02-19 10:14	Oct-02-19 10:20	Oct-01-19 16:52	Oct-01-19 16:58	Oct-02-19 10:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		2.65 0.500	<0.500 0.500	20.3 5.02	48.8 5.00	46.8 4.96	1.43 0.500
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00
	<i>Analyzed:</i>	Oct-07-19 19:40	Oct-07-19 20:01	Oct-07-19 20:22	Oct-07-19 20:42	Oct-07-19 21:24	Oct-07-19 21:45
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0
Diesel Range Organics (DRO)		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0
Total TPH		<49.9 49.9	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Holly Taylor
Project Manager



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
 Contact: Mark Larson
 Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
 Report Date: 10-OCT-19
 Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638428-013	638428-014	638428-015	638428-016	638428-017	638428-018
	<i>Field Id:</i>	SP-2 (15')	SP-2 (20')	SP-2 (25')	SP-2 (30')	SP-2 (35')	SP-2 (40')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-19 10:25	Sep-27-19 10:27	Sep-27-19 10:32	Sep-27-19 10:45	Sep-27-19 10:51	Sep-27-19 11:12
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00
	<i>Analyzed:</i>	Oct-05-19 05:46	Oct-05-19 06:07	Oct-05-19 06:27	Oct-05-19 06:47	Oct-05-19 07:07	Oct-05-19 07:27
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Toluene		<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Ethylbenzene		<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
m,p-Xylenes		<0.00398 0.00398	<0.00398 0.00398	<0.00403 0.00403	<0.00398 0.00398	<0.00396 0.00396	<0.00403 0.00403
o-Xylene		<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Total Xylenes		<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Total BTEX		<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00198 0.00198	<0.00202 0.00202
Chloride by EPA 300	<i>Extracted:</i>	Oct-01-19 10:00	Oct-01-19 10:00	Oct-01-19 10:00	Oct-01-19 10:00	Oct-01-19 10:00	Oct-01-19 10:00
	<i>Analyzed:</i>	Oct-01-19 17:24	Oct-01-19 17:31	Oct-01-19 17:37	Oct-01-19 17:43	Oct-01-19 17:50	Oct-01-19 17:56
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		1680 49.8	2450 50.0	5150 49.6	12700 99.8	17800 101	23700 250
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-04-19 16:00	Oct-04-19 16:00
	<i>Analyzed:</i>	Oct-07-19 22:06	Oct-07-19 22:27	Oct-07-19 22:48	Oct-07-19 23:09	Oct-05-19 04:44	Oct-05-19 05:05
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		155 49.9	139 49.9	<50.0 50.0	66.5 50.0	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		86.9 49.9	<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		242 49.9	139 49.9	<50.0 50.0	66.5 50.0	<50.0 50.0	<49.9 49.9

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Holly Taylor
Project Manager



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
Contact: Mark Larson
Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
Report Date: 10-OCT-19
Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638428-019	638428-020	638428-021	638428-022	638428-023	638428-024
	<i>Field Id:</i>	SP-2 (45')	SP-2 50')	SP-2 (55')	SP2 (60')	SP-2 (65')	SP-5 (5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-19 11:21	Sep-27-19 11:38	Sep-27-19 11:45	Sep-27-19 11:59	Sep-27-19 12:10	Sep-27-19 13:03
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00
	<i>Analyzed:</i>	Oct-05-19 07:47	Oct-05-19 08:07	Oct-05-19 08:27	Oct-05-19 09:46	Oct-05-19 10:06	Oct-05-19 10:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201
Toluene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201
Ethylbenzene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201
m,p-Xylenes		<0.00400 0.00400	<0.00397 0.00397	<0.00401 0.00401	<0.00399 0.00399	<0.00400 0.00400	<0.00402 0.00402
o-Xylene		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201
Total Xylenes		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201
Total BTEX		<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200	<0.00200 0.00200	<0.00201 0.00201
Chloride by EPA 300	<i>Extracted:</i>	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15
	<i>Analyzed:</i>	Oct-01-19 15:12	Oct-01-19 15:17	Oct-01-19 15:33	Oct-01-19 15:38	Oct-01-19 15:43	Oct-01-19 15:49
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7770 50.1	5290 49.6	2170 25.2	1500 25.0	661 4.97	32.4 5.02
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-07-19 15:00
	<i>Analyzed:</i>	Oct-05-19 05:26	Oct-05-19 05:47	Oct-05-19 14:33	Oct-05-19 14:54	Oct-05-19 15:14	Oct-07-19 23:30
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0	<50.0 50.0	<49.9 49.9

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Holly Taylor
Project Manager



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
Contact: Mark Larson
Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
Report Date: 10-OCT-19
Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638428-025	638428-026	638428-027	638428-028	638428-029	638428-030
	<i>Field Id:</i>	SP-5 (10')	SP-5 (15')	SP-5 (20')	SP-5 (25')	SP-5 (30')	SP-5 (35')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-19 13:06	Sep-27-19 13:08	Sep-27-19 13:10	Sep-27-19 13:12	Sep-27-19 13:15	Sep-27-19 13:18
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00
	<i>Analyzed:</i>	Oct-05-19 10:46	Oct-05-19 11:06	Oct-05-19 11:26	Oct-05-19 11:47	Oct-05-19 12:07	Oct-05-19 12:27
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
m,p-Xylenes		<0.00401 0.00401	<0.00400 0.00400	<0.00397 0.00397	<0.00404 0.00404	<0.00396 0.00396	<0.00398 0.00398
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15
	<i>Analyzed:</i>	Oct-02-19 09:06	Oct-01-19 15:59	Oct-02-19 09:12	Oct-01-19 16:20	Oct-01-19 16:36	Oct-01-19 16:41
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		7.37 4.97	26.4 4.98	5.11 5.02	13.8 5.05	9.49 5.05	37.4 5.05
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-07-19 15:00	Oct-07-19 15:00	Oct-07-19 15:00	Oct-08-19 09:00	Oct-08-19 09:00	Oct-08-19 09:00
	<i>Analyzed:</i>	Oct-07-19 23:51	Oct-08-19 00:12	Oct-08-19 00:33	Oct-08-19 11:02	Oct-08-19 12:04	Oct-08-19 12:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9
Diesel Range Organics (DRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9
Total TPH		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9

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Holly Taylor
Project Manager



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
Contact: Mark Larson
Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
Report Date: 10-OCT-19
Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638428-031	638428-032	638428-033	638428-034	638428-035	638428-036
	<i>Field Id:</i>	SP-6 (5')	SP-6 (10')	SP-6 (15')	SP-6 (20')	SP-6 (25')	SP-6 (30')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-27-19 13:52	Sep-27-19 13:54	Sep-27-19 13:56	Sep-27-19 14:00	Sep-27-19 14:05	Sep-27-19 14:10
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00	Oct-04-19 12:00
	<i>Analyzed:</i>	Oct-05-19 12:47	Oct-05-19 16:05	Oct-05-19 16:25	Oct-05-19 16:45	Oct-05-19 17:06	Oct-05-19 17:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198
Toluene		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198
Ethylbenzene		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198
m,p-Xylenes		<0.00399 0.00399	<0.00398 0.00398	<0.00398 0.00398	<0.00398 0.00398	<0.00398 0.00398	<0.00396 0.00396
o-Xylene		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198
Total Xylenes		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198
Total BTEX		<0.00200 0.00200	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 11:15	Oct-01-19 17:30
	<i>Analyzed:</i>	Oct-01-19 16:47	Oct-01-19 16:52	Oct-01-19 16:57	Oct-01-19 17:03	Oct-01-19 17:08	Oct-01-19 19:09
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		89.3 5.00	18.6 4.96	14.1 4.99	42.9 5.04	14.1 5.00	146 5.04
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-08-19 09:00	Oct-08-19 09:00	Oct-08-19 09:00	Oct-08-19 09:00	Oct-08-19 09:00	Oct-08-19 09:00
	<i>Analyzed:</i>	Oct-08-19 12:47	Oct-08-19 13:08	Oct-08-19 13:29	Oct-08-19 13:50	Oct-08-19 14:11	Oct-08-19 14:32
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8
Total TPH		<49.9 49.9	<50.0 50.0	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8

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Holly Taylor
Project Manager



Certificate of Analysis Summary 638428

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp,NEDU 922

Project Id: 19-012-22
Contact: Mark Larson
Project Location:

Date Received in Lab: Mon Sep-30-19 10:00 am
Report Date: 10-OCT-19
Project Manager: Holly Taylor

Analysis Requested	Lab Id:	638428-037					
	Field Id:	SP-6 (35')					
	Depth:						
	Matrix:	SOIL					
	Sampled:	Sep-27-19 14:13					
BTEX by EPA 8021B	Extracted:	Oct-04-19 12:00					
	Analyzed:	Oct-05-19 17:46					
	Units/RL:	mg/kg RL					
Benzene		<0.00198 0.00198					
Toluene		<0.00198 0.00198					
Ethylbenzene		<0.00198 0.00198					
m,p-Xylenes		<0.00397 0.00397					
o-Xylene		<0.00198 0.00198					
Total Xylenes		<0.00198 0.00198					
Total BTEX		<0.00198 0.00198					
Chloride by EPA 300	Extracted:	Oct-01-19 17:30					
	Analyzed:	Oct-01-19 19:28					
	Units/RL:	mg/kg RL					
Chloride		39.2 4.96					
TPH by SW8015 Mod	Extracted:	Oct-08-19 09:00					
	Analyzed:	Oct-08-19 14:53					
	Units/RL:	mg/kg RL					
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0					
Diesel Range Organics (DRO)		<50.0 50.0					
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0					
Total TPH		<50.0 50.0					

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Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Holly Taylor
Project Manager

Analytical Report 638428

for
Larson and Associates, Inc.

Project Manager: Mark Larson

Apache Corp,NEDU 922

19-012-22

10-OCT-19

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):

Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):

Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)

Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)

Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)

Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)

Xenco-Tampa: Florida (E87429), North Carolina (483)



10-OCT-19

Project Manager: **Mark Larson**

Larson and Associates, Inc.

P. O. Box 50685

Midland, TX 79710

Reference: XENCO Report No(s): **638428**

Apache Corp, NEDU 922

Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 638428. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 638428 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads 'Holly Taylor'.

Holly Taylor

Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

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Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



Sample Cross Reference 638428

Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-3 (5')	S	09-27-19 08:48		638428-001
SP-3 (10')	S	09-27-19 08:51		638428-002
SP-3 (15')	S	09-27-19 08:53		638428-003
SP-3 (20')	S	09-27-19 08:56		638428-004
SP-3 (25')	S	09-27-19 09:06		638428-005
SP-4 (5')	S	09-27-19 09:38		638428-006
SP-4 (10')	S	09-27-19 09:41		638428-007
SP-4 (15')	S	09-27-19 09:44		638428-008
SP-4 (20')	S	09-27-19 09:47		638428-009
SP-4 (25')	S	09-27-19 09:52		638428-010
SP-2 (5')	S	09-27-19 10:19		638428-011
SP-2 (10')	S	09-27-19 10:22		638428-012
SP-2 (15')	S	09-27-19 10:25		638428-013
SP-2 (20')	S	09-27-19 10:27		638428-014
SP-2 (25')	S	09-27-19 10:32		638428-015
SP-2 (30')	S	09-27-19 10:45		638428-016
SP-2 (35')	S	09-27-19 10:51		638428-017
SP-2 (40')	S	09-27-19 11:12		638428-018
SP-2 (45')	S	09-27-19 11:21		638428-019
SP-2 (50')	S	09-27-19 11:38		638428-020
SP-2 (55')	S	09-27-19 11:45		638428-021
SP-2 (60')	S	09-27-19 11:59		638428-022
SP-2 (65')	S	09-27-19 12:10		638428-023
SP-5 (5')	S	09-27-19 13:03		638428-024
SP-5 (10')	S	09-27-19 13:06		638428-025
SP-5 (15')	S	09-27-19 13:08		638428-026
SP-5 (20')	S	09-27-19 13:10		638428-027
SP-5 (25')	S	09-27-19 13:12		638428-028
SP-5 (30')	S	09-27-19 13:15		638428-029
SP-5 (35')	S	09-27-19 13:18		638428-030
SP-6 (5')	S	09-27-19 13:52		638428-031
SP-6 (10')	S	09-27-19 13:54		638428-032
SP-6 (15')	S	09-27-19 13:56		638428-033
SP-6 (20')	S	09-27-19 14:00		638428-034
SP-6 (25')	S	09-27-19 14:05		638428-035
SP-6 (30')	S	09-27-19 14:10		638428-036
SP-6 (35')	S	09-27-19 14:13		638428-037

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp, NEDU 922**Project ID: 19-012-22
Work Order Number(s): 638428Report Date: 10-OCT-19
Date Received: 09/30/2019**Sample receipt non conformances and comments:**

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3103060 Chloride by EPA 300

Samples re-analyzed due to hit in blank; re-analysis confirms original data.

Batch: LBA-3103523 TPH by SW8015 Mod

Gasoline Range Hydrocarbons (GRO) recovered above QC limits Analyte was not detected in any of the associated samples and therefore the data was accepted. Diesel Range Organics (DRO) recovered above QC limits in the Blank Spike and Duplicate. Analyte was not detected in any of the associated samples and therefore the data was accepted. Samples in the analytical batch are: 638428-017, -018, -019, -020. The MS/MSD shows recovery for the batch.

Surrogate 1-Chlorooctane, Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687566-1-BKS, 7687566-1-BSD.

Batch: LBA-3103528 BTEX by EPA 8021B

Lab Sample ID 638428-032 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638428-032, -033, -034, -035, -036, -037.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3103530 TPH by SW8015 Mod

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638336-001 S, 638336-001 SD, 638428-022, 638428-023.

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638336-001 SD, 638428-022.

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp, NEDU 922**Project ID: 19-012-22
Work Order Number(s): 638428Report Date: 10-OCT-19
Date Received: 09/30/2019

Batch: LBA-3103594 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3103596 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Lab Sample ID 638428-012 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638428-012, -013, -014, -015, -016, -017, -018, -019, -020, -021, -022, -023, -024, -025, -026, -027, -028, -029, -030, -031.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3103628 TPH by SW8015 Mod

Lab Sample ID 638428-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Diesel Range Organics (DRO) recovered above QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638428-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -024, -025, -026, -027.

The Laboratory Control Sample for Diesel Range Organics (DRO), Motor Oil Range Hydrocarbons (MRO) is within laboratory Control Limits, therefore the data was accepted.

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638428-001 S.

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638428-001 S, 638428-010, 638428-015.

Batch: LBA-3103768 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered below QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638428-033, 638428-028.



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-3 (5')**
Lab Sample Id: 638428-001

Matrix: Soil
Date Collected: 09.27.19 08.48

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	58.6	4.99	mg/kg	10.01.19 15.28		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 16.52	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 16.52	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 16.52	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 16.52	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	73	%	70-135	10.07.19 16.52		
o-Terphenyl	84-15-1	72	%	70-135	10.07.19 16.52		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-3 (5')**
Lab Sample Id: 638428-001

Matrix: Soil
Date Collected: 09.27.19 08.48

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.04.19 21.49	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.04.19 21.49	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.04.19 21.49	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.04.19 21.49	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.04.19 21.49	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.04.19 21.49	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.04.19 21.49	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.04.19 21.49		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.04.19 21.49		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-3 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-002

Date Collected: 09.27.19 08.51

Analytical Method: Chloride by EPA 300

Tech: SPC

% Moisture:

Analyst: CHE

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	0.654	0.500	mg/kg	10.02.19 09.54		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 17.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 17.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 17.56	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 17.56	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	70	%	70-135	10.07.19 17.56	
o-Terphenyl	84-15-1	70	%	70-135	10.07.19 17.56	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-3 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-002

Date Collected: 09.27.19 08.51

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.04.19 23.07	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.04.19 23.07	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.04.19 23.07	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.04.19 23.07	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.04.19 23.07	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.04.19 23.07	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.04.19 23.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	70-130	10.04.19 23.07		
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.04.19 23.07		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-3 (15')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-003

Date Collected: 09.27.19 08.53

Analytical Method: Chloride by EPA 300

Tech: SPC

% Moisture:

Analyst: CHE

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	0.827	0.500	mg/kg	10.02.19 10.01		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 18.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 18.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 18.17	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 18.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	75	%	70-135	10.07.19 18.17		
o-Terphenyl	84-15-1	77	%	70-135	10.07.19 18.17		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-3 (15')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-003

Date Collected: 09.27.19 08.53

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 23.27	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 23.27	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 23.27	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 23.27	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 23.27	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 23.27	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 23.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.04.19 23.27		
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.04.19 23.27		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-3 (20')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-004

Date Collected: 09.27.19 08.56

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	42.0	4.97	mg/kg	10.01.19 16.00		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.07.19 18.38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.07.19 18.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.07.19 18.38	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.07.19 18.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	75	%	70-135	10.07.19 18.38		
o-Terphenyl	84-15-1	73	%	70-135	10.07.19 18.38		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-3 (20')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-004

Date Collected: 09.27.19 08.56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.04.19 23.47	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.04.19 23.47	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.04.19 23.47	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.04.19 23.47	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.04.19 23.47	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.04.19 23.47	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.04.19 23.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.04.19 23.47		
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.04.19 23.47		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-3 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-005

Date Collected: 09.27.19 09.06

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	125	4.96	mg/kg	10.01.19 16.07		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 18.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.19 18.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 18.59	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.19 18.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	77	%	70-135	10.07.19 18.59		
o-Terphenyl	84-15-1	76	%	70-135	10.07.19 18.59		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: SP-3 (25')

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-005

Date Collected: 09.27.19 09.06

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 00.08	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 00.08	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 00.08	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.05.19 00.08	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 00.08	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 00.08	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 00.08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.05.19 00.08		
4-Bromofluorobenzene	460-00-4	115	%	70-130	10.05.19 00.08		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-4 (5')**
Lab Sample Id: 638428-006

Matrix: Soil
Date Collected: 09.27.19 09.38

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3103060

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 10.01.19 10.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	61.2	4.95	mg/kg	10.01.19 16.13		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103628

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 10.07.19 15.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 19.19	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 19.19	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 19.19	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 19.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	78	%	70-135	10.07.19 19.19		
o-Terphenyl	84-15-1	78	%	70-135	10.07.19 19.19		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-4 (5')**
Lab Sample Id: 638428-006

Matrix: Soil
Date Collected: 09.27.19 09.38

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 00.28	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 00.28	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 00.28	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 00.28	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 00.28	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 00.28	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 00.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.05.19 00.28		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.05.19 00.28		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-007

Date Collected: 09.27.19 09.41

Analytical Method: Chloride by EPA 300

Tech: SPC

% Moisture:

Analyst: CHE

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2.65	0.500	mg/kg	10.02.19 10.07		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 19.40	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 19.40	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 19.40	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 19.40	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	76	%	70-135	10.07.19 19.40	
o-Terphenyl	84-15-1	75	%	70-135	10.07.19 19.40	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-007

Date Collected: 09.27.19 09.41

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 00.48	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 00.48	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 00.48	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.05.19 00.48	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 00.48	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 00.48	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 00.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	70-130	10.05.19 00.48		
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.05.19 00.48		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-4 (15')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-008

Date Collected: 09.27.19 09.44

Analytical Method: Chloride by EPA 300

Tech: SPC

% Moisture:

Analyst: CHE

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<0.500	0.500	mg/kg	10.02.19 10.14	U	1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.07.19 20.01	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.07.19 20.01	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.07.19 20.01	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.07.19 20.01	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-135	10.07.19 20.01	
o-Terphenyl	84-15-1	79	%	70-135	10.07.19 20.01	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-4 (15')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-008

Date Collected: 09.27.19 09.44

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 01.08	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 01.08	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 01.08	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.05.19 01.08	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 01.08	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 01.08	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 01.08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 01.08		
4-Bromofluorobenzene	460-00-4	119	%	70-130	10.05.19 01.08		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-4 (20')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-009

Date Collected: 09.27.19 09.47

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20.3	5.02	mg/kg	10.02.19 10.20		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 20.22	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.19 20.22	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 20.22	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.19 20.22	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	73	%	70-135	10.07.19 20.22		
o-Terphenyl	84-15-1	74	%	70-135	10.07.19 20.22		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-4 (20')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-009

Date Collected: 09.27.19 09.47

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 01.28	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 01.28	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 01.28	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 01.28	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 01.28	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 01.28	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 01.28	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.05.19 01.28		
4-Bromofluorobenzene	460-00-4	125	%	70-130	10.05.19 01.28		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-4 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-010

Date Collected: 09.27.19 09.52

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	48.8	5.00	mg/kg	10.01.19 16.52		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 20.42	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.19 20.42	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 20.42	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.19 20.42	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	10.07.19 20.42		
o-Terphenyl	84-15-1	138	%	70-135	10.07.19 20.42	**	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-4 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-010

Date Collected: 09.27.19 09.52

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 01.48	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 01.48	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 01.48	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.05.19 01.48	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 01.48	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 01.48	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 01.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	116	%	70-130	10.05.19 01.48		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.05.19 01.48		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (5')**
Lab Sample Id: 638428-011

Matrix: Soil
Date Collected: 09.27.19 10.19

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	46.8	4.96	mg/kg	10.01.19 16.58		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 21.24	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 21.24	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 21.24	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 21.24	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	129	%	70-135	10.07.19 21.24	
o-Terphenyl	84-15-1	133	%	70-135	10.07.19 21.24	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (5')**
Lab Sample Id: 638428-011

Matrix: Soil
Date Collected: 09.27.19 10.19

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.02.19 13.00

Basis: Wet Weight

Seq Number: 3103594

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 02.08	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 02.08	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 02.08	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.05.19 02.08	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 02.08	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 02.08	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 02.08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.05.19 02.08		
4-Bromofluorobenzene	460-00-4	115	%	70-130	10.05.19 02.08		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-012

Date Collected: 09.27.19 10.22

Analytical Method: Chloride by EPA 300

Tech: SPC

% Moisture:

Analyst: CHE

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1.43	0.500	mg/kg	10.02.19 10.26		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 21.45	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.19 21.45	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 21.45	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.19 21.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	77	%	70-135	10.07.19 21.45		
o-Terphenyl	84-15-1	78	%	70-135	10.07.19 21.45		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (10')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-012

Date Collected: 09.27.19 10.22

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 05.26	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 05.26	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 05.26	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.05.19 05.26	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 05.26	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 05.26	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 05.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	93	%	70-130	10.05.19 05.26		
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.05.19 05.26		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (15')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-013

Date Collected: 09.27.19 10.25

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1680	49.8	mg/kg	10.01.19 17.24		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 22.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	155	49.9	mg/kg	10.07.19 22.06		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	86.9	49.9	mg/kg	10.07.19 22.06		1
Total TPH	PHC635	242	49.9	mg/kg	10.07.19 22.06		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	76	%	70-135	10.07.19 22.06	
o-Terphenyl	84-15-1	79	%	70-135	10.07.19 22.06	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (15')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-013

Date Collected: 09.27.19 10.25

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 05.46	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 05.46	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 05.46	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 05.46	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 05.46	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 05.46	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 05.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	117	%	70-130	10.05.19 05.46		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.05.19 05.46		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (20')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-014

Date Collected: 09.27.19 10.27

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2450	50.0	mg/kg	10.01.19 17.31		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 22.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	139	49.9	mg/kg	10.07.19 22.27		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 22.27	U	1
Total TPH	PHC635	139	49.9	mg/kg	10.07.19 22.27		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	80	%	70-135	10.07.19 22.27	
o-Terphenyl	84-15-1	82	%	70-135	10.07.19 22.27	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (20')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-014

Date Collected: 09.27.19 10.27

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 06.07	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 06.07	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 06.07	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 06.07	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 06.07	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 06.07	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 06.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 06.07		
4-Bromofluorobenzene	460-00-4	117	%	70-130	10.05.19 06.07		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-2 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-015

Date Collected: 09.27.19 10.32

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5150	49.6	mg/kg	10.01.19 17.37		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 22.48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.19 22.48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 22.48	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.19 22.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	128	%	70-135	10.07.19 22.48		
o-Terphenyl	84-15-1	142	%	70-135	10.07.19 22.48	**	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-2 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-015

Date Collected: 09.27.19 10.32

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.05.19 06.27	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.05.19 06.27	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.05.19 06.27	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.05.19 06.27	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.05.19 06.27	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.05.19 06.27	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.05.19 06.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.05.19 06.27		
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.05.19 06.27		



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Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (30')**
Lab Sample Id: 638428-016

Matrix: Soil
Date Collected: 09.27.19 10.45

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12700	99.8	mg/kg	10.01.19 17.43		20

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 23.09	U	1
Diesel Range Organics (DRO)	C10C28DRO	66.5	50.0	mg/kg	10.07.19 23.09		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 23.09	U	1
Total TPH	PHC635	66.5	50.0	mg/kg	10.07.19 23.09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	85	%	70-135	10.07.19 23.09	
o-Terphenyl	84-15-1	92	%	70-135	10.07.19 23.09	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (30')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-016

Date Collected: 09.27.19 10.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 06.47	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 06.47	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 06.47	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 06.47	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 06.47	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 06.47	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 06.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.05.19 06.47		
4-Bromofluorobenzene	460-00-4	105	%	70-130	10.05.19 06.47		



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Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (35')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-017

Date Collected: 09.27.19 10.51

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	17800	101	mg/kg	10.01.19 17.50		20

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	112	%	70-135	10.05.19 04.44		
o-Terphenyl	84-15-1	120	%	70-135	10.05.19 04.44		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: SP-2 (35')

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-017

Date Collected: 09.27.19 10.51

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 07.07	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 07.07	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 07.07	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.05.19 07.07	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 07.07	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 07.07	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 07.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.05.19 07.07		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.05.19 07.07		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (40')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-018

Date Collected: 09.27.19 11.12

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 10.00

Basis: Wet Weight

Seq Number: 3103060

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	23700	250	mg/kg	10.01.19 17.56		50

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	109	%	70-135	10.05.19 05.05		
o-Terphenyl	84-15-1	113	%	70-135	10.05.19 05.05		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (40')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-018

Date Collected: 09.27.19 11.12

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.05.19 07.27	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.05.19 07.27	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.05.19 07.27	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.05.19 07.27	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.05.19 07.27	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.05.19 07.27	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.05.19 07.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 07.27		
4-Bromofluorobenzene	460-00-4	119	%	70-130	10.05.19 07.27		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-2 (45')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-019

Date Collected: 09.27.19 11.21

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7770	50.1	mg/kg	10.01.19 15.12		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 05.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 05.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 05.26	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 05.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	106	%	70-135	10.05.19 05.26		
o-Terphenyl	84-15-1	113	%	70-135	10.05.19 05.26		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (45')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-019

Date Collected: 09.27.19 11.21

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 07.47	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 07.47	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 07.47	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.05.19 07.47	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 07.47	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 07.47	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 07.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	124	%	70-130	10.05.19 07.47		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 07.47		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-2 50')
Lab Sample Id: 638428-020

Matrix: Soil
Date Collected: 09.27.19 11.38

Date Received:09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5290	49.6	mg/kg	10.01.19 15.17		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 05.47	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 05.47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 05.47	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 05.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	117	%	70-135	10.05.19 05.47	
o-Terphenyl	84-15-1	127	%	70-135	10.05.19 05.47	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 50')**
Lab Sample Id: 638428-020

Matrix: Soil
Date Collected: 09.27.19 11.38

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 08.07	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 08.07	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 08.07	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.05.19 08.07	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 08.07	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 08.07	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 08.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.05.19 08.07		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.05.19 08.07		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-2 (55')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-021

Date Collected: 09.27.19 11.45

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2170	25.2	mg/kg	10.01.19 15.33		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.05.19 14.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.05.19 14.33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.05.19 14.33	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.05.19 14.33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	114	%	70-135	10.05.19 14.33	
o-Terphenyl	84-15-1	125	%	70-135	10.05.19 14.33	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: SP-2 (55')

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-021

Date Collected: 09.27.19 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 08.27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 08.27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 08.27	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.05.19 08.27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 08.27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 08.27	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 08.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.05.19 08.27		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.05.19 08.27		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP2 (60')**
Lab Sample Id: 638428-022

Matrix: Soil
Date Collected: 09.27.19 11.59

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1500	25.0	mg/kg	10.01.19 15.38		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 14.54	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 14.54	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 14.54	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 14.54	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	138	%	70-135	10.05.19 14.54	**	
o-Terphenyl	84-15-1	150	%	70-135	10.05.19 14.54	**	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP2 (60')**
Lab Sample Id: 638428-022

Matrix: Soil
Date Collected: 09.27.19 11.59

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 09.46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 09.46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 09.46	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.05.19 09.46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 09.46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 09.46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 09.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.05.19 09.46		
4-Bromofluorobenzene	460-00-4	102	%	70-130	10.05.19 09.46		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-2 (65')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-023

Date Collected: 09.27.19 12.10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	661	4.97	mg/kg	10.01.19 15.43		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 15.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 15.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 15.14	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 15.14	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	135	%	70-135	10.05.19 15.14		
o-Terphenyl	84-15-1	145	%	70-135	10.05.19 15.14	**	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-2 (65')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-023

Date Collected: 09.27.19 12.10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 10.06	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 10.06	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 10.06	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.05.19 10.06	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 10.06	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 10.06	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 10.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.05.19 10.06		
4-Bromofluorobenzene	460-00-4	102	%	70-130	10.05.19 10.06		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-5 (5')
Lab Sample Id: 638428-024

Matrix: Soil
Date Collected: 09.27.19 13.03

Date Received:09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	32.4	5.02	mg/kg	10.01.19 15.49		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.07.19 23.30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.07.19 23.30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.07.19 23.30	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.07.19 23.30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	70	%	70-135	10.07.19 23.30		
o-Terphenyl	84-15-1	75	%	70-135	10.07.19 23.30		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-5 (5')**
Lab Sample Id: 638428-024

Matrix: Soil
Date Collected: 09.27.19 13.03

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.05.19 10.26	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.05.19 10.26	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.05.19 10.26	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.05.19 10.26	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.05.19 10.26	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.05.19 10.26	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.05.19 10.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.05.19 10.26		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 10.26		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-025

Date Collected: 09.27.19 13.06

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	7.37	4.97	mg/kg	10.02.19 09.06		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.07.19 23.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.07.19 23.51	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.07.19 23.51	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.07.19 23.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	86	%	70-135	10.07.19 23.51		
o-Terphenyl	84-15-1	89	%	70-135	10.07.19 23.51		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-025

Date Collected: 09.27.19 13.06

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 10.46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 10.46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 10.46	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.05.19 10.46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 10.46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 10.46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 10.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.05.19 10.46		
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.05.19 10.46		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-5 (15')**
Lab Sample Id: 638428-026

Matrix: Soil
Date Collected: 09.27.19 13.08

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	26.4	4.98	mg/kg	10.01.19 15.59		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.08.19 00.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.08.19 00.12	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.08.19 00.12	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.08.19 00.12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	84	%	70-135	10.08.19 00.12		
o-Terphenyl	84-15-1	90	%	70-135	10.08.19 00.12		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-5 (15')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-026

Date Collected: 09.27.19 13.08

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 11.06	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 11.06	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 11.06	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.05.19 11.06	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 11.06	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 11.06	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 11.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 11.06		
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.05.19 11.06		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-5 (20')**
Lab Sample Id: 638428-027

Matrix: Soil
Date Collected: 09.27.19 13.10

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5.11	5.02	mg/kg	10.02.19 09.12		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.07.19 15.00

Basis: Wet Weight

Seq Number: 3103628

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 00.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 00.33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 00.33	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 00.33	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	79	%	70-135	10.08.19 00.33		
o-Terphenyl	84-15-1	81	%	70-135	10.08.19 00.33		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: SP-5 (20')

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-027

Date Collected: 09.27.19 13.10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 11.26	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 11.26	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 11.26	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.05.19 11.26	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 11.26	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 11.26	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 11.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 11.26		
4-Bromofluorobenzene	460-00-4	108	%	70-130	10.05.19 11.26		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-5 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-028

Date Collected: 09.27.19 13.12

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	13.8	5.05	mg/kg	10.01.19 16.20		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 11.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 11.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 11.02	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 11.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	69	%	70-135	10.08.19 11.02	**
o-Terphenyl	84-15-1	74	%	70-135	10.08.19 11.02	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: SP-5 (25')

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-028

Date Collected: 09.27.19 13.12

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.05.19 11.47	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.05.19 11.47	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.05.19 11.47	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	10.05.19 11.47	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.05.19 11.47	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.05.19 11.47	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.05.19 11.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.05.19 11.47		
4-Bromofluorobenzene	460-00-4	105	%	70-130	10.05.19 11.47		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-5 (30')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-029

Date Collected: 09.27.19 13.15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9.49	5.05	mg/kg	10.01.19 16.36		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 12.04	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 12.04	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 12.04	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 12.04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	71	%	70-135	10.08.19 12.04	
o-Terphenyl	84-15-1	78	%	70-135	10.08.19 12.04	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-5 (30')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-029

Date Collected: 09.27.19 13.15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 12.07	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 12.07	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 12.07	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.05.19 12.07	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 12.07	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 12.07	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 12.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.05.19 12.07		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.05.19 12.07		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-5 (35')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-030

Date Collected: 09.27.19 13.18

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	37.4	5.05	mg/kg	10.01.19 16.41		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.08.19 12.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.08.19 12.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.08.19 12.26	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.08.19 12.26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	70	%	70-135	10.08.19 12.26	
o-Terphenyl	84-15-1	77	%	70-135	10.08.19 12.26	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-5 (35')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-030

Date Collected: 09.27.19 13.18

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 12.27	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 12.27	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 12.27	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 12.27	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 12.27	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 12.27	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 12.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	102	%	70-130	10.05.19 12.27		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.05.19 12.27		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (5')**
Lab Sample Id: 638428-031

Matrix: Soil
Date Collected: 09.27.19 13.52

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	89.3	5.00	mg/kg	10.01.19 16.47		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.08.19 12.47	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.08.19 12.47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.08.19 12.47	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.08.19 12.47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	70	%	70-135	10.08.19 12.47	
o-Terphenyl	84-15-1	76	%	70-135	10.08.19 12.47	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-6 (5')**
Lab Sample Id: 638428-031

Matrix: Soil
Date Collected: 09.27.19 13.52

Date Received: 09.30.19 10.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103596

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.05.19 12.47	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.05.19 12.47	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.05.19 12.47	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.05.19 12.47	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.05.19 12.47	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.05.19 12.47	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.05.19 12.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	104	%	70-130	10.05.19 12.47		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.05.19 12.47		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-032

Date Collected: 09.27.19 13.54

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	18.6	4.96	mg/kg	10.01.19 16.52		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 13.08	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 13.08	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 13.08	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 13.08	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	71	%	70-135	10.08.19 13.08	
o-Terphenyl	84-15-1	77	%	70-135	10.08.19 13.08	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (10')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-032

Date Collected: 09.27.19 13.54

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103528

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 16.05	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 16.05	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 16.05	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 16.05	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 16.05	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 16.05	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 16.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	99	%	70-130	10.05.19 16.05		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.05.19 16.05		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (15')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-033

Date Collected: 09.27.19 13.56

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.1	4.99	mg/kg	10.01.19 16.57		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 13.29	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 13.29	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 13.29	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 13.29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	67	%	70-135	10.08.19 13.29	**
o-Terphenyl	84-15-1	72	%	70-135	10.08.19 13.29	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (15')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-033

Date Collected: 09.27.19 13.56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103528

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 16.25	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 16.25	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 16.25	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 16.25	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 16.25	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 16.25	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 16.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.05.19 16.25		
4-Bromofluorobenzene	460-00-4	107	%	70-130	10.05.19 16.25		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (20')**

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-034

Date Collected: 09.27.19 14.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	42.9	5.04	mg/kg	10.01.19 17.03		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 13.50	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 13.50	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 13.50	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 13.50	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	70	%	70-135	10.08.19 13.50		
o-Terphenyl	84-15-1	76	%	70-135	10.08.19 13.50		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-6 (20')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-034

Date Collected: 09.27.19 14.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103528

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 16.45	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 16.45	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 16.45	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 16.45	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 16.45	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 16.45	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 16.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	99	%	70-130	10.05.19 16.45		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.05.19 16.45		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-6 (25')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-035

Date Collected: 09.27.19 14.05

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 10.01.19 11.15

Basis: Wet Weight

Seq Number: 3103061

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	14.1	5.00	mg/kg	10.01.19 17.08		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.08.19 14.11	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.08.19 14.11	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.08.19 14.11	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.08.19 14.11	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	71	%	70-135	10.08.19 14.11		
o-Terphenyl	84-15-1	78	%	70-135	10.08.19 14.11		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (25')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-035

Date Collected: 09.27.19 14.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103528

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.05.19 17.06	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.05.19 17.06	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.05.19 17.06	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.05.19 17.06	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.05.19 17.06	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.05.19 17.06	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.05.19 17.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.05.19 17.06		
4-Bromofluorobenzene	460-00-4	107	%	70-130	10.05.19 17.06		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: **SP-6 (30')**
Lab Sample Id: 638428-036

Matrix: Soil
Date Collected: 09.27.19 14.10

Date Received: 09.30.19 10.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SPC

Date Prep: 10.01.19 17.30

Basis: Wet Weight

Seq Number: 3103063

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	146	5.04	mg/kg	10.01.19 19.09		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.08.19 14.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.08.19 14.32	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.08.19 14.32	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.08.19 14.32	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	73	%	70-135	10.08.19 14.32		
o-Terphenyl	84-15-1	80	%	70-135	10.08.19 14.32		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-6 (30')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-036

Date Collected: 09.27.19 14.10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103528

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 17.26	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 17.26	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 17.26	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.05.19 17.26	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 17.26	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 17.26	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 17.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.05.19 17.26		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.05.19 17.26		



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp,NEDU 922

Sample Id: SP-6 (35')

Matrix: Soil

Date Received:09.30.19 10.00

Lab Sample Id: 638428-037

Date Collected: 09.27.19 14.13

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SPC

Date Prep: 10.01.19 17.30

Basis: Wet Weight

Seq Number: 3103063

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	39.2	4.96	mg/kg	10.01.19 19.28		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.08.19 09.00

Basis: Wet Weight

Seq Number: 3103768

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.08.19 14.53	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.08.19 14.53	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.08.19 14.53	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.08.19 14.53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	74	%	70-135	10.08.19 14.53	
o-Terphenyl	84-15-1	81	%	70-135	10.08.19 14.53	



Certificate of Analytical Results 638428



Larson and Associates, Inc., Midland, TX

Apache Corp, NEDU 922

Sample Id: **SP-6 (35')**

Matrix: Soil

Date Received: 09.30.19 10.00

Lab Sample Id: 638428-037

Date Collected: 09.27.19 14.13

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.04.19 12.00

Basis: Wet Weight

Seq Number: 3103528

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.05.19 17.46	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.05.19 17.46	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.05.19 17.46	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.05.19 17.46	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.05.19 17.46	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.05.19 17.46	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.05.19 17.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	107	%	70-130	10.05.19 17.46		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.05.19 17.46		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Larson and Associates, Inc.
Apache Corp,NEDU 922

Analytical Method: Chloride by EPA 300

Seq Number: 3103060

MB Sample Id: 7687203-1-BLK

Matrix: Solid

LCS Sample Id: 7687203-1-BKS

Prep Method: E300P

Date Prep: 10.01.19

LCSD Sample Id: 7687203-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	2.90	250	268	107	268	107	90-110	0	20	mg/kg	10.01.19 14:49	

Analytical Method: Chloride by EPA 300

Seq Number: 3103061

MB Sample Id: 7687204-1-BLK

Matrix: Solid

LCS Sample Id: 7687204-1-BKS

Prep Method: E300P

Date Prep: 10.01.19

LCSD Sample Id: 7687204-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	0.892	250	249	100	250	100	90-110	0	20	mg/kg	10.01.19 14:35	

Analytical Method: Chloride by EPA 300

Seq Number: 3103063

MB Sample Id: 7687206-1-BLK

Matrix: Solid

LCS Sample Id: 7687206-1-BKS

Prep Method: E300P

Date Prep: 10.01.19

LCSD Sample Id: 7687206-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	271	108	269	108	90-110	1	20	mg/kg	10.01.19 18:56	

Analytical Method: Chloride by EPA 300

Seq Number: 3103060

Parent Sample Id: 638417-005

Matrix: Soil

MS Sample Id: 638417-005 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638417-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	80.4	250	352	109	349	107	90-110	1	20	mg/kg	10.01.19 15:09	

Analytical Method: Chloride by EPA 300

Seq Number: 3103060

Parent Sample Id: 638428-009

Matrix: Soil

MS Sample Id: 638428-009 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638428-009 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	20.3	251	298	111	297	110	90-110	0	20	mg/kg	10.01.19 16:39	X

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp,NEDU 922

Analytical Method: Chloride by EPA 300

Seq Number: 3103061

Parent Sample Id: 638428-026

Matrix: Soil

MS Sample Id: 638428-026 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638428-026 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	26.4	249	274	99	275	100	90-110	0	20	mg/kg	10.01.19 16:05	

Analytical Method: Chloride by EPA 300

Seq Number: 3103061

Parent Sample Id: 638524-001

Matrix: Soil

MS Sample Id: 638524-001 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638524-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	15.4	252	273	102	273	102	90-110	0	20	mg/kg	10.01.19 14:50	

Analytical Method: Chloride by EPA 300

Seq Number: 3103063

Parent Sample Id: 638428-036

Matrix: Soil

MS Sample Id: 638428-036 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638428-036 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	146	252	418	108	418	108	90-110	0	20	mg/kg	10.01.19 19:15	

Analytical Method: Chloride by EPA 300

Seq Number: 3103063

Parent Sample Id: 638458-003

Matrix: Soil

MS Sample Id: 638458-003 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638458-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	36.8	248	305	108	306	109	90-110	0	20	mg/kg	10.01.19 20:46	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103523

MB Sample Id: 7687566-1-BLK

Matrix: Solid

LCS Sample Id: 7687566-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687566-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1380	138	1150	115	70-135	18	20	mg/kg	10.04.19 21:25	H
Diesel Range Organics (DRO)	<15.0	1000	1670	167	1450	145	70-135	14	20	mg/kg	10.04.19 21:25	H

Surrogate

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		176	**	153	**	70-135	%	10.04.19 21:25
o-Terphenyl	110		180	**	158	**	70-135	%	10.04.19 21:25

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp, NEDU 922

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103530

MB Sample Id: 7687568-1-BLK

Matrix: Solid

LCS Sample Id: 7687568-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687568-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	924	92	1030	103	70-135	11	20	mg/kg	10.05.19 06:50	
Diesel Range Organics (DRO)	<15.0	1000	953	95	1080	108	70-135	12	20	mg/kg	10.05.19 06:50	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	106		114		127		70-135	%	10.05.19 06:50			
o-Terphenyl	114		104		114		70-135	%	10.05.19 06:50			

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103628

MB Sample Id: 7687644-1-BLK

Matrix: Solid

LCS Sample Id: 7687644-1-BKS

Prep Method: SW8015P

Date Prep: 10.07.19

LCSD Sample Id: 7687644-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	958	96	917	92	70-135	4	20	mg/kg	10.07.19 16:10	
Diesel Range Organics (DRO)	<15.0	1000	888	89	861	86	70-135	3	20	mg/kg	10.07.19 16:10	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	71		82		81		70-135	%	10.07.19 16:10			
o-Terphenyl	78		77		80		70-135	%	10.07.19 16:10			

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103768

MB Sample Id: 7687646-1-BLK

Matrix: Solid

LCS Sample Id: 7687646-1-BKS

Prep Method: SW8015P

Date Prep: 10.08.19

LCSD Sample Id: 7687646-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1060	106	917	92	70-135	14	20	mg/kg	10.08.19 10:18	
Diesel Range Organics (DRO)	<15.0	1000	1030	103	857	86	70-135	18	20	mg/kg	10.08.19 10:18	
Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date			
1-Chlorooctane	79		91		80		70-135	%	10.08.19 10:18			
o-Terphenyl	85		94		81		70-135	%	10.08.19 10:18			

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103628

Matrix: Solid
MB Sample Id: 7687644-1-BLK

Prep Method: SW8015P

Date Prep: 10.07.19

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.07.19 15:49	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp, NEDU 922

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103768

Matrix: Solid

Prep Method: SW8015P

Date Prep: 10.08.19

MB Sample Id: 7687646-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.08.19 09:57	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103523

Matrix: Soil

Prep Method: SW8015P

Date Prep: 10.04.19

Parent Sample Id: 638334-008

MS Sample Id: 638334-008 S

MSD Sample Id: 638334-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	829	83	826	83	70-135	0	20	mg/kg	10.04.19 22:27	
Diesel Range Organics (DRO)	<15.0	997	1010	101	997	100	70-135	1	20	mg/kg	10.04.19 22:27	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	112		110		70-135	%	10.04.19 22:27
o-Terphenyl	119		119		70-135	%	10.04.19 22:27

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103530

Matrix: Soil

Prep Method: SW8015P

Date Prep: 10.04.19

Parent Sample Id: 638336-001

MS Sample Id: 638336-001 S

MSD Sample Id: 638336-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	911	91	1030	103	70-135	12	20	mg/kg	10.05.19 07:53	
Diesel Range Organics (DRO)	454	999	1810	136	2110	166	70-135	15	20	mg/kg	10.05.19 07:53	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		146	**	70-135	%	10.05.19 07:53
o-Terphenyl	140	**	161	**	70-135	%	10.05.19 07:53

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103628

Matrix: Soil

Prep Method: SW8015P

Date Prep: 10.07.19

Parent Sample Id: 638428-001

MS Sample Id: 638428-001 S

MSD Sample Id: 638428-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<14.9	996	1240	124	1230	123	70-135	1	20	mg/kg	10.07.19 17:13	
Diesel Range Organics (DRO)	<14.9	996	1420	143	1410	141	70-135	1	20	mg/kg	10.07.19 17:13	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	160	**	80		70-135	%	10.07.19 17:13
o-Terphenyl	157	**	79		70-135	%	10.07.19 17:13

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp, NEDU 922

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103768

Parent Sample Id: 638428-028

Matrix: Soil

MS Sample Id: 638428-028 S

Prep Method: SW8015P

Date Prep: 10.08.19

MSD Sample Id: 638428-028 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	998	915	92	936	94	70-135	2	20	mg/kg	10.08.19 11:23	
Diesel Range Organics (DRO)	<15.0	998	879	88	907	91	70-135	3	20	mg/kg	10.08.19 11:23	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	89		80		70-135	%	10.08.19 11:23
o-Terphenyl	79		80		70-135	%	10.08.19 11:23

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103594

MB Sample Id: 7687327-1-BLK

Matrix: Solid

LCS Sample Id: 7687327-1-BKS

Prep Method: SW5030B

Date Prep: 10.02.19

LCSD Sample Id: 7687327-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.107	107	0.111	111	70-130	4	35	mg/kg	10.04.19 16:48	
Toluene	<0.00200	0.100	0.101	101	0.106	106	70-130	5	35	mg/kg	10.04.19 16:48	
Ethylbenzene	<0.00200	0.100	0.107	107	0.114	114	70-130	6	35	mg/kg	10.04.19 16:48	
m,p-Xylenes	<0.00400	0.200	0.209	105	0.226	113	70-130	8	35	mg/kg	10.04.19 16:48	
o-Xylene	<0.00200	0.100	0.108	108	0.116	116	70-130	7	35	mg/kg	10.04.19 16:48	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		100		99		70-130	%	10.04.19 16:48
4-Bromofluorobenzene	99		104		110		70-130	%	10.04.19 16:48

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103528

MB Sample Id: 7687489-1-BLK

Matrix: Solid

LCS Sample Id: 7687489-1-BKS

Prep Method: SW5030B

Date Prep: 10.04.19

LCSD Sample Id: 7687489-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.114	114	0.100	100	70-130	13	35	mg/kg	10.05.19 14:05	
Toluene	<0.00200	0.100	0.106	106	0.0969	97	70-130	9	35	mg/kg	10.05.19 14:05	
Ethylbenzene	<0.00200	0.100	0.112	112	0.103	103	70-130	8	35	mg/kg	10.05.19 14:05	
m,p-Xylenes	<0.00400	0.200	0.219	110	0.205	103	70-130	7	35	mg/kg	10.05.19 14:05	
o-Xylene	<0.00200	0.100	0.114	114	0.107	107	70-130	6	35	mg/kg	10.05.19 14:05	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		100		99		70-130	%	10.05.19 14:05
4-Bromofluorobenzene	98		110		112		70-130	%	10.05.19 14:05

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp, NEDU 922

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103596

MB Sample Id: 7687486-1-BLK

Matrix: Solid

LCS Sample Id: 7687486-1-BKS

Prep Method: SW5030B

Date Prep: 10.04.19

LCSD Sample Id: 7687486-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.105	105	0.105	105	70-130	0	35	mg/kg	10.05.19 03:27	
Toluene	<0.00200	0.100	0.102	102	0.103	103	70-130	1	35	mg/kg	10.05.19 03:27	
Ethylbenzene	<0.00200	0.100	0.110	110	0.112	112	70-130	2	35	mg/kg	10.05.19 03:27	
m,p-Xylenes	<0.00400	0.200	0.217	109	0.223	112	70-130	3	35	mg/kg	10.05.19 03:27	
o-Xylene	<0.00200	0.100	0.112	112	0.117	117	70-130	4	35	mg/kg	10.05.19 03:27	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		96		99		70-130	%	10.05.19 03:27
4-Bromofluorobenzene	99		108		120		70-130	%	10.05.19 03:27

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103594

Parent Sample Id: 638335-023

Matrix: Soil

MS Sample Id: 638335-023 S

Prep Method: SW5030B

Date Prep: 10.02.19

MSD Sample Id: 638335-023 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00198	0.0992	0.116	117	0.121	122	70-130	4	35	mg/kg	10.04.19 17:28	
Toluene	<0.00198	0.0992	0.112	113	0.115	116	70-130	3	35	mg/kg	10.04.19 17:28	
Ethylbenzene	<0.00198	0.0992	0.121	122	0.124	125	70-130	2	35	mg/kg	10.04.19 17:28	
m,p-Xylenes	<0.00397	0.198	0.205	104	0.214	108	70-130	4	35	mg/kg	10.04.19 17:28	
o-Xylene	<0.00198	0.0992	0.129	130	0.129	130	70-130	0	35	mg/kg	10.04.19 17:28	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	104		103		70-130	%	10.04.19 17:28
4-Bromofluorobenzene	124		112		70-130	%	10.04.19 17:28

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103528

Parent Sample Id: 638428-032

Matrix: Soil

MS Sample Id: 638428-032 S

Prep Method: SW5030B

Date Prep: 10.04.19

MSD Sample Id: 638428-032 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.0998	0.0555	56	0.0497	50	70-130	11	35	mg/kg	10.05.19 14:46	X
Toluene	<0.00200	0.0998	0.0586	59	0.0536	54	70-130	9	35	mg/kg	10.05.19 14:46	X
Ethylbenzene	<0.00200	0.0998	0.0648	65	0.0605	61	70-130	7	35	mg/kg	10.05.19 14:46	X
m,p-Xylenes	<0.00399	0.200	0.124	62	0.116	58	70-130	7	35	mg/kg	10.05.19 14:46	X
o-Xylene	<0.00200	0.0998	0.0582	58	0.0532	53	70-130	9	35	mg/kg	10.05.19 14:46	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		100		70-130	%	10.05.19 14:46
4-Bromofluorobenzene	117		116		70-130	%	10.05.19 14:46

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp, NEDU 922

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103596

Parent Sample Id: 638428-012

Matrix: Soil

MS Sample Id: 638428-012 S

Prep Method: SW5030B

Date Prep: 10.04.19

MSD Sample Id: 638428-012 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0482	48	0.0514	52	70-130	6	35	mg/kg	10.05.19 04:07	X
Toluene	<0.00201	0.100	0.0567	57	0.0535	54	70-130	6	35	mg/kg	10.05.19 04:07	X
Ethylbenzene	<0.00201	0.100	0.0620	62	0.0595	60	70-130	4	35	mg/kg	10.05.19 04:07	X
m,p-Xylenes	<0.00402	0.201	0.122	61	0.114	57	70-130	7	35	mg/kg	10.05.19 04:07	X
o-Xylene	<0.00201	0.100	0.0579	58	0.0528	53	70-130	9	35	mg/kg	10.05.19 04:07	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		100		70-130	%	10.05.19 04:07
4-Bromofluorobenzene	123		113		70-130	%	10.05.19 04:07

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Varson & Associates, Inc.
Environmental Consultants
Rachel Owen /

507 N. Marlenfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: Larry.baker@apachecorp.com

DATE: 9/30/2019
PO#: 1038428
PROJECT LOCATION OR NAME: Apache Corp, NEDU922
LAI PROJECT #: 19-0112-22
LAB WORK ORDER#: 1038428
COLLECTOR: RUIEC

CHAIN-OF-CUSTODY

NO 0737

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO ₃	H ₂ SO ₄ ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES		FIELD NOTES
SR-3 (5')		9/23/19	8:48	S	1						☒ BTEX	☐ TPH 1005 ☐ TPH 1006	
SR-3 (10')			8:51								☐ TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006	☐ HOLDPAH ☐	
SR-3 (15')			8:53								☐ GASOLINE MOD 8015 ☐	☐ DIESEL - MOD 8015 ☐	
SR-3 (20')			8:56								☐ OIL - MOD 8015 ☐	☐ VOC 8280 ☐	
SR-3 (25')			9:06								☐ SVOC 8270 ☐	☐ PAH 8270 ☐	
SR-4 (5')			9:38								☐ 8081 PESTICIDES ☐	☐ 8151 HERBICIDES ☐	
SR-4 (10')			9:41								☐ TBLP - PCBs ☐	☐ TBLP - METALS (RCRA) ☐	
SR-4 (15')			9:44								☐ TOTAL PEST ☐	☐ HERB ☐	
SR-4 (20')			9:47								☐ TOTAL METALS (RCRA) ☐	☐ OTHER LIST ☐	
SR-4 (25')			9:52								☐ LEAD - TOTAL ☐	☐ D.W. 200.8 ☐	
SR-2 (5')			10:19								☐ TOX ☐	☐ FLASHPOINT ☐	
SR-2 (10')			10:22								☐ TDS ☐	☐ % MOISTURE ☐	
SR-2 (15')			10:25								☐ PH ☐	☐ HEXAVALENT CHROMIUM ☐	
SR-2 (20')			10:27								☐ EXPLOSIVES ☐	☐ PCHLORATE ☐	
SR-2 (25')			10:32								☐ CHLORIDES ☐	☐ ANIONS ☐	
TOTAL 15													

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	TURN AROUND TIME	LABORATORY USE ONLY
RELINQUISHED BY: (Signature)	9/30/19 10:00	RECEIVED BY: (Signature)	NORMAL ☒	RECEIVING TEMP: <u>26</u> THERM#: <u>02</u>
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	1 DAY ☐	CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	2 DAY ☐	☐ CARRIER BILL #
LABORATORY: XEYCO				☐ HAND DELIVERED

NO 0738

1036428

CHAIN-OF-CUSTODY

Varson & Associates, Inc.
Environmental Consultants
Rachel Owen /

Data Reported to:

larry.baker@apachecorp.com

507 N. Marientfield, Ste. 200

Midland, TX 79701

432-687-0901

DATE: 9/30/2014

PO#:

LAB WORK ORDER#:

PAGE 2 OF 3

PROJECT LOCATION OR NAME:

Apache Corp, NEDU 922

LA PROJECT #: 14-0112-22

COLLECTOR: RM/EC

TRRP report? ☐ Yes ☒ No		S=SOIL W=WATER A=AIR		P=PAINT SL=SLUDGE OT=OTHER	
TIME ZONE: Time zone/State: MST					
Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers
SR-2(30')		9/24/14	10:45	S	1
SR-2(35')			10:51		
SR-2(40')			11:12		
SR-2(45')			11:21		
SR-2(50')			11:38		
SR-2(55')			11:45		
SR-2(60')			11:54		
SR-2(65')			12:10		
SR-5(5')			13:03		
SR-5(10')			13:06		
SR-5(15')			13:08		
SR-5(20')			13:10		
SR-5(25')			13:12		
SR-5(30')			13:15		
SR-5(35')			13:18		
TOTAL 15					
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)	
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)	
RELINQUISHED BY: (Signature)		DATE/TIME		RECEIVED BY: (Signature)	
LABORATORY: NEDU					

PRESERVATION		ANALYSES	
HCl		BTEX ☒ MTBE ☐	
HNO ₃		TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	
H ₂ SO ₄ ☐ NaOH ☐		GASOLINE MOD 8015 ☐	
ICE		DIESEL - MOD 8015 ☐	
UNPRESERVED		OIL - MOD 8015 ☐	
		VOC 8260 ☐	
		SVOC 8270 ☐	
		8081 PESTICIDES ☐ PAH 8270 ☐ HOLDPAH ☐	
		8082 PESTICIDES ☐ 8151 HERBICIDES ☐	
		TBLP - METALS (RCRA) ☐ Semiv-VOC ☐	
		TCLP - METALS (RCRA) ☐ OTHER LIST ☐	
		TOTAL METALS (RCRA) ☐ D.W 200.8 ☐ TCLP ☐	
		LEAD - TOTAL ☐ FLASHPOINT ☐	
		TDS ☐ TSS ☐ % MOISTURE ☐	
		PH ☐ HEXAVALENT CHROMIUM ☐	
		EXPLOSIVES ☐ PECHLORATE ☐	
		CHLORIDE ANIONS ☐ ALKALINITY ☐	
		M308	
		FIELD NOTES	

TURN AROUND TIME		LABORATORY USE ONLY:	
NORMAL ☒		RECEIVING TEMP: 20°C THERM#: 12	
1 DAY ☐		CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED	
2 DAY ☐		CARRIER BILL #	
OTHER ☐		HAND DELIVERED ☐	



Client: Larson and Associates, Inc.

Date/ Time Received: 09/30/2019 10:00:00 AM

Work Order #: 638428

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	.4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Date: 09/30/2019

Checklist reviewed by:

Holly Taylor

Date: 09/30/2019



Certificate of Analysis Summary 638334

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 928

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638334-001	638334-002	638334-003	638334-004	638334-005	638334-006
	<i>Field Id:</i>	SP-2 (25')	SP-2 (30')	SP-2 (35')	SP-2 (40')	SP-4(5')	SP-4 (10')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-23-19 11:03	Sep-23-19 11:31	Sep-23-19 11:59	Sep-23-19 12:05	Sep-23-19 12:33	Sep-23-19 12:46
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00
	<i>Analyzed:</i>	Oct-03-19 18:58	Oct-03-19 19:18	Oct-03-19 19:39	Oct-03-19 19:59	Oct-03-19 20:19	Oct-03-19 20:39
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00198 0.00198
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00198 0.00198
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00198 0.00198
m,p-Xylenes		<0.00398 0.00398	<0.00399 0.00399	<0.00397 0.00397	<0.00398 0.00398	<0.00402 0.00402	<0.00397 0.00397
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00198 0.00198
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00198 0.00198
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00199 0.00199	<0.00201 0.00201	<0.00198 0.00198
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00
	<i>Analyzed:</i>	Sep-30-19 14:30	Sep-30-19 14:36	Sep-30-19 14:43	Sep-30-19 15:02	Sep-30-19 15:22	Sep-30-19 15:28
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		9440 50.4	6940 49.6	573 5.00	349 5.02	345 4.96	1020 5.00
TPH by SW8015 Mod	<i>Extracted:</i>	*** ** *	*** ** *	*** ** *	*** ** *	*** ** *	*** ** *
	<i>Analyzed:</i>	Oct-05-19 03:41	Oct-05-19 04:02	Oct-05-19 04:23	Oct-05-19 04:44	Oct-05-19 05:05	Oct-05-19 05:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0
Total TPH		<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.9 49.9	<50.0 50.0

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Version: 1.0%

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638334

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 928

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638334-007	638334-008	638334-009	638334-010	638334-011	638334-012
	<i>Field Id:</i>	SP-4 (15')	SP-4 (20')	SP-5 (5')	SP-5 (10')	SP-5 (15')	SP-5 (20')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-23-19 12:50	Sep-23-19 13:04	Sep-23-19 13:32	Sep-23-19 13:37	Sep-23-19 13:40	Sep-23-19 13:43
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00
	<i>Analyzed:</i>	Oct-03-19 20:59	Oct-03-19 21:19	Oct-03-19 21:39	Oct-03-19 21:59	Oct-03-19 23:18	Oct-03-19 23:38
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201
Toluene		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201
Ethylbenzene		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201
m,p-Xylenes		<0.00399 0.00399	<0.00399 0.00399	<0.00398 0.00398	<0.00400 0.00400	<0.00403 0.00403	<0.00402 0.00402
o-Xylene		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201
Total Xylenes		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201
Total BTEX		<0.00200 0.00200	<0.00200 0.00200	<0.00199 0.00199	<0.00200 0.00200	<0.00202 0.00202	<0.00201 0.00201
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00
	<i>Analyzed:</i>	Sep-30-19 15:34	Sep-30-19 15:41	Sep-30-19 15:47	Sep-30-19 15:54	Sep-30-19 16:13	Sep-30-19 16:20
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		5320 25.0	6810 50.2	176 4.98	248 5.05	726 4.96	601 5.04
TPH by SW8015 Mod	<i>Extracted:</i>	** ** *	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00	Oct-04-19 16:00
	<i>Analyzed:</i>	Oct-05-19 05:47	Oct-04-19 22:06	Oct-04-19 23:09	Oct-04-19 23:30	Oct-04-19 23:51	Oct-05-19 00:12
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.8 49.8
Diesel Range Organics (DRO)		<49.9 49.9	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.8 49.8
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.8 49.8
Total TPH		<49.9 49.9	<49.8 49.8	<49.9 49.9	<49.9 49.9	<50.0 50.0	<49.8 49.8

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Version: 1.9%

Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638334

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 928

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638334-013	638334-014	638334-015	638334-016	638334-017	638334-018
	<i>Field Id:</i>	SP-3 (5')	SP-3 (10')	SP-3 (15')	SP-3 (20')	SP-6 (5')	SP-6 (10')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-23-19 13:50	Sep-23-19 13:54	Sep-23-19 13:52	Sep-23-19 13:55	Sep-23-19 14:47	Sep-23-19 14:50
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 12:00
	<i>Analyzed:</i>	Oct-03-19 23:58	Oct-04-19 00:18	Oct-04-19 00:38	Oct-04-19 00:58	Oct-04-19 01:18	Oct-04-19 01:38
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199
Toluene		<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199
Ethylbenzene		<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199
m,p-Xylenes		<0.00398 0.00398	<0.00398 0.00398	<0.00398 0.00398	<0.00404 0.00404	<0.00398 0.00398	<0.00398 0.00398
o-Xylene		<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199
Total Xylenes		<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199
Total BTEX		<0.00199 0.00199	<0.00199 0.00199	<0.00199 0.00199	<0.00202 0.00202	<0.00199 0.00199	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00	Sep-30-19 11:00
	<i>Analyzed:</i>	Sep-30-19 16:39	Sep-30-19 16:45	Sep-30-19 16:52	Sep-30-19 16:58	Sep-30-19 17:05	Sep-30-19 17:11
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		45.1 4.97	1940 25.2	757 49.9	1420 25.0	94.4 5.00	149 5.00
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 16:00	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00
	<i>Analyzed:</i>	Oct-05-19 00:33	Oct-02-19 14:06	Oct-02-19 14:27	Oct-02-19 14:48	Oct-02-19 15:10	Oct-02-19 15:31
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0
Diesel Range Organics (DRO)		<50.0 50.0	<50.0 50.0	122 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0
Total TPH		<50.0 50.0	<50.0 50.0	122 49.9	<50.0 50.0	<49.8 49.8	<50.0 50.0

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638334

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 928

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 08-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638334-019	638334-020	638334-021	638334-022	638334-023	638334-024
	<i>Field Id:</i>	SP-6 (15')	SP-6 (20')	SP-8 (5')	SP-8 (10')	SP-8 (15')	SP-8(20')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-23-19 14:55	Sep-23-19 14:58	Sep-24-19 08:00	Sep-24-19 09:00	Sep-24-19 09:05	Sep-24-19 09:10
BTEX by EPA 8021B	<i>Extracted:</i>	Sep-30-19 12:00	Sep-30-19 12:00	Sep-30-19 11:45	Sep-30-19 11:45	Sep-30-19 11:45	Sep-30-19 11:45
	<i>Analyzed:</i>	Oct-04-19 01:59	Oct-04-19 02:19	Oct-02-19 08:35	Oct-02-19 08:56	Oct-02-19 09:16	Oct-02-19 09:36
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Toluene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Ethylbenzene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
m,p-Xylenes		<0.00398 0.00398	<0.00397 0.00397	<0.00398 0.00398	<0.00403 0.00403	<0.00397 0.00397	<0.00398 0.00398
o-Xylene		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Total Xylenes		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Total BTEX		<0.00199 0.00199	<0.00198 0.00198	<0.00199 0.00199	<0.00202 0.00202	<0.00198 0.00198	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:00	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25	Sep-30-19 11:25
	<i>Analyzed:</i>	Sep-30-19 17:18	Sep-30-19 17:56	Sep-30-19 18:16	Sep-30-19 18:22	Sep-30-19 18:29	Sep-30-19 18:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		394 5.02	224 5.01	1570 25.0	955 5.02	398 5.05	260 4.96
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00	Oct-01-19 17:00
	<i>Analyzed:</i>	Oct-02-19 16:14	Oct-02-19 16:35	Oct-02-19 16:56	Oct-02-19 17:18	Oct-02-19 17:39	Oct-02-19 18:00
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0
Diesel Range Organics (DRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0
Total TPH		<49.9 49.9	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0

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Version: 1.9%

Jessica Kramer
Project Assistant

Analytical Report 638334

for
Larson and Associates, Inc.

Project Manager: Mark Larson

Apache Corp. NEDU 928

19-0112-22

08-OCT-19

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



08-OCT-19

Project Manager: **Mark Larson**

Larson and Associates, Inc.

P. O. Box 50685

Midland, TX 79710

Reference: XENCO Report No(s): **638334**

Apache Corp. NEDU 928

Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 638334. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 638334 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads 'Jessica Kramer'.

Jessica Kramer

Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

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Sample Cross Reference 638334

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-2 (25')	S	09-23-19 11:03		638334-001
SP-2 (30')	S	09-23-19 11:31		638334-002
SP-2 (35')	S	09-23-19 11:59		638334-003
SP-2 (40')	S	09-23-19 12:05		638334-004
SP-4(5')	S	09-23-19 12:33		638334-005
SP-4 (10')	S	09-23-19 12:46		638334-006
SP-4 (15')	S	09-23-19 12:50		638334-007
SP-4 (20')	S	09-23-19 13:04		638334-008
SP-5 (5')	S	09-23-19 13:32		638334-009
SP-5 (10')	S	09-23-19 13:37		638334-010
SP-5 (15')	S	09-23-19 13:40		638334-011
SP-5 (20')	S	09-23-19 13:43		638334-012
SP-3 (5')	S	09-23-19 13:50		638334-013
SP-3 (10')	S	09-23-19 13:54		638334-014
SP-3 (15')	S	09-23-19 13:52		638334-015
SP-3 (20')	S	09-23-19 13:55		638334-016
SP-6 (5')	S	09-23-19 14:47		638334-017
SP-6 (10')	S	09-23-19 14:50		638334-018
SP-6 (15')	S	09-23-19 14:55		638334-019
SP-6 (20')	S	09-23-19 14:58		638334-020
SP-8 (5')	S	09-24-19 08:00		638334-021
SP-8 (10')	S	09-24-19 09:00		638334-022
SP-8 (15')	S	09-24-19 09:05		638334-023
SP-8(20')	S	09-24-19 09:10		638334-024

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 928**Project ID: 19-0112-22
Work Order Number(s): 638334Report Date: 08-OCT-19
Date Received: 09/27/2019**Sample receipt non conformances and comments:**

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3103109 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits. Matrix interferences is suspected.

Samples affected are: 638414-001 S, 638414-001 SD.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3103183 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638225-042 SD.

Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687303-1-BLK, 638334-016.

Batch: LBA-3103305 BTEX by EPA 8021B

Benzene, Ethylbenzene, Toluene, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.

Samples in the analytical batch are: 638334-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020

Lab Sample ID 638334-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene, Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638334-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017, -018, -019, -020.

The Laboratory Control Sample for Toluene, Benzene, m,p-Xylenes, Ethylbenzene, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 928**Project ID: 19-0112-22
Work Order Number(s): 638334Report Date: 08-OCT-19
Date Received: 09/27/2019

Batch: LBA-3103523 TPH by SW8015 Mod

Gasoline Range Hydrocarbons (GRO) recovered above QC limits Analyte was not detected in any of the associated samples and therefore the data was accepted. Diesel Range Organics (DRO) recovered above QC limits in the Blank Spike and Duplicate. Analyte was not detected in any of the associated samples and therefore the data was accepted. Samples in the analytical batch are: 638334-008, -009, -010, -011, -012, -013. The MS/MSD shows recovery for the batch.

Surrogate 1-Chlorooctane, Surrogate o-Terphenyl recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7687566-1-BKS, 7687566-1-BSD.

Batch: LBA-3103538 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638334-001, 638334-002, 638334-003, 638334-004, 638334-005, 638334-006, 638334-007.

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638334-002, 638334-003, 638334-004, 638334-005, 638334-006, 638334-007.



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: SP-2 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-001

Date Collected: 09.23.19 11.03

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9440	50.4	mg/kg	09.30.19 14.30		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 03.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 03.41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 03.41	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 03.41	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	149	%	70-135	10.05.19 03.41	**	
o-Terphenyl	84-15-1	135	%	70-135	10.05.19 03.41		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-2 (25')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-001

Date Collected: 09.23.19 11.03

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.03.19 18.58	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.03.19 18.58	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.03.19 18.58	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.03.19 18.58	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.03.19 18.58	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.03.19 18.58	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.03.19 18.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	100	%	70-130	10.03.19 18.58		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.03.19 18.58		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-2 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-002

Date Collected: 09.23.19 11.31

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6940	49.6	mg/kg	09.30.19 14.36		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 04.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 04.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 04.02	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 04.02	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	153	%	70-135	10.05.19 04.02	**	
o-Terphenyl	84-15-1	139	%	70-135	10.05.19 04.02	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-2 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-002

Date Collected: 09.23.19 11.31

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.03.19 19.18	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.03.19 19.18	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.03.19 19.18	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.03.19 19.18	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.03.19 19.18	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.03.19 19.18	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.03.19 19.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.03.19 19.18		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.03.19 19.18		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: SP-2 (35')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-003

Date Collected: 09.23.19 11.59

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	573	5.00	mg/kg	09.30.19 14.43		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 04.23	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 04.23	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 04.23	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 04.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	159	%	70-135	10.05.19 04.23	**	
o-Terphenyl	84-15-1	144	%	70-135	10.05.19 04.23	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: SP-2 (35')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-003

Date Collected: 09.23.19 11.59

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.03.19 19.39	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.03.19 19.39	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.03.19 19.39	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.03.19 19.39	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.03.19 19.39	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.03.19 19.39	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.03.19 19.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.03.19 19.39		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 19.39		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-2 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-004

Date Collected: 09.23.19 12.05

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	349	5.02	mg/kg	09.30.19 15.02		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 04.44	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	157	%	70-135	10.05.19 04.44	**	
o-Terphenyl	84-15-1	143	%	70-135	10.05.19 04.44	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-2 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-004

Date Collected: 09.23.19 12.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.03.19 19.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.03.19 19.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.03.19 19.59	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.03.19 19.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.03.19 19.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.03.19 19.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.03.19 19.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.03.19 19.59		
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.03.19 19.59		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4(5')**
Lab Sample Id: 638334-005

Matrix: Soil
Date Collected: 09.23.19 12.33

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	345	4.96	mg/kg	09.30.19 15.22		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 05.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	150	%	70-135	10.05.19 05.05	**	
o-Terphenyl	84-15-1	138	%	70-135	10.05.19 05.05	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4(5')**
Lab Sample Id: 638334-005

Matrix: Soil
Date Collected: 09.23.19 12.33

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.03.19 20.19	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.03.19 20.19	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.03.19 20.19	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.03.19 20.19	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.03.19 20.19	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.03.19 20.19	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.03.19 20.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.03.19 20.19		
4-Bromofluorobenzene	460-00-4	108	%	70-130	10.03.19 20.19		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-006

Date Collected: 09.23.19 12.46

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1020	5.00	mg/kg	09.30.19 15.28		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 05.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 05.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 05.26	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 05.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	168	%	70-135	10.05.19 05.26	**	
o-Terphenyl	84-15-1	151	%	70-135	10.05.19 05.26	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-006

Date Collected: 09.23.19 12.46

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.03.19 20.39	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.03.19 20.39	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.03.19 20.39	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.03.19 20.39	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.03.19 20.39	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.03.19 20.39	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.03.19 20.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.03.19 20.39		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.03.19 20.39		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-007

Date Collected: 09.23.19 12.50

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	5320	25.0	mg/kg	09.30.19 15.34		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 09.27.19 12.00

Basis: Wet Weight

Seq Number: 3103538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 05.47	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 05.47	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 05.47	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 05.47	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	160	%	70-135	10.05.19 05.47	**	
o-Terphenyl	84-15-1	144	%	70-135	10.05.19 05.47	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-007

Date Collected: 09.23.19 12.50

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.03.19 20.59	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.03.19 20.59	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.03.19 20.59	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.03.19 20.59	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.03.19 20.59	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.03.19 20.59	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.03.19 20.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.03.19 20.59		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 20.59		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-008

Date Collected: 09.23.19 13.04

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6810	50.2	mg/kg	09.30.19 15.41		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.04.19 22.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.04.19 22.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.04.19 22.06	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.04.19 22.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	111	%	70-135	10.04.19 22.06		
o-Terphenyl	84-15-1	123	%	70-135	10.04.19 22.06		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-4 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-008

Date Collected: 09.23.19 13.04

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.03.19 21.19	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.03.19 21.19	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.03.19 21.19	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.03.19 21.19	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.03.19 21.19	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.03.19 21.19	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.03.19 21.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.03.19 21.19		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 21.19		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: SP-5 (5')
Lab Sample Id: 638334-009

Matrix: Soil
Date Collected: 09.23.19 13.32

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: CHE

Analyst: CHE

Seq Number: 3102924

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.30.19 11.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	176	4.98	mg/kg	09.30.19 15.47		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103523

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 10.04.19 16.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 23.09	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 23.09	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 23.09	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 23.09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	111	%	70-135	10.04.19 23.09		
o-Terphenyl	84-15-1	120	%	70-135	10.04.19 23.09		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-5 (5')**
Lab Sample Id: 638334-009

Matrix: Soil
Date Collected: 09.23.19 13.32

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.03.19 21.39	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.03.19 21.39	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.03.19 21.39	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.03.19 21.39	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.03.19 21.39	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.03.19 21.39	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.03.19 21.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.03.19 21.39		
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.03.19 21.39		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-010

Date Collected: 09.23.19 13.37

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	248	5.05	mg/kg	09.30.19 15.54		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.04.19 23.30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.04.19 23.30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.04.19 23.30	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.04.19 23.30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	110	%	70-135	10.04.19 23.30		
o-Terphenyl	84-15-1	120	%	70-135	10.04.19 23.30		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-010

Date Collected: 09.23.19 13.37

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.03.19 21.59	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.03.19 21.59	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.03.19 21.59	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.03.19 21.59	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.03.19 21.59	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.03.19 21.59	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.03.19 21.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.03.19 21.59		
4-Bromofluorobenzene	460-00-4	117	%	70-130	10.03.19 21.59		



Certificate of Analytical Results 638334

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: SP-5 (15')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-011

Date Collected: 09.23.19 13.40

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	726	4.96	mg/kg	09.30.19 16.13		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.04.19 23.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.04.19 23.51	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.04.19 23.51	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.04.19 23.51	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	111	%	70-135	10.04.19 23.51		
o-Terphenyl	84-15-1	123	%	70-135	10.04.19 23.51		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-5 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-011

Date Collected: 09.23.19 13.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.03.19 23.18	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.03.19 23.18	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.03.19 23.18	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.03.19 23.18	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.03.19 23.18	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.03.19 23.18	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.03.19 23.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.03.19 23.18		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.03.19 23.18		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-5 (20')**
Lab Sample Id: 638334-012

Matrix: Soil
Date Collected: 09.23.19 13.43

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	601	5.04	mg/kg	09.30.19 16.20		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.05.19 00.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.05.19 00.12	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.05.19 00.12	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.05.19 00.12	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	111	%	70-135	10.05.19 00.12		
o-Terphenyl	84-15-1	122	%	70-135	10.05.19 00.12		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-5 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-012

Date Collected: 09.23.19 13.43

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.03.19 23.38	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.03.19 23.38	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.03.19 23.38	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.03.19 23.38	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.03.19 23.38	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.03.19 23.38	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.03.19 23.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.03.19 23.38		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.03.19 23.38		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (5')**
Lab Sample Id: 638334-013

Matrix: Soil
Date Collected: 09.23.19 13.50

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	45.1	4.97	mg/kg	09.30.19 16.39		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 16.00

Basis: Wet Weight

Seq Number: 3103523

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 00.33	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 00.33	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 00.33	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 00.33	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.05.19 00.33		
o-Terphenyl	84-15-1	124	%	70-135	10.05.19 00.33		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (5')**
Lab Sample Id: 638334-013

Matrix: Soil
Date Collected: 09.23.19 13.50

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.03.19 23.58	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.03.19 23.58	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.03.19 23.58	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.03.19 23.58	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.03.19 23.58	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.03.19 23.58	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.03.19 23.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.03.19 23.58		
4-Bromofluorobenzene	460-00-4	120	%	70-130	10.03.19 23.58		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-014

Date Collected: 09.23.19 13.54

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1940	25.2	mg/kg	09.30.19 16.45		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 14.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 14.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 14.06	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 14.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	10.02.19 14.06		
o-Terphenyl	84-15-1	132	%	70-135	10.02.19 14.06		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-014

Date Collected: 09.23.19 13.54

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 00.18	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 00.18	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 00.18	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 00.18	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 00.18	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 00.18	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 00.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.04.19 00.18		
4-Bromofluorobenzene	460-00-4	110	%	70-130	10.04.19 00.18		



Certificate of Analytical Results 638334

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: SP-3 (15')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-015

Date Collected: 09.23.19 13.52

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	757	49.9	mg/kg	09.30.19 16.52		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 14.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	122	49.9	mg/kg	10.02.19 14.27		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 14.27	U	1
Total TPH	PHC635	122	49.9	mg/kg	10.02.19 14.27		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	126	%	70-135	10.02.19 14.27	
o-Terphenyl	84-15-1	134	%	70-135	10.02.19 14.27	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-015

Date Collected: 09.23.19 13.52

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 00.38	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 00.38	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 00.38	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 00.38	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 00.38	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 00.38	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 00.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.04.19 00.38		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.04.19 00.38		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-016

Date Collected: 09.23.19 13.55

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1420	25.0	mg/kg	09.30.19 16.58		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 14.48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 14.48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 14.48	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 14.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	127	%	70-135	10.02.19 14.48		
o-Terphenyl	84-15-1	137	%	70-135	10.02.19 14.48	**	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-3 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-016

Date Collected: 09.23.19 13.55

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.04.19 00.58	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.04.19 00.58	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.04.19 00.58	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	10.04.19 00.58	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.04.19 00.58	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.04.19 00.58	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.04.19 00.58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.04.19 00.58		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.04.19 00.58		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (5')**
Lab Sample Id: 638334-017

Matrix: Soil
Date Collected: 09.23.19 14.47

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	94.4	5.00	mg/kg	09.30.19 17.05		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.02.19 15.10	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.02.19 15.10	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.02.19 15.10	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.02.19 15.10	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.02.19 15.10		
o-Terphenyl	84-15-1	127	%	70-135	10.02.19 15.10		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (5')**
Lab Sample Id: 638334-017

Matrix: Soil
Date Collected: 09.23.19 14.47

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 01.18	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 01.18	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 01.18	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 01.18	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 01.18	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 01.18	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 01.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.04.19 01.18		
4-Bromofluorobenzene	460-00-4	111	%	70-130	10.04.19 01.18		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-018

Date Collected: 09.23.19 14.50

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	149	5.00	mg/kg	09.30.19 17.11		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 15.31	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 15.31	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 15.31	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 15.31	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	123	%	70-135	10.02.19 15.31		
o-Terphenyl	84-15-1	133	%	70-135	10.02.19 15.31		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-018

Date Collected: 09.23.19 14.50

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 01.38	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 01.38	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 01.38	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 01.38	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 01.38	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 01.38	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 01.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.04.19 01.38		
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.04.19 01.38		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-019

Date Collected: 09.23.19 14.55

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: CHE

Date Prep: 09.30.19 11.00

Basis: Wet Weight

Seq Number: 3102924

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	394	5.02	mg/kg	09.30.19 17.18		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 16.14	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 16.14	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 16.14	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 16.14	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	124	%	70-135	10.02.19 16.14	
o-Terphenyl	84-15-1	134	%	70-135	10.02.19 16.14	



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-019

Date Collected: 09.23.19 14.55

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.04.19 01.59	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.04.19 01.59	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.04.19 01.59	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.04.19 01.59	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.04.19 01.59	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.04.19 01.59	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.04.19 01.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.04.19 01.59		
1,4-Difluorobenzene	540-36-3	94	%	70-130	10.04.19 01.59		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-020

Date Collected: 09.23.19 14.58

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	224	5.01	mg/kg	09.30.19 17.56		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 16.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 16.35	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 16.35	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 16.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	10.02.19 16.35		
o-Terphenyl	84-15-1	134	%	70-135	10.02.19 16.35		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-6 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-020

Date Collected: 09.23.19 14.58

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 12.00

Basis: Wet Weight

Seq Number: 3103305

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.04.19 02.19	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.04.19 02.19	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.04.19 02.19	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.04.19 02.19	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.04.19 02.19	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.04.19 02.19	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.04.19 02.19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	116	%	70-130	10.04.19 02.19		
1,4-Difluorobenzene	540-36-3	95	%	70-130	10.04.19 02.19		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8 (5)**
Lab Sample Id: 638334-021

Matrix: Soil
Date Collected: 09.24.19 08.00

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102927

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1570	25.0	mg/kg	09.30.19 18.16		5

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: DVM

Seq Number: 3103183

Prep Method: SW8015P

% Moisture:

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 16.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 16.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 16.56	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 16.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	122	%	70-135	10.02.19 16.56		
o-Terphenyl	84-15-1	131	%	70-135	10.02.19 16.56		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8 (5)**
Lab Sample Id: 638334-021

Matrix: Soil
Date Collected: 09.24.19 08.00

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 11.45

Basis: Wet Weight

Seq Number: 3103109

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 08.35	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 08.35	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 08.35	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 08.35	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 08.35	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 08.35	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 08.35	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	107	%	70-130	10.02.19 08.35		
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.02.19 08.35		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8 (10')**
Lab Sample Id: 638334-022

Matrix: Soil
Date Collected: 09.24.19 09.00

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102927

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	955	5.02	mg/kg	09.30.19 18.22		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: DVM

Seq Number: 3103183

Prep Method: SW8015P

% Moisture:

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.02.19 17.18	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.02.19 17.18	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.02.19 17.18	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.02.19 17.18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	122	%	70-135	10.02.19 17.18		
o-Terphenyl	84-15-1	133	%	70-135	10.02.19 17.18		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-022

Date Collected: 09.24.19 09.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 11.45

Basis: Wet Weight

Seq Number: 3103109

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.02.19 08.56	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.02.19 08.56	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.02.19 08.56	U	1
m,p-Xylenes	179601-23-1	<0.00403	0.00403	mg/kg	10.02.19 08.56	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.02.19 08.56	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.02.19 08.56	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.02.19 08.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.02.19 08.56		
4-Bromofluorobenzene	460-00-4	98	%	70-130	10.02.19 08.56		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-023

Date Collected: 09.24.19 09.05

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Seq Number: 3102927

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	398	5.05	mg/kg	09.30.19 18.29		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: DVM

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Seq Number: 3103183

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.02.19 17.39	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.02.19 17.39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.02.19 17.39	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.02.19 17.39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	115	%	70-135	10.02.19 17.39		
o-Terphenyl	84-15-1	127	%	70-135	10.02.19 17.39		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638334-023

Date Collected: 09.24.19 09.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 11.45

Basis: Wet Weight

Seq Number: 3103109

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 09.16	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 09.16	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 09.16	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.02.19 09.16	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 09.16	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 09.16	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 09.16	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	104	%	70-130	10.02.19 09.16		
4-Bromofluorobenzene	460-00-4	104	%	70-130	10.02.19 09.16		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8(20')**
Lab Sample Id: 638334-024

Matrix: Soil
Date Collected: 09.24.19 09.10

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102927

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.25

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	260	4.96	mg/kg	09.30.19 18.35		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: DVM

Seq Number: 3103183

Prep Method: SW8015P

% Moisture:

Date Prep: 10.01.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.02.19 18.00	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.02.19 18.00	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.02.19 18.00	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.02.19 18.00	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	10.02.19 18.00		
o-Terphenyl	84-15-1	134	%	70-135	10.02.19 18.00		



Certificate of Analytical Results 638334



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 928

Sample Id: **SP-8(20')**
Lab Sample Id: 638334-024

Matrix: Soil
Date Collected: 09.24.19 09.10

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 09.30.19 11.45

Basis: Wet Weight

Seq Number: 3103109

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 09.36	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 09.36	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 09.36	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 09.36	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 09.36	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 09.36	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 09.36	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.02.19 09.36		
1,4-Difluorobenzene	540-36-3	110	%	70-130	10.02.19 09.36		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Larson and Associates, Inc.
Apache Corp. NEDU 928

Analytical Method: Chloride by EPA 300

Seq Number: 3102924

MB Sample Id: 7687138-1-BLK

Matrix: Solid

LCS Sample Id: 7687138-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687138-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	266	106	267	107	90-110	0	20	mg/kg	09.30.19 13:58	

Analytical Method: Chloride by EPA 300

Seq Number: 3102927

MB Sample Id: 7687139-1-BLK

Matrix: Solid

LCS Sample Id: 7687139-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687139-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	274	110	271	108	90-110	1	20	mg/kg	09.30.19 17:43	

Analytical Method: Chloride by EPA 300

Seq Number: 3102924

Parent Sample Id: 638333-011

Matrix: Soil

MS Sample Id: 638333-011 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638333-011 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	592	250	861	108	861	108	90-110	0	20	mg/kg	09.30.19 14:17	

Analytical Method: Chloride by EPA 300

Seq Number: 3102924

Parent Sample Id: 638334-010

Matrix: Soil

MS Sample Id: 638334-010 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638334-010 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	248	253	510	104	512	104	90-110	0	20	mg/kg	09.30.19 16:00	

Analytical Method: Chloride by EPA 300

Seq Number: 3102927

Parent Sample Id: 638334-020

Matrix: Soil

MS Sample Id: 638334-020 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638334-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	224	251	497	109	498	109	90-110	0	20	mg/kg	09.30.19 18:03	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 928

Analytical Method: Chloride by EPA 300

Seq Number: 3102927

Parent Sample Id: 638335-015

Matrix: Soil

MS Sample Id: 638335-015 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638335-015 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	93.6	251	370	110	367	109	90-110	1	20	mg/kg	09.30.19 19:33	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103183

MB Sample Id: 7687303-1-BLK

Matrix: Solid

LCS Sample Id: 7687303-1-BKS

Prep Method: SW8015P

Date Prep: 10.01.19

LCSD Sample Id: 7687303-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	941	94	1090	109	70-135	15	20	mg/kg	10.02.19 10:55	
Diesel Range Organics (DRO)	<15.0	1000	987	99	1180	118	70-135	18	20	mg/kg	10.02.19 10:55	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		103		132		70-135	%	10.02.19 10:55
o-Terphenyl	142	**	105		127		70-135	%	10.02.19 10:55

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103523

MB Sample Id: 7687566-1-BLK

Matrix: Solid

LCS Sample Id: 7687566-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687566-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1380	138	1150	115	70-135	18	20	mg/kg	10.04.19 21:25	H
Diesel Range Organics (DRO)	<15.0	1000	1670	167	1450	145	70-135	14	20	mg/kg	10.04.19 21:25	H

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	99		176	**	153	**	70-135	%	10.04.19 21:25
o-Terphenyl	110		180	**	158	**	70-135	%	10.04.19 21:25

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103183

Parent Sample Id: 638225-042

Matrix: Soil

MS Sample Id: 638225-042 S

Prep Method: SW8015P

Date Prep: 10.01.19

MSD Sample Id: 638225-042 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	1160	116	1120	112	70-135	4	20	mg/kg	10.02.19 11:58	
Diesel Range Organics (DRO)	<15.0	999	1240	124	1190	119	70-135	4	20	mg/kg	10.02.19 11:58	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	129		140	**	70-135	%	10.02.19 11:58
o-Terphenyl	131		128		70-135	%	10.02.19 11:58

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

[D] = 100*(C-A) / B
RPD = 200* |(C-E) / (C+E)|
[D] = 100 * (C) / [B]
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 928

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103523

Parent Sample Id: 638334-008

Matrix: Soil

MS Sample Id: 638334-008 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638334-008 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	829	83	826	83	70-135	0	20	mg/kg	10.04.19 22:27	
Diesel Range Organics (DRO)	<15.0	997	1010	101	997	100	70-135	1	20	mg/kg	10.04.19 22:27	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	112		110		70-135	%	10.04.19 22:27
o-Terphenyl	119		119		70-135	%	10.04.19 22:27

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103109

MB Sample Id: 7687125-1-BLK

Matrix: Solid

LCS Sample Id: 7687125-1-BKS

Prep Method: SW5030B

Date Prep: 09.30.19

LCSD Sample Id: 7687125-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.106	106	0.101	101	70-130	5	35	mg/kg	10.02.19 10:56	
Toluene	<0.00200	0.100	0.113	113	0.110	110	70-130	3	35	mg/kg	10.02.19 10:56	
Ethylbenzene	<0.00200	0.100	0.105	105	0.0985	99	70-130	6	35	mg/kg	10.02.19 10:56	
m,p-Xylenes	<0.00400	0.200	0.207	104	0.192	96	70-130	8	35	mg/kg	10.02.19 10:56	
o-Xylene	<0.00200	0.100	0.0982	98	0.0987	99	70-130	1	35	mg/kg	10.02.19 10:56	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	94		101		108		70-130	%	10.02.19 10:56
4-Bromofluorobenzene	102		98		103		70-130	%	10.02.19 10:56

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103305

MB Sample Id: 7687126-1-BLK

Matrix: Solid

LCS Sample Id: 7687126-1-BKS

Prep Method: SW5030B

Date Prep: 09.30.19

LCSD Sample Id: 7687126-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.110	110	0.118	118	70-130	7	35	mg/kg	10.03.19 16:59	
Toluene	<0.00200	0.100	0.102	102	0.110	110	70-130	8	35	mg/kg	10.03.19 16:59	
Ethylbenzene	<0.00200	0.100	0.109	109	0.117	117	70-130	7	35	mg/kg	10.03.19 16:59	
m,p-Xylenes	<0.00400	0.200	0.214	107	0.229	115	70-130	7	35	mg/kg	10.03.19 16:59	
o-Xylene	<0.00200	0.100	0.108	108	0.117	117	70-130	8	35	mg/kg	10.03.19 16:59	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	96		100		101		70-130	%	10.03.19 16:59
4-Bromofluorobenzene	91		101		104		70-130	%	10.03.19 16:59

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 928

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103109

Parent Sample Id: 638414-001

Matrix: Soil

MS Sample Id: 638414-001 S

Prep Method: SW5030B

Date Prep: 09.30.19

MSD Sample Id: 638414-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	0.0115	0.0990	0.0827	72	0.0700	59	70-130	17	35	mg/kg	10.02.19 05:15	X
Toluene	0.786	0.0990	0.691	0	0.588	0	70-130	16	35	mg/kg	10.02.19 05:15	X
Ethylbenzene	0.220	0.0990	0.255	35	0.240	20	70-130	6	35	mg/kg	10.02.19 05:15	X
m,p-Xylenes	1.11	0.198	1.32	106	1.25	70	70-130	5	35	mg/kg	10.02.19 05:15	
o-Xylene	0.416	0.0990	0.483	68	0.482	66	70-130	0	35	mg/kg	10.02.19 05:15	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	115		109		70-130	%	10.02.19 05:15
4-Bromofluorobenzene	453	**	510	**	70-130	%	10.02.19 05:15

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103305

Parent Sample Id: 638334-001

Matrix: Soil

MS Sample Id: 638334-001 S

Prep Method: SW5030B

Date Prep: 09.30.19

MSD Sample Id: 638334-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.00151	2	0.00302	3	70-130	67	35	mg/kg	10.03.19 17:39	XF
Toluene	<0.00200	0.100	0.00167	2	0.00275	3	70-130	49	35	mg/kg	10.03.19 17:39	XF
Ethylbenzene	<0.00200	0.100	0.00179	2	0.00387	4	70-130	73	35	mg/kg	10.03.19 17:39	XF
m,p-Xylenes	<0.00401	0.200	0.00271	1	0.00231	1	70-130	16	35	mg/kg	10.03.19 17:39	X
o-Xylene	<0.00200	0.100	0.00188	2	0.00405	4	70-130	73	35	mg/kg	10.03.19 17:39	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	101		100		70-130	%	10.03.19 17:39
4-Bromofluorobenzene	107		104		70-130	%	10.03.19 17:39

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

1038334

CHAIN-OF-CUSTODY

0774 N10

TRRP report? ☐ Yes ☒ No					
S=SOIL W=WATER A=AIR					
P=PAINT SL=SLUDGE OT=OTHER					
TIME ZONE: Time zone/State:					
MST					
Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers
SP-2(25')		9-23-19	11:03	S	1
SP-2(30')			11:31		
SP-2(35')			11:59		
SP-2(40')			12:05		
SP-4(5')			12:33		
SP-4(10')			12:46		
SP-4(15')			12:50		
SP-4(20')			13:04		
SP-5(5')			13:32		
SP-5(10')			13:37		
SP-5(15')			13:40		
SP-5(20')			13:43		
SP-3(5')			13:50		
SP-3(10')			13:54		
SP-3(15')			13:52		
TOTAL			15		
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY:(Signature)					
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY:(Signature)					
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY:(Signature)					
LABORATORY: XEROX					
TURN AROUND TIME NORMAL ☒ 1 DAY ☐ 2 DAY ☐ OTHER ☐					
LABORATORY USE ONLY: RECEIVING TEMP: 131 THERM#: DS CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED ☐ CARRIER BILL # ☐ HAND DELIVERED					
ANALYSES BTEX ☒ MTBE ☐ TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☒ DIESEL - MOD 8015 ☒ OIL - MOD 8015 ☒ VOC 8280 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ TBLP - METALS (RCRA) ☐ TCLP VOC ☐ TCLP - PEST ☐ HERB ☐ OTHER LIST ☐ TOTAL METALS (RCRA) ☐ D.W. 200.8 ☐ TCLP ☐ LEAD - TOTAL ☐ TOX ☐ FLASHPOINT ☐ RCl ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ PH ☐ HEXAVALENT CHROMIUM ☐ EXPLOSIVES ☐ PECHLORATE ☐ CHLORIDES ☒ ANIONS ☐ ALKALINITY ☐					
FIELD NOTES					

Varson & Associates, Inc.
Environmental Consultants

507 N. Marientfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

Bruce Baker & Rachel Owen

DATE: 9/12/2019

PO#:

PROJECT LOCATION OR NAME:

Apache Corp, NEDM 928

LAB PROJECT #: 19-0112-22

COLLECTOR: Pd/PAN

PAGE 2 OF 2

LAB WORK ORDER#:

No 0775

CHAIN-OF-CUSTODY

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION				UNPRESERVED	ANALYSES		FIELD NOTES
						HCl	HNO ₃	H ₂ SO ₄ ☐ NaOH ☐	ICE		TPH 1005 ☐ TPH 1006 ☐	TPH 418.1 ☐	
SP-3 (20')		9/12/19	13:55	S	1						X	X	
SP-6 (15')			14:44								X	X	
SP-6 (10')			14:50								X	X	
SP-6 (15')			14:55								X	X	
SP-6 (20')		9/24/19	8:55	S	1						X	X	
SP-8 (5')			9:00								X	X	
SP-8 (10')			9:05								X	X	
SP-8 (15')			9:10								X	X	
SP-8 (20')											X	X	
TOTAL													

RELINQUISHED BY: (Signature) <i>Rachel Owen</i>	DATE/TIME 9-23-19/13:00	RECEIVED BY: (Signature) <i>[Signature]</i>	TURN AROUND TIME NORMAL ☒ 1 DAY ☐ 2 DAY ☐ OTHER ☐
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	LABORATORY USE ONLY: RECEIVING TEMP: 13/11 THERM#: 20 CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED ☐ CARRIER BILL # ☐ HAND DELIVERED
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	
LABORATORY:			



Client: Larson and Associates, Inc.

Date/ Time Received: 09/27/2019 01:00:00 PM

Work Order #: 638334

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Date: 09/27/2019

Checklist reviewed by:

Holly Taylor

Date: 09/30/2019



Certificate of Analysis Summary 638336

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 929

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 07-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638336-001	638336-002	638336-003	638336-004	638336-005	638336-006
	<i>Field Id:</i>	SP-3 (5')	SP-3 (10')	SP-3 (15')	SP-3 (20')	SP-3 (25')	SP-3 (30')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-24-19 10:55	Sep-24-19 11:00	Sep-24-19 11:05	Sep-24-19 11:10	Sep-24-19 11:15	Sep-24-19 11:20
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15
	<i>Analyzed:</i>	Oct-01-19 20:26	Oct-01-19 20:46	Oct-01-19 21:06	Oct-01-19 21:26	Oct-01-19 21:46	Oct-01-19 22:07
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Toluene		<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Ethylbenzene		<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
m,p-Xylenes		<0.00398 0.00398	<0.00404 0.00404	<0.00399 0.00399	<0.00397 0.00397	<0.00396 0.00396	<0.00398 0.00398
o-Xylene		<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Total Xylenes		<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Total BTEX		<0.00199 0.00199	<0.00202 0.00202	<0.00200 0.00200	<0.00198 0.00198	<0.00198 0.00198	<0.00199 0.00199
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55
	<i>Analyzed:</i>	Sep-30-19 19:25	Sep-30-19 19:30	Sep-30-19 19:36	Sep-30-19 19:42	Sep-30-19 19:48	Sep-30-19 20:11
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		23500 250	20400 250	8020 50.0	9170 50.2	3460 25.0	3590 25.0
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00
	<i>Analyzed:</i>	Oct-05-19 07:32	Oct-05-19 08:35	Oct-05-19 08:56	Oct-05-19 09:17	Oct-05-19 09:38	Oct-05-19 09:59
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0
Diesel Range Organics (DRO)		454 49.9	308 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0
Total TPH		454 49.9	308 50.0	<50.0 50.0	<49.9 49.9	<49.8 49.8	<50.0 50.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638336

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 929

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 07-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638336-007	638336-008	638336-009	638336-010	638336-011	638336-012
	<i>Field Id:</i>	SP-3 (35')	SP-3 (40')	SP-3 (45')	SP-3 (50')	SP-3 (55')	SP-1 (5')
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Sep-24-19 11:25	Sep-24-19 11:30	Sep-24-19 11:35	Sep-24-19 11:40	Sep-24-19 11:45	Sep-24-19 12:55
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15
	<i>Analyzed:</i>	Oct-01-19 22:27	Oct-01-19 23:45	Oct-02-19 00:05	Oct-02-19 00:25	Oct-02-19 00:45	Oct-02-19 01:06
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200
m,p-Xylenes		<0.00398 0.00398	<0.00400 0.00400	<0.00399 0.00399	<0.00397 0.00397	<0.00401 0.00401	<0.00399 0.00399
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00200 0.00200	<0.00198 0.00198	<0.00200 0.00200	<0.00200 0.00200
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 11:55
	<i>Analyzed:</i>	Sep-30-19 20:17	Sep-30-19 20:34	Sep-30-19 20:40	Sep-30-19 20:46	Sep-30-19 20:52	Sep-30-19 20:58
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Chloride		3740 25.0	2040 24.8	1230 4.97	899 4.98	429 4.97	198 5.00
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00
	<i>Analyzed:</i>	Oct-05-19 10:20	Oct-05-19 10:41	Oct-05-19 11:02	Oct-05-19 11:23	Oct-05-19 12:06	Oct-05-19 12:27
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0
Diesel Range Organics (DRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0
Total TPH		<50.0 50.0	<50.0 50.0	<49.9 49.9	<49.9 49.9	<49.8 49.8	<50.0 50.0

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Jessica Kramer
Project Assistant



Certificate of Analysis Summary 638336

Larson and Associates, Inc., Midland, TX

Project Name: Apache Corp. NEDU 929

Project Id: 19-0112-22

Contact: Mark Larson

Project Location:

Date Received in Lab: Fri Sep-27-19 01:00 pm

Report Date: 07-OCT-19

Project Manager: Holly Taylor

<i>Analysis Requested</i>	<i>Lab Id:</i>	638336-013	638336-014	638336-015	638336-016	638336-017	
	<i>Field Id:</i>	SP-1(10')	SP-4 (5')	SP-4 (10')	SP-5 (5')	SP-5 (10')	
	<i>Depth:</i>						
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	
	<i>Sampled:</i>	Sep-24-19 13:00	Sep-24-19 14:00	Sep-24-19 14:05	Sep-24-19 14:53	Sep-24-19 00:00	
BTEX by EPA 8021B	<i>Extracted:</i>	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	Oct-01-19 14:15	
	<i>Analyzed:</i>	Oct-02-19 01:26	Oct-02-19 01:46	Oct-02-19 02:06	Oct-02-19 02:26	Oct-02-19 02:46	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Benzene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00199 0.00199	
Toluene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00199 0.00199	
Ethylbenzene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00199 0.00199	
m,p-Xylenes		<0.00398 0.00398	<0.00400 0.00400	<0.00397 0.00397	<0.00402 0.00402	<0.00398 0.00398	
o-Xylene		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00199 0.00199	
Total Xylenes		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00199 0.00199	
Total BTEX		<0.00199 0.00199	<0.00200 0.00200	<0.00198 0.00198	<0.00201 0.00201	<0.00199 0.00199	
Chloride by EPA 300	<i>Extracted:</i>	Sep-30-19 11:55	Sep-30-19 11:55	Sep-30-19 12:55	Sep-30-19 12:55	Oct-01-19 17:30	
	<i>Analyzed:</i>	Sep-30-19 21:03	Sep-30-19 21:09	Sep-30-19 21:44	Sep-30-19 22:02	Oct-01-19 19:35	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Chloride		63.3 4.97	51.6 5.00	255 5.03	2630 50.0	6030 50.0	
TPH by SW8015 Mod	<i>Extracted:</i>	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	Oct-04-19 17:00	
	<i>Analyzed:</i>	Oct-05-19 12:48	Oct-05-19 13:09	Oct-05-19 13:30	Oct-05-19 13:51	Oct-05-19 14:12	
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	
Gasoline Range Hydrocarbons (GRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	<50.0 50.0	<49.9 49.9	
Diesel Range Organics (DRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	409 50.0	95.8 49.9	
Motor Oil Range Hydrocarbons (MRO)		<50.0 50.0	<49.9 49.9	<50.0 50.0	124 50.0	<49.9 49.9	
Total TPH		<50.0 50.0	<49.9 49.9	<50.0 50.0	533 50.0	95.8 49.9	

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Jessica Kramer
Project Assistant

Analytical Report 638336

for
Larson and Associates, Inc.

Project Manager: Mark Larson

Apache Corp. NEDU 929

19-0112-22

07-OCT-19

Collected By: Client



**1211 W. Florida Ave
Midland TX 79701**

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)



07-OCT-19

Project Manager: **Mark Larson**

Larson and Associates, Inc.

P. O. Box 50685

Midland, TX 79710

Reference: XENCO Report No(s): **638336**

Apache Corp. NEDU 929

Project Address:

Mark Larson :

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 638336. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 638336 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads 'Jessica Kramer'.

Jessica Kramer

Project Assistant

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

A Small Business and Minority Status Company that delivers SERVICE and QUALITY

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America

**Sample Cross Reference 638336****Larson and Associates, Inc., Midland, TX**

Apache Corp. NEDU 929

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SP-3 (5')	S	09-24-19 10:55		638336-001
SP-3 (10')	S	09-24-19 11:00		638336-002
SP-3 (15')	S	09-24-19 11:05		638336-003
SP-3 (20')	S	09-24-19 11:10		638336-004
SP-3 (25')	S	09-24-19 11:15		638336-005
SP-3 (30')	S	09-24-19 11:20		638336-006
SP-3 (35')	S	09-24-19 11:25		638336-007
SP-3 (40')	S	09-24-19 11:30		638336-008
SP-3 (45')	S	09-24-19 11:35		638336-009
SP-3 (50')	S	09-24-19 11:40		638336-010
SP-3 (55')	S	09-24-19 11:45		638336-011
SP-1 (5')	S	09-24-19 12:55		638336-012
SP-1(10')	S	09-24-19 13:00		638336-013
SP-4 (5')	S	09-24-19 14:00		638336-014
SP-4 (10')	S	09-24-19 14:05		638336-015
SP-5 (5')	S	09-24-19 14:53		638336-016
SP-5 (10')	S	09-24-19 00:00		638336-017

**CASE NARRATIVE****Client Name: Larson and Associates, Inc.****Project Name: Apache Corp. NEDU 929**Project ID: 19-0112-22
Work Order Number(s): 638336Report Date: 07-OCT-19
Date Received: 09/27/2019**Sample receipt non conformances and comments:**

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3103051 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3103530 TPH by SW8015 Mod

Surrogate o-Terphenyl recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638336-001 S, 638336-001 SD, 638336-007, 638336-003, 638336-009, 638336-002.

Surrogate 1-Chlorooctane recovered above QC limits. Matrix interferences is suspected; data confirmed by re-analysis.

Samples affected are: 638336-001 SD.

Lab Sample ID 638336-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD).

Diesel Range Organics (DRO) recovered above QC limits in the Matrix Spike and Matrix Spike

Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 638336-001, -002, -003, -004, -005, -006, -007, -008, -009, -010, -011, -012, -013, -014, -015, -016, -017.

The Laboratory Control Sample for Diesel Range Organics (DRO) is within laboratory Control Limits, therefore the data was accepted.



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (5')**
Lab Sample Id: 638336-001

Matrix: Soil
Date Collected: 09.24.19 10.55

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102929

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.30.19 11.55

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	23500	250	mg/kg	09.30.19 19.25		50

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103530

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 10.04.19 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 07.32	U	1
Diesel Range Organics (DRO)	C10C28DRO	454	49.9	mg/kg	10.05.19 07.32		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 07.32	U	1
Total TPH	PHC635	454	49.9	mg/kg	10.05.19 07.32		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	109	%	70-135	10.05.19 07.32		
o-Terphenyl	84-15-1	123	%	70-135	10.05.19 07.32		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (5')**
Lab Sample Id: 638336-001

Matrix: Soil
Date Collected: 09.24.19 10.55

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.01.19 20.26	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.01.19 20.26	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.01.19 20.26	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.01.19 20.26	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.01.19 20.26	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.01.19 20.26	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.01.19 20.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.01.19 20.26		
4-Bromofluorobenzene	460-00-4	118	%	70-130	10.01.19 20.26		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-002

Date Collected: 09.24.19 11.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20400	250	mg/kg	09.30.19 19.30		50

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 08.35	U	1
Diesel Range Organics (DRO)	C10C28DRO	308	50.0	mg/kg	10.05.19 08.35		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 08.35	U	1
Total TPH	PHC635	308	50.0	mg/kg	10.05.19 08.35		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	130	%	70-135	10.05.19 08.35	
o-Terphenyl	84-15-1	143	%	70-135	10.05.19 08.35	**



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-002

Date Collected: 09.24.19 11.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00202	0.00202	mg/kg	10.01.19 20.46	U	1
Toluene	108-88-3	<0.00202	0.00202	mg/kg	10.01.19 20.46	U	1
Ethylbenzene	100-41-4	<0.00202	0.00202	mg/kg	10.01.19 20.46	U	1
m,p-Xylenes	179601-23-1	<0.00404	0.00404	mg/kg	10.01.19 20.46	U	1
o-Xylene	95-47-6	<0.00202	0.00202	mg/kg	10.01.19 20.46	U	1
Total Xylenes	1330-20-7	<0.00202	0.00202	mg/kg	10.01.19 20.46	U	1
Total BTEX		<0.00202	0.00202	mg/kg	10.01.19 20.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.01.19 20.46		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.01.19 20.46		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-003

Date Collected: 09.24.19 11.05

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8020	50.0	mg/kg	09.30.19 19.36		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 08.56	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 08.56	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 08.56	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 08.56	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	131	%	70-135	10.05.19 08.56		
o-Terphenyl	84-15-1	138	%	70-135	10.05.19 08.56	**	



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (15')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-003

Date Collected: 09.24.19 11.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.01.19 21.06	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.01.19 21.06	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.01.19 21.06	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.01.19 21.06	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.01.19 21.06	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.01.19 21.06	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.01.19 21.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.01.19 21.06		
4-Bromofluorobenzene	460-00-4	108	%	70-130	10.01.19 21.06		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-004

Date Collected: 09.24.19 11.10

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9170	50.2	mg/kg	09.30.19 19.42		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 09.17	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 09.17	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 09.17	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 09.17	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	10.05.19 09.17		
o-Terphenyl	84-15-1	134	%	70-135	10.05.19 09.17		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (20')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-004

Date Collected: 09.24.19 11.10

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.01.19 21.26	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.01.19 21.26	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.01.19 21.26	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.01.19 21.26	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.01.19 21.26	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.01.19 21.26	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.01.19 21.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.01.19 21.26		
4-Bromofluorobenzene	460-00-4	114	%	70-130	10.01.19 21.26		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: SP-3 (25')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-005

Date Collected: 09.24.19 11.15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3460	25.0	mg/kg	09.30.19 19.48		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.05.19 09.38	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.05.19 09.38	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.05.19 09.38	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.05.19 09.38	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	117	%	70-135	10.05.19 09.38		
o-Terphenyl	84-15-1	124	%	70-135	10.05.19 09.38		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (25')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-005

Date Collected: 09.24.19 11.15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.01.19 21.46	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.01.19 21.46	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.01.19 21.46	U	1
m,p-Xylenes	179601-23-1	<0.00396	0.00396	mg/kg	10.01.19 21.46	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.01.19 21.46	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.01.19 21.46	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.01.19 21.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.01.19 21.46		
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.01.19 21.46		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-006

Date Collected: 09.24.19 11.20

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3590	25.0	mg/kg	09.30.19 20.11		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 09.59	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 09.59	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 09.59	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 09.59	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	124	%	70-135	10.05.19 09.59		
o-Terphenyl	84-15-1	133	%	70-135	10.05.19 09.59		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (30')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-006

Date Collected: 09.24.19 11.20

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.01.19 22.07	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.01.19 22.07	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.01.19 22.07	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.01.19 22.07	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.01.19 22.07	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.01.19 22.07	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.01.19 22.07	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.01.19 22.07		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.01.19 22.07		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (35')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-007

Date Collected: 09.24.19 11.25

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	3740	25.0	mg/kg	09.30.19 20.17		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 10.20	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 10.20	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 10.20	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 10.20	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	129	%	70-135	10.05.19 10.20	
o-Terphenyl	84-15-1	136	%	70-135	10.05.19 10.20	**



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (35')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-007

Date Collected: 09.24.19 11.25

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.01.19 22.27	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.01.19 22.27	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.01.19 22.27	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.01.19 22.27	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.01.19 22.27	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.01.19 22.27	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.01.19 22.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	117	%	70-130	10.01.19 22.27		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.01.19 22.27		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-008

Date Collected: 09.24.19 11.30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2040	24.8	mg/kg	09.30.19 20.34		5

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 10.41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 10.41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 10.41	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 10.41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	123	%	70-135	10.05.19 10.41	
o-Terphenyl	84-15-1	133	%	70-135	10.05.19 10.41	



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (40')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-008

Date Collected: 09.24.19 11.30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.01.19 23.45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.01.19 23.45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.01.19 23.45	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.01.19 23.45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.01.19 23.45	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.01.19 23.45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.01.19 23.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.01.19 23.45		
4-Bromofluorobenzene	460-00-4	100	%	70-130	10.01.19 23.45		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (45')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-009

Date Collected: 09.24.19 11.35

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1230	4.97	mg/kg	09.30.19 20.40		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 11.02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 11.02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 11.02	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 11.02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	131	%	70-135	10.05.19 11.02	
o-Terphenyl	84-15-1	141	%	70-135	10.05.19 11.02	**



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (45')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-009

Date Collected: 09.24.19 11.35

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 00.05	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 00.05	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 00.05	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.02.19 00.05	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 00.05	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 00.05	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 00.05	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	108	%	70-130	10.02.19 00.05		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.02.19 00.05		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (50')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-010

Date Collected: 09.24.19 11.40

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	899	4.98	mg/kg	09.30.19 20.46		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 11.23	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 11.23	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 11.23	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 11.23	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	116	%	70-135	10.05.19 11.23		
o-Terphenyl	84-15-1	127	%	70-135	10.05.19 11.23		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (50')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-010

Date Collected: 09.24.19 11.40

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 00.25	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 00.25	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 00.25	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.02.19 00.25	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 00.25	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 00.25	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 00.25	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.02.19 00.25		
1,4-Difluorobenzene	540-36-3	96	%	70-130	10.02.19 00.25		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: SP-3 (55')

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-011

Date Collected: 09.24.19 11.45

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	429	4.97	mg/kg	09.30.19 20.52		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.8	49.8	mg/kg	10.05.19 12.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.8	49.8	mg/kg	10.05.19 12.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.8	49.8	mg/kg	10.05.19 12.06	U	1
Total TPH	PHC635	<49.8	49.8	mg/kg	10.05.19 12.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	120	%	70-135	10.05.19 12.06		
o-Terphenyl	84-15-1	129	%	70-135	10.05.19 12.06		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-3 (55')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-011

Date Collected: 09.24.19 11.45

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 00.45	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 00.45	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 00.45	U	1
m,p-Xylenes	179601-23-1	<0.00401	0.00401	mg/kg	10.02.19 00.45	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 00.45	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 00.45	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 00.45	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	118	%	70-130	10.02.19 00.45		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.02.19 00.45		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-1 (5')**
Lab Sample Id: 638336-012

Matrix: Soil
Date Collected: 09.24.19 12.55

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102929

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	198	5.00	mg/kg	09.30.19 20.58		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103530

Prep Method: SW8015P

% Moisture:

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 12.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 12.27	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 12.27	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 12.27	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	129	%	70-135	10.05.19 12.27		
o-Terphenyl	84-15-1	135	%	70-135	10.05.19 12.27		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-1 (5')**
Lab Sample Id: 638336-012

Matrix: Soil
Date Collected: 09.24.19 12.55

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 01.06	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 01.06	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 01.06	U	1
m,p-Xylenes	179601-23-1	<0.00399	0.00399	mg/kg	10.02.19 01.06	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 01.06	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 01.06	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 01.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.02.19 01.06		
4-Bromofluorobenzene	460-00-4	116	%	70-130	10.02.19 01.06		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-1(10')**
Lab Sample Id: 638336-013

Matrix: Soil
Date Collected: 09.24.19 13.00

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102929

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	63.3	4.97	mg/kg	09.30.19 21.03		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103530

Prep Method: SW8015P

% Moisture:

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 12.48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 12.48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 12.48	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 12.48	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	117	%	70-135	10.05.19 12.48		
o-Terphenyl	84-15-1	125	%	70-135	10.05.19 12.48		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-1(10')**
Lab Sample Id: 638336-013

Matrix: Soil
Date Collected: 09.24.19 13.00

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 01.26	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 01.26	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 01.26	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 01.26	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 01.26	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 01.26	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 01.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.02.19 01.26		
4-Bromofluorobenzene	460-00-4	122	%	70-130	10.02.19 01.26		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-4 (5')**
Lab Sample Id: 638336-014

Matrix: Soil
Date Collected: 09.24.19 14.00

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: SPC

% Moisture:

Analyst: SPC

Date Prep: 09.30.19 11.55

Basis: Wet Weight

Seq Number: 3102929

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	51.6	5.00	mg/kg	09.30.19 21.09		1

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 13.09	U	1
Diesel Range Organics (DRO)	C10C28DRO	<49.9	49.9	mg/kg	10.05.19 13.09	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 13.09	U	1
Total TPH	PHC635	<49.9	49.9	mg/kg	10.05.19 13.09	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	120	%	70-135	10.05.19 13.09		
o-Terphenyl	84-15-1	127	%	70-135	10.05.19 13.09		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-4 (5')**
Lab Sample Id: 638336-014

Matrix: Soil
Date Collected: 09.24.19 14.00

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/kg	10.02.19 01.46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/kg	10.02.19 01.46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/kg	10.02.19 01.46	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/kg	10.02.19 01.46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/kg	10.02.19 01.46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/kg	10.02.19 01.46	U	1
Total BTEX		<0.00200	0.00200	mg/kg	10.02.19 01.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	123	%	70-130	10.02.19 01.46		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.02.19 01.46		



Certificate of Analytical Results 638336

Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-4 (10')**
 Lab Sample Id: 638336-015

Matrix: Soil
 Date Collected: 09.24.19 14.05

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102932

Prep Method: E300P

% Moisture:

Date Prep: 09.30.19 12.55

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	255	5.03	mg/kg	09.30.19 21.44		1

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103530

Prep Method: SW8015P

% Moisture:

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 13.30	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.05.19 13.30	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.05.19 13.30	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.05.19 13.30	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	119	%	70-135	10.05.19 13.30		
o-Terphenyl	84-15-1	130	%	70-135	10.05.19 13.30		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-4 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-015

Date Collected: 09.24.19 14.05

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00198	0.00198	mg/kg	10.02.19 02.06	U	1
Toluene	108-88-3	<0.00198	0.00198	mg/kg	10.02.19 02.06	U	1
Ethylbenzene	100-41-4	<0.00198	0.00198	mg/kg	10.02.19 02.06	U	1
m,p-Xylenes	179601-23-1	<0.00397	0.00397	mg/kg	10.02.19 02.06	U	1
o-Xylene	95-47-6	<0.00198	0.00198	mg/kg	10.02.19 02.06	U	1
Total Xylenes	1330-20-7	<0.00198	0.00198	mg/kg	10.02.19 02.06	U	1
Total BTEX		<0.00198	0.00198	mg/kg	10.02.19 02.06	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	120	%	70-130	10.02.19 02.06		
1,4-Difluorobenzene	540-36-3	99	%	70-130	10.02.19 02.06		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-5 (5')**
Lab Sample Id: 638336-016

Matrix: Soil
Date Collected: 09.24.19 14.53

Date Received: 09.27.19 13.00

Analytical Method: Chloride by EPA 300

Tech: SPC

Analyst: SPC

Seq Number: 3102932

Prep Method: E300P

% Moisture:

Basis: Wet Weight

Date Prep: 09.30.19 12.55

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	2630	50.0	mg/kg	09.30.19 22.02		10

Analytical Method: TPH by SW8015 Mod

Tech: DVM

Analyst: ARM

Seq Number: 3103530

Prep Method: SW8015P

% Moisture:

Basis: Wet Weight

Date Prep: 10.04.19 17.00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.05.19 13.51	U	1
Diesel Range Organics (DRO)	C10C28DRO	409	50.0	mg/kg	10.05.19 13.51		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	124	50.0	mg/kg	10.05.19 13.51		1
Total TPH	PHC635	533	50.0	mg/kg	10.05.19 13.51		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	131	%	70-135	10.05.19 13.51	
o-Terphenyl	84-15-1	134	%	70-135	10.05.19 13.51	



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-5 (5')**
Lab Sample Id: 638336-016

Matrix: Soil
Date Collected: 09.24.19 14.53

Date Received: 09.27.19 13.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00201	0.00201	mg/kg	10.02.19 02.26	U	1
Toluene	108-88-3	<0.00201	0.00201	mg/kg	10.02.19 02.26	U	1
Ethylbenzene	100-41-4	<0.00201	0.00201	mg/kg	10.02.19 02.26	U	1
m,p-Xylenes	179601-23-1	<0.00402	0.00402	mg/kg	10.02.19 02.26	U	1
o-Xylene	95-47-6	<0.00201	0.00201	mg/kg	10.02.19 02.26	U	1
Total Xylenes	1330-20-7	<0.00201	0.00201	mg/kg	10.02.19 02.26	U	1
Total BTEX		<0.00201	0.00201	mg/kg	10.02.19 02.26	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	119	%	70-130	10.02.19 02.26		
1,4-Difluorobenzene	540-36-3	97	%	70-130	10.02.19 02.26		



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-017

Date Collected: 09.24.19 00.00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

% Moisture:

Analyst: SPC

Date Prep: 10.01.19 17.30

Basis: Wet Weight

Seq Number: 3103063

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	6030	50.0	mg/kg	10.01.19 19.35		10

Analytical Method: TPH by SW8015 Mod

Prep Method: SW8015P

Tech: DVM

% Moisture:

Analyst: ARM

Date Prep: 10.04.19 17.00

Basis: Wet Weight

Seq Number: 3103530

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<49.9	49.9	mg/kg	10.05.19 14.12	U	1
Diesel Range Organics (DRO)	C10C28DRO	95.8	49.9	mg/kg	10.05.19 14.12		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<49.9	49.9	mg/kg	10.05.19 14.12	U	1
Total TPH	PHC635	95.8	49.9	mg/kg	10.05.19 14.12		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	123	%	70-135	10.05.19 14.12	
o-Terphenyl	84-15-1	126	%	70-135	10.05.19 14.12	



Certificate of Analytical Results 638336



Larson and Associates, Inc., Midland, TX

Apache Corp. NEDU 929

Sample Id: **SP-5 (10')**

Matrix: Soil

Date Received: 09.27.19 13.00

Lab Sample Id: 638336-017

Date Collected: 09.24.19 00.00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: KTL

% Moisture:

Analyst: KTL

Date Prep: 10.01.19 14.15

Basis: Wet Weight

Seq Number: 3103051

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00199	0.00199	mg/kg	10.02.19 02.46	U	1
Toluene	108-88-3	<0.00199	0.00199	mg/kg	10.02.19 02.46	U	1
Ethylbenzene	100-41-4	<0.00199	0.00199	mg/kg	10.02.19 02.46	U	1
m,p-Xylenes	179601-23-1	<0.00398	0.00398	mg/kg	10.02.19 02.46	U	1
o-Xylene	95-47-6	<0.00199	0.00199	mg/kg	10.02.19 02.46	U	1
Total Xylenes	1330-20-7	<0.00199	0.00199	mg/kg	10.02.19 02.46	U	1
Total BTEX		<0.00199	0.00199	mg/kg	10.02.19 02.46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag	
4-Bromofluorobenzene	460-00-4	122	%	70-130	10.02.19 02.46		
1,4-Difluorobenzene	540-36-3	98	%	70-130	10.02.19 02.46		



Flagging Criteria



- X** In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E** The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F** RPD exceeded lab control limits.
- J** The target analyte was positively identified below the quantitation limit and above the detection limit.
- U** Analyte was not detected.
- L** The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K** Sample analyzed outside of recommended hold time.
- JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

* (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation



Larson and Associates, Inc.
Apache Corp. NEDU 929

Analytical Method: Chloride by EPA 300

Seq Number: 3102929

MB Sample Id: 7687141-1-BLK

Matrix: Solid

LCS Sample Id: 7687141-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687141-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	244	98	90-110	0	20	mg/kg	09.30.19 18:21	

Analytical Method: Chloride by EPA 300

Seq Number: 3102932

MB Sample Id: 7687142-1-BLK

Matrix: Solid

LCS Sample Id: 7687142-1-BKS

Prep Method: E300P

Date Prep: 09.30.19

LCSD Sample Id: 7687142-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<5.00	250	245	98	243	97	90-110	1	20	mg/kg	09.30.19 21:33	

Analytical Method: Chloride by EPA 300

Seq Number: 3103063

MB Sample Id: 7687206-1-BLK

Matrix: Solid

LCS Sample Id: 7687206-1-BKS

Prep Method: E300P

Date Prep: 10.01.19

LCSD Sample Id: 7687206-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	271	108	269	108	90-110	1	20	mg/kg	10.01.19 18:56	

Analytical Method: Chloride by EPA 300

Seq Number: 3102929

Parent Sample Id: 638335-016

Matrix: Soil

MS Sample Id: 638335-016 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638335-016 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	11.3	248	261	101	260	100	90-110	0	20	mg/kg	09.30.19 18:38	

Analytical Method: Chloride by EPA 300

Seq Number: 3102929

Parent Sample Id: 638335-020

Matrix: Soil

MS Sample Id: 638335-020 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638335-020 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	54.1	248	299	99	296	98	90-110	1	20	mg/kg	09.30.19 19:59	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 929

Analytical Method: Chloride by EPA 300

Seq Number: 3102932

Parent Sample Id: 638336-015

Matrix: Soil

MS Sample Id: 638336-015 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638336-015 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	255	252	486	92	493	94	90-110	1	20	mg/kg	09.30.19 21:50	

Analytical Method: Chloride by EPA 300

Seq Number: 3102932

Parent Sample Id: 638351-002

Matrix: Soil

MS Sample Id: 638351-002 S

Prep Method: E300P

Date Prep: 09.30.19

MSD Sample Id: 638351-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	422	251	656	93	654	92	90-110	0	20	mg/kg	09.30.19 23:11	

Analytical Method: Chloride by EPA 300

Seq Number: 3103063

Parent Sample Id: 638428-036

Matrix: Soil

MS Sample Id: 638428-036 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638428-036 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	146	252	418	108	418	108	90-110	0	20	mg/kg	10.01.19 19:15	

Analytical Method: Chloride by EPA 300

Seq Number: 3103063

Parent Sample Id: 638458-003

Matrix: Soil

MS Sample Id: 638458-003 S

Prep Method: E300P

Date Prep: 10.01.19

MSD Sample Id: 638458-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	36.8	248	305	108	306	109	90-110	0	20	mg/kg	10.01.19 20:46	

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103530

MB Sample Id: 7687568-1-BLK

Matrix: Solid

LCS Sample Id: 7687568-1-BKS

Prep Method: SW8015P

Date Prep: 10.04.19

LCSD Sample Id: 7687568-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	924	92	1030	103	70-135	11	20	mg/kg	10.05.19 06:50	
Diesel Range Organics (DRO)	<15.0	1000	953	95	1080	108	70-135	12	20	mg/kg	10.05.19 06:50	

Surrogate

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	106		114		127		70-135	%	10.05.19 06:50
o-Terphenyl	114		104		114		70-135	%	10.05.19 06:50

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$
 $\text{Log Diff.} = \text{Log}(\text{Sample Duplicate}) - \text{Log}(\text{Original Sample})$

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec



Larson and Associates, Inc.
Apache Corp. NEDU 929

Analytical Method: TPH by SW8015 Mod

Seq Number: 3103530

Parent Sample Id: 638336-001

Matrix: Soil

MS Sample Id: 638336-001 S

Prep Method: SW8015P

Date Prep: 10.04.19

MSD Sample Id: 638336-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	999	911	91	1030	103	70-135	12	20	mg/kg	10.05.19 07:53	
Diesel Range Organics (DRO)	454	999	1810	136	2110	166	70-135	15	20	mg/kg	10.05.19 07:53	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	127		146	**	70-135	%	10.05.19 07:53
o-Terphenyl	140	**	161	**	70-135	%	10.05.19 07:53

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103051

MB Sample Id: 7687273-1-BLK

Matrix: Solid

LCS Sample Id: 7687273-1-BKS

Prep Method: SW5030B

Date Prep: 10.01.19

LCSD Sample Id: 7687273-1-BSO

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.114	114	0.118	118	70-130	3	35	mg/kg	10.01.19 17:26	
Toluene	<0.00200	0.100	0.104	104	0.109	109	70-130	5	35	mg/kg	10.01.19 17:26	
Ethylbenzene	<0.00200	0.100	0.109	109	0.116	116	70-130	6	35	mg/kg	10.01.19 17:26	
m,p-Xylenes	<0.00400	0.200	0.214	107	0.227	114	70-130	6	35	mg/kg	10.01.19 17:26	
o-Xylene	<0.00200	0.100	0.109	109	0.117	117	70-130	7	35	mg/kg	10.01.19 17:26	

Surrogate

	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		102		103		70-130	%	10.01.19 17:26
4-Bromofluorobenzene	96		103		108		70-130	%	10.01.19 17:26

Analytical Method: BTEX by EPA 8021B

Seq Number: 3103051

Parent Sample Id: 638524-001

Matrix: Soil

MS Sample Id: 638524-001 S

Prep Method: SW5030B

Date Prep: 10.01.19

MSD Sample Id: 638524-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00201	0.100	0.0861	86	0.0842	85	70-130	2	35	mg/kg	10.01.19 18:06	
Toluene	<0.00201	0.100	0.0789	79	0.0781	79	70-130	1	35	mg/kg	10.01.19 18:06	
Ethylbenzene	<0.00201	0.100	0.0823	82	0.0821	83	70-130	0	35	mg/kg	10.01.19 18:06	
m,p-Xylenes	<0.00402	0.201	0.159	79	0.159	80	70-130	0	35	mg/kg	10.01.19 18:06	
o-Xylene	<0.00201	0.100	0.0809	81	0.0807	81	70-130	0	35	mg/kg	10.01.19 18:06	

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		100		70-130	%	10.01.19 18:06
4-Bromofluorobenzene	107		103		70-130	%	10.01.19 18:06

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
 A = Parent Result
 C = MS/LCS Result
 E = MSD/LCSD Result

MS = Matrix Spike
 B = Spike Added
 D = MSD/LCSD % Rec

Varson & Associates, Inc.
Environmental Consultants
rachelc@varson.com

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to: **amy.baker@opaldatacorp.com**

DATE: **9/27/2019**

PAGE **1** OF **2**

PO#:

LAB WORK ORDER#:

PROJECT LOCATION OR NAME:

Apache Corp, NEDU 929

LAI PROJECT #: **19-0112-22**

COLLECTOR: **RN/EC**

U38334

CHAIN-OF-CUSTODY

Nº 0776

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION				ANALYSES		FIELD NOTES
						HCl	HNO ₃	H ₂ SO ₄ ☐ NaOH ☐	ICE	UNPRESERVED		
SP-3 (5')		9/24/19	10:55	S	1							
SP-3 (10')			11:00									
SP-3 (15')			11:05									
SP-3 (20')			11:10									
SP-3 (25')			11:15									
SP-3 (30')			11:20									
SP-3 (35')			11:25									
SP-3 (40')			11:30									
SP-3 (45')			11:35									
SP-3 (50')			11:40									
SP-3 (55')			11:45									
SP-1 (5')			12:55									
SP-1 (10')			13:00									
SP-4 (5')			14:00									
SP-4 (10')			14:05									
TOTAL												

RELINQUISHED BY: (Signature) **Rachel Owen** DATE/TIME **9-27-19/13:00** RECEIVED BY: (Signature) **[Signature]**

RELINQUISHED BY: (Signature) DATE/TIME DATE/TIME RECEIVED BY: (Signature)

LABORATORY: **Varson** TURN AROUND TIME **NORMAL** LABORATORY USE ONLY: RECEIVING TEMP: **1311** THERM#: **28**

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

☐ CARRIER BILL # ☐ HAND DELIVERED

Larson & Associates, Inc.
Environmental Consultants

507 N. Marientfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 9/23/2019 PAGE 2 OF 2
PO#: 186330 LAB WORK ORDER#: APACHE CORP, NEDU 929
PROJECT LOCATION OR NAME: APACHE CORP, NEDU 929
LAI PROJECT #: 19-012-22 COLLECTOR: RV/EC

TRRP report?
☐ Yes ☒ No

S=SOIL
W=WATER
A=AIR
P=PAINT
SL=SLUDGE
OT=OTHER

TIME ZONE:
Time zone/State:

MS-T

Field
Sample I.D.

Lab #

Date

Time

Matrix

of Containers

HCl

HNO₃H₂SO₄ ☐ NaOH ☐

ICE

UNPRESERVED

ANALYSES
BTEX ☒ MTBE ☐

TRPH 418.1 ☐ TPH 1005 ☒ TPH 1006 ☐
GASOLINE MOD 8015 ☒
DIESEL - MOD 8015 ☒
OIL - MOD 8015 ☒
VOC 8260 ☒
SVOC 8270 ☒

8081 PESTICIDES ☐ PAH 8270 ☐ HOLDPAH ☐
8082 PCBS ☐ 8151 HERBICIDES ☐
TCLP - METALS (RCRA) ☐ TCLP VOC ☐
TCLP - PEST ☐ HERB ☐ OTHER LIST ☐
TOTAL METALS (RCRA) ☐ Semi-VOC ☐
LEAD - TOTAL ☐ P.W. 200.8 ☐ TCLP ☐
RCI ☐ TOX ☐ FLASHPOINT ☐
TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐
PH ☐ HEXAVALENT CHROMIUM ☐
EXPLOSIVES ☐ PECHLORATE ☐
CHLORIDES ☐ ANIONS ☐ ALKALINITY ☐

FIELD NOTES

SP-5 (5')
SP-5 (10')

9/24/19 14:33
9/24/19

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TOTAL

RELINQUISHED BY: (Signature) Rachelle Owen DATE/TIME 9-23-19/13:00

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature) [Signature]

RECEIVED BY: (Signature)

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

LABORATORY: YENCO

TURN AROUND TIME

NORMAL ☒1 DAY ☐2 DAY ☐OTHER ☐

LABORATORY USE ONLY

RECEIVING TEMP: 1311THERM#: DECUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

CARRIER BILL #

HAND DELIVERED

No 07771

CHAIN-OF-CUSTODY



Client: Larson and Associates, Inc.

Date/ Time Received: 09/27/2019 01:00:00 PM

Work Order #: 638336

Acceptable Temperature Range: 0 - 6 degC

Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist

Comments

#1 *Temperature of cooler(s)?	1.1
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	N/A
#5 Custody Seals intact on sample bottles?	N/A
#6 *Custody Seals Signed and dated?	N/A
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	N/A
#18 Water VOC samples have zero headspace?	N/A

* Must be completed for after-hours delivery of samples prior to placing in the refrigerator

Analyst:

PH Device/Lot#:

Checklist completed by:

Brianna Teel

Date: 09/27/2019

Checklist reviewed by:

Holly Taylor

Date: 09/27/2019



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

July 20, 2021

MARK LARSON

LARSON & ASSOCIATES, INC.

507 N. MARIENFELD, SUITE 200

MIDLAND, TX 79701

RE: NEDU PIT 830

Enclosed are the results of analyses for samples received by the laboratory on 07/19/21 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 830
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE - 1 (H211873-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42	
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62	
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25	
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31	
Total BTEX	<0.300	0.300	07/19/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	256	16.0	07/20/2021	ND	432	108	400	0.00		

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	07/19/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/19/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/19/2021	ND					

Surrogate: 1-Chlorooctane 97.7 % 44.3-133

Surrogate: 1-Chlorooctadecane 94.2 % 38.9-142

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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 830
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE - 2 (H211873-02)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42	
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62	
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25	
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31	
Total BTEx	<0.300	0.300	07/19/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	176	16.0	07/20/2021	ND	432	108	400	0.00		

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	07/19/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/19/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/19/2021	ND					

Surrogate: 1-Chlorooctane 97.4 % 44.3-133

Surrogate: 1-Chlorooctadecane 94.1 % 38.9-142

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:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 830
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SW - N (H211873-03)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42		
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62		
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25		
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31		
Total BTEx	<0.300	0.300	07/19/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	07/20/2021	ND	432	108	400	0.00	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 98.1 % 44.3-133

Surrogate: 1-Chlorooctadecane 96.2 % 38.9-142

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:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 830
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SW - S (H211873-04)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42	
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62	
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25	
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31	
Total BTEX	<0.300	0.300	07/19/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 93.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 92.0 % 38.9-142

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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 830
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SW - E (H211873-05)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42		
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62		
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25		
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31		
Total BTEx	<0.300	0.300	07/19/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 97.3 % 44.3-133

Surrogate: 1-Chlorooctadecane 95.4 % 38.9-142

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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 830
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SW - W (H211873-06)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42	
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62	
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25	
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31	
Total BTX	<0.300	0.300	07/19/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 93.2 % 44.3-133

Surrogate: 1-Chlorooctadecane 93.9 % 38.9-142

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

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by 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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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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

Rush!

[illegible]



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

July 20, 2021

MARK LARSON

LARSON & ASSOCIATES, INC.

507 N. MARIENFELD, SUITE 200

MIDLAND, TX 79701

RE: NEDU PIT 922

Enclosed are the results of analyses for samples received by the laboratory on 07/19/21 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

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

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 922
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE (H211874-01)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42	
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62	
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25	
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31	
Total BTX	<0.300	0.300	07/19/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 98.5 % 44.3-133

Surrogate: 1-Chlorooctadecane 96.8 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 922
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S & W - SW (H211874-02)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42		
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62		
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25		
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31		
Total BTEx	<0.300	0.300	07/19/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 112 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 97.3 % 44.3-133

Surrogate: 1-Chlorooctadecane 95.6 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: ?

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 922
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: N & E - SW (H211874-03)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/19/2021	ND	2.10	105	2.00	2.42		
Toluene*	<0.050	0.050	07/19/2021	ND	2.26	113	2.00	3.62		
Ethylbenzene*	<0.050	0.050	07/19/2021	ND	2.18	109	2.00	4.25		
Total Xylenes*	<0.150	0.150	07/19/2021	ND	6.54	109	6.00	4.31		
Total BTEx	<0.300	0.300	07/19/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 94.1 % 44.3-133

Surrogate: 1-Chlorooctadecane 91.8 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager

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Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Bush!

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com



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

July 20, 2021

MARK LARSON

LARSON & ASSOCIATES, INC.

507 N. MARIENFELD, SUITE 200

MIDLAND, TX 79701

RE: NEDU PIT 928

Enclosed are the results of analyses for samples received by the laboratory on 07/19/21 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S - SW (H211875-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 95.2 % 44.3-133

Surrogate: 1-Chlorooctadecane 94.4 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: N - SW (H211875-02)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 90.3 % 44.3-133

Surrogate: 1-Chlorooctadecane 89.0 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: E - SW (H211875-03)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 92.9 % 44.3-133

Surrogate: 1-Chlorooctadecane 88.9 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W - SW (H211875-04)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1380	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 92.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 88.8 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: N TRENCH E - SW (H211875-05)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 94.0 % 44.3-133

Surrogate: 1-Chlorooctadecane 91.0 % 38.9-142

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: N TRENCH W - SW (H211875-06)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 87.8 % 44.3-133

Surrogate: 1-Chlorooctadecane 85.3 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S TRENCH E - SW (H211875-07)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 102 % 44.3-133

Surrogate: 1-Chlorooctadecane 100 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S TRENCH W - SW (H211875-08)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81		
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50		
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97		
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61		
Total BTEx	<0.300	0.300	07/20/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 93.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 89.7 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE - 1 (H211875-09)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 91.1 % 44.3-133

Surrogate: 1-Chlorooctadecane 90.8 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 928
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: TRENCH SOIL PILE (H211875-10)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 92.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 89.9 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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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

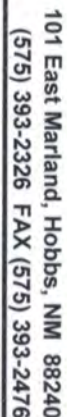
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



Brush!

Page 13 of 13



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

July 20, 2021

MARK LARSON

LARSON & ASSOCIATES, INC.

507 N. MARIENFELD, SUITE 200

MIDLAND, TX 79701

RE: NEDU PIT 929

Enclosed are the results of analyses for samples received by the laboratory on 07/19/21 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

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

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE - 1 (H211876-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	320	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	222	111	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	225	113	200	0.538	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 89.7 % 44.3-133

Surrogate: 1-Chlorooctadecane 87.6 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE - 2 (H211876-02)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3840	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 108 % 44.3-133

Surrogate: 1-Chlorooctadecane 123 % 38.9-142

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: N - SW (H211876-03)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.5 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 106 % 44.3-133

Surrogate: 1-Chlorooctadecane 121 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S - SW (H211876-04)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	976	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 112 % 44.3-133

Surrogate: 1-Chlorooctadecane 128 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: E1 - SW (H211876-05)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.7 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 109 % 44.3-133

Surrogate: 1-Chlorooctadecane 124 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: E2 - SW (H211876-06)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 111 % 44.3-133

Surrogate: 1-Chlorooctadecane 124 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W1 - SW (H211876-07)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	480	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 105 % 44.3-133

Surrogate: 1-Chlorooctadecane 120 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W2 - SW (H211876-08)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTX	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	336	16.0	07/20/2021	ND	400	100	400	3.92	

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	07/20/2021	ND	238	119	200	17.3	
DRO >C10-C28*	<10.0	10.0	07/20/2021	ND	230	115	200	3.91	
EXT DRO >C28-C36	<10.0	10.0	07/20/2021	ND					

Surrogate: 1-Chlorooctane 109 % 44.3-133

Surrogate: 1-Chlorooctadecane 126 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

LARSON & ASSOCIATES, INC.
 MARK LARSON
 507 N. MARIENFELD, SUITE 200
 MIDLAND TX, 79701
 Fax To: NA

Received: 07/19/2021
 Reported: 07/20/2021
 Project Name: NEDU PIT 929
 Project Number: 19-0112-22
 Project Location: APACHE CORP - NM

Sampling Date: 07/19/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: SOIL PILE - 3 (H211876-09)

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2021	ND	2.06	103	2.00	1.81	
Toluene*	<0.050	0.050	07/20/2021	ND	2.22	111	2.00	3.50	
Ethylbenzene*	<0.050	0.050	07/20/2021	ND	2.13	106	2.00	2.97	
Total Xylenes*	<0.150	0.150	07/20/2021	ND	6.36	106	6.00	3.61	
Total BTEx	<0.300	0.300	07/20/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1280	16.0	07/20/2021	ND	400	100	400	3.92		

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	07/19/2021	ND	217	109	200	1.37	
DRO >C10-C28*	<10.0	10.0	07/19/2021	ND	218	109	200	0.502	
EXT DRO >C28-C36	<10.0	10.0	07/19/2021	ND					

Surrogate: 1-Chlorooctane 94.7 % 44.3-133

Surrogate: 1-Chlorooctadecane 93.3 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager

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Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by 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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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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

Push!

Company Name: Larson & Associates, Inc Project Manager: Mark Larson Address: 507 N. Mainfield St Suite 205 City: Midland State: TX Zip: 79701 Phone #: 432-687-0901 Fax #: Project #: 19-0112-22 Project Owner: Project Name: NEVPit 429 Project Location: Sampler Name: Treat Jackson FOR LAB USE ONLY				BILL TO P.O. #: Company: Archer (Levick) Attn: Bruce Baker Address: City: State: Zip: Phone #: Fax #:				ANALYSIS REQUEST			
Lab I.D. H21876		Sample I.D.		MATRIX ☐ GROUNDWATER ☐ WASTEWATER ☐ SOIL ☐ OIL ☐ SLUDGE ☐ OTHER :		PRESERV. ☐ ACID/BASE: ☐ ICE / COOL ☐ OTHER :		SAMPLING		BTEX Gasoline MOD 8015 Diesel MOD 8015 Oil MOD 8015 Chloride	
1 Soil Pile - 1 2 Soil Pile - 2 3 4-5w 4 5-5w 5 E1-5w 6 E2-5w 7 W1-5w 8 W2-5w 9 Soil Pile - 3		(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER :		DATE 7-19-21		TIME 10:10 10:20 10:22 10:24 10:26 10:28 10:30 10:15		X X X X X X X X X		X X X X X X X X X	
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Delivered By: (Circle One) Sampler - UPS - Bus - Other:				Observed Temp. °C 4.4		Sample Condition ☒ Cool ☐ Intact ☐ Yes ☐ No		CHECKED BY: (Initials)		Turnaround Time: ☐ Standard ☒ Rush Thermometer ID #113 Correction Factor None	
Relinquished By: Date: 7-19-21 Time: 7:35 Received By: <i>Nelson</i>				Observed Temp. °C 4.4		Sample Condition ☒ Cool ☐ Intact ☐ Yes ☐ No		CHECKED BY: (Initials)		Turnaround Time: ☐ Standard ☒ Rush Thermometer ID #113 Correction Factor None	



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

July 23, 2021

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU #929

Enclosed are the results of analyses for samples received by the laboratory on 07/22/21 16:56.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

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: 07/22/2021
 Reported: 07/23/2021
 Project Name: NEDU #929
 Project Number: NONE GIVEN
 Project Location: NONE GIVEN

Sampling Date: 07/22/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: S - SW 1 (H211930-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	07/23/2021	ND	400	100	400	7.69	

Sample ID: S - SW 2 (H211930-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/23/2021	ND	400	100	400	7.69	

Sample ID: SOIL PILE 4 (H211930-03)

Chloride, SM4500CI-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	07/23/2021	ND	400	100	400	7.69	

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*=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

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



Page 4 of 4

† Cardinal cannot accept verbal changes. Please email changes to celej.keene@cardinallabsnm.com



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

July 23, 2021

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU #928

Enclosed are the results of analyses for samples received by the laboratory on 07/22/21 16:56.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is fluid and cursive, with the first name "Celey" and last name "Keene" clearly distinguishable.

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: 07/22/2021
 Reported: 07/23/2021
 Project Name: NEDU #928
 Project Number: NONE GIVEN
 Project Location: NONE GIVEN

Sampling Date: 07/22/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W - SW (H211932-01)**Chloride, SM4500Cl-B****mg/kg****Analyzed By: GM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	880	16.0	07/23/2021	ND	400	100	400	7.69	

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Celey D. Keene, Lab Director/Quality Manager



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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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A handwritten signature in black ink, appearing to read "Celey D. Keene", written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager

**BILL TO**

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

July 26, 2021

BRUCE BAKER

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU #928

Enclosed are the results of analyses for samples received by the laboratory on 07/23/21 16:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

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: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #928
 Project Number: NONE GIVEN
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: W - SW (H211951-01)**Chloride, SM4500Cl-B****mg/kg****Analyzed By: GM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	07/26/2021	ND	416	104	400	0.00	

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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

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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

Company Name: <u>Apacche Corporation</u> Project Manager: <u>Bruce Baker</u>				BILL TO				ANALYSIS REQUEST			
Address: City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____ Project #: _____ Project Owner: _____ Project Name: <u>NEOU 928</u> Project Location: <u>NEOU 928</u> Sampler Name: <u>Jeff Brown</u>				P.O. #: _____ Company: _____ Attn: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone #: _____ Fax #: _____							
FOR LAB USE ONLY				LAB I.D. <u>H219S1</u> Sample I.D. <u>W-SM</u>				Matrix: (G)RAB OR (C)OMP. ☒ # CONTAINERS _____ GROUNDWATER _____ WASTEWATER _____ SOIL ☒ _____ OIL _____ SLUDGE _____ OTHER : _____ DATE <u>7/23/21</u> TIME <u>12:00</u>			
Relinquished By: <u>Jeff Brown</u> Date: <u>7/23/21</u> Received By: <u>Medi Mauer</u>				Verbal Result: ☐ Yes ☐ No ☒ Add'l Phone #: _____ REMARKS: _____ Turnaround Time: <u>Standard</u> ☒ Rush ☐ Bacteria (only) ☐ Sample Condition ☒ Cool ☐ Intact ☐ Yes ☐ No ☐ Corrected Temp. °C _____ Thermometer ID #113 _____ Correction Factor <u>None</u>							



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

July 26, 2021

JEFFREY BROOM

APACHE CORP - HOBBS

2350 W. MARLAND BLVD.

HOBBS, NM 88240

RE: NEDU #829

Enclosed are the results of analyses for samples received by the laboratory on 07/23/21 16:54.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 1 BGS 1-4' (H211953-01)

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22	
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25	
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10	
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21	
Total BTEX	<0.300	0.300	07/25/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	07/26/2021	ND	400	100	400	3.92	

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 82.0 % 44.3-133

Surrogate: 1-Chlorooctadecane 76.9 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 2 BGS 1-4' (H211953-02)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 76.8 % 44.3-133

Surrogate: 1-Chlorooctadecane 70.7 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 3 BGS 1-4' (H211953-03)

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTX	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 76.2 % 44.3-133

Surrogate: 1-Chlorooctadecane 71.2 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 4 BGS 1-4' (H211953-04)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 83.0 % 44.3-133

Surrogate: 1-Chlorooctadecane 76.5 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 5 BGS 1-4' (H211953-05)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	07/26/2021	ND	400	100	400	3.92	

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 83.2 % 44.3-133

Surrogate: 1-Chlorooctadecane 77.2 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 6 BGS 1-4' (H211953-06)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 80.3 % 44.3-133

Surrogate: 1-Chlorooctadecane 74.0 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 7 BGS 1-4' (H211953-07)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 77.8 % 44.3-133

Surrogate: 1-Chlorooctadecane 72.5 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 8 BGS 1-4' (H211953-08)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 78.4 % 44.3-133

Surrogate: 1-Chlorooctadecane 72.2 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 9 BGS 1-4' (H211953-09)

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22	
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25	
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10	
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21	
Total BTX	<0.300	0.300	07/25/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	07/26/2021	ND	400	100	400	3.92	

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 78.5 % 44.3-133

Surrogate: 1-Chlorooctadecane 73.5 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 10 BGS 1-4' (H211953-10)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 79.4 % 44.3-133

Surrogate: 1-Chlorooctadecane 75.1 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 11 BGS 1-4' (H211953-11)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	07/26/2021	ND	400	100	400	3.92	

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 77.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 72.7 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: W 12 BGS 1-4' (H211953-12)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/26/2021	ND	400	100	400	3.92	

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 80.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 75.3 % 38.9-142

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: EAST WALL BGS 1-4' (H211953-13)

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTEx	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	368	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 79.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 74.4 % 38.9-142

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

Analytical Results For:

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

Received: 07/23/2021
 Reported: 07/26/2021
 Project Name: NEDU #829
 Project Number: NEDU #829
 Project Location: NONE GIVEN

Sampling Date: 07/23/2021
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: WEST WALL BGS 1-4' (H211953-14)

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/25/2021	ND	1.89	94.6	2.00	5.22		
Toluene*	<0.050	0.050	07/25/2021	ND	2.03	102	2.00	5.25		
Ethylbenzene*	<0.050	0.050	07/25/2021	ND	1.99	99.6	2.00	5.10		
Total Xylenes*	<0.150	0.150	07/25/2021	ND	5.99	99.8	6.00	5.21		
Total BTX	<0.300	0.300	07/25/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	256	16.0	07/26/2021	ND	400	100	400	3.92		

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	07/25/2021	ND	214	107	200	1.73	
DRO >C10-C28*	<10.0	10.0	07/25/2021	ND	214	107	200	1.28	
EXT DRO >C28-C36	<10.0	10.0	07/25/2021	ND					

Surrogate: 1-Chlorooctane 83.6 % 44.3-133

Surrogate: 1-Chlorooctadecane 77.7 % 38.9-142

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

BS-3	Blank spike recovery outside of lab established statistical limits, but still within method limits. Data is not adversely affected.
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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A handwritten signature in black ink, appearing to read "Celey D. Keene".

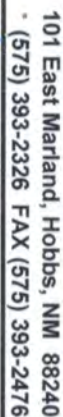
Celey D. Keene, Lab Director/Quality Manager



BILL TO

ANALYSIS REQUEST

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com



BILL TO

ANALYSIS REQUEST

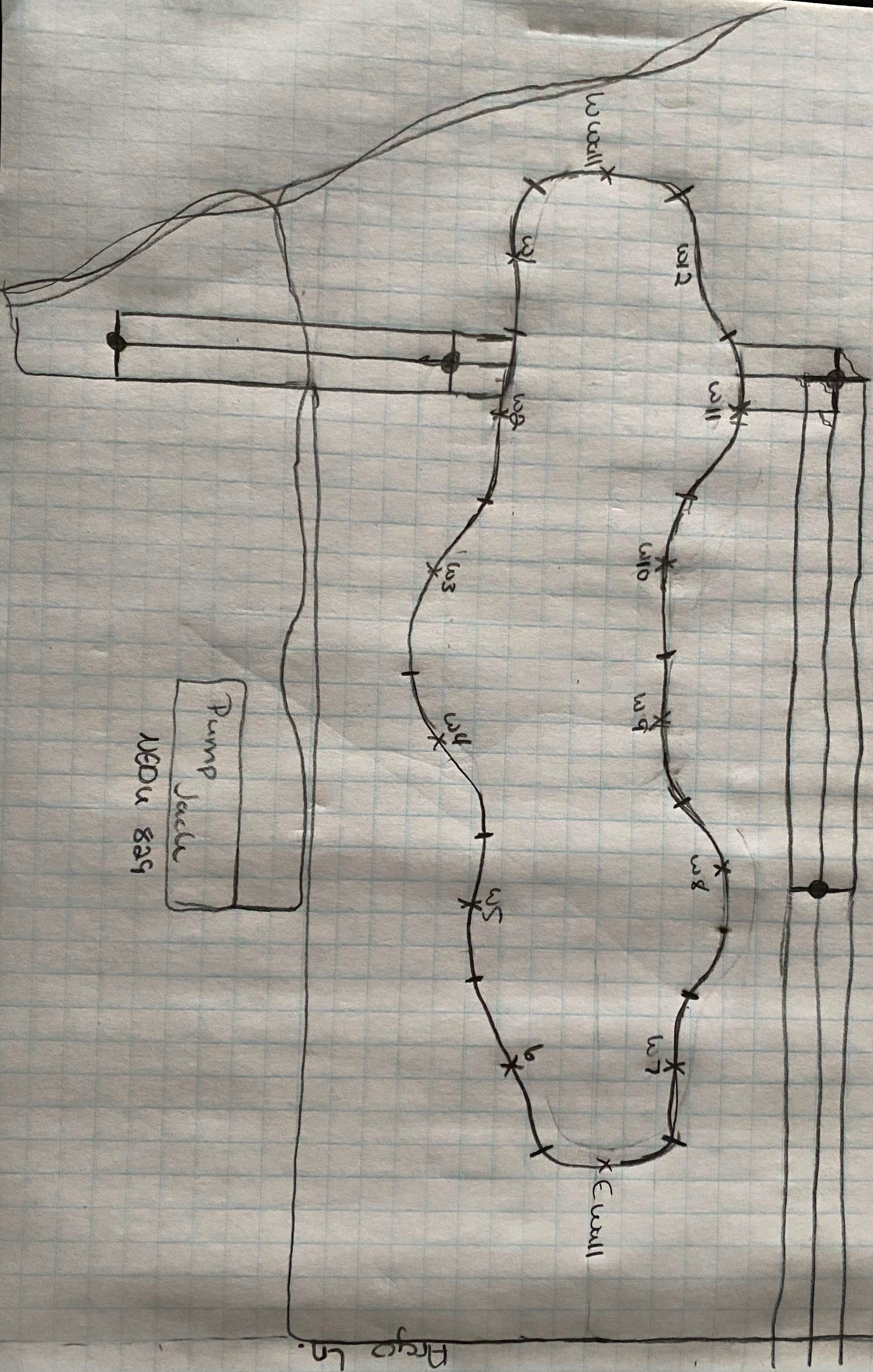
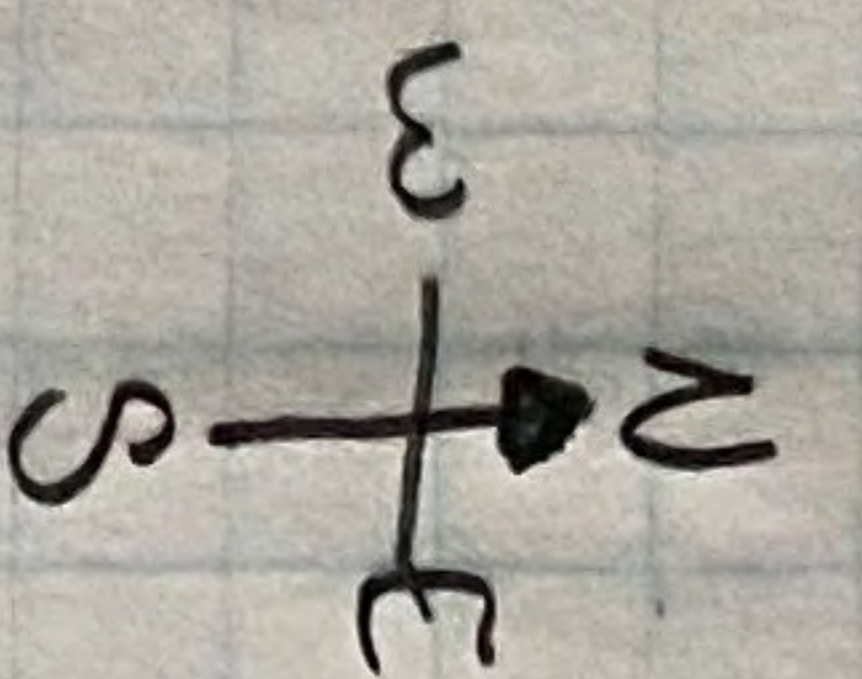
[illegible]

Appendix F

Drawing Showing the Soil Sample Locations at NEDU #829

Apurba North East Disposal unit #829

7-22-21



Appendix G

Boring Logs

BORING RECORD

GEOLOGIC UNIT	DEPTH	Start: 10:49 MST Finish: 12:37 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	Surface Elevation: TOC Elevation:		NUMBER	RECOVERY	DEPTH	REMARKS
	0	Sand, 10YR 5/6, Yellowish Brown, Fine Grained Quartz	SW							
	5	Sand, Well Sorted, Dry								
		Silty Sand, 10YR 5/6, Yellowish Brown, Fine Grained Quartz	SM							
	10	Sand, Well Sorted, Dry								
	15	Sand, 7.5YR 7/6, Reddish Yellow, Fine Grained Quartz								
	20	Sand, Dry, Poorly Sorted								
	25	Sand, 7.5YR 7/6, Reddish Brown, Fine Grained Quartz	SW							
	30	Sand, Dry, 4.75mm Clasts, Poorly Sorted								
	35									
	40	Silty Sand, 7.5YR 8/6, Pink, Well Sorted, Fine Grained								
	45	Quartz Sand, Dry								
	50	10 YR 7/6, Yellowish Brown, Fine Grained Quartz Sand, Well Sorted Dry								
	55	10 YR 7/6, Yellowish Brown, Moderately Sorted, 2mm Quartz Clasts, Dry	SM							
	60	Water Injected at 55'								
	65									
	70									
	75	TD: 71.08'								

57.88
Depth to
Water

57.88
Depth to
Water

Graded
Silica Sand

2" Sch. 40
PVC
Threaded
0.0.0" Slotted
Screw

70.85
71.08

Cap

- ☐ 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

JOB NUMBER : 19-0112-22/ Apache

HOLE DIAMETER : 5'

LOCATION : NEDU #830

LAI GEOLOGIST : R. Nelson

DRILLING CONTRACTOR : SDI

DRILLING METHOD : Air Rotary

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE :
07/19/2021

BORING NUMBER :
MW-1

BORING RECORD

GEOLOGIC UNIT	DEPTH	Start: 13:17 MST Finish: 14:40 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	Surface Elevation: TOC Elevation:		REMARKS	
					NUMBER	RECOVERY	DEPTH	BACKGROUND PID READING SOIL: _____ PPM SOIL: _____ PPM
	0	Sand, 7.5YR 4/6, Strong Brown, Fine Grained Quartz Sand, Well Sorted, Dry	SW					
	5							
	10	Silty Sand, 7.5YR 7/4, Pink, Fine Grained Quartz Sand, Moderately Sorted, Dry, Quartz Clasts 2mm	SM					
	15	7.5YR 6/6, Reddish Yellow, Fine Grained Quartz Sand, Moderately Sorted, Dry, Fine to Medium Quartz Clasts						
	20							
	25	Sand, 7.5YR 7/6, Reddish Yellow, Fine Grained Quartz Sand, Dry	SW					
	30	7.5YR 7/6, Reddish Yellow, Fine Grained Quartz Sand, Quartz Clasts						
	35							
	40	Silty Sand, 7.5YR 5/6, Strong Brown, Fine Grained Quartz Sand, Well Sorted, Dry						
	45							
	50	7.5YR 5/6, Strong Brown, Fine Grained Quartz Sand, Well Sorted, Dry, Quartz Clasts	SM					
	55	Medium to Coarse Grained Water Injected at 55'						
	60							
	65							
	70							
	75	TD: 71.86'						

57.88
Depth to
Water

57.88
Depth
to
Water

Graded
Silica Sand

2" Sch. 40
PVC
Threaded
0.0.0" Slotted
Screw

71.68
71.86

Cap

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)

NR NO RECOVERY

JOB NUMBER : 19-0112-22/ Apache

HOLE DIAMETER : 5'

LOCATION : NEDU #922

LAI GEOLOGIST : R. Nelson

DRILLING CONTRACTOR : SDI

DRILLING METHOD : Air Rotary

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE :
07/19/2021

BORING NUMBER :
MW-2

BORING RECORD																		
GEOLOGIC UNIT	DEPTH (1"=5')	Start 1345 Finish 1450 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING										SAMPLE		REMARKS	
					PPM X										NUMBER	PID READING	RECOVERY DEPTH	BACKGROUND PID READING
					2	4	3	8	10	12	14	16	18					
		2.5 YR 4/6 Red Gtz rich Sand, fine, v. well sorted, well rounded, unconsolidated																
	5	increase in depth lithology remains same color changes to 2.5 YR 7/3 to 7/4 light reddish brown @ 13'													1	5	1350	
	10														2	10	1354	
	15														3	15	1358	
	20														4	20	1403	
	25	5 YR 7/4 Pink Gtz rich Sand fine to med, med sorting, rounded - sub rounded													5	25	1410	
	30														6	30	1413	
	35														7	35	1420	
	40	2.5 YR 7/2 Pale Yellowish Pink v. fine - fine, well sorted, well rounded to sub rounded, sand													8	40	1422	

☐ ONE CONTINUOUS AUGER SAMPLER	☐ WATER TABLE (TIME OF BORING)	JOB NUMBER :
☐ STANDARD PENETRATION TEST	☐ LABORATORY TEST LOCATION	HOLE DIAMETER : 5 1/4
☐ UNDISTURBED SAMPLE	☐ PENETROMETER (TONS/SQ. FT.)	LOCATION : 929 P-7
☐ WATER TABLE (24 HRS)	☐ NO RECOVERY	LAI GEOLOGIST : TJ

	DRILL DATE :	BORING NUMBER :	DRILLING CONTRACTOR :
	7-20-21	MW-3	SDI
			DRILLING METHOD : Air lift

BORING RECORD																		
GEOLOGIC UNIT	DEPTH (1"=5')	Start: 1345 Finish: 1450 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING										SAMPLE		REMARKS	
					PPM X										NUMBER	PID READING	RECOVERY	DEPTH
					2	4	6	8	10	12	14	16	18					
	45	7.5 YR 6/8 reddish yellow fine to fine sand, well sorted well rounded												9		45	1426	
	50													10		50	1430	
	55	53.71 Water Table												11		55	1442	
	60													12		60	1444	
	65													13		65	1450	
		TD: 65.35' DTW: 53.71' with stick up included (50' 2.6')																

☐ 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

Job Number: _____

Hole Diameter: _____

Location: _____

LAI Geologist: _____

Drilling Contractor: _____

Drilling Method: _____

Drill Date: 7-20-21

Boring Number: MW-3

Job Number: _____

Hole Diameter: _____

Location: _____

LAI Geologist: _____

Drilling Contractor: _____

Drilling Method: _____

Laerson & Associates, Inc.
Environmental Consultants

Page 2 of 2

BORING RECORD																			
GEOLOGIC UNIT	DEPTH (1"=5')	Start: 0935 Finish: 1210 DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING										SAMPLE		REMARKS		
					PPM X										NUMBER	PID READING		RECOVERY	DEPTH
					7	4	5	8	10	12	14	16	18						
	5	4/6 2.5 YR Red Sand, fine, V. well sorted, well rounded, Unconsolidated, @ 12 rich sand												1	5	0938			
	10													2	10	0940			
	15	7/4 2.5 YR light reddish brown Sand, V. fine - fine, mod sorted, sub-angular to sub-rounded, with depth decrease in grain size & becomes well sorted @ 12 rich sand												3	15	0942			
	20													4	20	0945			
	25	7.5 YR 8/3 Pink, Fine - med Sand, sub rounded to sub 7.5 sorted, mod sorted. @ 12 rich sand												5	25	1030			
	30													6	30	1035			
	35	7.5 YR 6/4 light brown fine Sand, well sorted, round - sub rounded, with depth increase in consolidation & cementation @ 12 rich sand												7	35	1038			
	40													8	40	1040			
		41.05 Water Table																	

☐ 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.)
☐ NR NO RECOVERY

Job Number: _____
Hole Diameter: 5in
Location: NEDU 928
LAI Geologist: TJ
Drilling Contractor: SDI
Drilling Method: Air Rotary

Drill Date: 7-20-21
Boring Number: MW-4

Aarson & Associates, Inc.
 Environmental Consultants

BORING RECORD																				
GEOLOGIC UNIT	DEPTH (1"=5')	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	PID READING												SAMPLE		REMARKS	
					PPM X												NUMBER	PID READING	RECOVERY	DEPTH
					2	4	6	8	10	12	14	16	18							
	15	7.5 YR 7/4 light cobbly brown poorly sorted sand fine to coarse grains that are round to angular. Very consolidated with co sandstone fragments in cuttings. 0.12 inch sand													9		45	1114		
	50																			
	55																			
	60																			
	65																			
	70																			
		TD - 76.01 with 3' of stick up btw - 41.05 of stick up inverted																		

Introduced water with drilling

☐ ONE CONTINUOUS AUGER SAMPLER
☐ STANDARD PENETRATION TEST
☐ UNDISTURBED SAMPLE
☐ WATER TABLE (24 HRS)

WATER TABLE (TIME OF BORING)
 L LABORATORY TEST LOCATION
 + PENETROMETER (TONS/ SQ. FT.)
 NR NO RECOVERY

JOB NUMBER :
 HOLE DIAMETER :
 LOCATION :
 LAI GEOLOGIST :
 DRILLING CONTRACTOR :
 DRILLING METHOD :

Larson & Associates, Inc.
 Environmental Consultants

DRILL DATE : 7-20-21
 BORING NUMBER : MW-4

Page 2 of 2

Appendix H
Photographic Documentation

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #830 Excavated Soil, July 14, 2021



NEDU #928 Excavated Soil, July 15, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #928 Excavated Soil, July 15, 2021



NEDU #922 Excavated Soil, July 15, 2021

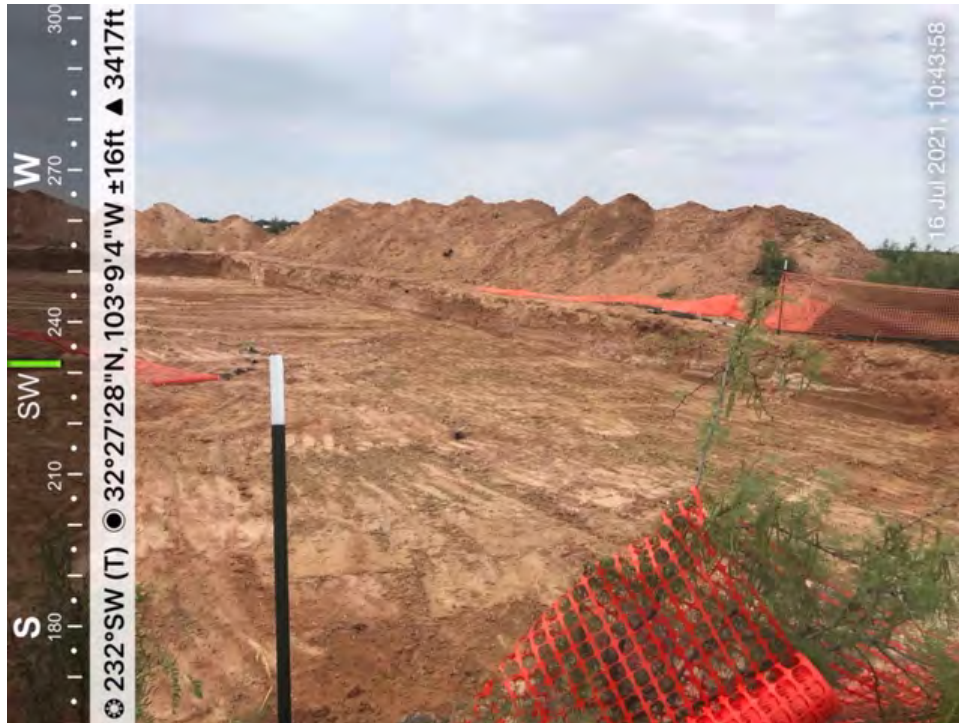
Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #929 Excavated Soil, July 16, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #829 Excavated Soil, July 26, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #829 Excavated Soil, July 26, 2021



NEDU #830 with 20-mil Liner Installed, July 27, 2021

Closure Report
1RP-313
NEDU #829, 830, 922, 928, and 929
Lea County, New Mexico
July 30, 2021



NEDU #830 Aerial with 20-mil Liner Installed, July 27, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #922 with 20-mil Liner Installed, July 27, 2021

Closure Report
1RP-313
NEDU #829, 830, 922, 928, and 929
Lea County, New Mexico
July 30, 2021



NEDU #922 Aerial with 20-mil Liner Installed, July 27, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #929 with 20-mil Liner Installed, July 27, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #929 Aerial with 20-mil Liner Installed, July 27, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #928 with 20-mil Liner Installed, July 27, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #928 Aerial with 20-mil Liner Installed, July 27, 2021

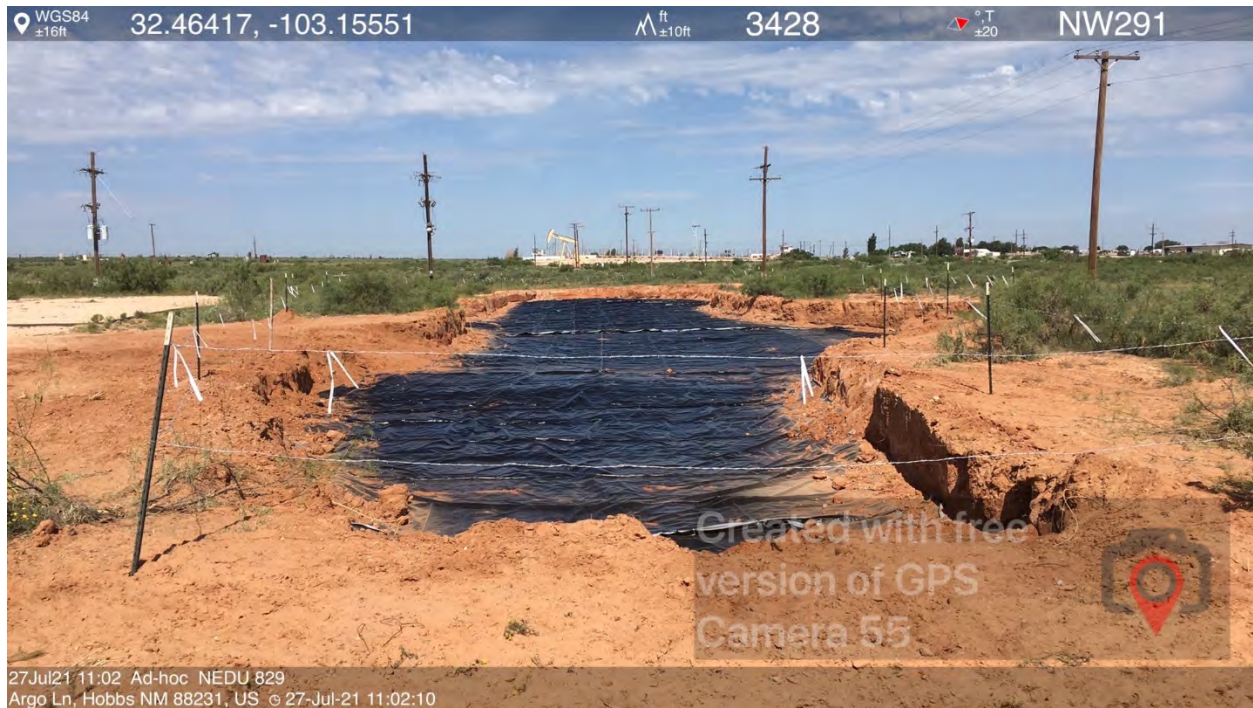
Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #829 with 20-mil Liner Installed, July 27 ,2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #829 Aerial with 20-mil Liner Installed, July 27, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #830 Backfilled Excavation, July 30, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021

North Elevation

☉ 178°S (T) ● 32°27'29"N, 103°9'4"W ±19ft ▲ 3410ft



NEDU #929 Backfilled Excavation, July 29, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021

North Elevation

☉ 178°S (T) ● 32°27'30"N, 103°9'19"W ±13ft ▲ 3419ft



NEDU #928 Backfilled Excavation, July 29, 2021

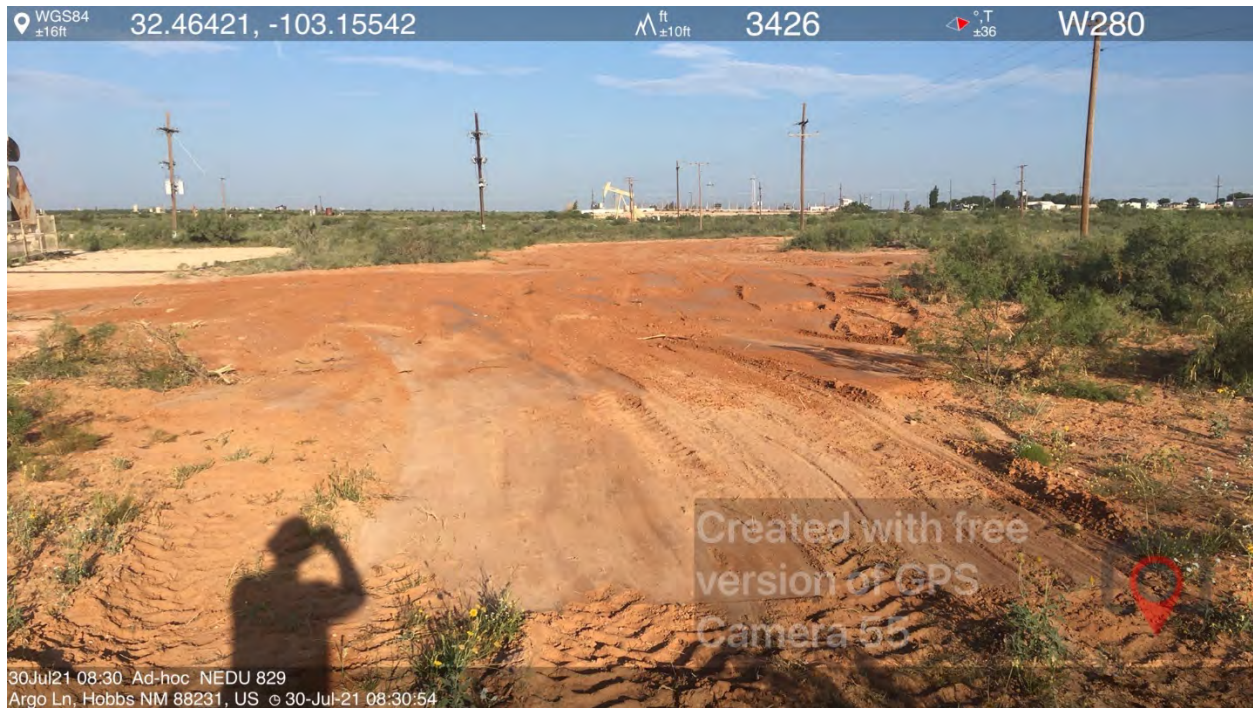
Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #829 Backfilled Excavation, July 30, 2021

Closure Report

1RP-313

NEDU #829, 830, 922, 928, and 929

Lea County, New Mexico

July 30, 2021



NEDU #922 Backfilled Excavation, July 29, 2021

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 38936

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 38936
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Apache requested no further action for the soil remediation. OCD approval applied to this specific request only.	5/12/2023