Volume calculator

There was no volume calculator prepared when the spill occurred.

Incident Number: nTO1510542386

Remediation Closure

Ragin Cajun 13 Federal #002H

Unit M, Section 13, Township 26 South, Range 34 East

API: 30-025-41273

County: Lea

Vertex File Number: 23E-02967

Prepared for:

Devon Energy Production Company, LP

Prepared by:

Vertex Resource Services Inc.

Date:

August 2024

Remediation Closure
Ragin Cajun 13 Federal #002H
Unit M, Section 13, Township 26 South, Range 34 East
API: 30-025-41273
County: Lea

Prepared for:
Devon Energy Production Company, LP
6488 Seven Rivers Highway
Artesia, New Mexico 88210

New Mexico Oil Conservation Division
508 West Texas Avenue
Artesia, New Mexico 88210

Prepared by:
Vertex Resource Services Inc.
3101 Boyd Drive
Carlsbad, New Mexico 88220

Riley Plogger — Date: 8/20/2024
ENVIRONMENTAL SPECIALIST, REPORTING

Chad Hensley, B.Sc. GCNR — Date: 8/20/2024
SENIOR PROJECT MANAGER, REPORT REVIEW

Table of Contents

In-text Tables

List of Figures

List of Tables

List of Appendices

1.0 Introduction

Devon Energy Production Company, LP (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a Remediation Closure for a produced water release that occurred on April 11, 2015, at Ragin Cajun 13 Federal #002H API 30-025-41273 (hereafter referred to as the "site"). Devon submitted an initial C-141 Release Notification (Appendix A) to New Mexico Oil Conservation Division (NMOCD) District 1 on April 14, 2015. Incident ID numbers nTO1510542386, 1RP-3609 were assigned to this incident.

This report provides a description of the release assessment and remediation activities associated with the site. The information presented demonstrates that closure criteria established in Table I of 19.15.29.12 of the *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) related to NMOCD has been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NMOCD for closure of this release, with the understanding that restoration of the release site will be deferred until such time as all oil and gas activities are terminated and the site is reclaimed as per NMAC 19.15.29.13.

2.0 Incident Description

The release occurred on April 11, 2015, due to an open valve to the Poseidon tank. The incident was reported on April 14, 2015, and involved the release of approximately 51 barrels (bbl) of produced water into containment and over onto the pad south of containment. Approximately 47 bbl of free fluid was removed during the initial clean-up. Additional details relevant to the release are presented in the C-141 Report (Appendix A).

3.0 Site Characteristics

The site is located approximately 13 miles west of Bennett, New Mexico. The legal location for the site is Unit M, Section 13, Township 26 South, Range 34 East in Lea County, New Mexico. The release area is located on Bureau of Land Management property. An aerial photograph and site schematic are presented on Figure 1.
The location is typical of oil and gas exploration and production sites in the Permian Basin and is currently used for oil and gas production. The following sections specifically describe the release area south and southwest of the tank battery on the constructed pad (Figure 1).

The Geological Map of New Mexico (New Mexico Bureau of Geology and Mineral Resources, 2024) indicates the site's surface geology primarily comprises Qep - Eolian and piedmont deposits (New Mexico Bureau of Geology and Mineral Resources, 2024). The karst geology potential for the site is low (United States Department of the Interior, Bureau of Land Management, 2018). The surrounding landscape is associated with depressions and dunes with elevations ranging between 3,000 and 3,900 feet. The climate is semiarid with average annual precipitation ranging between 10 and 12 inches. Predominant soil textures around the site are well-drained fine sands with negligible to very low runoff potential (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Using information from the United States Department of Agriculture, the dominant vegetation was determined to be grasses interspersed with shrubs (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Limited to no vegetation is allowed to grow on the compacted production pad.

4.0 Closure Criteria Determination

The nearest active well to the site is a monitoring well 1.81 miles to the west. There is no surface water present at the site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 4,963 feet west of the site (United States Fish and Wildlife Service, 2024). At the site, there are no continuously flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC

The nearest depth to groundwater reference to the release is an exploratory borehole advanced 0.42 miles to the east on March 25, 2024. The borehole was terminated at 105 feet below ground surface (bgs) without encountering the water surface (New Mexico Office of the State Engineer, 2024). Information pertaining to the depth to ground water determination is included in Appendix B.

Closure Criteria Determination Table 1			
Site Name: Ragin Cajun 13 Federal #002H			
Spill Coordinates: 32.036706,-103.434327		**X: 647835**	**Y: 3545576**
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater (nearest reference)	**>105**	feet
	Distance between release and nearest DTGW reference	**2,195**	feet
		0.42	miles
	Date of nearest DTGW reference measurement	**March 25, 2024**	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	4,963	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	15,840	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	10,604	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	-	feet
	ii) Within 1000 feet of any fresh water well or spring	9,567	feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	9,240	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	181,048	feet
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
	Distance between release and nearest unstable area	65,619	feet
10	Within a 100-year Floodplain	Undetermined	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	75,486	feet
11	Soil Type	Fine sand	
12	Ecological Classification	Loamy Sand	
13	Geology	Eolian and piedmont deposits	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	>100'	<50' 51-100' >100'

The closure criteria determined for the site are associated with the following constituent concentration limits as presented in Table 2.

Table 2. Closure Criteria for Soils Impacted by a Release

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
> 100 feet	Chloride	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

TDS – total dissolved solids
TPH – total petroleum hydrocarbons, GRO – gas range organics, DRO – diesel range organics, MRO – motor oil range organics
BTEX – benzene, toluene, ethylbenzene and xylenes

5.0 Remedial Actions Taken

Inspection and site characterization of the release was completed by Vertex between July 7 and September 2, 2023, including vertical and horizontal delineation. The total area of impact was determined to be 4,941 square feet. The Daily Field Reports (DFRs) associated with the site visits are included in Appendix C. Characterization sample locations and approximate release areas are presented on Figure 1. Characterization field screening and laboratory results are summarized in Table 3.

Notification that a liner inspection was scheduled to be completed was provided to the NMOCD on September 15, 2023, and the inspection took place on September 20, 2023. Visual observation of the liner was completed on all sides and the base of the containment, around equipment, and of all seams in the liner. As evidenced in the DFR (Appendix C), liner integrity was confirmed, and the Liner Inspection Notification email is presented in Appendix D.

Remediation efforts began on July 16, 2024 and were finalized on July 22 2024. Vertex personnel supervised the excavation of impacted soils. Field screening was completed on a total of seven sample points and consisted of analysis using a Photo Ionization Detector (volatile hydrocarbons), Dexsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and titration with silver nitrate (chloride). Field screening results were used to identify areas requiring further remediation. Soils were removed to depths of 1 and 2 feet bgs. Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility. Daily Field Reports documenting various phases of the remediation are presented in Appendix C.

Notification that confirmation samples were being collected was provided to the NMOCD on July 19, 2024, and is included in Appendix D. Confirmatory composite samples were collected from the base and walls of the excavation in 200 square foot increments. A total of seven base and wall samples were collected for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to the Eurofins Laboratory in Albuquerque, New Mexico, under chain-of-custody protocols and analyzed for BTEX (EPA Method 8021B), total petroleum hydrocarbons (GRO,

DRO, MRO – EPA Method 8015D) and total chlorides (EPA Method 300.0). Laboratory results are presented in Table 4, and the laboratory data reports are included in Appendix E. All confirmatory samples collected and analyzed were below closure criteria for the site.

6.0 Closure Request

Vertex recommends no additional reclamation or remediation actions to address the release at Ragin Cajun 13 Federal #002H. The release area was fully delineated, remediated, and backfilled with local soils by August 9, 2024 Laboratory analyses of the confirmation samples showed constituent of concern concentration levels below NMOCD closure criteria for areas where depth to groundwater is "greater than 100 feet to groundwater" as shown in Table 2. There are no anticipated or imminent risks to human, ecological, or hydrological receptors associated with the release site.

On behalf of Devon Energy Production Company, LP, Vertex requests that the incident (nTO1510542386) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Devon certifies that all information in this report and the attachments is correct and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain closure on the historical release at the site.

Should you have any questions or concerns, please do not hesitate to contact Chad Hensley at 575.200.6167 or CHensley@vertexresource.com.

7.0 References

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New Mexico Bureau of Geology and Mineral Resources. (2024). *Interactive Geologic Map*. Retrieved from https://maps.nmt.edu/

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United States Department of the Interior, Bureau of Land Management. (2018). *New Mexico Cave/Karst*. Retrieved from https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html

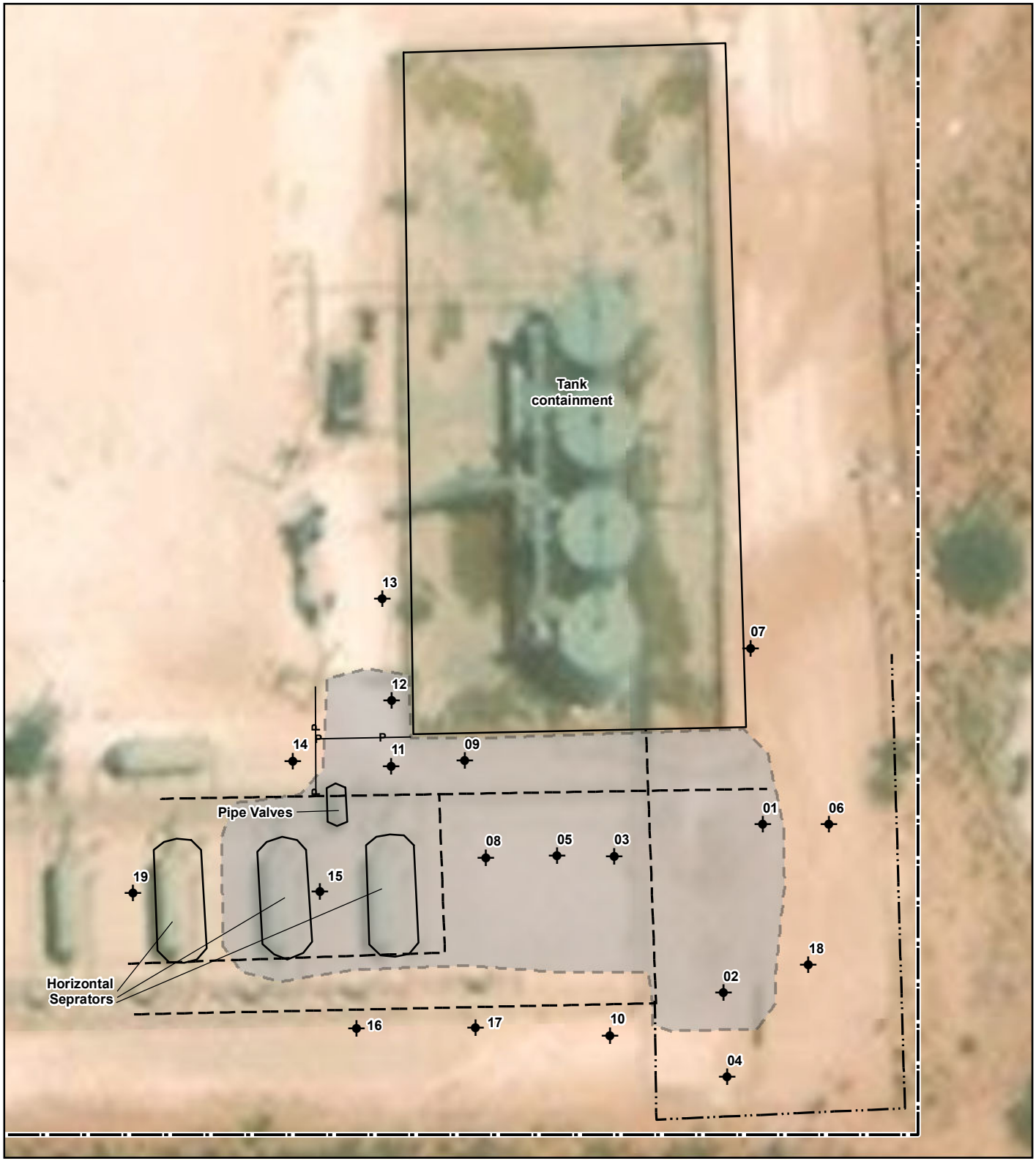
United States Fish and Wildlife Service. (2024). *National Wetland Inventory - Surface Waters and Wetlands*. Retrieved from https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

8.0 Limitations

This report has been prepared for the sole benefit of Devon Energy Production Company, LP. This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division and the Bureau of Land Management, without the express written consent of Vertex Resource Services Inc. (Vertex) and Devon Energy Production Company, LP. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement of Vertex based on the data collected during the assessment. Due to the nature of the assessment and the data available, Vertex cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be considered legal advice.

FIGURES



Borehole (Prefixed by "BH24-")
Buried Electrical Line
Pipeline (Aboveground)
Pipeline (Underground)
Approximate Lease Boundary
Area of Impact (~4,941 sq. ft | 329 ft.)
Infrastructure (Existing)

VERTEX

0 5 10 20 ft

NAD 1983 UTM Zone 13N
Date: Aug 07/24

Map Center:
Lat: 32.036833,
Long:-103.434286

N

Characterization Sampling Site Schematic
Ragin Cajun 13 Federal #002H

FIGURE: 1

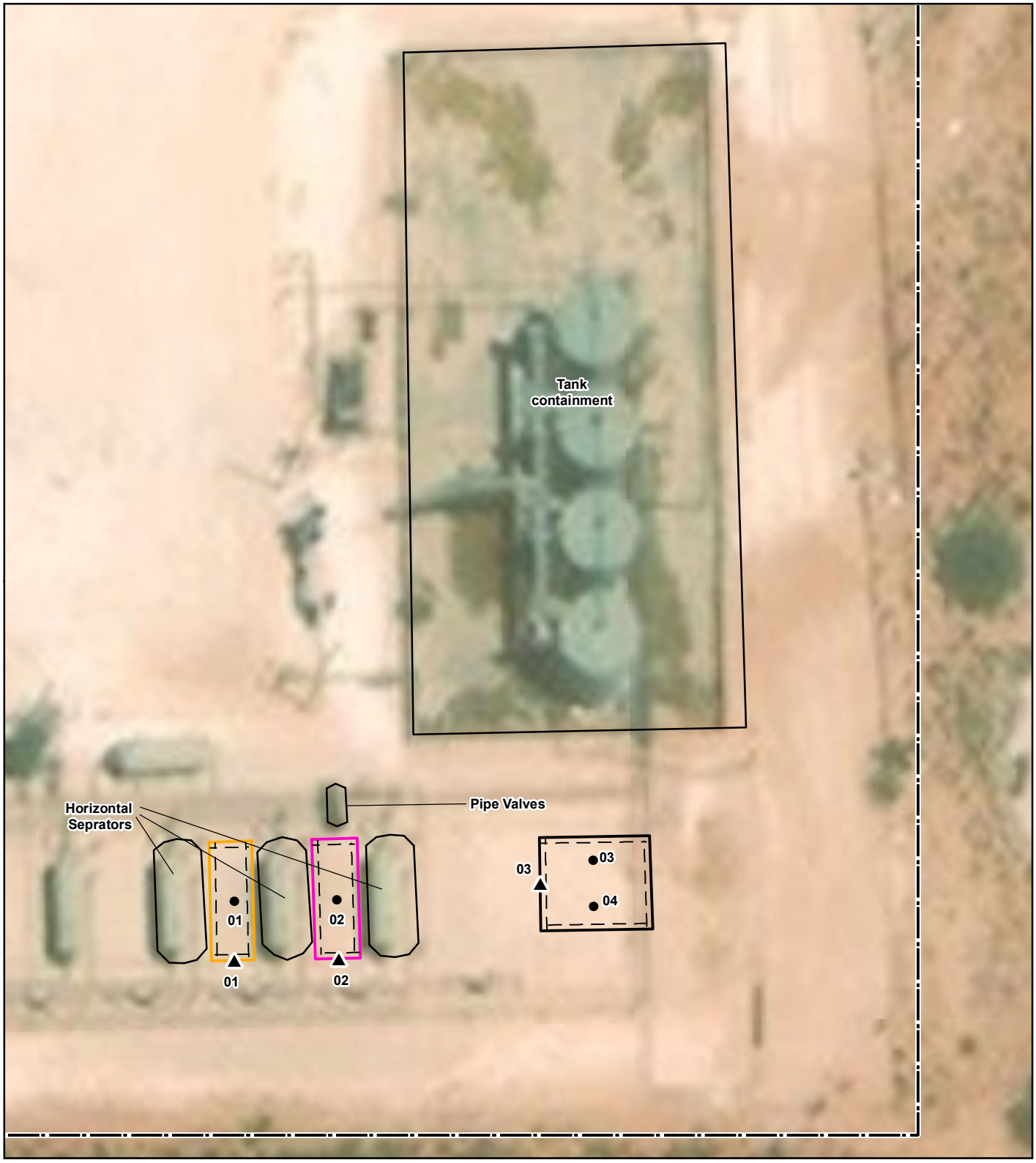
devon

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Esri, 2023. Approximate lease boundary from imagery by Vertex Professional Services Ltd. (Vertex), 2024. Site features from GPS by Vertex, 2024.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\2023\23E-02967 - Ragin Cajun 13 Federal 2H\Figure 1 Characterization Sampling Site Schematic (23E-02967)ID19095.mxd



- Base Sample (Prefixed by "BS24-")
- Wall Sample (Prefixed by "WS24-")
- Approximate Lease Boundary
- Infrastructure (Existing)
- Excavation to 1' bgs (~374 sq.ft. | 78ft.)
- East Excavation to 2' bgs (~196 sq.ft. | 63 ft.)
- West Excavation to 2' bgs (~183 sq. ft. | 62 ft.)

VERTEX

0 5 10 20 ft

NAD 1983 UTM Zone 13N

Date: Aug 07/24

Map Center:
Lat: 32.036833,
Long:-103.434286

N

Confirmation Sampling Site Schematic
Ragin Cajun 13 Federal #002H

FIGURE: 2

devon

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Esri, 2023. Approximate lease boundary from imagery by Vertex Professional Services Ltd. (Vertex), 2024. Site features from GPS by Vertex, 2024.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\2023\23E-02967 - Ragin Cajun 13 Federal 2H\Figure 2 Confirmation Sampling Site Schematic (23E-02967)ID19095.mxd

TABLES

Client Name: Devon Energy Production Company, LP
Site Name: Ragin Cajun 13 Federal #002H
NMOCD Tracking #: nTO1510542386
Project #: 23E-02967
Lab Reports: 2306494, 2306930, 2306A86, 2306C33, and 2309274

Table 3. Initial Characterization Sample Field Screen and Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Greater Than 100 feet bgs							
BH23-01	0	July 7, 2023	ND	ND	ND	330	370	330	700	ND
	2	June 7, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	4	June 7, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-02	0	June 7, 2023	ND	ND	ND	120	340	120	460	ND
	2	June 7, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-03	0	June 15, 2023	ND	ND	ND	2,600	5,100	**2,600**	**7,700**	ND
	2	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-04	0	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-05	0	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	2,900
	2	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	1,100
BH23-06	0	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-07	0	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 15, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-08	0	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	830
	2	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	150
BH23-09	0	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	14,000
	2	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	660
BH23-10	0	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-11	0	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	570
	2	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	740
	4	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	1,400
	4.5	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	720
	5	September 2, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-12	0	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	900
	2	June 19, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-13	0	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	70
	2	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-14	0	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	66
	2	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-15	0	June 21, 2023	ND	ND	12	7,800	2,400	**7,812**	**10,212**	ND
	2	June 21, 2023	ND	ND	ND	280	84	280	364	ND
BH23-16	0	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND

Client Name: Devon Energy Production Company, LP
Site Name: Ragin Cajun 13 Federal #002H
NMOCD Tracking #: nTO1510542386
Project #: 23E-02967
Lab Reports: 2306494, 2306930, 2306A86, 2306C33, and 2309274

Table 3. Initial Characterization Sample Field Screen and Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Greater Than 100 feet bgs							
BH23-17	0	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-18	0	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-19	0	June 21, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	September 2, 2023	ND	ND	ND	ND	ND	ND	ND	ND

Client Name: Devon Energy Production Company, LP
Site Name: Ragin Cajun 13 Federal #002H
NMOCD Tracking #: nTO1510542386
Project #: 23E-02967
Lab Reports: 2306494, 2306930, 2306A86, 2306C33, and 2309274

Table 3. Initial Characterization Sample Field Screen and Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Greater Than 100 feet bgs							
BS24-01	2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
BS24-02	2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
BS24-03	1	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	770
BS24-04	1	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	180
WS24-01	0-2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-02	0-2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-03	0-1	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND

"ND" indicates not detected
"-" indicates not analyzed/assessed
Bold and grey shaded indicates exceedance outside of NMOCD Remediation Closure Criteria

Client Name: Devon Energy Production Company, LP
Site Name: Rajin Cajun 13 Federal #002H
NMOCD Tracking #: nTO1510542386
Project #: 23E-02967
Lab Report: 8859077-1

Table 4. Confirmation Sample Field Screen and Laboratory Results

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			Depth to Groundwater Greater Than 100 feet bgs							
BS24-01	2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
BS24-02	2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
BS24-03	1	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	770
BS24-04	1	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	180
WS24-01	0-2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-02	0-2	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	ND
WS24-03	0-1	July 24, 2024	ND	ND	ND	ND	ND	ND	ND	760

"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
Bold and grey shaded indicates exceedance outside of NMOCD Remediation Closure Criteria

APPENDIX A - NMOCD C-141 Report

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: **Devon Energy Production Co LP (6137)**		Contact:	**Brian Kuh, Devon Foreman**
Address:	**PO Box 250, Artesia, NM 88211**	Telephone No.	**575- 616-1540**
Facility Name:	**Ragin Cajun 13 Fed 2H**	Facility Type :	**Oil Well**

Surface Owner: **Federal**	Mineral Owner: **Federal**	API No. **30-025-41273**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	**13**	**26S**	**34E**	**330**	**South**	**1295**	**West**	**Lea**

Latitude: 32.0370312' N **Longitude:** 103.4279813' W

NATURE OF RELEASE

Type of Release: **Produced Water**	Volume of Release: **51 bbls**	Volume Recovered: **47 bbl**
Source of Release: **Poseidon Tank**	Date and Hour of Occurrence **4/11/2015, 8:30 AM**	Date and Hour of Discovery **4/11/2015, 8:30 AM**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **OCD-Tomas Obering** **BLM-Jim Amos**	
By Whom? **Brian Kuh, Devon Foreman**	Date and Hour: **9/18/2013 – 10:40 AM**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

If a Watercourse was Impacted, Describe Fully.*
N/A

RECEIVED
By OCD; Dr. Oberding at 10:44 am, Apr 15, 2015

Describe Cause of Problem and Remedial Action Taken.*

A valve to the Poseidon tank was left partially open while transferring produced water from one tank to another causing a spill of 51 BPW. 42 bbls spilled into the lined containment and 9 bbls spilled over on to location. A vacuum truck was able to recover all of the 42 BPW in the containment and 5 BPW on the pad, leaving 4 bbls that soaked into the ground on location. No water spilled outside the location pad.

Describe Area Affected and Cleanup Action Taken.*

The ground area affected was approximately 40' x 60' and on the southeast section of the pad. Alfredos Trucking will take soil samples, haul off the contaminated soil, and lay new caliche.

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

Signature: D. Menoud

Printed Name: **Denise Menoud**

Title: **Field Admin Support**

E-mail Address: **Denise.Menoud@dvn.com**

Date: **4/14/2015** Phone: **575-746-5544**

OIL CONSERVATION DIVISION

Approved by ~~Environmental~~ Specialist: Hydrologist

Approval Date: 04/15/2015 Expiration Date: 07/15/2015

Conditions of Approval:
Site samplres required. Delineate and remediate area as per NMOCD guides. Provide geotagged photographic documentation of remediation

Attached ☐

1RP-3609 6137

nTO1510542386

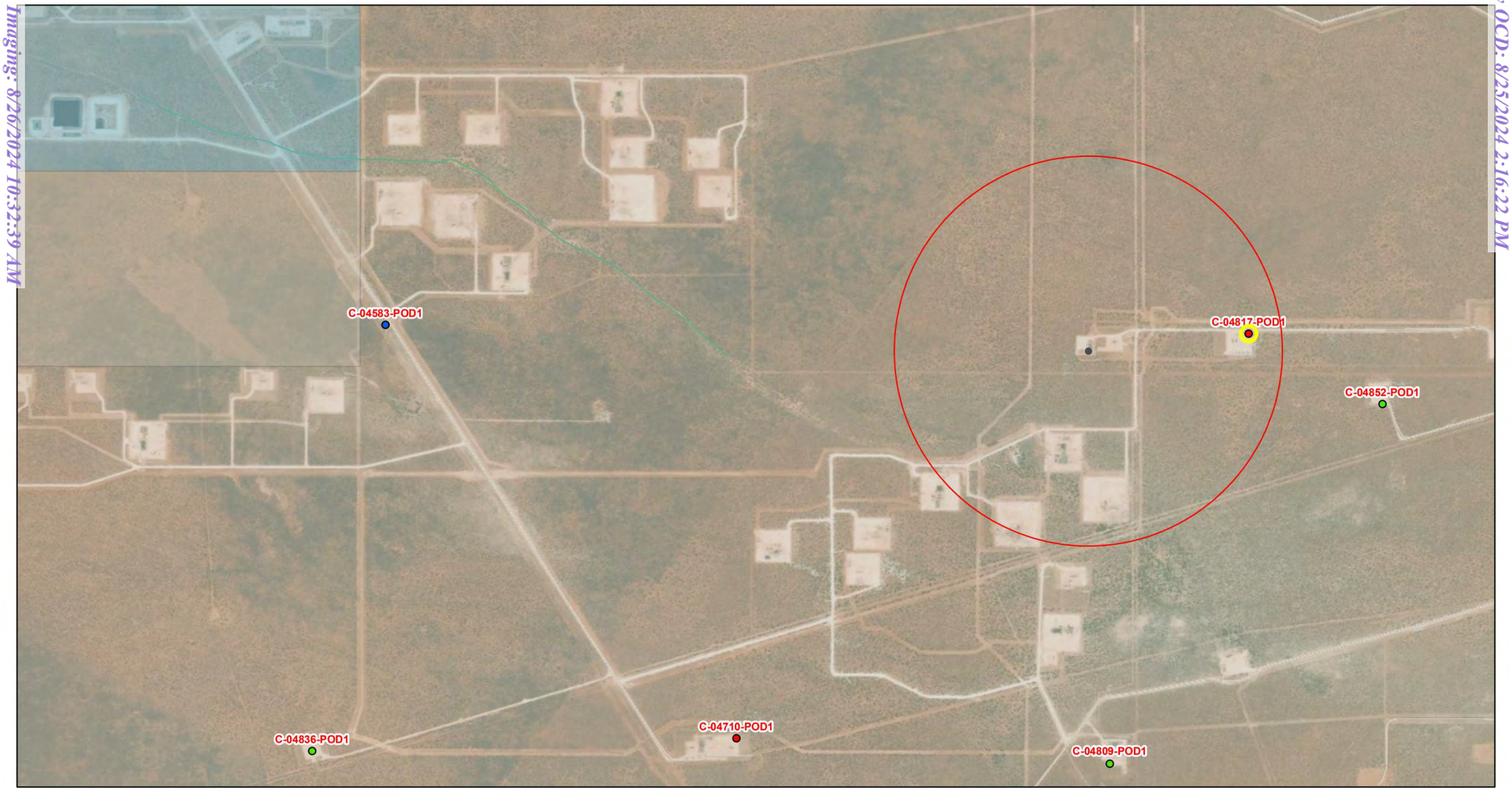
pTO1510542583

* Attach Additional Sheets If Necessary


55 BPW Spill
Ragin Cajun 13 Fed 2H
devon
This map is for illustrative purposes only and is neither a legally recorded map nor survey and is not intended to be used as one. Devon makes no warranty, representation, or guarantee of any kind regarding this map.
WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by:
Map is current as of: 14-Apr-2015
N
Miles
0
0.04
0.07
0.15
1:7,475
TDM Wells
Devon TDM Wells
AMI PDA SDA Outlines
AMI
PDA
SDA

APPENDIX B – Closure Criteria Research Documentation

OSE POD 0.5 miles



8/2/2024, 6:39:56 PM

1:18,056

GIS WATERS PODs
- Active
- Pending
- Plugged
- OSE District Boundary

Water Right Regulations
- Closure Area

New Mexico State Trust Lands
- Subsurface Estate
- Both Estates

NHD Flowlines
- Stream River

0 0.17 0.35 0.7 mi
0 0.3 0.6 1.2 km

Esri, HERE, iPC, Esri, HERE, Garmin, iPC, Maxar

Online web user
This is an unofficial map from the OSE's online application.

Water Column/Average Depth to Water

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet) (In feet) (In feet)

POD Number	Code	Sub basin	County	Q64	Q16	Q4	Sec	Tws	Range	X	Y	Map	Distance	Well Depth	Depth Water	Water Column
C 04817 POD1		CUB	LE	SW	SE	SW	13	26S	34E	648499.2	3545657.3		669	105		
C 04820 POD1		CUB	LE	NE	NW	NW	13	26S	34E	648389.9	3547088.9		1611	55		
C 04791 POD1		CUB	LE	SE	SE	SE	13	26S	34E	649598.8	3545568.0		1763	60		
C 04710 POD1		CUB	LE	SE	SE	SE	22	26S	34E	646399.7	3543956.9		2163			
C 04583 POD1		CUB	LE	SW	SW	SW	15	26S	34E	644919.7	3545643.4		2916	55		
C 04836 POD1		CUB	LE	SE	SE	SE	21	26S	34E	644618.7	3543853.3		3648	105		

Average Depth to Water: **0 feet**

Minimum Depth: **0 feet**

Maximum Depth: **0 feet**

Record Count: 6

UTM Filters (in meters):
Easting: 647835
Northing: 3545576
Radius: 005000

*** UTM location was derived from PLSS - see Help**

Active & Inactive Points of Diversion

(with Ownership Information)

		(acre ft per annum)					(R=POD has been replaced and no longer serves this file, C=the file is closed)			(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)						(NAD83 UTM in meters)			(meters)
WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q64	q16	q4	Sec	Tws	Range	X	Y	Map	Distance
C 04817	CUB	MON	0.000	DEVON ENERGY RESOURCES	LE	C 04817 POD1	NA				SW	SE	SW	13	26S	34E	648499.2	3545657.3		669.2
C 04856	CUB	EXP	0.000	DEVON ENERGY PRODUCTION COMPANY	LE	C 04856 POD1	NA				NE	SW	NE	23	26S	34E	647550.6	3544940.3		696.4
C 04852	CUB	EXP	0.000	RAYBAW OPERATING, LLC	LE	C 04852 POD1	NA				NE	NW	NE	24	26S	34E	649057.5	3545374.4		1,239.0
C 04820	CUB	MON	0.000	DEVON ENERGY	LE	C 04820 POD1	NA				NE	NW	NW	13	26S	34E	648389.9	3547088.9		1,611.5
C 04809	CUB	MON	0.000	DEVON ENERGY PRODUCTION CO.	LE	C 04809 POD1	NA				NE	NE	NE	26	26S	34E	647948.9	3543876.1		1,703.7
C 04791	CUB	MON	0.000	DEVON ENERGY RESOURCES	LE	C 04791 POD1	NA				SE	SE	SE	13	26S	34E	649598.8	3545568.0		1,763.8
C 04710	CUB	MON	0.000	DEVON ENERGY	LE	C 04710 POD1	NA				SE	SE	SE	22	26S	34E	646399.7	3543956.9		2,163.7
C 04583	CUB	MON	0.000	LUCID ENERGY GROUP	LE	C 04583 POD1	NA				SW	SW	SW	15	26S	34E	644919.7	3545643.4		2,916.1
C 04836	CUB	MON	0.000	DEVON ENERGY PRODUCTION COMPAN	LE	C 04836 POD1	NA				SE	SE	SE	21	26S	34E	644618.7	3543853.3		3,648.6

Record Count: 9

Filters Applied:

UTM Filters (in meters):
Easting: 647835
Northing: 3545576
Radius: 005000

Sorted By: Distance

*** UTM location was derived from PLSS - see Help**

Point of Diversion Summary

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

NAD83 UTM in meters

Well Tag	POD Nbr	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map
NA	C 04817 POD1	SW	SE	SW	13	26S	34E	648499.2	3545657.3	

*** UTM location was derived from PLSS - see Help**

Driller License:	1833	**Driller Company:**	VISION RESOURCES, INC		
Driller Name:	JASON MALEY				
Drill Start Date:	2024-03-25	**Drill Finish Date:**	2024-03-25	**Plug Date:**	2024-03-28
Log File Date:	2024-04-17	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	105	**Depth Water:**	

Water Right Summary

get image list

WR File Number:	C 04817	**Subbasin:**	CUB	**Cross Reference:**
Primary Purpose:	MON MONITORING WELL			
Primary Status:	PMT Permit			
Total Acres:		**Subfile:**		**Header:**
Total Diversion:	0.000	**Cause/Case:**		
Owner:	DEVON ENERGY RESOURCES			
Contact:	DALE WOODALL			

Documents on File

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Diversion	Consumptive
get images	757600	EXPL	2024-03-22	PMT	APR	C 04817 POD1	T	0.000	0.000	

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location Desc
C 04817 POD1	NA		SW	SE	SW	13	26S	34E	648499.2	3545657.3		

*** UTM location was derived from PLSS - see Help**

Transaction Summary

EXPL Permit To Explore

Transaction Number:	757600	**Transaction Desc:**	C 04817 POD1	**File Date:**	2024-03-07
Primary Status:	PMT Permit				
Secondary Status:	APR Approved				
Person Assigned:	*******				
Applicant:	DEVON ENERGY RESOURCES				
Contact:	DALE WOODALL				

Events

Event Images	Date	Type	Description	Comment	Processed By
get images	2024-03-07	APP	Application Received	*	*******
get images	2024-03-07	TEC	Technical Report	*PLG PLN OPS C-4817 POD1	*******
	2024-03-22	FTN	Finalize non-published Trans.		*******
get images	2024-04-17	LOG	Well Log Received	* DRY HOLE	*******
get images	2024-04-17	LGI	Well Log Image	*PLG RECORD C 04817 POD1	*******
	2024-04-24	DRY	Dry well log received		*******
	2024-05-16	QAT	Quality Assurance Completed	DATA	*******
	2024-05-20	QAT	Quality Assurance Completed	IMAGE	*******
	2024-05-30	QAT	Quality Assurance Completed	DATA	*******
	2024-06-04	QAT	Quality Assurance Completed	IMAGE	*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
C 04817	0.000	0.000		MON MONITORING WELL

Point of Diversion

POD Nbr	Easting	Northing	Map	Grant
C 04817 POD1	648499.5	3545657.3		

* UTM location was derived from PLSS - see Help

Conditions:

1A Depth of the well shall not exceed the thickness of the valley fill.

4 No water shall be appropriated and beneficially used under this permit.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casingshall not exceed two and three-eighths (2 3/8) inches outside diameter.

C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.

C2 No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days, and well shall be plugged or capped on or before &date, unless a permit to use water from this well is acquired from the Officeof the State Engineer.

6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternativeplugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. Toplug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable

7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

16 Construction of a water well by anyone without a valid New Mexico Well Driller License is illegal, and the landowner shall bear the cost of plugging the well by a licensed New Mexico well driller.This does not apply to driven wells, the casing of which does not exceed two and three-eighths inches outside diameter.

P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.

G If artesian water is encountered, the well driller shall comply with all rules and regulations pertaining to the drilling and casing of artesian wells.

Q The State Engineer retains jurisdiction over this permit.

R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, includingaccess to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

Action of the State Engineer

**** See Image For Any Additional Conditions of Approval ****

Approval Code: A

Action Date: 2024-03-22

Short Condition: IT IS THE PERMITEE'S RESPONSIBLITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACITIVITES UNTIL THIS PERMIT.

Log Due Date: 2025-03-22

State Engineer: Mike A. Hamman, P.E.

8/2/24 7:55 PM MST **Transaction Summary**

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
C 04817		C-4817

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Devon Energy Resources	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
205 E. Bender Road	Hobbs	NM	88240

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	2	14.47	N
	LONGITUDE	-103	25	38.23	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1833	Jason Maley	Vision Resources

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
3-25-24	3-25-24	105'	105'	N/A

COMPLETED WELL IS: ☐ ARTESIAN *add Centralizer info below ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 0'

DATE STATIC MEASURED: 3-28-24

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	95	6"	PVC 2" SCH40	Thread	2"	SCH40	N/A
95	105	6"	PVC 2" SCH40	Thread	2"	SCH40	.02

OSE DII APR 17 2024 PM 1:25

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL *(if using Centralizers for Artesian wells- indicate the spacing below)	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			None pulled and plugged		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. C-04817	POD NO. 1	TRN NO. 757600
LOCATION 26S.34E.13.343	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	10	10'	Brown dirt with white caliche	Y ✔ N	
10	30	20'	red coarse sand with small rock	Y ✔ N	
30	110	80'	Tan fine sand	Y ✔ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY: Dry hole

TOTAL ESTIMATED WELL YIELD (gpm): 0

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

OSE DII APR 17 2024 PM1:25

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Jason Maley

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Jason Maley

SIGNATURE OF DRILLER / PRINT SIGNEE NAME

4/11/24

DATE

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 09/22/2022)

FILE NO. C-04817	POD NO. 1	TRN NO. 757600	
LOCATION 26S.34E.13.343		WELL TAG ID NO.	PAGE 2 OF 2

Mike A. Hamman, P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 757600
File Nbr: C 04817
Well File Nbr: C 04817 POD1

Apr. 24, 2024

DALE WOODALL
DEVON ENERGY RESOURCES
205 E BENDER RD. #150
HOBBS, NM 88240

Greetings:

The above numbered permit was issued in your name on 03/22/2024.

The Well Record was received in this office on 04/17/2024, stating that it had been completed on 03/25/2024, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 03/22/2025.

If you have any questions, please feel free to contact us.

Sincerely,

Rodolfo Chavez
(575)622-6521

drywell

U.S. Fish and Wildlife Service
National Wetlands Inventory

Ragin Cajun 13 Federal 2H Watercourse 0

October 11, 2023

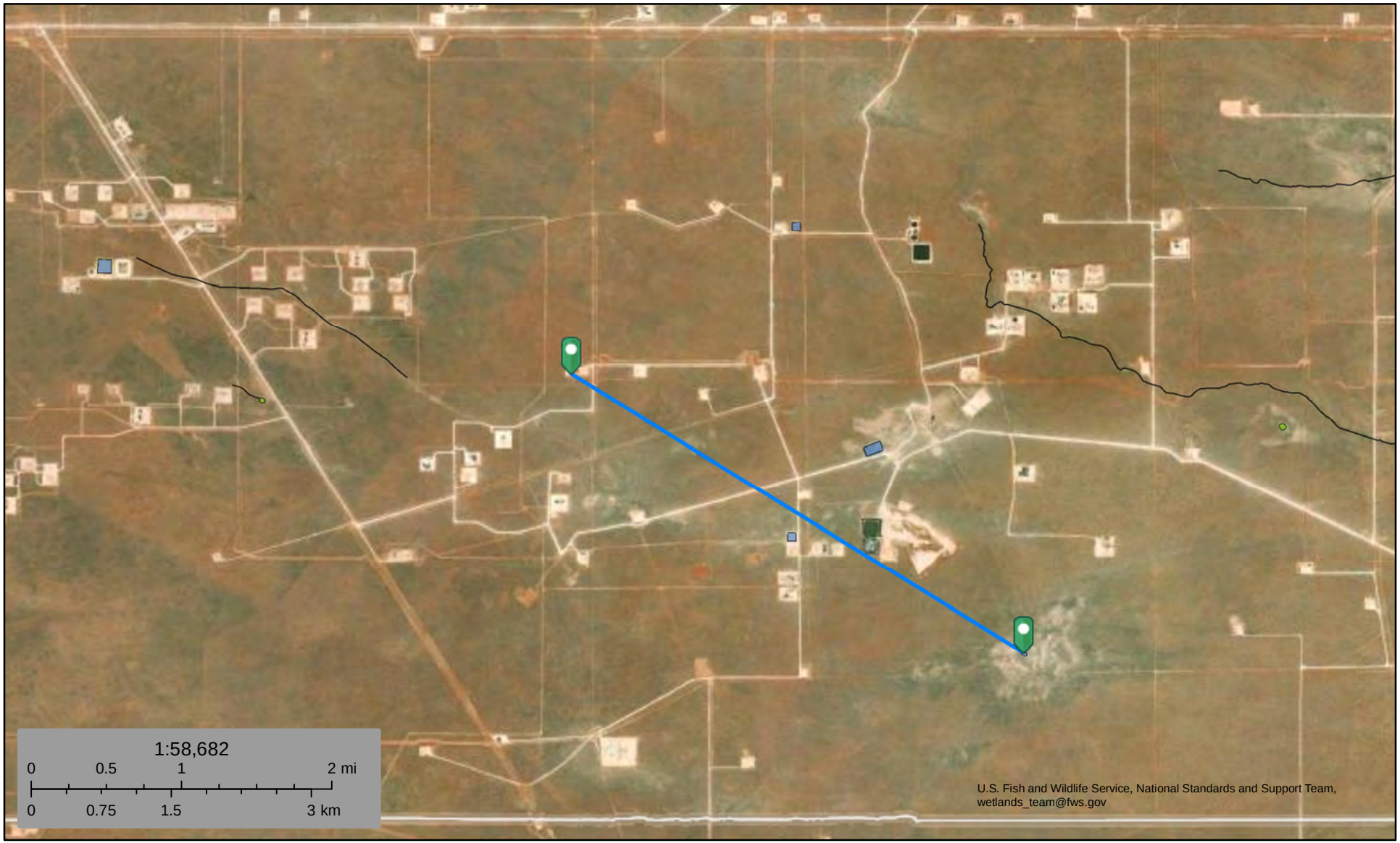
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Ragin Cajun 13 Federal 2H Pond 3 Miles



October 11, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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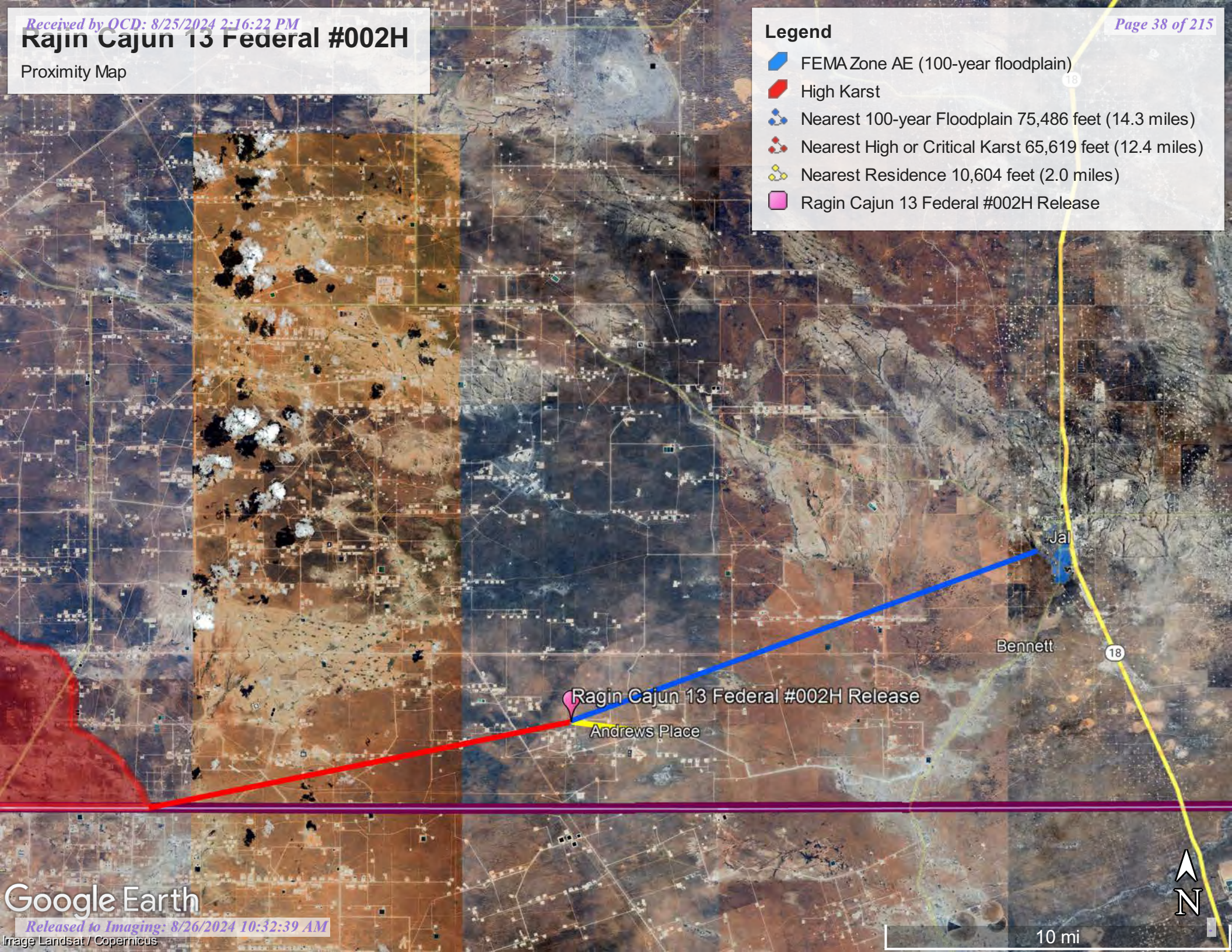
Ragin Cajun 13 Federal #002H

Proximity Map

Legend

- FEMA Zone AE (100-year floodplain)
- High Karst
- Nearest 100-year Floodplain 75,486 feet (14.3 miles)
- Nearest High or Critical Karst 65,619 feet (12.4 miles)
- Nearest Residence 10,604 feet (2.0 miles)
- Ragin Cajun 13 Federal #002H Release



Point of Diversion Summary

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

NAD83 UTM in meters

Well Tag	POD Nbr	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map
NA	C 04583 POD1	SW	SW	SW	15	26S	34E	644919.7	3545643.4	

*** UTM location was derived from PLSS - see Help**

Driller License:	1249	**Driller Company:**	ATKINS ENGINEERING ASSOC. INC.		
Driller Name:	JACKIE D ATKINS				
Drill Start Date:	2022-01-04	**Drill Finish Date:**	2022-01-04	**Plug Date:**	
Log File Date:	2022-02-04	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	55	**Depth Water:**	

Water Right Summary

get image list

WR File Number:	C 04583	**Subbasin:**	CUB	**Cross Reference:**	
Primary Purpose:	MON MONITORING WELL				
Primary Status:	PMT Permit				
Total Acres:		**Subfile:**		**Header:**	
Total Diversion:	0.000	**Cause/Case:**			
Owner:	LUCID ENERGY GROUP				
Contact:	MICHAEL GANT				

Documents on File

(acre-feet per annum)

Transaction Images	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/To	Acres	Diversion	Consumptive
get images	713387	EXPL	2021-12-20	PMT	APR	C 04583 POD1	T	0.000	0.000	

Current Points of Diversion

POD Number	Well Tag	Source	Q64	Q16	Q4	Sec	Tws	Rng	X	Y	Map	Other Location Desc
C 04583 POD1	NA		SW	SW	SW	15	26S	34E	644919.7	3545643.4		

*** UTM location was derived from PLSS - see Help**

U.S. Fish and Wildlife Service
National Wetlands Inventory

Ragin Cajun 13 Federal 2H Wetland 1.75 I

October 11, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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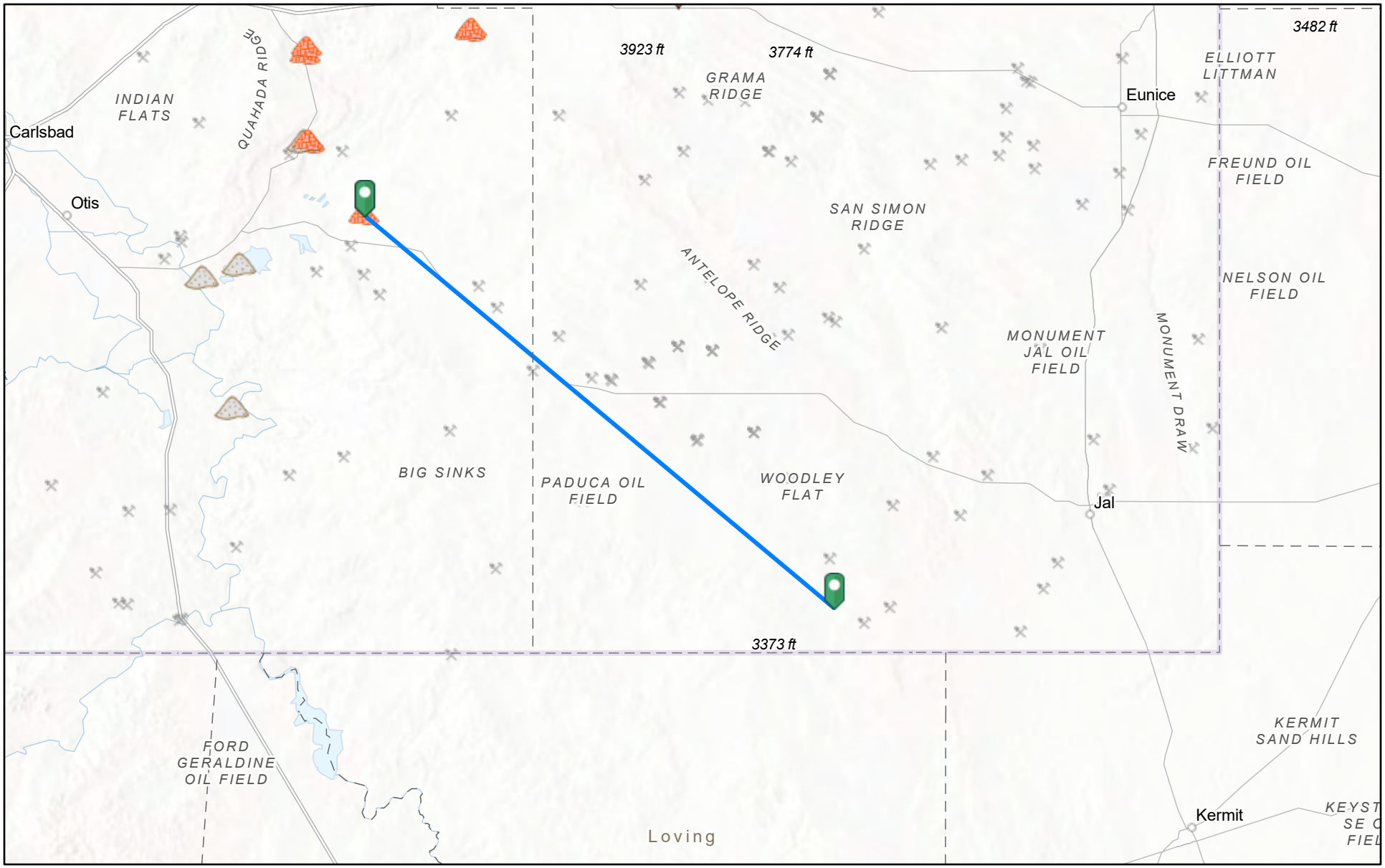
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Active Mines in New Mexico, 34.3 Miles to Nearest Subsurface mine, Ragin Cajun 13 Federal 2



3/28/2024, 2:10:43 PM

1:577,791

0 4.25 8.5 17 mi

0 5 10 20 km

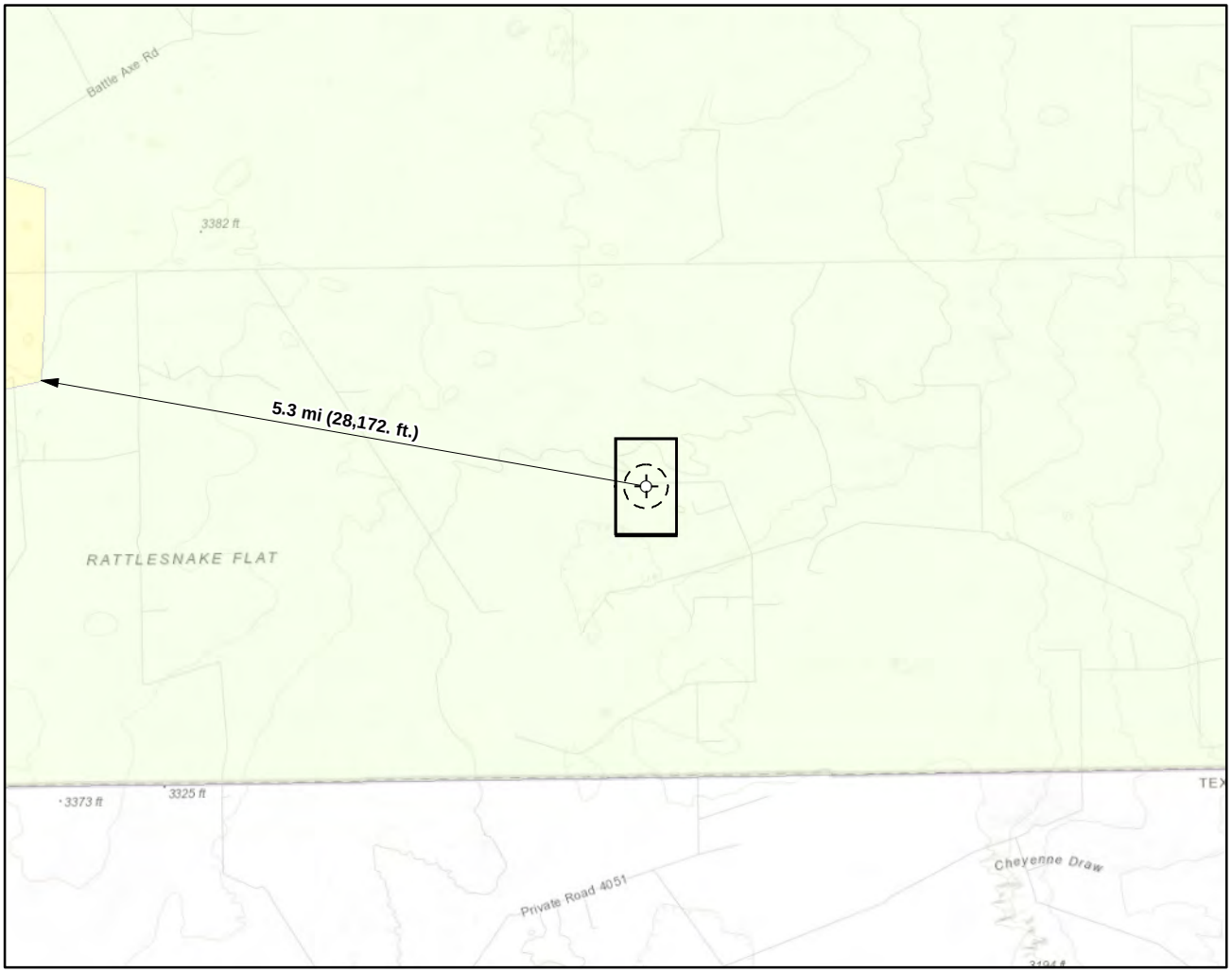
Registered Mines

- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Industrial Minerals (Other)
- Potash
- Salt

Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS, Esri, CGIAR, USGS

EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e577974664d689b47790897ca2795)



Karst Potential

- Critical
- High
- Medium
- Low

Site Location

Site Buffer (1,000 ft.)

Overview Map

0 0.5 1 mi

Detail Map

0 150 300 600 ft.

VERTEX

Map Center:
Lat/Long: 32.037039, -103.432499

NAD 1983 UTM Zone 13N
Date: Apr 02/24

N

Karst Potential Schematic
Ragin Cajun 13 Federal 2H

FIGURE:
X

devon

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Inset Map, ESRI 2022; Overview Map: ESRI World Topographic. Karst potential data sourced from Rosswell Field Office, Bureau of Land Management, 2020 or United States Department of the Interior, Bureau of Land Management. (2018). Karst Potential.

VERSATILITY. EXPERTISE.

Document Path: S:\04 - Geomatics\1-Projects_US PROJECTS\Devon Energy Corporation\2023\23E-02967 - Ragin Cajun 13 Federal 2H\Figure X Karst Potential Ragin Cajun 13 Federal 2H.mxd

National Flood Hazard Layer FIRMette

FEMA

103°26'23"W 32°2'28"N

103°25'45"W 32°1'58"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

- **SPECIAL FLOOD HAZARD AREAS**
  - Without Base Flood Elevation (BFE) *Zone A, V, A99*
  - With BFE or Depth *Zone AE, AO, AH, VE, AR*
  - Regulatory Floodway
- **OTHER AREAS OF FLOOD HAZARD**
  - 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
  - Future Conditions 1% Annual Chance Flood Hazard *Zone X*
  - Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
  - Area with Flood Risk due to Levee *Zone D*
- **OTHER AREAS**
  - NO SCREEN Area of Minimal Flood Hazard *Zone X*
  - Effective LOMRs
  - Area of Undetermined Flood Hazard *Zone D*
- **GENERAL STRUCTURES**
  - Channel, Culvert, or Storm Sewer
  - Levee, Dike, or Floodwall
- **OTHER FEATURES**
  - 20.2 Cross Sections with 1% Annual Chance
  - 17.5 Water Surface Elevation
  - Coastal Transect
  - Base Flood Elevation Line (BFE)
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- **MAP PANELS**
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/11/2023 at 1:32 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

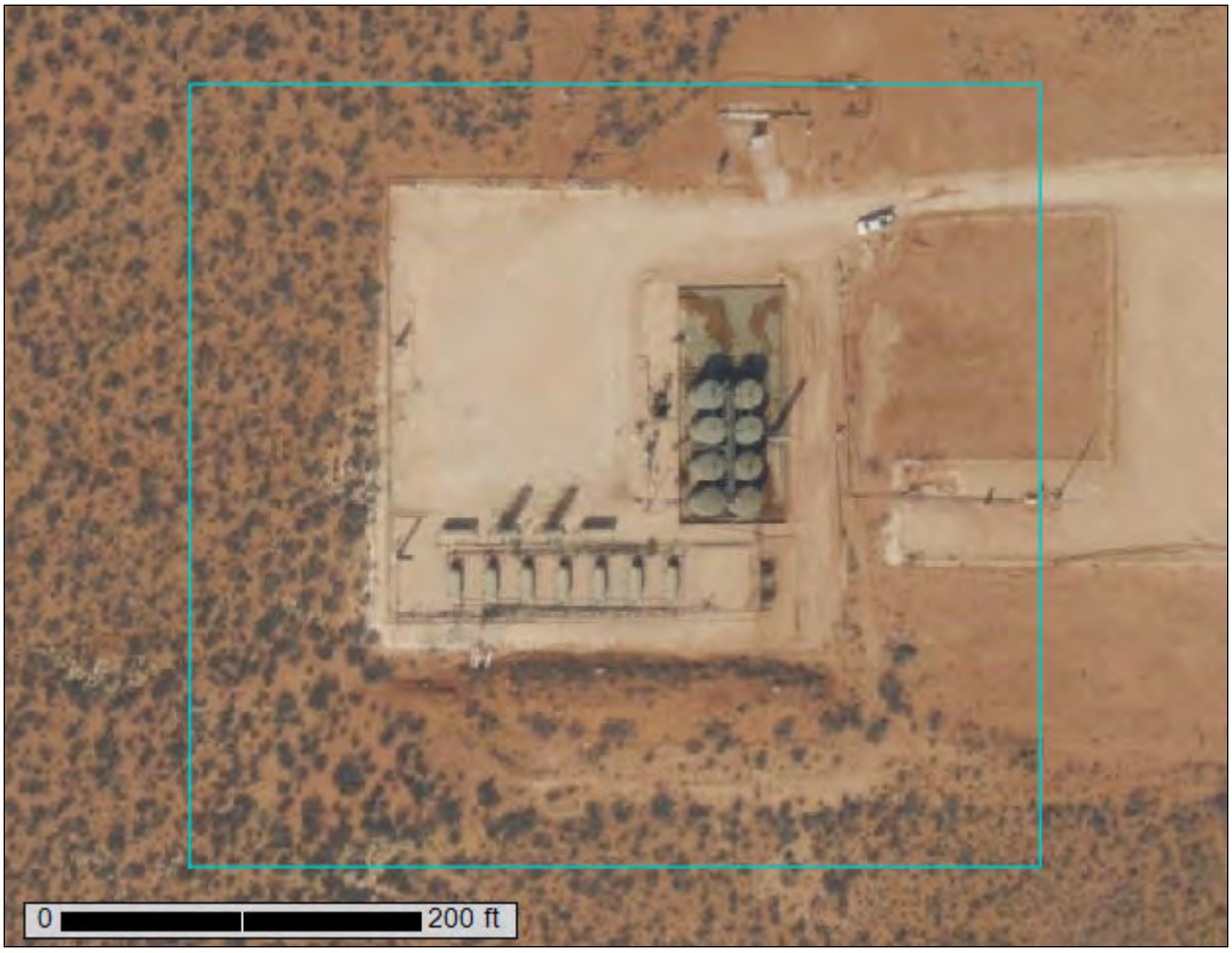
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lea County, New Mexico



October 11, 2023

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PU	Pyote and Maljamar fine sands	4.7	100.0%
Totals for Area of Interest		**4.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lea County, New Mexico

PU—Pyote and Maljamar fine sands

Map Unit Setting

National map unit symbol: dmqq
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Pyote and similar soils: 46 percent
Maljamar and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pyote

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 30 inches: fine sand
Bt - 30 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Description of Maljamar

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 24 inches: fine sand
Bt - 24 to 50 inches: sandy clay loam
Bkm - 50 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 40 to 60 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 10 percent
Ecological site: R070BC022NM - Sandhills
Hydric soil rating: No

USDA Natural Resources Conservation Service

Ecological site R070BD003NM
Loamy Sand

Accessed: 10/11/2023

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Associated sites

R070BD004NM	**Sandy** Sandy
R070BD005NM	**Deep Sand** Deep Sand

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is on uplands, plains, dunes, fan piedmonts and in inter dunal areas. The parent material consists of mixed alluvium and or eolian sands derived from sedimentary rock. Slope range on this site range from 0 to 9 percent with the average of 5 percent.

Low stabilized dunes may occur occasionally on this site. Elevations range from 2,800 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Alluvial fan (3) Dune
Elevation	2,800–5,000 ft
Slope	0–9%
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms.
Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes.

The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.
The average frost-free season is 207 to 220 days. The last killing frost being late March or early April and the first killing frost being in later October or early November.
Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of this site. Strong winds blow from the southwest from January through June, which accelerates soil drying during a critical period for cool season plant growth.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	221 days
Freeze-free period (average)	240 days
Precipitation total (average)	13 in

Influencing water features

This site is not influenced from water from wetlands or streams.

Soil features

Soils are moderately deep or very deep. Surface textures are loamy fine sand, fine sandy loam, loamy very fine sand or gravelly sandy loam.

Subsurface is a loamy fine sand, coarse sandy loam, fine sandy loam or loam that averages less than 18 percent clay and less than 15 percent carbonates.

Substratum is a fine sandy loam or gravelly fine sandy loam with less than 15 percent gravel and with less than 40 percent calcium carbonate. Some layers high in lime or with caliche fragments may occur at depths of 20 to 30 inches.

These soils, if unprotected by plant cover and organic residue, become wind blown and low hummocks are formed.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic soils are:
Maljamar
Berino
Parjarito
Palomas
Wink
Pyote

Table 4. Representative soil features

Surface texture	(1) Fine sand (2) Fine sandy loam (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to moderately rapid

Soil depth	40–72 in
Surface fragment cover <=3"	0–10%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–7 in
Calcium carbonate equivalent (0-40in)	3–40%
Electrical conductivity (0-40in)	2–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–2
Soil reaction (1:1 water) (0-40in)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	4–12%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

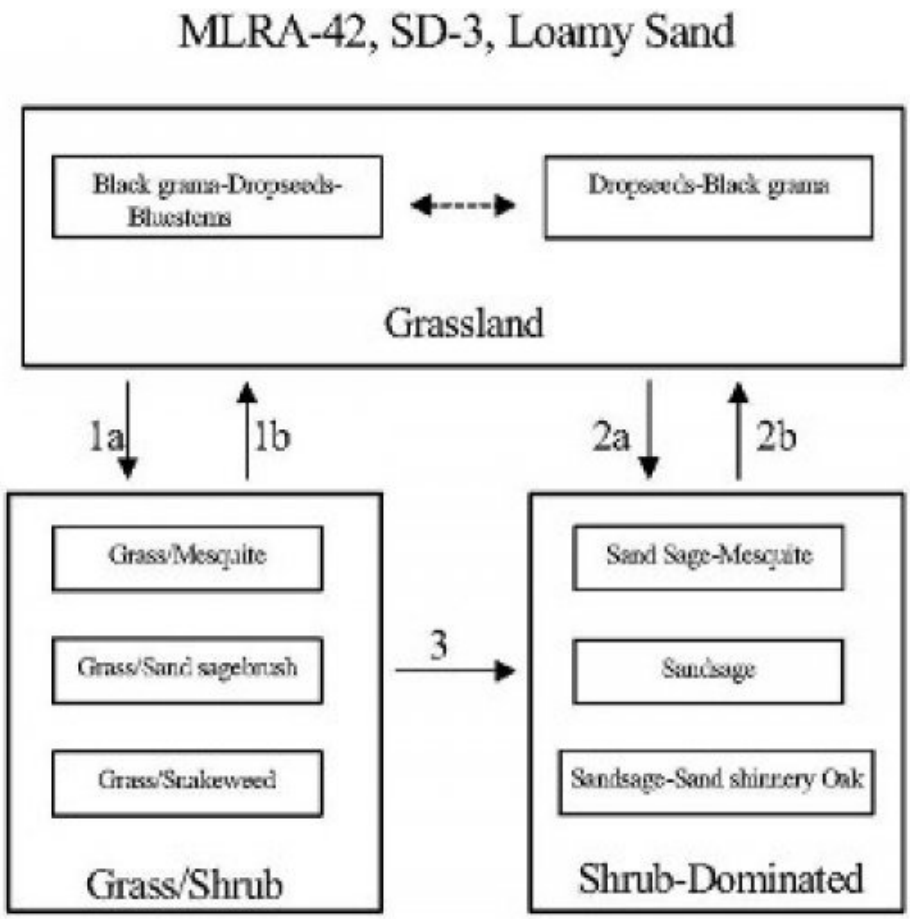
Overview

The Loamy Sand site intergrades with the Deep Sand and Sandy sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured (sandy loam and fine sandy loam) surfaces. Although Loamy Sand and Deep Sand sites have similar surface textures, the depth to a textural change is different—Loamy Sand sub-surface textures typically increase in clay at approximately 20 to 30 inches, and Deep Sand sites not until around 40 inches.

The historic plant community of Loamy Sand sites is dominated by black grama (*Bouteloua eriopoda*), dropseeds (*Sporobolus flexuosus*, *S. contractus*, *S. cryptandrus*), and bluestems (*Schizachyrium scoparium* and *Andropogon hallii*), with scattered shinnery oak (*Quercus havardii*) and sand sage (*Artemisia filifolia*). Perennial and annual forb abundance and distribution are dependent on precipitation. Litter and to a lesser extent, bare ground, are a significant proportion of ground cover while grasses compose the remainder. Decreases in black grama indicate a transition to either a grass/shrub or shrub-dominated state. The grass/shrub state is composed of grasses/honey mesquite (*Prosopis glandulosa*), grasses/broom snakeweed (*Gutierrezia sarothrae*), or grasses/sand sage. The shrub-dominated state occurs after a severe loss of grass cover and a prevalence of sand sage with secondary shinnery oak and mesquite. Heavy grazing intensity and/or drought are influential drivers in decreasing black grama and bluestems and subsequently increasing shrub cover, erosion, and bare patches. Historical fire suppression also encourages shrub pervasiveness and a competitive advantage over grass species (McPherson 1995). Brush and grazing management, however, may reverse grass/shrub and shrub-dominated states toward the grassland-dominated historic plant community.

State and transition model

Plant Communities and Transitional Pathways (diagram):



1a. Drought, over grazing, fire suppression.
1b. Brush control, prescribed grazing

2.a Severe loss of grass cover, fire suppression, erosion.
2b. Brush control, seeding, prescribed grazing.

3. Continued loss of grass cover, erosion.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

Grassland: The historic plant community is a uniformly distributed grassland dominated by black grama, dropseeds, and bluestems. Sand sage and shinnery oak are evenly dispersed throughout the grassland due to the coarse soil

surface texture. Perennial and annual forbs are common but their abundance and distribution are reflective of precipitation. Bluestems initially, followed by black grama, decrease with drought and heavy grazing intensity. Historical fire frequency is unknown but likely occurred enough to remove small shrubs to the competitive advantage of grass species. Fire suppression, drought conditions, and excessive grazing drive most grass species out of competition with shrub species. Diagnosis: Grassland dominated by black grama, dropseeds, and bluestems. Shrubs, such as sand sage, shinnery oak, and mesquite are dispersed throughout the grassland. Forbs are present and populations fluctuate with precipitation variability.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	442	833	1224
Forb	110	208	306
Shrub/Vine	98	184	270
Total	**650**	**1225**	**1800**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	28%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	22%

Figure 5. Plant community growth curve (percent production by month). NM2803, R042XC003NM-Loamy Sand-HCPC. SD-3 Loamy Sand - Warm season plant community .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0

State 2
Grass/Shrub

Community 2.1
Grass/Shrub

Grass/Shrub State: The grass/shrub state is dominated by communities of grasses/mesquite, grasses/snakeweed, or grasses/sand sage. Decreases in black grama and bluestem species lead to an increase in bare patches and mesquite which further competes with grass species. An increase of dropseeds and threeawns occurs. Grass distribution becomes more patchy with an absence or severe decrease in black grama and bluestems. Mesquite provides nitrogen and soil organic matter to co-dominant grasses (Ansley and Jacoby 1998, Ansley et al. 1998). Mesquite mortality when exposed to fire is low due to aggressive resprouting abilities. Herbicide application combined with subsequent prescribed fire may be more effective in mesquite reduction (Britton and Wright 1971). Diagnosis: This state is dominated by an increased abundance of communities including grass/mesquite, grass/snakeweed, or grass/sand sage. Dropseeds and threeawns have a patchy distribution. Transition to Grass/Shrub State (1a): The historic plant community begins to shift toward the grass/shrub state as drivers such as drought, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by a decrease in black grama with a subsequent increase of dropseeds, threeawns, mesquite, and snakeweed. Snakeweed has been documented to outcompete black grama especially under conditions of fire suppression and drought (McDaniel et al. 1984). Key indicators of approach to transition: • Loss of black grama cover • Surface soil erosion • Bare patch expansion • Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances Transition to Historic Plant Community (1b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community.

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

Shrub-Dominated State: The shrub-dominated state results from a severe loss of grass cover. This state's primary species is sand sage. Shinnery oak and mesquite also occur; however, grass cover is limited to intershrub distribution. Sand sage stabilizes light sandy soils from wind erosion, which enhances protected grass/forb cover (Davis and Bonham 1979). However, shinnery oak also responds to the sandy soils with dense stands due to an

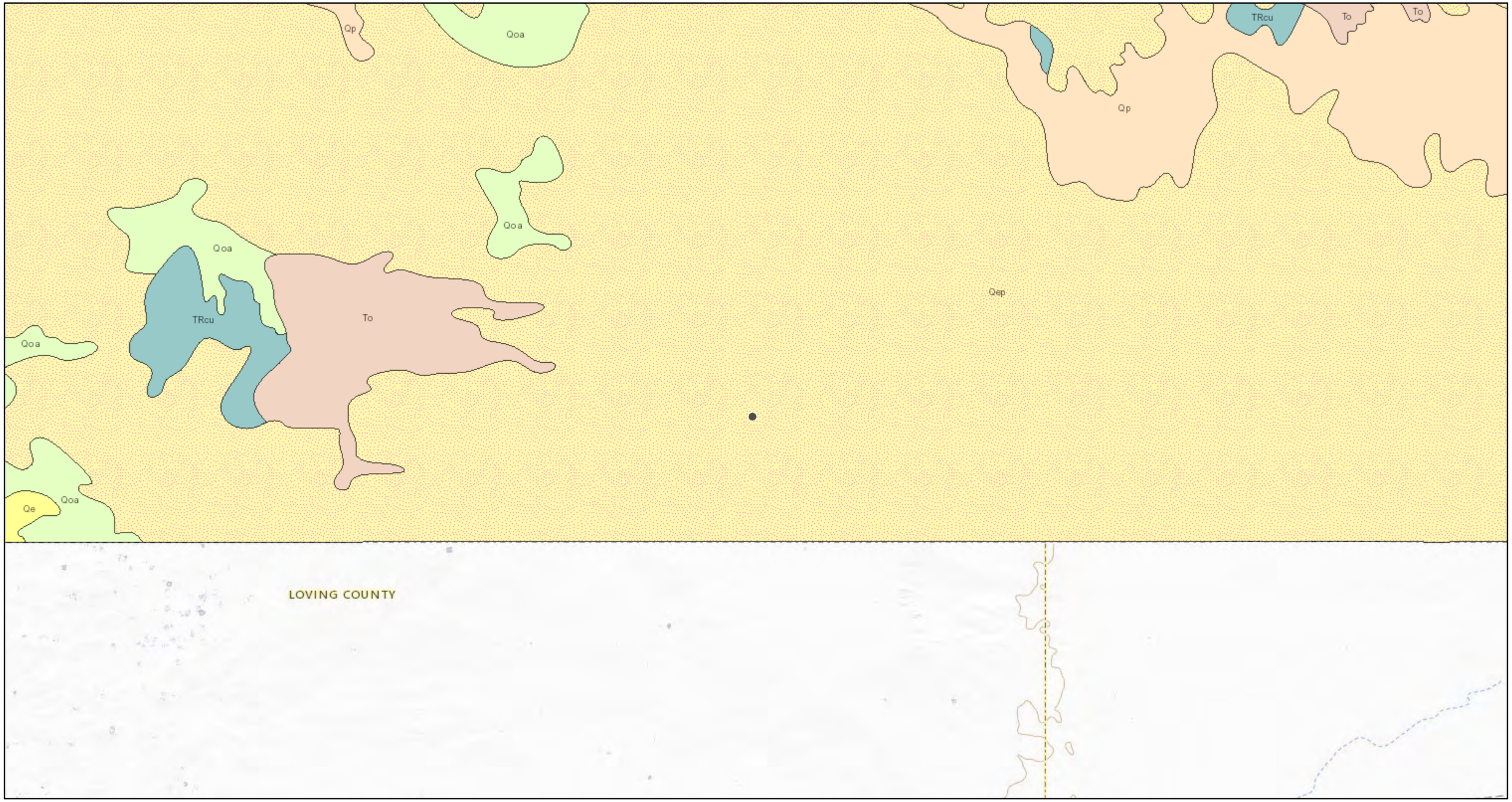
aggressive rhizome system. Shinnery oak's extensive root system promotes competitive exclusion of grasses and forbs. Sand sage, shinnery oak, and mesquite can be controlled with herbicide (Herbel et al. 1979, Pettit 1986). Transition to Shrub-Dominated (2a): Severe loss of grass species with increased erosion and fire suppression will result in a transition to a shrub-dominated state with sand sage, Shin oak, and honey mesquite directly from the grassland-dominated state. Key indicators of approach to transition: • Severe loss of grass species cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite abundance Transition to Historic Plant Community (2b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community. In addition, seeding with native grass species will augment the transition to a grassland-dominated state. Transition to Shrub-Dominated (3): If the grass/shrub site continues to lose grass cover with soil erosion, the site will transition to a shrub-dominated state with sand sage, shinnery oak, and honey mesquite. Key indicators of approach to transition: • Continual loss of dropseeds/threeawns cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite/dropseed/threeawn and mesquite/snakeweed abundance

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Warm Season**			61–123	
	little bluestem	SCSC	*Schizachyrium scoparium*	61–123	–
2	**Warm Season**			37–61	
	sand bluestem	ANHA	*Andropogon hallii*	37–61	–
3	**Warm Season**			37–61	
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	37–61	–
	silver bluestem	BOSA	*Bothriochloa saccharoides*	37–61	–
4	**Warm Season**			123–184	
	black grama	BOER4	*Bouteloua eriopoda*	123–184	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	123–184	–
5	**Warm Season**			123–184	
	thin paspalum	PASE5	*Paspalum setaceum*	123–184	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	123–184	–
	fringed signalgrass	URCI	*Urochloa ciliatissima*	123–184	–
6	**Warm Season**			123–184	
	spike dropseed	SPCO4	*Sporobolus contractus*	123–184	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	123–184	–
	mesa dropseed	SPFL2	*Sporobolus flexuosus*	123–184	–
7	**Warm Season**			61–123	
	hooded windmill grass	CHCU2	*Chloris cucullata*	61–123	–
	Arizona cottontop	DICA8	*Digitaria californica*	61–123	–
9	**Other Perennial Grasses**			37–61	
	Grass, perennial	2GP	*Grass, perennial*	37–61	–
Shrub/Vine					
8	**Warm Season**			37–61	
	New Mexico feathergrass	HENE5	*Hesperostipa neomexicana*	37–61	–
	giant dropseed	SPGI	*Sporobolus giganteus*	37–61	–
10	**Shrub**			61–123	

Ragin Cajun 13 Federal 2H Geology



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Lithologic Units

- Playa—Alluvium and evaporite deposits (Holocene)
- Water—Perenial standing water
- Qa—Alluvium (Holocene to upper Pleistocene)
- Ql—Landslide deposits and colluvium (Holocene to Pleistocene) — Landslide deposits on western flanks of Socorro Mountains not shown for clarity
- Qpl—Lacustrine and playa deposits (Holocene) — Includes associated alluvial and eolian deposits of major lake basins
- Qp—Piedmont alluvial deposits (Holocene to lower Pleistocene)
- Qe—Eolian deposits (Holocene to middle Pleistocene)
- Qeg—Gypsiferous eolian deposits (Holocene to middle Pleistocene)

0 1.5 3 6 mi

0 2.25 4.5 9 km

Esri, NASA, NGA, USGS, NMBGMR, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census

ArcGIS Web AppBuilder

APPENDIX C – Daily Field Reports

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	6/7/2023
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	6/7/2023 10:26 PM
Client Contact Name:	Wes Matthews	API #:	30-025-41273
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	6/7/2023 1:00 PM
Departed Site	6/7/2023 3:00 PM

Field Notes

13:57 On site. Completed safety meeting and line sweep.

13:57 Collecting BH23-01 at 0', 2', and 4' and 02 at 0' and 2' bgs

Next Steps & Recommendations

1 Continue delineation

Daily Site Visit Report

Site Photos

Viewing Direction: West

BH23-02

Viewing Direction: Northwest

Release area

Viewing Direction: North

Sampling area

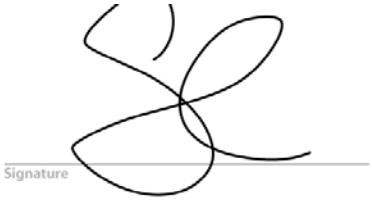
Viewing Direction: Southwest

Sampling area with both boreholes backfilled and gate closed

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Sally Carttar

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	6/19/2023
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	6/19/2023 9:47 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	6/19/2023 9:50 AM
Departed Site	6/19/2023 2:25 PM

Field Notes

10:55 Arrived on site, filling out and signing safety documents. Examined site and location to mark proposed sample points. Performed magnetic line locator sweep.

13:08 Collected samples BH23-08 through BH23-12 at 0 foot and 2 foot and BH23-11 at 4 foot on the west and northwest side. Field screened for chlorides with EC meter and VOCs with PID. Field screened all 0 foot samples with Dexsil Petroflag.

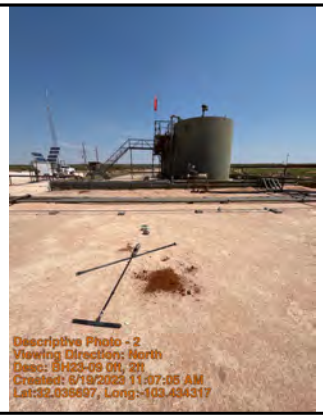
14:17 Prepared samples for lab

Next Steps & Recommendations

1 Continue stepping out to west northwest.

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: North
	
BH23-08 0ft, 2ft	BH23-09 0ft, 2ft
Viewing Direction: North	**Viewing Direction**: Northeast
	
BH23-10 0ft, 2ft	BH23-11 0ft, 2ft

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: East
	
BH23-12 0ft, 2ft	BH23-11 4ft

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	6/21/2023
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	6/21/2023 9:56 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	6/21/2023 9:00 AM
Departed Site	6/21/2023 1:30 PM

Field Notes

11:02 Arrived on site, filling out and signing safety documents. Examined site and location to determining best location for marking sample points, using magnetic locator to sweep for lines.

Collected BH23-13 through BH23-18 at 0 foot and 2 foot.

12:20 Field screened samples BH23-13 through 18 0ft and 2ft for chlorides with EC meter, for TPH with Dexsil Petroflag and VOCs with PID.

12:24 Collected samples BH23-19 0ft stepping out west from BH23-15 and sample BH23-11 at 4.5 ft due to refusal, attempting to collect at 6ft to vertical delineation.

12:24 Field screened samples BH23-19 0ft and BH23-11 4.5 for chlorides, TPH and VOCs.

13:22 Backfilled sample boreholes and prepared samples for lab.

Next Steps & Recommendations

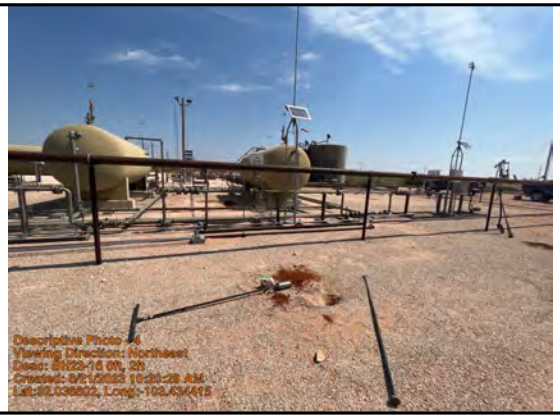
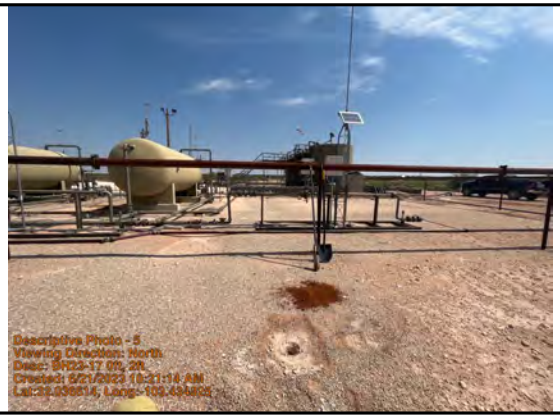
1 Receive lab data

Daily Site Visit Report

Site Photos

Viewing Direction: Southeast	**Viewing Direction**: Southeast
	
BH23-13 0ft, 2ft	Sample area, staining and release area.
Viewing Direction: East	**Viewing Direction**: North
	
BH24-14 0ft, 2ft	BH23-15 0ft, 2ft

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: North
	
BH23-16 0ft, 2ft	BH23-17 0ft, 2ft
Viewing Direction: Northeast	**Viewing Direction**: Southeast
	
BH23-19 0ft	BH23-11 4.5ft, refusal

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: Northwest
	
Sample area, staining and release area.	Sample area, staining and release area.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	9/20/2023
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	9/20/2023 6:54 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	9/20/2023 8:45 AM
Departed Site	9/20/2023 9:40 AM

Field Notes

9:22 Arrived on site and completed safety paperwork.
Proceeded to conduct scheduled, on site Liner inspection.

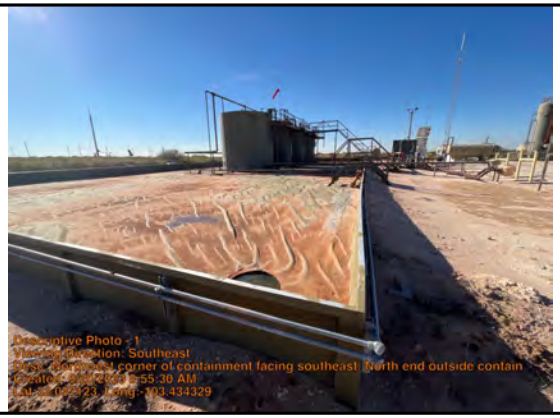
9:29 Inspected both inside and outside walls of containment and did not find any compromising damage or unexpected breaches. No unexpected staining on soil outside the containment or from area of breach, which has been delineated.
Inspection of liner around and between equipment and tanks, inside containment did not yield any damage, breaches, or areas of concern with liner.

Next Steps & Recommendations

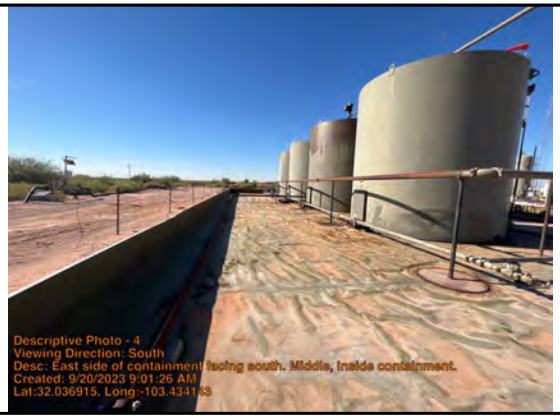
1 Prepare report

Daily Site Visit Report

Site Photos

Viewing Direction: Southeast	**Viewing Direction**: South
	
Northwest corner of containment facing southeast. North end outside containment.	Southwest corner of containment facing southwest. Inside containment.
Viewing Direction: South	**Viewing Direction**: Northwest
	
Southeast corner of containment facing southeast. Inside containment.	Northwest corner of containment facing northwest. Inside containment.

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: South
	
Northeast corner of containment facing southwest. North end outside containment.	West side of containment facing south. Middle, inside containment.
Viewing Direction: South	**Viewing Direction**: Northwest
	
East side of containment facing south. Middle, inside containment.	East side of containment facing northwest. Middle, outside containment.

Daily Site Visit Report

Viewing Direction: Southwest	**Viewing Direction**: Northwest
	
East side of containment facing southwest. Middle, outside containment.	Southeast corner of containment facing northwest. Outside containment.
Viewing Direction: West	**Viewing Direction**: Northeast
	
South side of containment facing west. Middle, inside containment.	Southwest corner of containment facing northeast. Outside containment.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature:

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/17/2024
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	7/29/2024 4:08 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	7/17/2024 10:10 AM
Departed Site	7/17/2024 2:43 PM

Field Notes

14:37 Excavation around separators

Next Steps & Recommendations

1 Once excavation is finished put in confirmation sample event

Daily Site Visit Report

Site Photos

Viewing Direction: South

Area in between separators @ 2’

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 
Signature

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/18/2024
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	7/29/2024 4:09 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	7/18/2024 11:10 AM
Departed Site	7/18/2024 2:45 PM

Field Notes

14:28 Start excavating around separators

14:28 Field screen excavated areas to make sure area meets criteria

Next Steps & Recommendations

1 After finishing excavation between separators move to BH23-03 to excavate to 1’

Daily Site Visit Report

Site Photos

Viewing Direction: South	**Viewing Direction**: South
	
Excavation area between separators @2’	Excavation area in between separators going to 2’

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/19/2024
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	7/29/2024 4:09 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	7/19/2024 11:30 AM
Departed Site	7/19/2024 1:45 PM

Field Notes

13:26 Finish excavation in between separators

Next Steps & Recommendations

1 Start excavation on areas BH23-03

Daily Site Visit Report

Site Photos

Viewing Direction: South	**Viewing Direction**: North
	
Excavation on area between separators @ 2’	Location placard

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/22/2024
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	7/29/2024 4:09 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	7/22/2024 10:00 AM
Departed Site	7/22/2024 1:00 PM

Field Notes

12:50 Finish excavation on BH23-03 at 1-2’

12:51 Field screen samples on BH23-03

Next Steps & Recommendations

1 Confirmation sample event 7.24.24 @ 10 am

Daily Site Visit Report

Site Photos

Viewing Direction: East	**Viewing Direction**: North
	
BH23-03 @ 1’	Location placard

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 
Signature

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	8/6/2024
Site Location Name:	Ragin Cajun 13 Fed 2H	Report Run Date:	8/7/2024 1:31 PM
Client Contact Name:	Dale Woodall	API #:	30-025-41273
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	8/6/2024 9:30 AM
Departed Site	8/6/2024 1:05 PM

Field Notes

13:40 Confirmation sampling event 7.24.24

13:41 Field screen samples

Next Steps & Recommendations

1 Send samples off to lab 7.24.24

Daily Site Visit Report

Site Photos

Viewing Direction: South

Area where confirmation sampling was collected

Viewing Direction: South

Area where confirmation sampling was collected

Viewing Direction: East

Area where confirmation sampling was collected

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Riley Plogger

Signature: 

APPENDIX D – Notifications

Gmail Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Liner Inspection RAGIN CAJUN 13 FEDERAL #002H

2 messages

Dhugal Hanton <vertexresourcegroupusa@gmail.com> Fri, Sep 15, 2023 at 5:37 PM
To: "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>, "Enviro, OCD, EMNRD" <OCD.Enviro@emnrd.nm.gov>, KStallings@vertex.ca, Brittany.Hall@emnrd.nm.gov

Please accept this email as notification that Vertex Resource Services has scheduled a Liner Inspection to be conducted at the following release.

[30-025-41273] RAGIN CAJUN 13 FEDERAL #002H, NTO1510542386

On Wednesday September 20, 2023, Vertex will be on-site to conduct a final liner inspection. If you have any questions regarding this notification, please call at 346-814-1413.

V/R,

Steph McCarty
Environmental Technician
Vertex Resource Services Inc.
3101 Boyd Drive,
Carlsbad, NM 88220

C 575.263.3295

www.vertex.ca

Rodgers, Scott, EMNRD <Scott.Rodgers@emnrd.nm.gov> Mon, Sep 18, 2023 at 9:36 AM
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>, "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>, "KStallings@vertex.ca" <KStallings@vertex.ca>, "Hall, Brittany, EMNRD" <Brittany.Hall@emnrd.nm.gov>

The OCD has received your notification. Include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

Thanks,

Scott

Scott Rodgers ● Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

8801 Horizon Blvd. NE, Suite 260 | Albuquerque, NM 87113

505.469.1830 | scott.rodgers@emnrd.nm.gov

http://www.emnrd.nm.gov/ocd

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Friday, September 15, 2023 5:38 PM
To: Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>; KStallings@vertex.ca; Hall, Brittany, EMNRD <Brittany.Hall@emnrd.nm.gov>
Subject: [EXTERNAL] Liner Inspection RAGIN CAJUN 13 FEDERAL #002H

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

[Quoted text hidden]

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

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 365736
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nTO1510542386**
Incident Name	**NTO1510542386 RAGIN CAJUN 13 FEDERAL #002H @ 30-025-41273**
Incident Type	**Produced Water Release**
Incident Status	**Initial C-141 Approved**
Incident Well	**[30-025-41273] RAGIN CAJUN 13 FEDERAL #002H**

Location of Release Source	
Site Name	**RAGIN CAJUN 13 FEDERAL #002H**
Date Release Discovered	**04/11/2015**
Surface Owner	**Federal**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	620
What is the estimated number of samples that will be gathered	7
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	07/24/2024
Time sampling will commence	10:00 AM
Please provide any information necessary for observers to contact samplers	Riley Plogger 575-361-9639
Please provide any information necessary for navigation to sampling site	FROM NM128 AND CR2/BATTLEAXE RD, 12.2 MI ON CR-2, L ON ACCESS RD GOING S 0.66 MI; L ON LR GOING E ON ANTHONY RD 7.81 MI, R/S/SW ON LR 1.25 MI, R ON LR GOING W 0.56 MI, L/S ON LR 0.97 MI, R ON LR 1.82 MI DEAD END ON LOCATION TO SE CORNER OF PAD 32.0368022-103.434284

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
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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 365736

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 365736
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
wdale	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	7/19/2024

APPENDIX E – Laboratory Data Reports and Chain of Custody Forms

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 22, 2023

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX:

RE: Ragin Cajun 13 Federal 002H OrderNo.: 2306494

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/9/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2306494**
Date Reported: **6/22/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-01 0'
Project: Ragin Cajun 13 Federal 002H
Collection Date: 6/7/2023 1:40:00 PM
Lab ID: 2306494-001 **Matrix:** SOIL **Received Date:** 6/9/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	330	9.5		mg/Kg	1	6/16/2023 4:34:16 PM
Motor Oil Range Organics (MRO)	370	48		mg/Kg	1	6/16/2023 4:34:16 PM
Surr: DNOP	109	69-147		%Rec	1	6/16/2023 4:34:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/18/2023 12:31:00 AM
Surr: BFB	91.7	15-244		%Rec	1	6/18/2023 12:31:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/19/2023 2:27:00 PM
Toluene	ND	0.049		mg/Kg	1	6/19/2023 2:27:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	6/19/2023 2:27:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	6/19/2023 2:27:00 PM
Surr: 4-Bromofluorobenzene	102	39.1-146		%Rec	1	6/19/2023 2:27:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	59		mg/Kg	20	6/15/2023 5:13:51 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2306494**
Date Reported: **6/22/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-01 2'
Project: Ragin Cajun 13 Federal 002H **Collection Date:** 6/7/2023 1:48:00 PM
Lab ID: 2306494-002 **Matrix:** SOIL **Received Date:** 6/9/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	6/16/2023 12:31:51 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/16/2023 12:31:51 AM
Surr: DNOP	84.0	69-147		%Rec	1	6/16/2023 12:31:51 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/18/2023 12:52:00 AM
Surr: BFB	100	15-244		%Rec	1	6/18/2023 12:52:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/19/2023 2:49:00 PM
Toluene	ND	0.048		mg/Kg	1	6/19/2023 2:49:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	6/19/2023 2:49:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	6/19/2023 2:49:00 PM
Surr: 4-Bromofluorobenzene	96.9	39.1-146		%Rec	1	6/19/2023 2:49:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/15/2023 5:26:12 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2306494**
Date Reported: **6/22/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-01 4'
Project: Ragin Cajun 13 Federal 002H **Collection Date:** 6/7/2023 2:05:00 PM
Lab ID: 2306494-003 **Matrix:** SOIL **Received Date:** 6/9/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/16/2023 12:42:51 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/16/2023 12:42:51 AM
Surr: DNOP	84.8	69-147		%Rec	1	6/16/2023 12:42:51 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/18/2023 1:14:00 AM
Surr: BFB	95.8	15-244		%Rec	1	6/18/2023 1:14:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/19/2023 3:11:00 PM
Toluene	ND	0.050		mg/Kg	1	6/19/2023 3:11:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/19/2023 3:11:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	6/19/2023 3:11:00 PM
Surr: 4-Bromofluorobenzene	98.0	39.1-146		%Rec	1	6/19/2023 3:11:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	59		mg/Kg	20	6/15/2023 5:38:32 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2306494**
Date Reported: **6/22/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 0'
Project: Ragin Cajun 13 Federal 002H **Collection Date:** 6/7/2023 1:38:00 PM
Lab ID: 2306494-004 **Matrix:** SOIL **Received Date:** 6/9/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	120	9.3		mg/Kg	1	6/16/2023 12:53:54 AM
Motor Oil Range Organics (MRO)	340	47		mg/Kg	1	6/16/2023 12:53:54 AM
Surr: DNOP	93.3	69-147		%Rec	1	6/16/2023 12:53:54 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/18/2023 1:35:00 AM
Surr: BFB	96.3	15-244		%Rec	1	6/18/2023 1:35:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/19/2023 3:33:00 PM
Toluene	ND	0.049		mg/Kg	1	6/19/2023 3:33:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	6/19/2023 3:33:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	6/19/2023 3:33:00 PM
Surr: 4-Bromofluorobenzene	97.4	39.1-146		%Rec	1	6/19/2023 3:33:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/15/2023 4:51:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2306494**
Date Reported: **6/22/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 2'
Project: Ragin Cajun 13 Federal 002H **Collection Date:** 6/7/2023 1:46:00 PM
Lab ID: 2306494-005 **Matrix:** SOIL **Received Date:** 6/9/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	6/16/2023 1:05:08 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/16/2023 1:05:08 AM
Surr: DNOP	85.4	69-147		%Rec	1	6/16/2023 1:05:08 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/18/2023 1:57:00 AM
Surr: BFB	101	15-244		%Rec	1	6/18/2023 1:57:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/19/2023 3:55:00 PM
Toluene	ND	0.050		mg/Kg	1	6/19/2023 3:55:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/19/2023 3:55:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	6/19/2023 3:55:00 PM
Surr: 4-Bromofluorobenzene	99.5	39.1-146		%Rec	1	6/19/2023 3:55:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/15/2023 5:03:54 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **MB-75634**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **75634**	RunNo: **97471**							
Prep Date: **6/15/2023**	Analysis Date: **6/15/2023**	SeqNo: **3542367**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-75634**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **75634**	RunNo: **97471**							
Prep Date: **6/15/2023**	Analysis Date: **6/15/2023**	SeqNo: **3542368**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.0	90	110			

Sample ID: **MB-75617**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **75617**	RunNo: **97494**							
Prep Date: **6/15/2023**	Analysis Date: **6/15/2023**	SeqNo: **3542499**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **LCS-75592** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **75592** RunNo: **97480**
Prep Date: **6/14/2023** Analysis Date: **6/15/2023** SeqNo: **3541824** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	36	10	50.00	0	72.7	61.9	130			
Surr: DNOP	4.7		5.000		93.7	69	147			

Sample ID: **MB-75592** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **75592** RunNo: **97480**
Prep Date: **6/14/2023** Analysis Date: **6/15/2023** SeqNo: **3541827** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		96.5	69	147			

Sample ID: **LCS-75600** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **75600** RunNo: **97480**
Prep Date: **6/14/2023** Analysis Date: **6/15/2023** SeqNo: **3542195** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.2		5.000		83.4	69	147			

Sample ID: **MB-75600** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **75600** RunNo: **97480**
Prep Date: **6/14/2023** Analysis Date: **6/15/2023** SeqNo: **3542197** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.1		10.00		80.6	69	147			

Sample ID: **LCS-75609** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **75609** RunNo: **97521**
Prep Date: **6/15/2023** Analysis Date: **6/16/2023** SeqNo: **3546967** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		100	69	147			

Sample ID: **LCS-75623** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **75623** RunNo: **97521**
Prep Date: **6/15/2023** Analysis Date: **6/16/2023** SeqNo: **3546969** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.9		5.000		97.8	69	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **LCS-75644**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **75644**	RunNo: **97521**							
Prep Date: **6/15/2023**	Analysis Date: **6/16/2023**	SeqNo: **3546970**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.8		5.000		96.0	69	147			

Sample ID: **MB-75609**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **75609**	RunNo: **97521**							
Prep Date: **6/15/2023**	Analysis Date: **6/16/2023**	SeqNo: **3546972**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		112	69	147			

Sample ID: **MB-75623**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **75623**	RunNo: **97521**							
Prep Date: **6/15/2023**	Analysis Date: **6/16/2023**	SeqNo: **3546974**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.9		10.00		99.3	69	147			

Sample ID: **MB-75644**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **75644**	RunNo: **97521**							
Prep Date: **6/15/2023**	Analysis Date: **6/16/2023**	SeqNo: **3546975**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.3		10.00		93.3	69	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **lcs-75583**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **75583**	RunNo: **97501**							
Prep Date: **6/14/2023**	Analysis Date: **6/16/2023**	SeqNo: **3543011**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.6	70	130			
Surr: BFB	2200		1000		216	15	244			

Sample ID: **mb-75583**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **75583**	RunNo: **97501**							
Prep Date: **6/14/2023**	Analysis Date: **6/16/2023**	SeqNo: **3543012**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		96.9	15	244			

Sample ID: **lcs-75597**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **75597**	RunNo: **97537**							
Prep Date: **6/14/2023**	Analysis Date: **6/18/2023**	SeqNo: **3544808**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2100		1000		215	15	244			

Sample ID: **mb-75597**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **75597**	RunNo: **97537**							
Prep Date: **6/14/2023**	Analysis Date: **6/18/2023**	SeqNo: **3544809**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		103	15	244			

Sample ID: **lcs-75614**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **75614**	RunNo: **97537**							
Prep Date: **6/15/2023**	Analysis Date: **6/18/2023**	SeqNo: **3545009**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2200		1000		217	15	244			

Sample ID: **mb-75614**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **75614**	RunNo: **97537**							
Prep Date: **6/15/2023**	Analysis Date: **6/18/2023**	SeqNo: **3545010**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		109	15	244			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **lcs-75597**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **75597**	RunNo: **97558**
Prep Date: **6/14/2023**	Analysis Date: **6/19/2023**	SeqNo: **3545956** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2200		1000		222	15	244			

Sample ID: **mb-75597**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **75597**	RunNo: **97558**
Prep Date: **6/14/2023**	Analysis Date: **6/19/2023**	SeqNo: **3545957** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		99.9	15	244			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **lcs-75583** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **75583** RunNo: **97501**
Prep Date: **6/14/2023** Analysis Date: **6/16/2023** SeqNo: **3543043** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	98.0	70	130			
Toluene	0.98	0.050	1.000	0	98.2	70	130			
Ethylbenzene	0.98	0.050	1.000	0	97.8	70	130			
Xylenes, Total	2.9	0.10	3.000	0	97.7	70	130			
Surr: 4-Bromofluorobenzene	0.95		1.000		95.5	39.1	146			

Sample ID: **mb-75583** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **75583** RunNo: **97501**
Prep Date: **6/14/2023** Analysis Date: **6/16/2023** SeqNo: **3543044** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		93.3	39.1	146			

Sample ID: **lcs-75597** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **75597** RunNo: **97537**
Prep Date: **6/14/2023** Analysis Date: **6/18/2023** SeqNo: **3544873** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.95		1.000		94.7	39.1	146			

Sample ID: **mb-75597** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **75597** RunNo: **97537**
Prep Date: **6/14/2023** Analysis Date: **6/18/2023** SeqNo: **3544874** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		92.3	39.1	146			

Sample ID: **lcs-75614** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **75614** RunNo: **97537**
Prep Date: **6/15/2023** Analysis Date: **6/18/2023** SeqNo: **3545011** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		103	39.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306494**

22-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 002H

Sample ID: **mb-75614**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75614**	RunNo: **97537**
Prep Date: **6/15/2023**	Analysis Date: **6/18/2023**	SeqNo: **3545012** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		100	39.1	146			

Sample ID: **lcs-75597**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75597**	RunNo: **97558**
Prep Date: **6/14/2023**	Analysis Date: **6/19/2023**	SeqNo: **3546026** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		99.7	39.1	146			

Sample ID: **mb-75597**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75597**	RunNo: **97558**
Prep Date: **6/14/2023**	Analysis Date: **6/19/2023**	SeqNo: **3546027** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.95		1.000		95.2	39.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2306494

RcptNo: 1

Received By: Juan Rojas 6/9/2023 7:45:00 AM

Completed By: Cheyenne Cason 6/9/2023 9:11:27 AM

Reviewed By: 6/9/23

Chain of Custody

1. Is Chain of Custody complete? Yes ☐ No ☑ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

SCM 06/09/23

11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

Client information lacking address, phone and email - CMC 6/9/23

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.9	Good	Not Present	Yogi		

Chain-of-Custody Record

Client: Devon (Vertex)

Mailing Address: on file

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: Ragin Cajun 13 Federal #002H

Project #: 23E-02967

Project Manager: Kent Stallings

Sampler: SM

On Ice: ~~☐ Yes~~ ☐ No

# of Coolers: 1 4oz

Cooler Temp(including CF): 0.9+0=0.9 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2306494	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/7/23	1340	Soil	BH23-01 0'	4oz jar	Ice	001	✓	✓					✓			
	1348		BH23-01 2'			002										
	1405		BH23-01 4'			003										
	1338		BH23-02 0'			004										
	1346		BH23-02 2'			005										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6/7/23	1757	Sally Carttar	A Cummings		6/8/23	905
6/8/23	1900	A Cummings		courier	6/9/23	7:45

Remarks: WO # 21160440

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 30, 2023

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX:

RE: Ragin Cajun 13 Federal 2 OrderNo.: 2306930

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 10 sample(s) on 6/17/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-03 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 11:05:00 AM
Lab ID: 2306930-001 **Matrix:** SOIL
Received Date: 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	2600	96		mg/Kg	10	6/23/2023 12:32:23 PM
Motor Oil Range Organics (MRO)	5100	480		mg/Kg	10	6/23/2023 12:32:23 PM
Surr: DNOP	0	69-147	S	%Rec	10	6/23/2023 12:32:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/23/2023 2:31:00 PM
Surr: BFB	101	15-244		%Rec	1	6/23/2023 2:31:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/23/2023 2:31:00 PM
Toluene	ND	0.048		mg/Kg	1	6/23/2023 2:31:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	6/23/2023 2:31:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	6/23/2023 2:31:00 PM
Surr: 4-Bromofluorobenzene	95.8	39.1-146		%Rec	1	6/23/2023 2:31:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/22/2023 11:58:52 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-03 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 11:10:00 AM
Lab ID: 2306930-002 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	6/22/2023 8:29:29 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/22/2023 8:29:29 PM
Surr: DNOP	90.2	69-147		%Rec	1	6/22/2023 8:29:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/23/2023 2:53:00 PM
Surr: BFB	104	15-244		%Rec	1	6/23/2023 2:53:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 2:53:00 PM
Toluene	ND	0.046		mg/Kg	1	6/23/2023 2:53:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	6/23/2023 2:53:00 PM
Xylenes, Total	ND	0.092		mg/Kg	1	6/23/2023 2:53:00 PM
Surr: 4-Bromofluorobenzene	95.5	39.1-146		%Rec	1	6/23/2023 2:53:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/23/2023 12:11:16 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-04 0'
Project: Ragin Cajun 13 Federal 2 **Collection Date:** 6/15/2023 11:25:00 AM
Lab ID: 2306930-003 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/22/2023 8:40:32 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/22/2023 8:40:32 PM
Surr: DNOP	112	69-147		%Rec	1	6/22/2023 8:40:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/23/2023 3:15:00 PM
Surr: BFB	103	15-244		%Rec	1	6/23/2023 3:15:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 3:15:00 PM
Toluene	ND	0.046		mg/Kg	1	6/23/2023 3:15:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	6/23/2023 3:15:00 PM
Xylenes, Total	ND	0.093		mg/Kg	1	6/23/2023 3:15:00 PM
Surr: 4-Bromofluorobenzene	95.7	39.1-146		%Rec	1	6/23/2023 3:15:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/23/2023 12:23:41 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-04 2'
Project: Ragin Cajun 13 Federal 2 **Collection Date:** 6/15/2023 11:30:00 AM
Lab ID: 2306930-004 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	6/22/2023 8:51:33 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/22/2023 8:51:33 PM
Surr: DNOP	114	69-147		%Rec	1	6/22/2023 8:51:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/23/2023 3:38:00 PM
Surr: BFB	107	15-244		%Rec	1	6/23/2023 3:38:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 3:38:00 PM
Toluene	ND	0.047		mg/Kg	1	6/23/2023 3:38:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	6/23/2023 3:38:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	6/23/2023 3:38:00 PM
Surr: 4-Bromofluorobenzene	96.3	39.1-146		%Rec	1	6/23/2023 3:38:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/23/2023 12:36:06 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-05 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 11:40:00 AM
Lab ID: 2306930-005 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/22/2023 9:13:14 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/22/2023 9:13:14 PM
Surr: DNOP	95.4	69-147		%Rec	1	6/22/2023 9:13:14 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/23/2023 4:00:00 PM
Surr: BFB	103	15-244		%Rec	1	6/23/2023 4:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/23/2023 4:00:00 PM
Toluene	ND	0.050		mg/Kg	1	6/23/2023 4:00:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/23/2023 4:00:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	6/23/2023 4:00:00 PM
Surr: 4-Bromofluorobenzene	97.2	39.1-146		%Rec	1	6/23/2023 4:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	2900	150		mg/Kg	50	6/23/2023 5:40:41 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix
E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
P	Sample pH Not In Range
PQL	Practical Quanitative Limit
RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-05 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 11:50:00 AM
Lab ID: 2306930-006 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	6/22/2023 9:24:11 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/22/2023 9:24:11 PM
Surr: DNOP	116	69-147		%Rec	1	6/22/2023 9:24:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/23/2023 4:23:00 PM
Surr: BFB	110	15-244		%Rec	1	6/23/2023 4:23:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/23/2023 4:23:00 PM
Toluene	ND	0.048		mg/Kg	1	6/23/2023 4:23:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	6/23/2023 4:23:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	6/23/2023 4:23:00 PM
Surr: 4-Bromofluorobenzene	98.1	39.1-146		%Rec	1	6/23/2023 4:23:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	1100	60		mg/Kg	20	6/23/2023 1:25:44 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-06 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 12:00:00 PM
Lab ID: 2306930-007 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	6/22/2023 9:35:06 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/22/2023 9:35:06 PM
Surr: DNOP	116	69-147		%Rec	1	6/22/2023 9:35:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/23/2023 4:45:00 PM
Surr: BFB	109	15-244		%Rec	1	6/23/2023 4:45:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 4:45:00 PM
Toluene	ND	0.047		mg/Kg	1	6/23/2023 4:45:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	6/23/2023 4:45:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	6/23/2023 4:45:00 PM
Surr: 4-Bromofluorobenzene	97.1	39.1-146		%Rec	1	6/23/2023 4:45:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/23/2023 1:38:08 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-06 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 12:05:00 PM
Lab ID: 2306930-008 **Matrix:** SOIL
Received Date: 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/22/2023 9:46:08 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/22/2023 9:46:08 PM
Surr: DNOP	104	69-147		%Rec	1	6/22/2023 9:46:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/23/2023 5:30:00 PM
Surr: BFB	105	15-244		%Rec	1	6/23/2023 5:30:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/26/2023 10:09:00 AM
Toluene	ND	0.049		mg/Kg	1	6/26/2023 10:09:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/26/2023 10:09:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	6/26/2023 10:09:00 AM
Surr: 4-Bromofluorobenzene	105	39.1-146		%Rec	1	6/26/2023 10:09:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/23/2023 1:50:33 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-07 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 12:10:00 PM
Lab ID: 2306930-009 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/22/2023 9:57:08 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/22/2023 9:57:08 PM
Surr: DNOP	96.7	69-147		%Rec	1	6/22/2023 9:57:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/23/2023 5:52:00 PM
Surr: BFB	109	15-244		%Rec	1	6/23/2023 5:52:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/26/2023 10:32:00 AM
Toluene	ND	0.048		mg/Kg	1	6/26/2023 10:32:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/26/2023 10:32:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	6/26/2023 10:32:00 AM
Surr: 4-Bromofluorobenzene	106	39.1-146		%Rec	1	6/26/2023 10:32:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	6/23/2023 11:55:04 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306930**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-07 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/15/2023 12:20:00 PM
Lab ID: 2306930-010 **Matrix:** SOIL **Received Date:** 6/17/2023 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/22/2023 10:08:13 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/22/2023 10:08:13 PM
Surr: DNOP	105	69-147		%Rec	1	6/22/2023 10:08:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/23/2023 6:14:00 PM
Surr: BFB	110	15-244		%Rec	1	6/23/2023 6:14:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/26/2023 10:55:00 AM
Toluene	ND	0.048		mg/Kg	1	6/26/2023 10:55:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/26/2023 10:55:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	6/26/2023 10:55:00 AM
Surr: 4-Bromofluorobenzene	107	39.1-146		%Rec	1	6/26/2023 10:55:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	6/23/2023 12:07:24 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306930**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **MB-75800** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **75800** RunNo: **97665**
Prep Date: **6/22/2023** Analysis Date: **6/22/2023** SeqNo: **3551663** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-75800** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **75800** RunNo: **97665**
Prep Date: **6/22/2023** Analysis Date: **6/22/2023** SeqNo: **3551664** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.1	90	110			

Sample ID: **MB-75808** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **75808** RunNo: **97685**
Prep Date: **6/23/2023** Analysis Date: **6/23/2023** SeqNo: **3552695** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-75808** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **75808** RunNo: **97685**
Prep Date: **6/23/2023** Analysis Date: **6/23/2023** SeqNo: **3552697** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	90.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306930**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **LCS-75757** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **75757** RunNo: **97639**

Prep Date: **6/21/2023** Analysis Date: **6/22/2023** SeqNo: **3551920** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	10	50.00	0	114	61.9	130			
Surr: DNOP	6.1		5.000		123	69	147			

Sample ID: **MB-75757** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **75757** RunNo: **97639**

Prep Date: **6/21/2023** Analysis Date: **6/22/2023** SeqNo: **3551923** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		126	69	147			

Sample ID: **LCS-75819** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **75819** RunNo: **97703**

Prep Date: **6/26/2023** Analysis Date: **6/26/2023** SeqNo: **3553956** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		90.5	69	147			

Sample ID: **MB-75819** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **75819** RunNo: **97703**

Prep Date: **6/26/2023** Analysis Date: **6/26/2023** SeqNo: **3553958** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		88.4	69	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306930**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **lcs-75744**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **75744**	RunNo: **97695**
Prep Date: **6/20/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553027** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.4	70	130			
Surr: BFB	2100		1000		210	15	244			

Sample ID: **mb-75744**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **75744**	RunNo: **97695**
Prep Date: **6/20/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553028** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		103	15	244			

Sample ID: **lcs-75811**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554080** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2100		1000		207	15	244			

Sample ID: **mb-75811**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554081** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	960		1000		95.9	15	244			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306930**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **lcs-75744**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75744**	RunNo: **97695**
Prep Date: **6/20/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553046** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.5	70	130			
Toluene	0.94	0.050	1.000	0	94.1	70	130			
Ethylbenzene	0.95	0.050	1.000	0	95.2	70	130			
Xylenes, Total	2.9	0.10	3.000	0	95.3	70	130			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.9	39.1	146			

Sample ID: **mb-75744**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75744**	RunNo: **97695**
Prep Date: **6/20/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553047** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		94.9	39.1	146			

Sample ID: **lcs-75811**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554125** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.93		1.000		93.0	39.1	146			

Sample ID: **mb-75811**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554126** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.93		1.000		92.9	39.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2306930

RcptNo: 1

Received By: **Tracy Casarrubias** 6/17/2023 7:50:00 AM

Completed By: **Tracy Casarrubias** 6/17/2023 8:43:02 AM

Reviewed By: JM 6/19/23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: TMC 6/17/23

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: Mailing address, phone number and Email are missing on COC- TMC 6/17/23

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Vertex / Devon

Mailing Address: On file

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☑ Rush 5 Day

Project Name: Ragin Cajun 13 Federal 2

Project #: 23E-02967

Project Manager: Kent Stallings

Sampler: SM

On Ice: ☑ Yes ☐ No Yogi

# of Coolers: 1

Cooler Temp(including CF): 3.6 - 0.1 = 3.5 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 23016930	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/15/23	11:05	Soil	BH23-03 0'	4 oz jar	ICE	001	✓	✓					✓			
	11:10		BH23-03 2'			002										
	11:25		BH23-04 0'			003										
	11:30		BH23-04 2'			004										
	11:40		BH23-05 0			005										
	11:50		BH23-05 2'			006										
	12:00		BH23-06 0'			007										
	12:05		BH23-06 2'			008										
	12:10		BH23-07 0'			009										
	12:20		BH23-07 2'			010										

Date	Time	Relinquished by	Received by	Via	Date	Time
6/15/23	18:24	Steph McCarty				
6/16/23	1900				6/16/23	700
				Courier	6/17/23	7:50

Remarks: Direct bill to: Devon W/O #: 21146173

C.C. SMccarty@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 30, 2023

Kent Stallings

Devon Energy
6488 Seven Rivers Highway
Artesia, NM 88210
TEL: (505) 350-1336
FAX:

RE: Ragin Cajun 13 Fed 2 OrderNo.: 2306A86

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 11 sample(s) on 6/21/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-001 **Matrix:** SOIL

Client Sample ID: BH23-08 0'
Collection Date: 6/19/2023 10:45:00 AM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	6/23/2023 3:26:05 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	6/23/2023 3:26:05 AM
Surr: DNOP	79.3	69-147		%Rec	1	6/23/2023 3:26:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/22/2023 7:11:00 PM
Surr: BFB	103	15-244		%Rec	1	6/22/2023 7:11:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/22/2023 7:11:00 PM
Toluene	ND	0.050		mg/Kg	1	6/22/2023 7:11:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	6/22/2023 7:11:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	6/22/2023 7:11:00 PM
Surr: 4-Bromofluorobenzene	93.8	39.1-146		%Rec	1	6/22/2023 7:11:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	830	60		mg/Kg	20	6/24/2023 6:49:06 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-002 **Matrix:** SOIL

Client Sample ID: BH23-08 2'
Collection Date: 6/19/2023 10:50:00 AM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	6/23/2023 3:37:01 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/23/2023 3:37:01 AM
Surr: DNOP	99.1	69-147		%Rec	1	6/23/2023 3:37:01 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/22/2023 7:34:00 PM
Surr: BFB	102	15-244		%Rec	1	6/22/2023 7:34:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/22/2023 7:34:00 PM
Toluene	ND	0.049		mg/Kg	1	6/22/2023 7:34:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	6/22/2023 7:34:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	6/22/2023 7:34:00 PM
Surr: 4-Bromofluorobenzene	92.9	39.1-146		%Rec	1	6/22/2023 7:34:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	150	60		mg/Kg	20	6/24/2023 7:51:09 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH23-09 0'
Project: Ragin Cajun 13 Fed 2
Collection Date: 6/19/2023 10:55:00 AM
Lab ID: 2306A86-003 **Matrix:** SOIL **Received Date:** 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/23/2023 3:48:03 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/23/2023 3:48:03 AM
Surr: DNOP	116	69-147		%Rec	1	6/23/2023 3:48:03 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/22/2023 7:56:00 PM
Surr: BFB	99.9	15-244		%Rec	1	6/22/2023 7:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/22/2023 7:56:00 PM
Toluene	ND	0.049		mg/Kg	1	6/22/2023 7:56:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	6/22/2023 7:56:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	6/22/2023 7:56:00 PM
Surr: 4-Bromofluorobenzene	92.1	39.1-146		%Rec	1	6/22/2023 7:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	14000	600		mg/Kg	200	6/26/2023 8:44:46 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH23-09 2'
Project: Ragin Cajun 13 Fed 2
Collection Date: 6/19/2023 11:05:00 AM
Lab ID: 2306A86-004 **Matrix:** SOIL **Received Date:** 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/23/2023 3:59:04 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/23/2023 3:59:04 AM
Surr: DNOP	91.2	69-147		%Rec	1	6/23/2023 3:59:04 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/23/2023 7:39:24 PM
Surr: BFB	110	15-244		%Rec	1	6/23/2023 7:39:24 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	6/23/2023 7:39:24 PM
Toluene	ND	0.047		mg/Kg	1	6/23/2023 7:39:24 PM
Ethylbenzene	ND	0.047		mg/Kg	1	6/23/2023 7:39:24 PM
Xylenes, Total	ND	0.095		mg/Kg	1	6/23/2023 7:39:24 PM
Surr: 4-Bromofluorobenzene	100	39.1-146		%Rec	1	6/23/2023 7:39:24 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	660	59		mg/Kg	20	6/24/2023 8:15:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-005 **Matrix:** SOIL

Client Sample ID: BH23-10 0'
Collection Date: 6/19/2023 11:10:00 AM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	6/23/2023 4:10:05 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	6/23/2023 4:10:05 AM
Surr: DNOP	117	69-147		%Rec	1	6/23/2023 4:10:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/23/2023 8:51:55 PM
Surr: BFB	108	15-244		%Rec	1	6/23/2023 8:51:55 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	6/23/2023 8:51:55 PM
Toluene	ND	0.048		mg/Kg	1	6/23/2023 8:51:55 PM
Ethylbenzene	ND	0.048		mg/Kg	1	6/23/2023 8:51:55 PM
Xylenes, Total	ND	0.096		mg/Kg	1	6/23/2023 8:51:55 PM
Surr: 4-Bromofluorobenzene	99.2	39.1-146		%Rec	1	6/23/2023 8:51:55 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	6/24/2023 8:28:21 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH23-10 2'
Project: Ragin Cajun 13 Fed 2
Collection Date: 6/19/2023 11:20:00 AM
Lab ID: 2306A86-006 **Matrix:** SOIL **Received Date:** 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	6/23/2023 4:21:05 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	6/23/2023 4:21:05 AM
Surr: DNOP	91.8	69-147		%Rec	1	6/23/2023 4:21:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/23/2023 10:03:37 PM
Surr: BFB	105	15-244		%Rec	1	6/23/2023 10:03:37 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	6/23/2023 10:03:37 PM
Toluene	ND	0.049		mg/Kg	1	6/23/2023 10:03:37 PM
Ethylbenzene	ND	0.049		mg/Kg	1	6/23/2023 10:03:37 PM
Xylenes, Total	ND	0.099		mg/Kg	1	6/23/2023 10:03:37 PM
Surr: 4-Bromofluorobenzene	98.4	39.1-146		%Rec	1	6/23/2023 10:03:37 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	61		mg/Kg	20	6/24/2023 8:40:46 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-007 **Matrix:** SOIL

Client Sample ID: BH23-11 0'
Collection Date: 6/19/2023 12:00:00 PM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/23/2023 4:32:05 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/23/2023 4:32:05 AM
Surr: DNOP	105	69-147		%Rec	1	6/23/2023 4:32:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/23/2023 10:27:22 PM
Surr: BFB	103	15-244		%Rec	1	6/23/2023 10:27:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 10:27:22 PM
Toluene	ND	0.047		mg/Kg	1	6/23/2023 10:27:22 PM
Ethylbenzene	ND	0.047		mg/Kg	1	6/23/2023 10:27:22 PM
Xylenes, Total	ND	0.093		mg/Kg	1	6/23/2023 10:27:22 PM
Surr: 4-Bromofluorobenzene	95.4	39.1-146		%Rec	1	6/23/2023 10:27:22 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	570	60		mg/Kg	20	6/24/2023 8:53:11 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-008 **Matrix:** SOIL

Client Sample ID: BH23-11 2'
Collection Date: 6/19/2023 12:10:00 PM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/23/2023 4:43:05 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/23/2023 4:43:05 AM
Surr: DNOP	97.2	69-147		%Rec	1	6/23/2023 4:43:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/23/2023 10:51:04 PM
Surr: BFB	103	15-244		%Rec	1	6/23/2023 10:51:04 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 10:51:04 PM
Toluene	ND	0.047		mg/Kg	1	6/23/2023 10:51:04 PM
Ethylbenzene	ND	0.047		mg/Kg	1	6/23/2023 10:51:04 PM
Xylenes, Total	ND	0.094		mg/Kg	1	6/23/2023 10:51:04 PM
Surr: 4-Bromofluorobenzene	95.7	39.1-146		%Rec	1	6/23/2023 10:51:04 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	740	60		mg/Kg	20	6/24/2023 9:05:35 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-009 **Matrix:** SOIL

Client Sample ID: BH23-11 4'
Collection Date: 6/19/2023 1:10:00 PM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	6/23/2023 4:54:14 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/23/2023 4:54:14 AM
Surr: DNOP	93.7	69-147		%Rec	1	6/23/2023 4:54:14 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/23/2023 11:14:44 PM
Surr: BFB	101	15-244		%Rec	1	6/23/2023 11:14:44 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	6/23/2023 11:14:44 PM
Toluene	ND	0.047		mg/Kg	1	6/23/2023 11:14:44 PM
Ethylbenzene	ND	0.047		mg/Kg	1	6/23/2023 11:14:44 PM
Xylenes, Total	ND	0.094		mg/Kg	1	6/23/2023 11:14:44 PM
Surr: 4-Bromofluorobenzene	94.1	39.1-146		%Rec	1	6/23/2023 11:14:44 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	1400	60		mg/Kg	20	6/24/2023 9:17:59 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Ragin Cajun 13 Fed 2
Lab ID: 2306A86-010 **Matrix:** SOIL

Client Sample ID: BH23-12 0'
Collection Date: 6/19/2023 12:10:00 PM
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	6/23/2023 5:05:21 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/23/2023 5:05:21 AM
Surr: DNOP	123	69-147		%Rec	1	6/23/2023 5:05:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/23/2023 11:38:20 PM
Surr: BFB	100	15-244		%Rec	1	6/23/2023 11:38:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	6/23/2023 11:38:20 PM
Toluene	ND	0.049		mg/Kg	1	6/23/2023 11:38:20 PM
Ethylbenzene	ND	0.049		mg/Kg	1	6/23/2023 11:38:20 PM
Xylenes, Total	ND	0.097		mg/Kg	1	6/23/2023 11:38:20 PM
Surr: 4-Bromofluorobenzene	94.0	39.1-146		%Rec	1	6/23/2023 11:38:20 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	900	60		mg/Kg	20	6/24/2023 9:55:13 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306A86**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH23-12 2'
Project: Ragin Cajun 13 Fed 2
Collection Date: 6/19/2023 12:20:00 PM
Lab ID: 2306A86-011 **Matrix:** SOIL
Received Date: 6/21/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	6/23/2023 5:27:07 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	6/23/2023 5:27:07 AM
Surr: DNOP	102	69-147		%Rec	1	6/23/2023 5:27:07 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/24/2023 12:02:01 AM
Surr: BFB	102	15-244		%Rec	1	6/24/2023 12:02:01 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	6/24/2023 12:02:01 AM
Toluene	ND	0.047		mg/Kg	1	6/24/2023 12:02:01 AM
Ethylbenzene	ND	0.047		mg/Kg	1	6/24/2023 12:02:01 AM
Xylenes, Total	ND	0.094		mg/Kg	1	6/24/2023 12:02:01 AM
Surr: 4-Bromofluorobenzene	94.8	39.1-146		%Rec	1	6/24/2023 12:02:01 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	61		mg/Kg	20	6/24/2023 10:07:37 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A86**

30-Jun-23

Client: Devon Energy

Project: Ragin Cajun 13 Fed 2

Sample ID:	**MB-75816**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**75816**	RunNo:	**97707**					
Prep Date:	**6/24/2023**	Analysis Date:	**6/24/2023**	SeqNo:	**3553436**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID:	**LCS-75816**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**75816**	RunNo:	**97707**					
Prep Date:	**6/24/2023**	Analysis Date:	**6/24/2023**	SeqNo:	**3553437**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.8	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A86**

30-Jun-23

Client: Devon Energy

Project: Ragin Cajun 13 Fed 2

Sample ID: **LCS-75766**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **75766**	RunNo: **97639**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3551921** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	39	10	50.00	0	78.5	61.9	130			
Surr: DNOP	5.3		5.000		105	69	147			

Sample ID: **LCS-75767**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **75767**	RunNo: **97639**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3551922** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	39	10	50.00	0	77.6	61.9	130			
Surr: DNOP	4.7		5.000		93.6	69	147			

Sample ID: **MB-75766**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **75766**	RunNo: **97639**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3551924** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		103	69	147			

Sample ID: **MB-75767**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **75767**	RunNo: **97639**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3551925** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		102	69	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A86**

30-Jun-23

Client: Devon Energy

Project: Ragin Cajun 13 Fed 2

Sample ID: **lcs-75760**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **75760**	RunNo: **97645**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3550631** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.4	70	130			
Surr: BFB	2100		1000		213	15	244			

Sample ID: **mb-75760**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **75760**	RunNo: **97645**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3550632** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		100	15	244			

Sample ID: **lcs-75764**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553219** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	70	130			
Surr: BFB	2300		1000		228	15	244			

Sample ID: **mb-75764**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553220** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		110	15	244			

Sample ID: **2306a86-004ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-09 2'**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553222** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.7	23.70	0	106	70	130			
Surr: BFB	2200		947.9		229	15	244			

Sample ID: **2306a86-004amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-09 2'**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A86**

30-Jun-23

Client: Devon Energy

Project: Ragin Cajun 13 Fed 2

Sample ID: **2306a86-004amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-09 2'**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.8	23.76	0	104	70	130	0.895	20	
Surr: BFB	2200		950.6		229	15	244	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A86**

30-Jun-23

Client: Devon Energy

Project: Ragin Cajun 13 Fed 2

Sample ID: **lcs-75760**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75760**	RunNo: **97645**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3550637** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.5	70	130			
Toluene	0.95	0.050	1.000	0	95.3	70	130			
Ethylbenzene	0.96	0.050	1.000	0	95.6	70	130			
Xylenes, Total	2.9	0.10	3.000	0	95.2	70	130			
Surr: 4-Bromofluorobenzene	0.94		1.000		94.1	39.1	146			

Sample ID: **mb-75760**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75760**	RunNo: **97645**
Prep Date: **6/21/2023**	Analysis Date: **6/22/2023**	SeqNo: **3550638** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		94.0	39.1	146			

Sample ID: **LCS-75764**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553245** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	88.3	70	130			
Toluene	0.89	0.050	1.000	0	89.4	70	130			
Ethylbenzene	0.89	0.050	1.000	0	89.3	70	130			
Xylenes, Total	2.7	0.10	3.000	0	90.9	70	130			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	39.1	146			

Sample ID: **mb-75764**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553246** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.99		1.000		99.2	39.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306A86**

30-Jun-23

Client: Devon Energy

Project: Ragin Cajun 13 Fed 2

Sample ID: **2306a86-005ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-10 0'**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553249** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.024	0.9597	0	97.3	70	130			
Toluene	0.95	0.048	0.9597	0	99.0	70	130			
Ethylbenzene	0.95	0.048	0.9597	0	99.4	70	130			
Xylenes, Total	2.9	0.096	2.879	0	100	70	130			
Surr: 4-Bromofluorobenzene	0.96		0.9597		100	39.1	146			

Sample ID: **2306a86-005amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-10 0'**	Batch ID: **75764**	RunNo: **97701**
Prep Date: **6/21/2023**	Analysis Date: **6/23/2023**	SeqNo: **3553250** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.024	0.9588	0	95.8	70	130	1.73	20	
Toluene	0.93	0.048	0.9588	0	97.0	70	130	2.18	20	
Ethylbenzene	0.94	0.048	0.9588	0	98.0	70	130	1.48	20	
Xylenes, Total	2.8	0.096	2.876	0	98.2	70	130	2.18	20	
Surr: 4-Bromofluorobenzene	0.95		0.9588		99.4	39.1	146	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Devon Energy Work Order Number: 2306A86 RcptNo: 1

Received By: Joseph Alderette 6/21/2023 7:30:00 AM

Completed By: Tracy Casarrubias 6/21/2023 9:42:34 AM

Reviewed By: TMP 6/21/23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: ____ (<2 or >12 unless noted)

Adjusted? ____

Checked by: TMP 6/21/23

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: ____ Date: ____

By Whom: ____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: ____

Client Instructions: Mailing address, phone number and Email/Fax are missing on COC- TMC 6/21/23

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0	Good	Yes	Morty		

Chain-of-Custody Record

Client: Devon/Vertex

Mailing Address: On file

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: Ragin Cajun 13 Fed 2

Project #: 23E-02967

Project Manager: Kent Stallings

Sampler: S M

On Ice: ☑ Yes ☐ No

# of Coolers: 1 morty

Cooler Temp (Including CF): 0.1 - 0.1 = 0.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 23060486
6/19/23	10:45	Soil	BH23-08 0'	4oz jar	ICE	001
	10:50		BH23-08 2'			002
	10:55		BH23-09 0'			003
	11:05		BH23-09 2'			004
	11:10		BH23-10 0'			005
	11:20		BH23-10 2'			006
	12:00		BH23-11 0'			007
	12:10		BH23-11 2'			008
	13:10		BH23-11 4'			009
	12:10		BH23-12 0'			010
	12:20		BH23-12 2'			011

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
✓	✓					✓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6/19/23	19:32	Steph McCay				
6/20/23	1900				6/20/23	930
				courier	6-21-23	7:30

Remarks: Direct bill to: Devon w/o # 211604440

c.c. smccarty@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 30, 2023

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX:

RE: Ragin Cajun 13 Federal 2 OrderNo.: 2306C33

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 14 sample(s) on 6/23/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-13 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 9:40:00 AM
Lab ID: 2306C33-001 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/26/2023 4:04:52 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/26/2023 4:04:52 PM
Surr: DNOP	92.7	69-147		%Rec	1	6/26/2023 4:04:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/27/2023 2:48:00 AM
Surr: BFB	92.7	15-244		%Rec	1	6/27/2023 2:48:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/27/2023 2:48:00 AM
Toluene	ND	0.049		mg/Kg	1	6/27/2023 2:48:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/27/2023 2:48:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	6/27/2023 2:48:00 AM
Surr: 4-Bromofluorobenzene	92.3	39.1-146		%Rec	1	6/27/2023 2:48:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	70	59		mg/Kg	20	6/26/2023 7:42:42 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-13 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 9:50:00 AM
Lab ID: 2306C33-002 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/26/2023 4:15:51 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/26/2023 4:15:51 PM
Surr: DNOP	95.7	69-147		%Rec	1	6/26/2023 4:15:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/27/2023 3:53:00 AM
Surr: BFB	94.9	15-244		%Rec	1	6/27/2023 3:53:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 3:53:00 AM
Toluene	ND	0.049		mg/Kg	1	6/27/2023 3:53:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/27/2023 3:53:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	6/27/2023 3:53:00 AM
Surr: 4-Bromofluorobenzene	92.0	39.1-146		%Rec	1	6/27/2023 3:53:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	6/26/2023 7:55:07 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-14 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 9:35:00 AM
Lab ID: 2306C33-003 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/26/2023 4:26:47 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/26/2023 4:26:47 PM
Surr: DNOP	97.8	69-147		%Rec	1	6/26/2023 4:26:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 4:15:00 AM
Surr: BFB	92.3	15-244		%Rec	1	6/27/2023 4:15:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 4:15:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 4:15:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 4:15:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	6/27/2023 4:15:00 AM
Surr: 4-Bromofluorobenzene	92.0	39.1-146		%Rec	1	6/27/2023 4:15:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	66	60		mg/Kg	20	6/26/2023 8:07:32 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-14 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 9:45:00 AM
Lab ID: 2306C33-004 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	6/26/2023 5:13:23 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/26/2023 5:13:23 PM
Surr: DNOP	97.5	69-147		%Rec	1	6/26/2023 5:13:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 4:37:00 AM
Surr: BFB	94.1	15-244		%Rec	1	6/27/2023 4:37:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 4:37:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 4:37:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 4:37:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	6/27/2023 4:37:00 AM
Surr: 4-Bromofluorobenzene	92.0	39.1-146		%Rec	1	6/27/2023 4:37:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	6/26/2023 8:19:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-15 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 9:50:00 AM
Lab ID: 2306C33-005 **Matrix:** SOIL
Received Date: 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	7800	98		mg/Kg	10	6/26/2023 1:25:20 PM
Motor Oil Range Organics (MRO)	2400	490		mg/Kg	10	6/26/2023 1:25:20 PM
Surr: DNOP	0	69-147	S	%Rec	10	6/26/2023 1:25:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	12	4.9		mg/Kg	1	6/27/2023 4:59:00 AM
Surr: BFB	149	15-244		%Rec	1	6/27/2023 4:59:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 4:59:00 AM
Toluene	ND	0.049		mg/Kg	1	6/27/2023 4:59:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/27/2023 4:59:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	6/27/2023 4:59:00 AM
Surr: 4-Bromofluorobenzene	101	39.1-146		%Rec	1	6/27/2023 4:59:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 2:48:12 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-15 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:00:00 AM
Lab ID: 2306C33-006 **Matrix:** SOIL
Received Date: 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	280	9.5		mg/Kg	1	6/26/2023 2:06:46 PM
Motor Oil Range Organics (MRO)	84	48		mg/Kg	1	6/26/2023 2:06:46 PM
Surr: DNOP	99.9	69-147		%Rec	1	6/26/2023 2:06:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/27/2023 5:21:00 AM
Surr: BFB	97.1	15-244		%Rec	1	6/27/2023 5:21:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 5:21:00 AM
Toluene	ND	0.049		mg/Kg	1	6/27/2023 5:21:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/27/2023 5:21:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	6/27/2023 5:21:00 AM
Surr: 4-Bromofluorobenzene	91.0	39.1-146		%Rec	1	6/27/2023 5:21:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 3:49:56 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-16 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:00:00 AM
Lab ID: 2306C33-007 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/26/2023 5:35:01 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/26/2023 5:35:01 PM
Surr: DNOP	100	69-147		%Rec	1	6/26/2023 5:35:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/27/2023 5:43:00 AM
Surr: BFB	93.5	15-244		%Rec	1	6/27/2023 5:43:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 5:43:00 AM
Toluene	ND	0.049		mg/Kg	1	6/27/2023 5:43:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/27/2023 5:43:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	6/27/2023 5:43:00 AM
Surr: 4-Bromofluorobenzene	91.3	39.1-146		%Rec	1	6/27/2023 5:43:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 4:02:17 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-16 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:15:00 AM
Lab ID: 2306C33-008 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/26/2023 5:45:57 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/26/2023 5:45:57 PM
Surr: DNOP	99.5	69-147		%Rec	1	6/26/2023 5:45:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 6:04:00 AM
Surr: BFB	93.0	15-244		%Rec	1	6/27/2023 6:04:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 6:04:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 6:04:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 6:04:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	6/27/2023 6:04:00 AM
Surr: 4-Bromofluorobenzene	91.3	39.1-146		%Rec	1	6/27/2023 6:04:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 4:14:37 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-17 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:20:00 AM
Lab ID: 2306C33-009 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	6/26/2023 5:56:54 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/26/2023 5:56:54 PM
Surr: DNOP	93.7	69-147		%Rec	1	6/26/2023 5:56:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 7:10:00 AM
Surr: BFB	95.2	15-244		%Rec	1	6/27/2023 7:10:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 7:10:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 7:10:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 7:10:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	6/27/2023 7:10:00 AM
Surr: 4-Bromofluorobenzene	94.8	39.1-146		%Rec	1	6/27/2023 7:10:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 4:26:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-17 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:25:00 AM
Lab ID: 2306C33-010 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/26/2023 6:07:50 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/26/2023 6:07:50 PM
Surr: DNOP	94.8	69-147		%Rec	1	6/26/2023 6:07:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 7:32:00 AM
Surr: BFB	91.8	15-244		%Rec	1	6/27/2023 7:32:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 7:32:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 7:32:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 7:32:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	6/27/2023 7:32:00 AM
Surr: 4-Bromofluorobenzene	90.7	39.1-146		%Rec	1	6/27/2023 7:32:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 9:47:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-18 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:25:00 AM
Lab ID: 2306C33-011 **Matrix:** SOIL **Received Date:** 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	6/26/2023 6:18:47 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/26/2023 6:18:47 PM
Surr: DNOP	92.8	69-147		%Rec	1	6/26/2023 6:18:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/27/2023 7:53:00 AM
Surr: BFB	94.3	15-244		%Rec	1	6/27/2023 7:53:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/27/2023 7:53:00 AM
Toluene	ND	0.049		mg/Kg	1	6/27/2023 7:53:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	6/27/2023 7:53:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	6/27/2023 7:53:00 AM
Surr: 4-Bromofluorobenzene	93.0	39.1-146		%Rec	1	6/27/2023 7:53:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 10:49:41 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-18 2'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 10:30:00 AM
Lab ID: 2306C33-012 **Matrix:** SOIL
Received Date: 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/26/2023 6:29:43 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/26/2023 6:29:43 PM
Surr: DNOP	94.4	69-147		%Rec	1	6/26/2023 6:29:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 8:15:00 AM
Surr: BFB	96.7	15-244		%Rec	1	6/27/2023 8:15:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 8:15:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 8:15:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 8:15:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	6/27/2023 8:15:00 AM
Surr: 4-Bromofluorobenzene	91.0	39.1-146		%Rec	1	6/27/2023 8:15:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 11:02:03 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-19 0'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 11:10:00 AM
Lab ID: 2306C33-013 **Matrix:** SOIL
Received Date: 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	6/26/2023 6:40:39 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/26/2023 6:40:39 PM
Surr: DNOP	95.8	69-147		%Rec	1	6/26/2023 6:40:39 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	6/27/2023 8:37:00 AM
Surr: BFB	96.2	15-244		%Rec	1	6/27/2023 8:37:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	6/27/2023 8:37:00 AM
Toluene	ND	0.050		mg/Kg	1	6/27/2023 8:37:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	6/27/2023 8:37:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	6/27/2023 8:37:00 AM
Surr: 4-Bromofluorobenzene	92.3	39.1-146		%Rec	1	6/27/2023 8:37:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	6/27/2023 11:14:23 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2306C33**
Date Reported: **6/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-11 4.5'
Project: Ragin Cajun 13 Federal 2
Collection Date: 6/21/2023 12:00:00 PM
Lab ID: 2306C33-014 **Matrix:** SOIL
Received Date: 6/23/2023 7:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/26/2023 6:51:36 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	6/26/2023 6:51:36 PM
Surr: DNOP	119	69-147		%Rec	1	6/26/2023 6:51:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/27/2023 8:59:00 AM
Surr: BFB	95.7	15-244		%Rec	1	6/27/2023 8:59:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	6/27/2023 8:59:00 AM
Toluene	ND	0.048		mg/Kg	1	6/27/2023 8:59:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	6/27/2023 8:59:00 AM
Xylenes, Total	ND	0.096		mg/Kg	1	6/27/2023 8:59:00 AM
Surr: 4-Bromofluorobenzene	92.9	39.1-146		%Rec	1	6/27/2023 8:59:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	720	60		mg/Kg	20	6/27/2023 11:26:44 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306C33**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **MB-75836**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **75836**	RunNo: **97729**
Prep Date: **6/26/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554216** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-75836**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **75836**	RunNo: **97729**
Prep Date: **6/26/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554217** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	99.9	90	110			

Sample ID: **MB-75846**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **75846**	RunNo: **97774**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555682** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **lcs-75846**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **75846**	RunNo: **97774**
Prep Date: **6/26/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555683** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.3	90	110			

Sample ID: **mb-75865**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **75865**	RunNo: **97774**
Prep Date: **6/27/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555716** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **lcs-75865**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **75865**	RunNo: **97774**
Prep Date: **6/27/2023**	Analysis Date: **6/27/2023**	SeqNo: **3555717** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.5	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306C33**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **LCS-75819**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **75819**	RunNo: **97703**
Prep Date: **6/26/2023**	Analysis Date: **6/26/2023**	SeqNo: **3553956** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	36	10	50.00	0	72.7	61.9	130			
Surr: DNOP	4.5		5.000		90.5	69	147			

Sample ID: **MB-75819**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **75819**	RunNo: **97703**
Prep Date: **6/26/2023**	Analysis Date: **6/26/2023**	SeqNo: **3553958** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.8		10.00		88.4	69	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306C33**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **lcs-75811**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554080** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	86.0	70	130			
Surr: BFB	2100		1000		207	15	244			

Sample ID: **mb-75811**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554081** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.9	15	244			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2306C33**

30-Jun-23

Client: Vertex Resources Services, Inc.

Project: Ragin Cajun 13 Federal 2

Sample ID: **2306C33-001ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-13 0'**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/27/2023**	SeqNo: **3554113** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	0.9980	0	87.4	70	130			
Toluene	0.91	0.050	0.9980	0	91.3	70	130			
Ethylbenzene	0.92	0.050	0.9980	0	92.3	70	130			
Xylenes, Total	2.8	0.10	2.994	0	92.5	70	130			
Surr: 4-Bromofluorobenzene	0.93		0.9980		92.8	39.1	146			

Sample ID: **2306C33-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-13 0'**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/27/2023**	SeqNo: **3554114** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	0.9950	0	89.3	70	130	1.85	20	
Toluene	0.91	0.050	0.9950	0	91.0	70	130	0.573	20	
Ethylbenzene	0.92	0.050	0.9950	0	92.1	70	130	0.567	20	
Xylenes, Total	2.7	0.10	2.985	0	91.8	70	130	0.968	20	
Surr: 4-Bromofluorobenzene	0.92		0.9950		92.9	39.1	146	0	0	

Sample ID: **lcs-75811**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554125** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.1	70	130			
Toluene	0.92	0.050	1.000	0	91.6	70	130			
Ethylbenzene	0.93	0.050	1.000	0	92.9	70	130			
Xylenes, Total	2.8	0.10	3.000	0	92.8	70	130			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.0	39.1	146			

Sample ID: **mb-75811**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **75811**	RunNo: **97706**
Prep Date: **6/23/2023**	Analysis Date: **6/26/2023**	SeqNo: **3554126** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		92.9	39.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2306C33

RcptNo: 1

Received By: **Tracy Casarrubias** 6/23/2023 7:40:00 AM

Completed By: **Tracy Casarrubias** 6/23/2023 8:24:24 AM

Reviewed By: TMB 6/23/23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: TMB 6/23/23

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions: Mailing address,phone number and Emailo/Fax are missing on COC- TMC 6/23/23

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Vertex/Devon

Mailing Address: On File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☑ Rush 5 Day

Project Name: Ragin Cajun 13 Federal 2

Project #: 23E-02967

Project Manager: Kent Stallings

Sampler: S M

On Ice: ☑ Yes ☐ No yoqi

# of Coolers: 1

Cooler Temp(including CF): 1.1-0.1=1.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2306C33	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/21/23	9:40	Soil	BH23-13 0'	4oz jar	ICE	001	✓	✓					✓			
	9:50		BH23-13 2'			002										
	9:35		BH23-14 0'			003										
	9:45		BH23-14 2'			004										
	9:50		BH23-15 0'			005										
	10:00		BH23-15 2'			006										
	10:00		BH23-16 0'			007										
	10:15		BH23-16 2'			008										
	10:20		BH23-17 0'			009										
	10:25		BH23-17 2'			010										
	10:25		BH23-18 0'			011										
	10:30		BH23-18 2'			012										

Date	Time	Relinquished by	Received by	Via	Date	Time
6/21/23	1745	Steph McCoy				
6/22/23	1900			Courier	6/23/23	7:40

Remarks: Direct bill to Devon WO#:211604440

C.C. smcarty@vertex.ca pg. 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Vertex / Devon

Mailing Address: On File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☑ Rush 5 Days

Project Name: Ragin Cajun 13 Federal 2

Project #: 23E-02967

Project Manager: Kent Stallings

Sampler: SM

On Ice: ☑ Yes ☐ No 4oqi

# of Coolers: 1

Cooler Temp(including CF): 1.1 - 0.1 = 1.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6/21/23	~~11:10~~ 10:47	Soil	BH23-19 0'	4oz jar	ICE	013	✓	✓					✓			
1	12:00	1	BH23-11 4.5'	1	1	014	✓	✓					✓			

Analysis Request

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
6/22/23	1745	Stephanie McGuire				
6/22/23	1900			Courier	6/23/23	7:40

Remarks: Direct bill to Devon w/o #: 211604440

cc: SMccarty@vertex.ca pg 2 of 2

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

September 14, 2023

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX:

RE: Rajin Cajun 13 Federal 002H OrderNo.: 2309274

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 2 sample(s) on 9/7/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2309274**
Date Reported: **9/14/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-11 5'
Project: Rajin Cajun 13 Federal 002H
Collection Date: 9/2/2023 4:30:00 PM
Lab ID: 2309274-001 **Matrix:** SOIL **Received Date:** 9/7/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	9/8/2023 9:26:18 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/8/2023 9:26:18 PM
Surr: DNOP	99.3	69-147		%Rec	1	9/8/2023 9:26:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/8/2023 7:47:32 PM
Surr: BFB	99.3	15-244		%Rec	1	9/8/2023 7:47:32 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	9/8/2023 7:47:32 PM
Toluene	ND	0.047		mg/Kg	1	9/8/2023 7:47:32 PM
Ethylbenzene	ND	0.047		mg/Kg	1	9/8/2023 7:47:32 PM
Xylenes, Total	ND	0.094		mg/Kg	1	9/8/2023 7:47:32 PM
Surr: 4-Bromofluorobenzene	109	39.1-146		%Rec	1	9/8/2023 7:47:32 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	9/9/2023 1:21:33 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309274**
Date Reported: **9/14/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-19 2'
Project: Rajin Cajun 13 Federal 002H **Collection Date:** 9/2/2023 4:45:00 PM
Lab ID: 2309274-002 **Matrix:** SOIL **Received Date:** 9/7/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	9/8/2023 9:59:13 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/8/2023 9:59:13 PM
Surr: DNOP	108	69-147		%Rec	1	9/8/2023 9:59:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/8/2023 8:57:53 PM
Surr: BFB	99.7	15-244		%Rec	1	9/8/2023 8:57:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	9/8/2023 8:57:53 PM
Toluene	ND	0.047		mg/Kg	1	9/8/2023 8:57:53 PM
Ethylbenzene	ND	0.047		mg/Kg	1	9/8/2023 8:57:53 PM
Xylenes, Total	ND	0.094		mg/Kg	1	9/8/2023 8:57:53 PM
Surr: 4-Bromofluorobenzene	112	39.1-146		%Rec	1	9/8/2023 8:57:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	ND	60		mg/Kg	20	9/9/2023 1:33:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309274**

14-Sep-23

Client: Vertex Resources Services, Inc.

Project: Rajin Cajun 13 Federal 002H

Sample ID: **MB-77401**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **77401**	RunNo: **99580**
Prep Date: **9/9/2023**	Analysis Date: **9/9/2023**	SeqNo: **3637203** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-77401**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **77401**	RunNo: **99580**
Prep Date: **9/9/2023**	Analysis Date: **9/9/2023**	SeqNo: **3637204** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309274**

14-Sep-23

Client: Vertex Resources Services, Inc.

Project: Rajin Cajun 13 Federal 002H

Sample ID: **MB-77368** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **77368** RunNo: **99545**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3636490** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		130	69	147			

Sample ID: **LCS-77368** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **77368** RunNo: **99545**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3636493** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	58	10	50.00	0	115	61.9	130			
Surr: DNOP	6.0		5.000		120	69	147			

Sample ID: **2309274-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **BH23-11 5'** Batch ID: **77368** RunNo: **99545**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3636558** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.5	47.71	0	95.3	54.2	135			
Surr: DNOP	4.8		4.771		100	69	147			

Sample ID: **2309274-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **BH23-11 5'** Batch ID: **77368** RunNo: **99545**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3636561** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.4	47.08	0	95.1	54.2	135	1.51	29.2	
Surr: DNOP	4.6		4.708		97.3	69	147	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309274**

14-Sep-23

Client: Vertex Resources Services, Inc.

Project: Rajin Cajun 13 Federal 002H

Sample ID: **lcs-77363**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **77363**	RunNo: **99554**
Prep Date: **9/7/2023**	Analysis Date: **9/8/2023**	SeqNo: **3636898** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.4	70	130			
Surr: BFB	2000		1000		205	15	244			

Sample ID: **mb-77363**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **77363**	RunNo: **99554**
Prep Date: **9/7/2023**	Analysis Date: **9/8/2023**	SeqNo: **3636901** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		101	15	244			

Sample ID: **2309274-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-11 5'**	Batch ID: **77363**	RunNo: **99554**
Prep Date: **9/7/2023**	Analysis Date: **9/8/2023**	SeqNo: **3636923** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.47	0	97.0	70	130			
Surr: BFB	2000		939.0		209	15	244			

Sample ID: **2309274-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-11 5'**	Batch ID: **77363**	RunNo: **99554**
Prep Date: **9/7/2023**	Analysis Date: **9/8/2023**	SeqNo: **3636924** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.58	0	99.6	70	130	3.16	20	
Surr: BFB	2000		943.4		216	15	244	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309274**

14-Sep-23

Client: Vertex Resources Services, Inc.

Project: Rajin Cajun 13 Federal 002H

Sample ID: **LCS-77363** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **77363** RunNo: **99554**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3636989** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.4	70	130			
Toluene	0.99	0.050	1.000	0	99.5	70	130			
Ethylbenzene	1.0	0.050	1.000	0	101	70	130			
Xylenes, Total	3.1	0.10	3.000	0	102	70	130			
Surr: 4-Bromofluorobenzene	1.1		1.000		110	39.1	146			

Sample ID: **mb-77363** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **77363** RunNo: **99554**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3636992** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		111	39.1	146			

Sample ID: **2309274-002ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BH23-19 2'** Batch ID: **77363** RunNo: **99554**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3637043** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.024	0.9407	0	109	70	130			
Toluene	1.1	0.047	0.9407	0	112	70	130			
Ethylbenzene	1.1	0.047	0.9407	0	113	70	130			
Xylenes, Total	3.2	0.094	2.822	0	114	70	130			
Surr: 4-Bromofluorobenzene	1.0		0.9407		111	39.1	146			

Sample ID: **2309274-002amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **BH23-19 2'** Batch ID: **77363** RunNo: **99554**

Prep Date: **9/7/2023** Analysis Date: **9/8/2023** SeqNo: **3637044** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.023	0.9363	0	104	70	130	5.05	20	
Toluene	1.0	0.047	0.9363	0	108	70	130	4.17	20	
Ethylbenzene	1.0	0.047	0.9363	0	110	70	130	3.43	20	
Xylenes, Total	3.1	0.094	2.809	0	111	70	130	3.14	20	
Surr: 4-Bromofluorobenzene	1.0		0.9363		107	39.1	146	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2309274

RcptNo: 1

Received By: Juan Rojas 9/7/2023 7:30:00 AM

Completed By: Tracy Casarrubias 9/7/2023 8:21:35 AM

Reviewed By: SCM 9/7/23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☐	No ☑	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	~~Yes ☑~~ NA 9/7/23	No ☑	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: TMC 9/7/23

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: Date:

By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions: Mailing address, phone number and Email/Fax are missing on COC- TMC 9/7/23

16. Additional remarks: Collection times for both samples on COC do not match sample bottle labels. NA 9/7/23

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.4	Good	Yes	Yogi		

Chain of Custody Record

Client: Vertex

(direct bill to Devon, work order 21160440)

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard X Rush_72-hour rush

Project Name:

Rajin Cajun 13 Federal 002H

Project #:

23E-02967

Project Manager:

Kent Stallings

kstallings@vertex.ca

Sampler: L. Pullman

On Ice: ~~☐~~ Yes ☐ No

# of Coolers: 1 Yoyi

Cooler Temp(including CF): 5.4-0=5.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2309274	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
09/02/23	16:30	Soil	BH23-11 5'	1, 4oz jar		001	X	X					X			
09/02/23	16:45	Soil	BH23-19 2'	1, 4oz jar		002	X	X					X			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9-6-23	07:00	Dale Pullman	Acummins		9/6/23	930
Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
9/6/23	1900	Acummins		courier	9/7/23	7:30

Remarks:
Direct bill to Devon work order 21160440 Dale Woodall
cc. KStallings@vertex.ca, SMcCarty@vertex.ca for Final Report

1/1

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Chad Hensley
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 8/12/2024 2:55:12 PM

JOB DESCRIPTION

Rajun Cajun 13 Federal 2

JOB NUMBER

885-9077-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization

Generated
8/12/2024 2:55:12 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Laboratory Job ID: 885-9077-1

Table of Contents

Definitions/Glossary

Client: Vertex Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex Job ID: 885-9077-1
Project: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1 Eurofins Albuquerque

Job Narrative
885-9077-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 8/2/2024 7:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.0°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

Client Sample ID: BS24-01 @ 2'

Date Collected: 07/24/24 10:12
Date Received: 08/02/24 07:30

Lab Sample ID: 885-9077-1

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		4.7		mg/Kg		08/02/24 09:38	08/04/24 16:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*08/02/24 09:38*	*08/04/24 16:48*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/02/24 09:38	08/05/24 23:35	1
Ethylbenzene	ND		0.047		mg/Kg		08/02/24 09:38	08/05/24 23:35	1
Toluene	ND		0.047		mg/Kg		08/02/24 09:38	08/05/24 23:35	1
Xylenes, Total	ND		0.094		mg/Kg		08/02/24 09:38	08/05/24 23:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*	*08/02/24 09:38*	*08/05/24 23:35*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		08/05/24 08:32	08/05/24 15:23	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		08/05/24 08:32	08/05/24 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*08/05/24 08:32*	*08/05/24 15:23*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		08/05/24 09:25	08/05/24 23:05	20

Client Sample Results

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: BS24-02 @ 2'
Lab Sample ID: 885-9077-2
Date Collected: 07/24/24 10:20
Matrix: Solid
Date Received: 08/02/24 07:30

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		5.0		mg/Kg		08/02/24 09:38	08/04/24 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*08/02/24 09:38*	*08/04/24 17:58*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/02/24 09:38	08/05/24 23:58	1
Ethylbenzene	ND		0.050		mg/Kg		08/02/24 09:38	08/05/24 23:58	1
Toluene	ND		0.050		mg/Kg		08/02/24 09:38	08/05/24 23:58	1
Xylenes, Total	ND		0.099		mg/Kg		08/02/24 09:38	08/05/24 23:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*48 - 145*	*08/02/24 09:38*	*08/05/24 23:58*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		08/05/24 08:32	08/05/24 15:36	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		08/05/24 08:32	08/05/24 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*08/05/24 08:32*	*08/05/24 15:36*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		08/05/24 09:25	08/05/24 23:18	20

Client Sample Results

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: BS24-03 @ 1'
Lab Sample ID: 885-9077-3
Date Collected: 07/24/24 10:31
Matrix: Solid
Date Received: 08/02/24 07:30

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		5.0		mg/Kg		08/02/24 09:38	08/04/24 19:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*08/02/24 09:38*	*08/04/24 19:09*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/02/24 09:38	08/06/24 01:09	1
Ethylbenzene	ND		0.050		mg/Kg		08/02/24 09:38	08/06/24 01:09	1
Toluene	ND		0.050		mg/Kg		08/02/24 09:38	08/06/24 01:09	1
Xylenes, Total	ND		0.10		mg/Kg		08/02/24 09:38	08/06/24 01:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*08/02/24 09:38*	*08/06/24 01:09*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/05/24 08:32	08/05/24 15:51	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/05/24 08:32	08/05/24 15:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*08/05/24 08:32*	*08/05/24 15:51*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**770**		60		mg/Kg		08/05/24 09:25	08/05/24 23:31	20

Client Sample Results

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: BS24-04 @ 1'
Lab Sample ID: 885-9077-4
Date Collected: 07/24/24 10:39
Matrix: Solid
Date Received: 08/02/24 07:30

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		5.0		mg/Kg		08/02/24 09:38	08/04/24 19:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*35 - 166*	*08/02/24 09:38*	*08/04/24 19:32*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/02/24 09:38	08/06/24 01:32	1
Ethylbenzene	ND		0.050		mg/Kg		08/02/24 09:38	08/06/24 01:32	1
Toluene	ND		0.050		mg/Kg		08/02/24 09:38	08/06/24 01:32	1
Xylenes, Total	ND		0.10		mg/Kg		08/02/24 09:38	08/06/24 01:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*08/02/24 09:38*	*08/06/24 01:32*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		08/05/24 08:35	08/05/24 17:13	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		08/05/24 08:35	08/05/24 17:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*98*		*62 - 134*	*08/05/24 08:35*	*08/05/24 17:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**180**		60		mg/Kg		08/05/24 11:47	08/05/24 23:44	20

Client Sample Results

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: WS24-01 @ 0-2'
Lab Sample ID: 885-9077-5
Date Collected: 07/24/24 10:46
Matrix: Solid
Date Received: 08/02/24 07:30

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		4.8		mg/Kg		08/02/24 09:38	08/04/24 19:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*08/02/24 09:38*	*08/04/24 19:56*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/02/24 09:38	08/06/24 01:56	1
Ethylbenzene	ND		0.048		mg/Kg		08/02/24 09:38	08/06/24 01:56	1
Toluene	ND		0.048		mg/Kg		08/02/24 09:38	08/06/24 01:56	1
Xylenes, Total	ND		0.097		mg/Kg		08/02/24 09:38	08/06/24 01:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*08/02/24 09:38*	*08/06/24 01:56*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		08/05/24 08:35	08/05/24 17:41	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		08/05/24 08:35	08/05/24 17:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*100*		*62 - 134*	*08/05/24 08:35*	*08/05/24 17:41*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		08/05/24 11:47	08/06/24 17:46	20

Client Sample Results

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: WS24-02 @ 0-2'
Lab Sample ID: 885-9077-6
Date Collected: 07/24/24 10:51
Matrix: Solid
Date Received: 08/02/24 07:30

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		4.8		mg/Kg		08/02/24 09:38	08/04/24 20:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*08/02/24 09:38*	*08/04/24 20:19*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/02/24 09:38	08/06/24 02:19	1
Ethylbenzene	ND		0.048		mg/Kg		08/02/24 09:38	08/06/24 02:19	1
Toluene	ND		0.048		mg/Kg		08/02/24 09:38	08/06/24 02:19	1
Xylenes, Total	ND		0.097		mg/Kg		08/02/24 09:38	08/06/24 02:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*	*08/02/24 09:38*	*08/06/24 02:19*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		08/05/24 08:35	08/05/24 17:55	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		08/05/24 08:35	08/05/24 17:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*08/05/24 08:35*	*08/05/24 17:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		08/05/24 11:47	08/06/24 17:59	20

Client Sample Results

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: WS24-03 @ 0-1'
Lab Sample ID: 885-9077-7
Date Collected: 07/24/24 10:55
Matrix: Solid
Date Received: 08/02/24 07:30

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		4.7		mg/Kg		08/02/24 09:38	08/04/24 20:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*08/02/24 09:38*	*08/04/24 20:43*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		08/02/24 09:38	08/06/24 02:42	1
Ethylbenzene	ND		0.047		mg/Kg		08/02/24 09:38	08/06/24 02:42	1
Toluene	ND		0.047		mg/Kg		08/02/24 09:38	08/06/24 02:42	1
Xylenes, Total	ND		0.095		mg/Kg		08/02/24 09:38	08/06/24 02:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*08/02/24 09:38*	*08/06/24 02:42*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/05/24 08:35	08/05/24 18:08	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/05/24 08:35	08/05/24 18:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*108*		*62 - 134*	*08/05/24 08:35*	*08/05/24 18:08*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**760**		60		mg/Kg		08/05/24 11:47	08/07/24 16:41	20

QC Sample Results

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-9626/1-A
Matrix: Solid
Analysis Batch: 9729

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9626

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C6-C10	ND		5.0		mg/Kg		08/02/24 09:38	08/04/24 16:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*08/02/24 09:38*	*08/04/24 16:24*	*1*

Lab Sample ID: LCS 885-9626/2-A
Matrix: Solid
Analysis Batch: 9729

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9626

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10			25.0	25.5		mg/Kg		102	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*206*	*S1+*	*35 - 166*

Lab Sample ID: 885-9077-1 MS
Matrix: Solid
Analysis Batch: 9729

Client Sample ID: BS24-01 @ 2'
Prep Type: Total/NA
Prep Batch: 9626

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics (GRO)-C6-C10	ND		23.3	25.1		mg/Kg		108	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*216*	*S1+*	*35 - 166*

Lab Sample ID: 885-9077-1 MSD
Matrix: Solid
Analysis Batch: 9729

Client Sample ID: BS24-01 @ 2'
Prep Type: Total/NA
Prep Batch: 9626

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C6-C10	ND		23.3	23.6		mg/Kg		101	70 - 130	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*207*	*S1+*	*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-9626/1-A
Matrix: Solid
Analysis Batch: 9780

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9626

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		08/02/24 09:38	08/05/24 23:12	1
Ethylbenzene	ND		0.050		mg/Kg		08/02/24 09:38	08/05/24 23:12	1
Toluene	ND		0.050		mg/Kg		08/02/24 09:38	08/05/24 23:12	1

QC Sample Results

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-9626/1-A
Matrix: Solid
Analysis Batch: 9780

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9626

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		08/02/24 09:38	08/05/24 23:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*08/02/24 09:38*	*08/05/24 23:12*	*1*

Lab Sample ID: LCS 885-9626/3-A
Matrix: Solid
Analysis Batch: 9780

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9626

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.976		mg/Kg		98	70 - 130		
Ethylbenzene			1.00	0.896		mg/Kg		90	70 - 130		
m-Xylene & p-Xylene			2.00	1.79		mg/Kg		89	70 - 130		
o-Xylene			1.00	0.876		mg/Kg		88	70 - 130		
Toluene			1.00	0.923		mg/Kg		92	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*

Lab Sample ID: 885-9077-2 MS
Matrix: Solid
Analysis Batch: 9780

Client Sample ID: BS24-02 @ 2'
Prep Type: Total/NA
Prep Batch: 9626

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.987	0.919		mg/Kg		93	70 - 130		
Ethylbenzene	ND		0.987	0.865		mg/Kg		88	70 - 130		
m-Xylene & p-Xylene	ND		1.97	1.73		mg/Kg		87	70 - 130		
o-Xylene	ND		0.987	0.824		mg/Kg		83	70 - 130		
Toluene	ND		0.987	0.867		mg/Kg		88	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*

Lab Sample ID: 885-9077-2 MSD
Matrix: Solid
Analysis Batch: 9780

Client Sample ID: BS24-02 @ 2'
Prep Type: Total/NA
Prep Batch: 9626

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		1.00	0.907		mg/Kg		91	70 - 130	1	20
Ethylbenzene	ND		1.00	0.832		mg/Kg		83	70 - 130	4	20
m-Xylene & p-Xylene	ND		2.00	1.68		mg/Kg		84	70 - 130	3	20
o-Xylene	ND		1.00	0.800		mg/Kg		80	70 - 130	3	20
Toluene	ND		1.00	0.847		mg/Kg		85	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*

QC Sample Results

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-9705/1-A
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9705

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/05/24 08:32	08/05/24 10:49	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/05/24 08:32	08/05/24 10:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*08/05/24 08:32*	*08/05/24 10:49*	*1*

Lab Sample ID: LCS 885-9705/2-A
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9705

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	46.0		mg/Kg		92	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*

Lab Sample ID: 885-9077-3 MS
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: BS24-03 @ 1'
Prep Type: Total/NA
Prep Batch: 9705

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		48.4	43.4		mg/Kg		90	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*

Lab Sample ID: 885-9077-3 MSD
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: BS24-03 @ 1'
Prep Type: Total/NA
Prep Batch: 9705

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		47.1	41.4		mg/Kg		88	44 - 136	5	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*

Lab Sample ID: MB 885-9711/1-A
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9711

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		08/05/24 08:35	08/05/24 16:46	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		08/05/24 08:35	08/05/24 16:46	1

QC Sample Results

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

Method: 8015M/D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-9711/1-A
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9711

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	100		62 - 134	08/05/24 08:35	08/05/24 16:46	1

Lab Sample ID: LCS 885-9711/2-A
Matrix: Solid
Analysis Batch: 9733

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9711

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	50.0	42.3		mg/Kg		85	60 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	90		62 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-9714/1-A
Matrix: Solid
Analysis Batch: 9776

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9714

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	mg/Kg		08/05/24 09:25	08/05/24 12:09	1

Lab Sample ID: LCS 885-9714/2-A
Matrix: Solid
Analysis Batch: 9776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9714

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	30.0	30.7		mg/Kg		102	90 - 110

Lab Sample ID: MB 885-9737/1-A
Matrix: Solid
Analysis Batch: 9776

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 9737

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0	mg/Kg		08/05/24 11:47	08/05/24 12:35	1

Lab Sample ID: LCS 885-9737/2-A
Matrix: Solid
Analysis Batch: 9776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 9737

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	30.0	31.1		mg/Kg		104	90 - 110

Lab Sample ID: 885-9077-4 MS
Matrix: Solid
Analysis Batch: 9866

Client Sample ID: BS24-04 @ 1'
Prep Type: Total/NA
Prep Batch: 9737

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	180		30.1	215	4	mg/Kg		115	50 - 150

QC Sample Results

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 885-9077-4 MSD
Matrix: Solid
Analysis Batch: 9866

Client Sample ID: BS24-04 @ 1'
Prep Type: Total/NA
Prep Batch: 9737

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	180		30.0	216	4	mg/Kg		120	50 - 150	1	20

Lab Sample ID: MB 885-9914/16
Matrix: Solid
Analysis Batch: 9914

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			08/07/24 17:30	1

Lab Sample ID: MRL 885-9914/15
Matrix: Solid
Analysis Batch: 9914

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.516		mg/L		103	50 - 150		

QC Association Summary

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

GC VOA

Prep Batch: 9626

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	5030C	
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	5030C	
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	5030C	
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	5030C	
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	5030C	
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	5030C	
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	5030C	
MB 885-9626/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-9626/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-9626/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-9077-1 MS	BS24-01 @ 2'	Total/NA	Solid	5030C	
885-9077-1 MSD	BS24-01 @ 2'	Total/NA	Solid	5030C	
885-9077-2 MS	BS24-02 @ 2'	Total/NA	Solid	5030C	
885-9077-2 MSD	BS24-02 @ 2'	Total/NA	Solid	5030C	

Analysis Batch: 9729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	8015M/D	9626
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	8015M/D	9626
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	8015M/D	9626
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	8015M/D	9626
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	8015M/D	9626
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	8015M/D	9626
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	8015M/D	9626
MB 885-9626/1-A	Method Blank	Total/NA	Solid	8015M/D	9626
LCS 885-9626/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	9626
885-9077-1 MS	BS24-01 @ 2'	Total/NA	Solid	8015M/D	9626
885-9077-1 MSD	BS24-01 @ 2'	Total/NA	Solid	8015M/D	9626

Analysis Batch: 9780

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	8021B	9626
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	8021B	9626
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	8021B	9626
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	8021B	9626
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	8021B	9626
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	8021B	9626
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	8021B	9626
MB 885-9626/1-A	Method Blank	Total/NA	Solid	8021B	9626
LCS 885-9626/3-A	Lab Control Sample	Total/NA	Solid	8021B	9626
885-9077-2 MS	BS24-02 @ 2'	Total/NA	Solid	8021B	9626
885-9077-2 MSD	BS24-02 @ 2'	Total/NA	Solid	8021B	9626

GC Semi VOA

Prep Batch: 9705

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	SHAKE	
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	SHAKE	
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	SHAKE	
MB 885-9705/1-A	Method Blank	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Project/Site: Rajun Cajun 13 Federal 2

Job ID: 885-9077-1

GC Semi VOA (Continued)

Prep Batch: 9705 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 885-9705/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-9077-3 MS	BS24-03 @ 1'	Total/NA	Solid	SHAKE	
885-9077-3 MSD	BS24-03 @ 1'	Total/NA	Solid	SHAKE	

Prep Batch: 9711

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	SHAKE	
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	SHAKE	
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	SHAKE	
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	SHAKE	
MB 885-9711/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-9711/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 9733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	8015M/D	9705
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	8015M/D	9705
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	8015M/D	9705
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	8015M/D	9711
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	8015M/D	9711
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	8015M/D	9711
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	8015M/D	9711
MB 885-9705/1-A	Method Blank	Total/NA	Solid	8015M/D	9705
MB 885-9711/1-A	Method Blank	Total/NA	Solid	8015M/D	9711
LCS 885-9705/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	9705
LCS 885-9711/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	9711
885-9077-3 MS	BS24-03 @ 1'	Total/NA	Solid	8015M/D	9705
885-9077-3 MSD	BS24-03 @ 1'	Total/NA	Solid	8015M/D	9705

HPLC/IC

Prep Batch: 9714

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	300_Prep	
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	300_Prep	
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	300_Prep	
MB 885-9714/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-9714/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 9737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	300_Prep	
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	300_Prep	
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	300_Prep	
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	300_Prep	
MB 885-9737/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-9737/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-9077-4 MS	BS24-04 @ 1'	Total/NA	Solid	300_Prep	
885-9077-4 MSD	BS24-04 @ 1'	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

HPLC/IC

Analysis Batch: 9776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-1	BS24-01 @ 2'	Total/NA	Solid	300.0	9714
885-9077-2	BS24-02 @ 2'	Total/NA	Solid	300.0	9714
885-9077-3	BS24-03 @ 1'	Total/NA	Solid	300.0	9714
885-9077-4	BS24-04 @ 1'	Total/NA	Solid	300.0	9737
MB 885-9714/1-A	Method Blank	Total/NA	Solid	300.0	9714
MB 885-9737/1-A	Method Blank	Total/NA	Solid	300.0	9737
LCS 885-9714/2-A	Lab Control Sample	Total/NA	Solid	300.0	9714
LCS 885-9737/2-A	Lab Control Sample	Total/NA	Solid	300.0	9737

Analysis Batch: 9866

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-5	WS24-01 @ 0-2'	Total/NA	Solid	300.0	9737
885-9077-6	WS24-02 @ 0-2'	Total/NA	Solid	300.0	9737
885-9077-4 MS	BS24-04 @ 1'	Total/NA	Solid	300.0	9737
885-9077-4 MSD	BS24-04 @ 1'	Total/NA	Solid	300.0	9737

Analysis Batch: 9914

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-9077-7	WS24-03 @ 0-1'	Total/NA	Solid	300.0	9737
MB 885-9914/16	Method Blank	Total/NA	Solid	300.0	
MRL 885-9914/15	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: BS24-01 @ 2'
Lab Sample ID: 885-9077-1
Date Collected: 07/24/24 10:12
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 16:48
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/05/24 23:35
Total/NA	Prep	SHAKE			9705	KR	EET ALB	08/05/24 08:32
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 15:23
Total/NA	Prep	300_Prep			9714	EH	EET ALB	08/05/24 09:25
Total/NA	Analysis	300.0		20	9776	EH	EET ALB	08/05/24 23:05

Client Sample ID: BS24-02 @ 2'
Lab Sample ID: 885-9077-2
Date Collected: 07/24/24 10:20
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 17:58
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/05/24 23:58
Total/NA	Prep	SHAKE			9705	KR	EET ALB	08/05/24 08:32
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 15:36
Total/NA	Prep	300_Prep			9714	EH	EET ALB	08/05/24 09:25
Total/NA	Analysis	300.0		20	9776	EH	EET ALB	08/05/24 23:18

Client Sample ID: BS24-03 @ 1'
Lab Sample ID: 885-9077-3
Date Collected: 07/24/24 10:31
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 19:09
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/06/24 01:09
Total/NA	Prep	SHAKE			9705	KR	EET ALB	08/05/24 08:32
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 15:51
Total/NA	Prep	300_Prep			9714	EH	EET ALB	08/05/24 09:25
Total/NA	Analysis	300.0		20	9776	EH	EET ALB	08/05/24 23:31

Client Sample ID: BS24-04 @ 1'
Lab Sample ID: 885-9077-4
Date Collected: 07/24/24 10:39
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 19:32

Lab Chronicle

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: BS24-04 @ 1'
Lab Sample ID: 885-9077-4
Date Collected: 07/24/24 10:39
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/06/24 01:32
Total/NA	Prep	SHAKE			9711	KR	EET ALB	08/05/24 08:35
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 17:13
Total/NA	Prep	300_Prep			9737	EH	EET ALB	08/05/24 11:47
Total/NA	Analysis	300.0		20	9776	EH	EET ALB	08/05/24 23:44

Client Sample ID: WS24-01 @ 0-2'
Lab Sample ID: 885-9077-5
Date Collected: 07/24/24 10:46
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 19:56
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/06/24 01:56
Total/NA	Prep	SHAKE			9711	KR	EET ALB	08/05/24 08:35
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 17:41
Total/NA	Prep	300_Prep			9737	EH	EET ALB	08/05/24 11:47
Total/NA	Analysis	300.0		20	9866	EH	EET ALB	08/06/24 17:46

Client Sample ID: WS24-02 @ 0-2'
Lab Sample ID: 885-9077-6
Date Collected: 07/24/24 10:51
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 20:19
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/06/24 02:19
Total/NA	Prep	SHAKE			9711	KR	EET ALB	08/05/24 08:35
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 17:55
Total/NA	Prep	300_Prep			9737	EH	EET ALB	08/05/24 11:47
Total/NA	Analysis	300.0		20	9866	EH	EET ALB	08/06/24 17:59

Client Sample ID: WS24-03 @ 0-1'
Lab Sample ID: 885-9077-7
Date Collected: 07/24/24 10:55
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8015M/D		1	9729	RA	EET ALB	08/04/24 20:43
Total/NA	Prep	5030C			9626	JP	EET ALB	08/02/24 09:38
Total/NA	Analysis	8021B		1	9780	JP	EET ALB	08/06/24 02:42

Lab Chronicle

Client: Vertex
Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Client Sample ID: WS24-03 @ 0-1'
Lab Sample ID: 885-9077-7
Date Collected: 07/24/24 10:55
Matrix: Solid
Date Received: 08/02/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			9711	KR	EET ALB	08/05/24 08:35
Total/NA	Analysis	8015M/D		1	9733	KR	EET ALB	08/05/24 18:08
Total/NA	Prep	300_Prep			9737	EH	EET ALB	08/05/24 11:47
Total/NA	Analysis	300.0		20	9914	JT	EET ALB	08/07/24 16:41

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-9077-1
Project/Site: Rajun Cajun 13 Federal 2

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics (GRO)-C6-C10
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Chain-of-Custody Record

Client: **Vertex (Bill to Devon)**

Dale Woodall WO# 21160440

Mailing Address: #150
205 E. Bender Blvd. Hobbs NM 88240

Phone #: 575-748-1838

email or Fax#: Dale.Woodall@dvn.com

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush 48-hr

Project Name:
Ragin Cajun 13 Federal 2

Project #:
23E-02967

Project Manager: Chad Hensley
Chensley@vertexresource.com
rplogger@vertexresource.com

Sampler: Riley Plogger
On Ice: ☑ Yes ☐ No
# of Coolers: 1 SCM 8/2/24 Boo Boo
Cooler Temp(including CF): ~~4.1~~ 6.3-1.3=5.0°C

HALL ENVIRONMENTAL ANALYSIS LAB
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM
Tel. 505-345-3975 Fax 505-345-4 885-9077 COC

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	Analysis Request: BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
7.24.24	10:12	Soil	CS24-01 @ 2'	1, 4oz jar	ICE	1	X	X					X			
	10:20		CS24-02 @ 2'			2										
	10:31		CS24-03 @ 1'			3										
	10:39		CS24-04 @ 1'			4										
	10:46		CWS24-01 @ 0-2'			5										
	10:51		CWS24-02 @ 0-2'			6										
	10:55		CWS24-03 @ 0-1'			7										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
7-1-2024	07:00	Dale Pulliam			8/1/24	0700
8/1/24	1900		SCM	COURIER	8/2/24	0730

Remarks:
WO# #21160440
Dale Woodall

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-9077-1

Login Number: 9077 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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QUESTIONS

Action 377307

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377307
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nTO1510542386**
Incident Name	**NTO1510542386 RAGIN CAJUN 13 FEDERAL #002H @ 30-025-41273**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Closure Report Received**
Incident Well	**[30-025-41273] RAGIN CAJUN 13 FEDERAL #002H**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	RAGIN CAJUN 13 FEDERAL #002H
Date Release Discovered	04/11/2015
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	Cause: Human Error | Valve | Produced Water | Released: 51 BBL | Recovered: 47 BBL | Lost: 4 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
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QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

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.

I hereby agree and sign off to the above statement	Name: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 08/25/2024

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377307
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). 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 in feet below ground surface (ft bgs)	Between 100 and 500 (ft.)
What method was used to determine the depth to ground water	OCD Imaging Records Lookup
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between ½ and 1 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Greater than 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	14000
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	10212
GRO+DRO (EPA SW-846 Method 8015M)	7812
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	07/16/2024
On what date will (or did) the final sampling or liner inspection occur	07/24/2024
On what date will (or was) the remediation complete(d)	07/24/2024
What is the estimated surface area (in square feet) that will be reclaimed	753
What is the estimated volume (in cubic yards) that will be reclaimed	60
What is the estimated surface area (in square feet) that will be remediated	753
What is the estimated volume (in cubic yards) that will be remediated	60
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

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	Action Number: 377307
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	LEA LAND LANDFILL [fEEM0112342028]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
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.	
I hereby agree and sign off to the above statement	Name: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 08/25/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 377307
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

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	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**365736**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**07/24/2024**
What was the (estimated) number of samples that were to be gathered	**7**
What was the sampling surface area in square feet	**620**

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Was this release entirely contained within a lined containment area	**No**
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	753
What was the total volume (cubic yards) remediated	60
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	753
What was the total volume (in cubic yards) reclaimed	60
Summarize any additional remediation activities not included by answers (above)	see report

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 (in .pdf format) 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.

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.

I hereby agree and sign off to the above statement	Name: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 08/25/2024

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QUESTIONS (continued)

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	Action Number: 377307
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

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CONDITIONS

Action 377307

CONDITIONS

Operator:	OGRID:
DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	6137
	Action Number: 377307
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
bhall	Remediation closure approved.	8/26/2024
bhall	A reclamation report will not be accepted until reclamation of the release area, including areas reasonably needed for production or drilling activities, is complete and meet the requirements of 19.15.29.13 NMAC. Areas not reasonably needed for production or drilling activities will still need to be reclaimed and revegetated as early as practicable.	8/26/2024
bhall	The reclamation report will need to include: Executive Summary of the reclamation activities; Scaled Site Map including sampling locations; Analytical results including, but not limited to, results showing that any remaining impacts meet the reclamation standards and results to prove the backfill is non-waste containing; At least one (1) representative 5-point composite sample will need to be collected from the backfill material that will be used for the reclamation of the top four feet of the excavation. OCD reserves the right to request additional sampling if needed; pictures of the backfilled areas showing that the area is back, as nearly as practical, to the original condition or the final land use and maintain those areas to control dust and minimize erosion to the extent practical; pictures of the top layer, which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater; and a revegetation plan.	8/26/2024
bhall	A revegetation report will not be accepted until revegetation of the release area, including areas reasonably needed for production or drilling activities, is complete and meet the requirements of 19.15.29.13 NMAC. Areas not reasonably needed for production or drilling activities will still need to be reclaimed and revegetated as early as practicable.	8/26/2024
bhall	All revegetation activities will need to be documented and included in the revegetation report. The revegetation report will need to include: An executive summary of the revegetation activities including: Seed mix, Method of seeding, dates of when the release area was reseeded, information pertinent to inspections, information about any amendments added to the soil, information on how the vegetative cover established meets the life-form ratio of plus or minus fifty percent of pre-disturbance levels and a total percent plant cover of at least seventy percent of pre-disturbance levels, excluding noxious weeds per 19.15.29.13 D.(3) NMAC, and any additional information; a scaled Site Map including area that was revegetated in square feet; and pictures of the revegetated areas during reseeding activities, inspections, and final pictures when revegetation is achieved.	8/26/2024