

Incident ID	nAPP2219226827
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

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

State of New Mexico
Oil Conservation Division

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

Printed Name: Dale Woodall Title: Env. Professional
Signature: Dale Woodall Date: 2/7/2023
email: dale.woodall@dvn.com Telephone: (405)318-4697

OCD Only

Received by: _____ Date: _____

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Remediation Plan

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

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

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

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

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email: dale.woodall@dnv.com Telephone: (405)-318-4697

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Received by: _____ Date: _____

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

Signature: _____ Date: _____

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

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

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

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Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 2/7/2023

email: dale.woodall@dvn.com Telephone: (405)-318-4697

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

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Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 2/7/2023

email: dale.woodall@dvn.com Telephone: (405)-318-4697

OCD Only

Received by: Robert Hamlet Date: 6/9/2023

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

Closure Approved by: Robert Hamlet Date: 6/9/2023

Printed Name: Robert Hamlet Title: Environmental Specialist - Advanced



February 7, 2023

Vertex Project #: 22E-02537

Spill Closure Report: Helios 6 Federal Com 1H and 3H Battery/Hackberry 6 Federal 1 Well Pad
Unit J, Section 6, Township 19 South, Range 31 East,
API: N/A
County: Eddy
Incident ID: nAPP2116940090, nAPP2219226827

Prepared For: **Devon Energy Production Company**
6488 Seven Rivers Highway
Artesia, New Mexico 88210

New Mexico Oil Conservation Division – District 2 – Artesia

811 S. 1st Street
Artesia, New Mexico 88210

Devon Energy Production Company (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a Spill Assessment for multiple produced water releases at the same location, registered at Helios 6 Federal Com 1H and 3H Battery, and Hackberry 6 Federal 1 Battery Well Pad, (hereafter referred to as “Helios/Hackberry”). Devon submitted initial C-141 Release Notifications (Attachment 1) to New Mexico Oil Conservation Division (NMOCD) District 2 on July 7, 2021, and July 11, 2022. Incident IDs nAPP2116940090 and nAPP2219226827 were assigned to the incidents.

This letter provides a description of the release assessments and remediation activities and demonstrates that closure criteria established in Table I of 19.15.29.12 *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) are being met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NMOCD for the closure of these releases, with the understanding that they were reclaimed per 19.15.29.13.

Site Characterization

The site is located approximately 10 miles southeast of Loco Hills, New Mexico at 32.687850 ° N, 103.907000 ° W (Google Inc., 2022). The legal location for the site is Section 6, Township 19 South and Range 31 East in Eddy County, New Mexico. The spill area is located on Bureau of Land Management property. An aerial photograph and site schematic are included on Figure 1 (Attachment 2).

The Geological Map of New Mexico (New Mexico Bureau of Geology and Mineral Resources, 2022) indicates the site’s surface geology is comprised primarily of Qp – Piedmont alluvial deposits (Holocene to lower Pleistocene). The predominant soil texture on the site is gravelly fine sandy loam. The Natural Resources Conservation Service *Web Soil Survey* characterizes the predominant soil texture on the site as Simona gravelly fine sandy loam. It tends to be well drained with very high runoff and very low available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2022).

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The surrounding landscape is associated with plains, uplands, fan piedmonts, and alluvial fans at elevations of 2,842 to 4,500 feet above sea level. The climate is semi-arid, with annual precipitation ranging between 8 to 13 inches. Historically, the plant community has grassland aspect, dominated by grasses with shrubs. Black grama is dominant with yucca, javalina bush, range ratany, prickly pear and mesquite. Overgrazing and extended drought can reduce grass cover (United States Department of Agriculture, Natural Resources Conservation Service, 2022).

There is no surface water located at Helios/Hackberry. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 Mexico Administrative Code (New Mexico Oil Conservation Division, 2018), is the Pecos River located approximately 800 feet west of the site (Google Inc., 2022). There are no continuous 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.

Incident Description

nAPP2116940090

The first release occurred on June 17, 2021, due to a pinhole leak on a water transfer line. The incident resulted in the release of approximately 91.82 barrels of produced water into the pasture north of the pad site. Approximately 73 barrels of free fluid were removed during the initial spill clean-up.

nAPP2219226827

The second release was discovered on July 9, 2022, due to equipment failure on the same pipeline as the first release. The incident resulted in the release of approximately 7 barrels of produced water into the pasture north of the pad site. Approximately 2 barrels of free fluid were removed during the initial spill clean-up.

Closure Criteria Determination

The depth to groundwater was determined by drilling a borehole permitted by the New Mexico Office of the State Engineer within a 0.5-mile radius of the site. The borehole was drilled to a depth of 105 feet, was left open as per requirements on the WR-07 Application for Permit to Drill a well With No Water Right, and an interface probe was lowered to the bottom of the borehole to investigate if groundwater may have accumulated in the 72-hour waiting period; no water was present at that time. The borehole was then plugged as per requirements on the WR-08, Well Plugging Plan of Operations. Documentation used in closure criteria determination (Attachment 4) research was included in the Characterization and Remediation Plan submitted and approved by NMOCD. The DFR associated with this site visit is included in Attachment 5.

The closure criteria determined for the site are associated with the following constituent concentration limits as presented in Table 1.

Table 1. Closure Criteria for Soils to Remediation & Reclamation Standards		
	Constituent	Limit
0-4 feet bgs (19.15.29.13)	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
DTGW > 100 feet (19.15.29.12)	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

bgs – below ground surface

DTGW – depth to groundwater

TPH – Total petroleum hydrocarbons = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)

BTEX – Benzene, toluene, ethylbenzene, and xylenes

Remedial Actions

An initial site inspection was completed for the first release on June 28, 2021, which identified the location of the impact specified in the initial C-141 Report and estimated the approximate volume of the release. The impacted area was determined to be approximately 158 feet long and 104 feet wide; the total affected area was determined to be 1,527 square feet. The DFR associated with the site inspection is included in Attachment 5.

A site inspection was conducted for the second release on November 3, 2022. More horizontal boreholes were established to ensure that the second release did not migrate further than the first release. The two releases were vertically delineated to the >100' criteria to 4 feet below ground surface (bgs) as required by NMOCD. The DFR associated with this site visit is included in Attachment 5.

Remediation efforts began on January 4, 2023, and were completed on January 20, 2023. Vertex personnel supervised the excavation of impacted soils. Field screening was completed on a total of 126 sample points and consisted of analysis using a photoionization detector (volatile hydrocarbons), Dextsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and silver nitrate titration (chlorides). Field screening results were used to identify areas requiring further remediation from those areas showing concentrations below determined closure criteria levels. Soils were removed to a depth of 4 feet bgs. Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility.

During excavation activities, Vertex provided three 48-hour notifications of confirmation sampling to NMOCD between December 28, 2022, and January 19, 2023 (Attachment 6), as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC. Confirmatory composite samples were collected from the base and walls of the excavation in 200-square-foot increments. A total of 131 samples, including one background sample, were collected for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to Hall Environmental Analysis Laboratory under chain-of-custody (COC) 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 3 (Attachment 3) and laboratory data reports are included in Attachment 7. All confirmatory samples collected and analyzed were below the closure criteria for the site.

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Closure Request

Vertex recommends no additional remediation action to address the releases at Helios/Hackberry. Laboratory analyses of confirmatory samples collected show final confirmatory values below the selected NMOCD closure criteria for areas where depth to groundwater is more than 100 feet bgs as presented in Table 1. There are no anticipated risks to human, ecological, or hydrological receptors at this release site.

The excavation will be backfilled with non-waste-containing, uncontaminated, earthen material, sourced locally, and placed to meet the site's existing grade to prevent water ponding and erosion. The site will then be reclaimed and seeded as required by Subsection A of 19.15.29.13 NMAC. This will take place when closure approval is received from NMOCD.

Vertex requests that these incidents (nAPP2116940090 and nAPP2219226827) 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 are 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 on the releases at Helios/Hackberry.

Should you have any questions or concerns, please do not hesitate to contact Chance Dixon at 575.988.1472 or cdixon@vertex.ca.

Sally Carttar, B.A.
INT. ENVIRONMENTAL TECHNOLOGIST, REPORTING

Date

Chance Dixon, B.Sc.
SR. ENVIRONMENTAL TECHNOLOGIST, REPORT REVIEW

Date

Attachments

- Attachment 1. NMOCD C-141 Reports
- Attachment 2. Figures
- Attachment 3. Tables
- Attachment 4. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
- Attachment 5. Daily Field Reports with Photographs
- Attachment 6. Required 48-Hour Notification of Confirmatory Sampling to Regulatory Agencies
- Attachment 7. Laboratory Data Reports and Chain of Custody Forms

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ATTACHMENT 1

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	nAPP2116940090
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Facility ID	
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Release Notification

Responsible Party

Responsible Party Devon Energy Production Company	OGRID 6137
Contact Name Wesley Mathews	Contact Telephone
Contact email Wesley.Mathews@dvn.com	Incident # (assigned by OCD)
Contact mailing address 6488 Seven Rivers Hwy Artesia, NM 88210	

Location of Release Source

Latitude 32.6880381 Longitude -103.9071575
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Helios 6 Fed Com 1H & 3H Battery	Site Type Oil
Date Release Discovered 6/17/2021	API# (if applicable)

Unit Letter	Section	Township	Range	County
J	6	19S	31E	Eddy

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 91.82 BBLS	Volume Recovered (bbls) 73 BBLS
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release Pin hole leak on water transfer line.

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Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? This is considered a major release because it is over 25 BBLS.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Immediate notice was given by NOR on the OCD website.	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: Spill was not in containment.	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
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Printed Name: Kendra DeHoyos	Title: EHS Associate
Signature: <u>Kendra DeHoyos</u>	Date: <u>7/7/2021</u>
email: Kendra.DeHoyos@dvn.com	Telephone: 575-748-0167
<u>OCD Only</u>	
Received by: <u>Ramona Marcus</u>	Date: <u>10/5/2021</u>

NAPP2116940090

Spill Volume(Bbls) Calculator	
<i>Inputs in blue , Outputs in red</i>	
Contaminated Soil measurement	
Area (square feet)	Depth(inches)
<u>7877.949</u>	<u>1.000</u>
Cubic Feet of Soil Impacted	<u>656.496</u>
Barrels of Soil Impacted	<u>117.02</u>
Soil Type	Clay/Sand
Barrels of water Assuming 100% Saturation	<u>17.55</u>
Saturation	Fluid present with shovel/backhoe
Estimated Barrels of water Released	17.55
Free Standing Fluid Only	
Area (square feet)	Depth(inches)
<u>2500</u>	<u>2.000</u>
Standing fluid	<u>74.272</u>
Total fluids spilled	<u>91.825</u>

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Printed Name: Dale Woodall Title: Env. ProfessionalSignature: Dale Woodall Date: 2/7/2023email: dale.woodall@dvn.com Telephone: (405)-318-4697**OCD Only**

Received by: _____ Date: _____

Incident ID	nAPP2116940090
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

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

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

Printed Name: Dale Woodall Title: Env. Professional
Signature: Dale Woodall Date: 2/7/2023
email: dale.woodall@dvn.com Telephone: (405)-318-4697

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

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

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 2/7/2023

email: dale.woodall@dvn.com Telephone: (405)-318-4697

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (Name: _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

<input type="checkbox"/> The source of the release has been stopped.	
<input type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: _____	Title: _____
Signature: <u>Kendra Ruiz</u>	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: <u>Jocelyn Harimon</u>	Date: _____

Spill Volume(Bbls) Calculator*Inputs in blue, Outputs in red***Contaminated Soil measurement**

Length(Ft)	Width(Ft)	Depth(Ft)
<u>35</u>	<u>15.000</u>	<u>0.500</u>
Cubic Feet of Soil Impacted		<u>262.500</u>
Barrels of Soil Impacted		<u>46.79</u>
Soil Type		Clay/Sand
Barrels of Oil Assuming 100% Saturation		<u>7.02</u>
Saturation	Damp no fluid when squeezed	
Estimated Barrels of Oil Released		0.70

Free Standing Fluid Only

Length(Ft)	Width(Ft)	Depth(Ft)
<u>0</u>	<u>0.000</u>	<u>0.000</u>
Standing fluid		<u>0.000</u>
Total fluids spilled		<u>7.019</u>

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 127694

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 127694
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	7/21/2022

Incident ID	nAPP2219226827
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

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

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	nAPP2219226827
District RP	
Facility ID	
Application ID	

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

Printed Name: Dale Woodall Title: Env. Professional
Signature: Dale Woodall Date: 2/7/2023
email: dale.woodall@dvn.com Telephone: (405)318-4697

OCD Only

Received by: _____ Date: _____

Incident ID	nAPP2219226827
District RP	
Facility ID	
Application ID	

Remediation Plan

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

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

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

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

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Printed Name: Dale Woodall Title: Env. Professional
Signature: Dale Woodall Date: 2/7/2023
email: dale.woodall@dvn.com Telephone: (405)-318-4697

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Incident ID	nAPP2219226827
District RP	
Facility ID	
Application ID	

Closure

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

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

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

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Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 2/7/2023

email: dale.woodall@dvn.com Telephone: (405)-318-4697

OCD Only

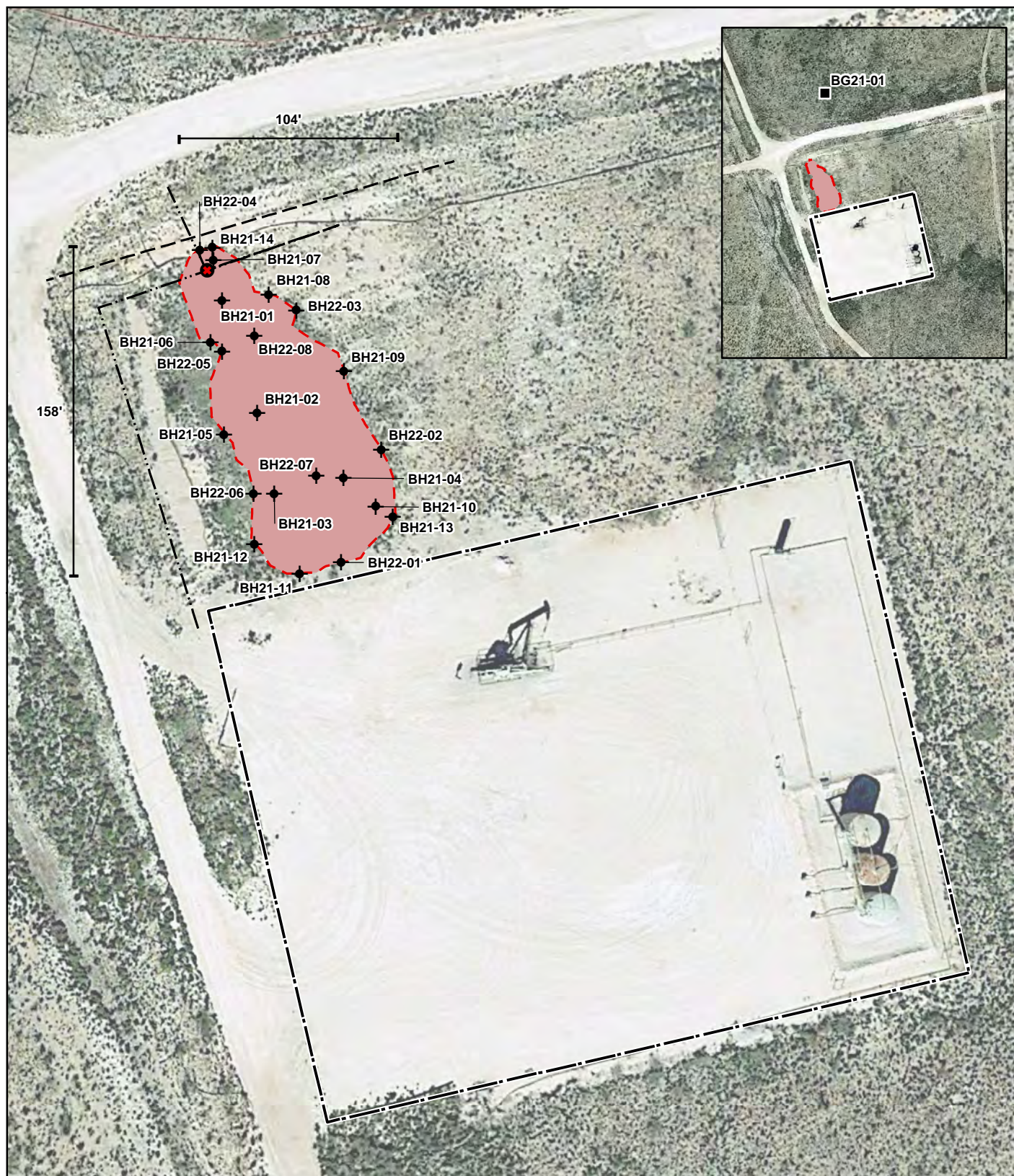
Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

ATTACHMENT 2



- Background Sample ● Point of Release - - - Devon Flowline □ Approximate Lease Boundary
- ✦ Borehole - - - DCP Flowline ■ Approximate Extent of Release (~8,776 sq. ft.)



0 10 20 40 ft.
NAD 1983 UTM Zone 13N
Date: Nov 07/22

Map Center:
Lat: 32.687591,
Long: -103.906654



Characterization Schematic Helios 6 Fed Com Battery and Hackberry 6 Federal 1 Well-Pad

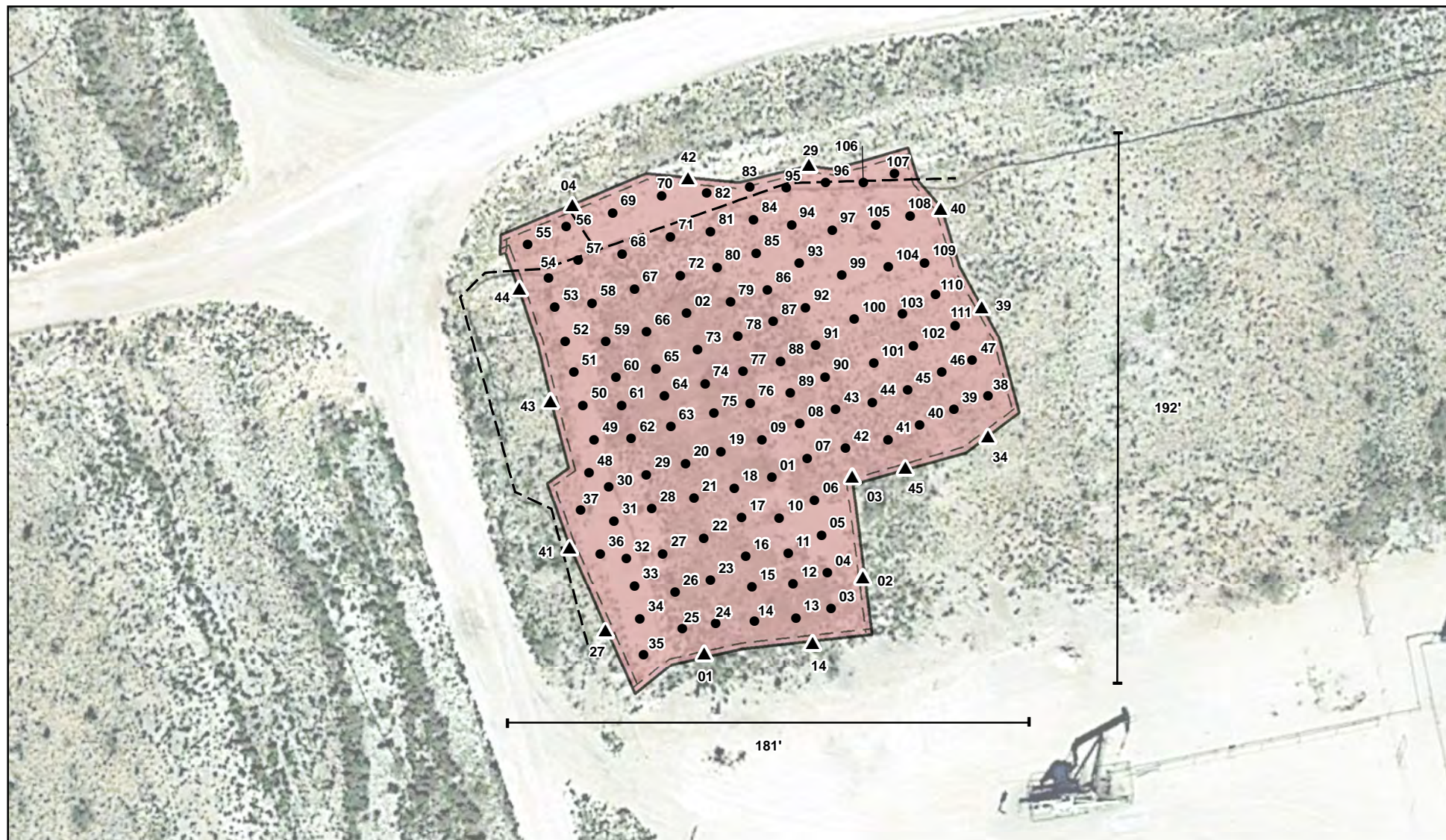
FIGURE:
1



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: Background imagery from Google Earth, 2017. Feature locations from GPS, Verex Professional Services Ltd., 2022.

VERSATILITY. EXPERTISE.



0 10 20 40 Feet
Map Center:
Lat/Long: 32.687850, -103.907000

NAD 1983 UTM Zone 13N
Date: Jan 30/23



Confirmation Schematic Hackberry 6 Federal 1 Wellpad

FIGURE:

2



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: Background imagery from Google Earth, 2023. Features from GPS. Vertex Professional Services Ltd., 2023.

VERSATILITY. EXPERTISE.

ATTACHMENT 3

Client Name: Devon Energy Production Company

Site Name: Helios 6 Fed Com 1H 3H

Project #: 21E-00580-003

Lab Report(s): 2106D66, 2107069

Table 2. Initial Characterization Sample/Field Screen and Laboratory Results - Depth to Groundwater >100 feet bgs													
Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroF)	Chloride Concentration	Volatile		Extractable					
						Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BG21-01	0	6/22/2021	0	—	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG21-01	1	6/22/2021	0	—	ND	ND	ND	ND	ND	ND	ND	ND	ND
BG21-01	2	6/22/2021	0	39	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH21-01	0.5	6/22/2021	1	—	8,188	ND	ND	ND	ND	ND	ND	ND	12,000.0
BH21-01	1	6/22/2021	1	—	7,091	—	—	—	—	—	—	—	—
BH21-01	2	6/22/2021	1	—	8,083	—	—	—	—	—	—	—	—
BH21-01	3	6/22/2021	2	1,037	7,233	—	—	—	—	—	—	—	—
BH21-01	4	6/30/2021	2	—	2,411	—	—	—	—	—	—	—	—
BH21-01	6	6/30/2021	1	—	9,427	—	—	—	—	—	—	—	—
BH21-01	8	6/30/2021	0	—	3,319	—	—	—	—	—	—	—	—
BH21-01	10	6/30/2021	1	—	7,468	—	—	—	—	—	—	—	—
BH21-01	11	6/30/2021	1	—	6,661	—	—	—	—	—	—	—	11,000.0
BH21-02	0.5	6/22/2021	3	—	5,590	ND	ND	ND	ND	ND	ND	ND	11,000.0
BH21-02	1	6/22/2021	1	—	8,520	—	—	—	—	—	—	—	—
BH21-02	2	6/22/2021	0	—	9,671	—	—	—	—	—	—	—	—
BH21-02	3	6/22/2021	1	57	6,289	—	—	—	—	—	—	—	—
BH21-02	3.5	6/23/2021	—	—	7,630	—	—	—	—	—	—	—	—

Table 2. Initial Characterization Sample/Field Screen and Laboratory Results - Depth to Groundwater >100 feet bgs													
Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroF)	Chloride Concentration	Volatile		Extractable					
						Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH21-02	4	6/30/2021	1	—	5,097	—	—	—	—	—	—	—	—
BH21-02	6	6/30/2021	1	—	4,215	—	—	—	—	—	—	—	—
BH21-02	8	6/30/2021	1	—	2,338	—	—	—	—	—	—	—	—
BH21-02	12	6/30/2021	1	41	331	ND	ND	ND	ND	ND	ND	ND	150.0
BH21-03	0.5	6/22/2021	—	—	9,824	ND	ND	ND	ND	ND	ND	ND	13,000.0
BH21-03	1	6/22/2021	—	—	8,835	—	—	—	—	—	—	—	—
BH21-03	2	6/22/2021	—	—	8,614	—	—	—	—	—	—	—	—
BH21-03	3	6/22/2021	—	—	8,556	—	—	—	—	—	—	—	—
BH21-03	3.5	6/23/2021	—	—	10,366	—	—	—	—	—	—	—	—
BH21-03	4	6/28/2021	—	—	6,279	—	—	—	—	—	—	—	—
BH21-03	5	6/28/2021	—	—	6,256	—	—	—	—	—	—	—	—
BH21-03	7	6/28/2021	—	—	5,092	—	—	—	—	—	—	—	—
BH21-03	8	6/28/2021	—	—	5,658	—	—	—	—	—	—	—	—
BH21-03	9	6/28/2021	—	—	1,367	—	—	—	—	—	—	—	—
BH21-03	10	6/30/2021	0	—	950	—	—	—	—	—	—	—	—
BH21-03	11	6/30/2021	1	—	664	—	—	—	—	—	—	—	—
BH21-03	12	6/30/2021	1	44	107	ND	ND	ND	ND	ND	ND	ND	170.0
BH21-04	0.5	6/22/2021	—	—	14,605	ND	ND	ND	28	98	28	126	18,000.0
BH21-04	1	6/22/2021	—	—	6,090	—	—	—	—	—	—	—	—
BH21-04	2	6/22/2021	—	—	7,618	—	—	—	—	—	—	—	—
BH21-04	3	6/22/2021	—	—	7,257	—	—	—	—	—	—	—	—
BH21-04	3.5	6/23/2021	—	—	10,044	—	—	—	—	—	—	—	—
BH21-04	4	6/30/2021	0	—	2,932	—	—	—	—	—	—	—	—

Table 2. Initial Characterization Sample/Field Screen and Laboratory Results - Depth to Groundwater >100 feet bgs													
Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroF)	Chloride Concentration	Volatile		Extractable					
						Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH21-04	6	6/30/2021	1	—	4,620	—	—	—	—	—	—	—	—
BH21-04	9	6/30/2021	1	—	6,410	—	—	—	—	—	—	—	—
BH21-04	11	6/30/2021	1	—	6,386	—	—	—	—	—	—	—	—
BH21-04	12	6/30/2021	1	—	6,085	—	—	—	—	—	—	—	—
BH21-04	13	6/30/2021	1	—	6,726	—	—	—	—	—	—	—	—
BH21-04	14	6/30/2021	1	—	6,560	—	—	—	—	—	—	—	—
BH21-04	15	6/30/2021	2	—	4,698	ND	ND	ND	ND	ND	ND	ND	6,700.0
BH21-05	0.5	6/23/2021	—	—	24	ND	ND	ND	ND	ND	ND	ND	ND
BH21-06	0.5	6/23/2021	—	—	71	ND	ND	ND	ND	ND	ND	ND	ND
BH21-07	0.5	6/23/2021	—	—	2,803	—	—	—	—	—	—	—	—
BH21-08	0.5	6/23/2021	—	—	28	ND	ND	ND	ND	ND	ND	ND	ND
BH21-09	0.5	6/23/2021	—	68	250	ND	ND	ND	ND	ND	ND	ND	120.0
BH21-10	0.5	6/23/2021	—	—	568	—	—	—	—	—	—	—	—
BH21-11	0.5	6/23/2021	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH21-12	0.5	6/23/2021	—	—	ND	ND	ND	ND	ND	ND	ND	ND	ND
BH21-13	0.5	6/23/2021	—	—	138	ND	ND	ND	ND	ND	ND	ND	ND
BH21-14	0.5	6/23/2021	—	—	282	ND	ND	ND	ND	ND	ND	ND	330.0
BH22-01	0	11/3/2022	0	21	228	ND	ND	ND	ND	ND	ND	ND	ND
BH22-01	2	11/3/2022	0	—	135	ND	ND	ND	ND	ND	ND	ND	ND
BH22-02	0	11/3/2022	0	48	342	ND	ND	ND	ND	ND	ND	ND	ND
BH22-02	2	11/3/2022	0	—	174	ND	ND	ND	ND	ND	ND	ND	ND
BH22-03	0	11/3/2022	0	55	205	ND	ND	ND	ND	ND	ND	ND	ND

Table 2. Initial Characterization Sample/Field Screen and Laboratory Results - Depth to Groundwater >100 feet bgs													
Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroF)	Chloride Concentration	Volatile		Extractable					
						Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH22-03	2	11/3/2022	0		69	ND	ND	ND	ND	ND	ND	ND	ND
BH22-04	0	11/3/2022	0	65	310	ND	ND	ND	ND	ND	ND	ND	ND
BH22-04	2	11/3/2022	0	—	212	ND	ND	ND	ND	ND	ND	ND	130.0
BH22-05	0	11/3/2022	0	64	477	ND	ND	ND	ND	ND	ND	ND	ND
BH22-05	2	11/3/2022	0	—	255	ND	ND	ND	ND	ND	ND	ND	ND
BH22-06	0	11/3/2022	0	74	380	ND	ND	ND	ND	ND	ND	ND	ND
BH22-06	2	11/3/2022	0	—	174	ND	ND	ND	ND	ND	ND	ND	ND
BH22-07	0	11/3/2022	0	164	7,426	ND	ND	ND	ND	ND	ND	ND	9,000.0
BH22-07	2	11/3/2022	0	24	7,995	ND	ND	ND	ND	ND	ND	ND	7,000.0
BH22-07	4	11/3/2022	0	50	7,925	ND	ND	ND	14	ND	14	14	6,600.0
BH22-08	0	11/3/2022	0	124	8,455	ND	ND	ND	ND	ND	ND	ND	7,100.0
BH22-08	2	11/3/2022	0	40	8,790	ND	ND	ND	ND	ND	ND	ND	5,600.0
BH22-08	4	11/3/2022	0	25	4,550	ND	ND	ND	41	110	41	151	7,300.0

"ND" Not Detected at the Reporting Limit

"-" indicates not analyzed/assessed

Bold and Shaded indicates exceedance outside of regulator criteria (Off-site)

Client Name: Devon Energy Production Company

Site Name: Helios 6 Fed Com 1/Hackberry 6 Federal 1 Wellpad

NMOCD Tracking #: nAPP2116940090, nAPP2219226827

Project #: 22E-02537

Lab Report(s): 2301225, 2301270, 2301321, 2301461, 2301574, 2301376, 2301522, 2301870, 2301754, 2301764, 2301711, 2301631

Table 3. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater >100 feet bgs

Table 3. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater >100 feet bgs													
Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Volatile		Extractable					
						Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
WS23-01	0-4	01/04/2023	-	67	318	ND	ND	ND	ND	ND	ND	ND	ND
WS23-02	0-4	01/04/2023	-	191	551	ND	ND	ND	9.6	ND	9.6	9.6	110
WS23-03	0-4	01/04/2023	-	206	654	ND	ND	ND	ND	ND	ND	ND	140
WS23-14	0-4	01/06/2023	-	48	390	ND	ND	ND	ND	ND	ND	ND	320
WS23-27	0-4	01/10/2023	0	12	210	ND	ND	ND	ND	ND	ND	ND	120
WS23-29	0-4	01/10/2023	0	49	220	ND	ND	ND	ND	ND	ND	ND	140
WS23-34	0-4	01/12/2023	0	84	378	ND	ND	ND	ND	ND	ND	ND	540
WS23-39	0-4	01/13/2023	0	59	218	ND	ND	ND	ND	ND	ND	ND	100
WS23-40	0-4	01/13/2023	0	28	90	ND	ND	ND	ND	ND	ND	ND	ND
WS23-41	0-4	01/13/2023	0	19	170	ND	ND	ND	ND	ND	ND	ND	79
WS23-42	0-4	01/13/2023	0	26	488	ND	ND	ND	ND	ND	ND	ND	170
WS23-43	0-4	01/20/2023	1	57	600	ND	ND	ND	ND	ND	ND	ND	ND
WS23-44	0-4	01/20/2023	1	33	578	ND	ND	ND	ND	ND	ND	ND	ND
WS23-45	0-4	01/20/2023	1	133	340	ND	ND	ND	ND	ND	ND	ND	ND
BS23-01	4	01/09/2023	0	60	7,720	ND	ND	ND	ND	ND	ND	ND	7800
BS23-02	4	01/09/2023	0	80	7,318	ND	ND	ND	ND	ND	ND	ND	8100
BS23-03	4	01/10/2023	0	35	200	ND	ND	ND	ND	ND	ND	ND	150
BS23-04	4	01/10/2023	0	120	668	ND	ND	ND	13	ND	13	13	790
BS23-05	4	01/10/2023	0	121	1,753	ND	ND	ND	24	ND	24	24	1700
BS23-06	4	01/11/2023	0	61	9,902	ND	ND	ND	ND	ND	ND	ND	7100
BS23-07	4	01/11/2023	0	24	3,426	ND	ND	ND	ND	ND	ND	ND	1900
BS23-08	4	01/11/2023	0	110	4,103	ND	ND	ND	11	ND	11	11	4200
BS23-09	4	01/11/2023	0	171	5,400	ND	ND	ND	9.6	ND	9.6	9.6	3000
BS23-10	4	01/11/2023	0	185	7,711	ND	ND	ND	15	ND	15	15	6100
BS23-11	4	01/11/2023	0	98	6,812	ND	ND	ND	ND	ND	ND	ND	7800
BS23-12	4	01/11/2023	0	188	8,052	ND	ND	ND	ND	ND	ND	ND	7000
BS23-13	4	01/11/2023	0	159	6,350	ND	ND	ND	ND	ND	ND	ND	5600
BS23-14	4	01/11/2023	0	188	8,052	ND	ND	ND	ND	ND	ND	ND	6500
BS23-15	4	01/11/2023	0	187	10,053	ND	ND	ND	ND	ND	ND	ND	12000
BS23-16	4	01/11/2023	0	183	9,150	ND	ND	ND	ND	ND	ND	ND	8300
BS23-17	4	01/11/2023	0	97	5,042	ND	ND	ND	ND	ND	ND	ND	4600
BS23-18	4	01/11/2023	0	150	7,661	ND	ND	ND	ND	ND	ND	ND	8500
BS23-19	4	01/11/2023	0	178	6,730	ND	ND	ND	26	67	26	93	6700
BS23-20	4	01/11/2023	0	323	7,837	ND	ND	ND	31	71	31	102	9100
BS23-21	4	01/11/2023	0	113	6,562	ND	ND	ND	11	ND	11	11	9200
BS23-22	4	01/11/2023	0	143	9,055	ND	ND	ND	ND	ND	ND	ND	6800
BS23-23	4	01/11/2023	0	190	10,039	ND	ND	ND	ND	ND	ND	ND	9000
BS23-24	4	01/11/2023	0	165	8,241	ND	ND	ND	ND	ND	ND	ND	7400
BS23-25	4	01/11/2023	0	246	9,550	ND	ND	ND	28	51	28	79	10000
BS23-26	4	01/13/2023	0	741	3,607	ND	ND	ND	73	100	73	173	3500
BS23-27	4	01/13/2023	0	675	5,880	ND	ND	ND	64	90	64	154	6000
BS23-28	4	01/16/2023	0	664	2,975	ND	ND	ND	220	260	220	480	3000
BS23-29	4	01/16/2023	0	819	3,120	ND	ND	ND	170	210	170	380	2700
BS23-30	4	01/16/2023	0	1,241	3,320	ND	ND	ND	310	520	310	830	3000
BS23-31	4	01/16/2023	0	149	2,605	ND	ND	ND	12	ND	12	12	2700
BS23-32	4	01/16/2023	0	183	2,845	ND	ND	ND	25	56	25	81	3600
BS23-33	4	01/16/2023	0	159	955	ND	ND	ND	30	48	30	78	2200
BS23-34	4	01/16/2023	0	112	1,205	ND	ND	ND	26	ND	26	26	1200
BS23-35	4	01/16/2023	0	54	640	ND	ND	ND	13	ND	13	13	730
BS23-36	4	01/16/2023	0	38	1,443	ND	ND	ND	ND	ND	ND	ND	1200
BS23-37	4	01/16/2023	0	101	835	ND	ND	ND	ND	ND	ND	ND	490
BS23-38	4	01/16/2023	0	12	1,770	ND	ND	ND	ND	ND	ND	ND	1200

BS23-39	4	01/16/2023	0	51	2,870	ND	ND	ND	ND	ND	ND	ND	2100
BS23-40	4	01/16/2023	0	102	1,480	ND	ND	ND	ND	ND	ND	ND	1600
BS23-41	4	01/16/2023	0	40	1,090	ND	ND	ND	ND	ND	ND	ND	1200
BS23-42	4	01/16/2023	0	19	433	ND	ND	ND	ND	ND	ND	ND	230
BS23-43	4	01/16/2023	0	52	988	ND	ND	ND	ND	ND	ND	ND	650
BS23-44	4	01/16/2023	0	56	1,463	ND	ND	ND	ND	ND	ND	ND	1600
BS23-45	4	01/16/2023	0	49	2,393	ND	ND	ND	ND	ND	ND	ND	2200
BS23-46	4	01/16/2023	0	81	1,190	ND	ND	ND	9.6	ND	9.6	9.6	910
BS23-47	4	01/16/2023	0	26	543	ND	ND	ND	ND	ND	ND	ND	510
BS23-48	4	01/17/2023	0	248	1,255	ND	ND	ND	33	64	33	97	1100
BS23-49	4	01/17/2023	0	378	1,490	ND	ND	ND	65	100	65	165	1400
BS23-50	4	01/17/2023	0	8	1,430	ND	ND	ND	52	96	52	148	1600
BS23-51	4	01/17/2023	0	316	1,662	ND	ND	ND	39	85	39	124	1600
BS23-52	4	01/17/2023	0	482	3,633	ND	ND	ND	76	160	76	236	3100
BS23-53	4	01/17/2023	0	479	3,012	ND	ND	ND	88	160	88	248	2600
BS23-54	4	01/17/2023	0	154	2,440	ND	ND	ND	32	ND	32	32	2200
BS23-55	4	01/17/2023	0	115	1,445	ND	ND	ND	ND	ND	ND	ND	1100
BS23-56	4	01/17/2023	0	575	4,043	ND	ND	ND	180	ND	180	180	3700
BS23-57	4	01/17/2023	0	990	8,762	ND	ND	ND	150	ND	150	150	7100
BS23-58	4	01/18/2023	1	678	4,498	ND	ND	ND	180	340	180	520	9700
BS23-59	4	01/18/2023	1	769	2,385	ND	ND	ND	170	240	170	410	4500
BS23-60	4	01/18/2023	1	594	1,132	ND	ND	ND	150	240	150	390	2200
BS23-61	4	01/18/2023	2	325	5,230	ND	ND	ND	70	100	70	170	8100
BS23-62	4	01/18/2023	1	745	3,948	ND	ND	ND	310	460	310	770	4200
BS23-63	4	01/18/2023	1	919	8,920	ND	ND	ND	190	300	190	490	8700
BS23-64	4	01/18/2023	1	273	12,598	ND	ND	ND	56	81	56	137	17000
BS23-65	4	01/18/2023	1	289	9,993	ND	ND	ND	120	150	120	270	12000
BS23-66	4	01/18/2023	1	714	7,055	ND	ND	ND	160	220	160	380	6800
BS23-67	4	01/18/2023	1	926	6,900	ND	ND	ND	390	670	390	1060	5900
BS23-68	4	01/18/2023	1	1,054	5,595	ND	ND	ND	330	590	330	920	5200
BS23-69	4	01/18/2023	1	726	5,560	ND	ND	ND	390	700	390	1090	4900
BS23-70	4	01/18/2023	1	1,145	3,495	ND	ND	ND	540	890	540	1430	3300
BS23-71	4	01/18/2023	1	1,180	2,940	ND	ND	ND	390	690	390	1080	2400
BS23-72	4	01/18/2023	1	1,157	2,620	ND	ND	ND	450	570	450	1020	2700
BS23-73	4	01/18/2023	1	688	7,813	ND	ND	ND	150	240	150	390	7800
BS23-74	4	01/18/2023	1	511	10,880	ND	ND	ND	160	220	160	380	11000
BS23-75	4	01/18/2023	1	474	8,605	ND	ND	ND	66	140	66	206	7700
BS23-76	4	01/19/2023	2	267	5,753	ND	ND	ND	49	79	49	128	9800
BS23-77	4	01/19/2023	2	249	5,008	ND	ND	ND	27	ND	27	27	8200
BS23-78	4	01/19/2023	2	581	3,495	ND	ND	ND	96	140	96	236	6000
BS23-79	4	01/19/2023	2	257	3,068	ND	ND	ND	76	120	76	196	4200
BS23-80	4	01/19/2023	1	1,008	1,788	ND	ND	ND	380	600	380	980	2400
BS23-81	4	01/19/2023	2	800	1,690	ND	ND	ND	170	320	270	590	2100
BS23-82	4	01/19/2023	1	880	1,613	ND	ND	ND	200	220	200	420	1900
BS23-83	4	01/19/2023	1	485	1,108	ND	ND	ND	310	370	310	680	1300
BS23-84	4	01/19/2023	1	1,120	1,930	ND	ND	ND	540	890	540	1430	2400
BS23-85	4	01/19/2023	1	660	2,073	ND	ND	ND	140	ND	140	140	3200
BS23-86	4	01/19/2023	1	231	1,498	ND	ND	ND	21	ND	21	21	1400
BS23-87	4	01/19/2023	1	390	1,573	ND	ND	ND	28	ND	28	28	1400
BS23-88	4	01/19/2023	1	152	1,638	ND	ND	ND	15	ND	15	15	3100
BS23-89	4	01/19/2023	1	104	3,380	ND	ND	ND	10	ND	10	10	5200
BS23-90	4	01/19/2023	1	102	1,018	ND	ND	ND	ND	ND	ND	ND	1000
BS23-91	4	01/19/2023	2	63	1,505	ND	ND	ND	ND	ND	ND	ND	2400
BS23-92	4	01/19/2023	1	358	2,498	ND	ND	ND	44	60	44	104	4300
BS23-93	4	01/19/2023	2	120	2,690	ND	ND	ND	13	ND	13	13	4900
BS23-94	4	01/19/2023	1	358	1,978	ND	ND	ND	80	130	80	210	2600
BS23-95	4	01/19/2023	1	664	1,505	ND	ND	ND	33	ND	33	33	2100
BS23-96	4	01/19/2023	1	868	2,100	ND	ND	ND	470	610	470	1080	2700
BS23-97	4	01/19/2023	1	319	1,833	ND	ND	ND	63	94	63	157	2200
BS23-98	4	01/19/2023	1	421	1,625	ND	ND	ND	39	69	39	108	2300
BS23-99	4	01/19/2023	1	352	1,755	ND	ND	ND	39	80	39	119	2300
BS23-100	4	01/20/2023	2	92	2,258	ND	ND	ND	ND	ND	ND	ND	2800
BS23-101	4	01/20/2023	1	81	1,283	ND	ND	ND	ND	ND	ND	ND	1700
BS23-102	4	01/20/2023	1	268	1,458	ND	ND	ND	20	ND	20	20	2000
BS23-103	4	01/20/2023	1	440	1,493	ND	ND	ND	39	64	39	103	1800
BS23-104	4	01/20/2023	1	346	1,680	ND	ND	ND	43	63	43	106	2300
BS23-105	4	01/20/2023	1	538	3,385	ND	ND	ND	100	180	100	280	2300
BS23-106	4	01/20/2023	1	569	1,750	ND	ND	ND	76	130	76	206	2200

BS23-107	4	01/20/2023	1	339	2,575	ND	ND	ND	40	62	40	102	2300
BS23-108	4	01/20/2023	1	251	1,600	ND	ND	ND	38	63	38	101	2200
BS23-109	4	01/20/2023	2	202	2,965	ND	ND	ND	25	ND	25	25	2900
BS23-110	4	01/20/2023	1	197	1,330	ND	ND	ND	ND	ND	ND	ND	1600
BS23-111	4	01/20/2023	1	210	1,025	ND	ND	ND	21	ND	21	21	960

"ND" Not Detected at the Reporting Limit

"-" indicates not analyzed/assessed


Bold and green shaded indicates exceedance outside of NMOCD Reclamation Criteria (off-pad)


ATTACHMENT 4

Hackberry Federal 1/Helios6

DTGW Borehole Location

Legend

 32.682433, -103.901483

 32.682433, -103.901483

Google Earth

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100 m



DTGW Borehole

0.5-Mile Radius

Legend

 Feature 1





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).			
	WELL OWNER NAME(S) Devon Energy				PHONE (OPTIONAL)			
	WELL OWNER MAILING ADDRESS 6488 7 Rivers Hwy				CITY Artesia	STATE NM	ZIP 88210	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 40	SECONDS 56.79 N	* 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. 1833		NAME OF LICENSED DRILLER Jason Maley		NAME OF WELL DRILLING COMPANY Vision Resources, Inc			
	DRILLING STARTED 12/13/22	DRILLING ENDED 12/13/22	DEPTH OF COMPLETED WELL (FT) 105	BORE HOLE DEPTH (FT) 105	DEPTH WATER FIRST ENCOUNTERED (FT) none			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN *add Centralizer info below <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT)		DATE STATIC MEASURED	
	DRILLING FLUID: <input checked="" type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER - SPECIFY:				CHECK HERE IF PITLESS ADAPTER IS INSTALLED <input type="checkbox"/>			
	DEPTH (feet bgl) FROM 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 80		6	2inch pvc sch 40	thread	2	Sch 40	
	80 100		6	2 inch pvc sch 40	thread	2	Sch 40	0.75
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM 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	

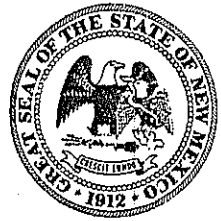
FOR OSE INTERNAL USE

FILE NO.	POD NO.	WR-20 WELL RECORD & LOG (Version 09/22/2022)
LOCATION	WELL TAG ID NO.	TRN NO.
		PAGE 1 OF 2

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PLUGGING RECORD



NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: _____
 Well owner: Devon Energy Phone No.: _____
 Mailing address: 6488 7 Rivers Hwy
 City: Artesia State: New Mexico Zip code: 88210

II. WELL PLUGGING INFORMATION:


- 1) Name of well drilling company that plugged well: Vision Resources, Inc
- 2) New Mexico Well Driller License No.: WD 1833 Expiration Date: 12-31-23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Jason Maley
- 4) Date well plugging began: 12-16-22 Date well plugging concluded: 12-16-22
- 5) GPS Well Location: Latitude: 32 deg, 40 min, 56.79 sec
 Longitude: 103 deg, 54 min, 4.32 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 105 ft below ground level (bgl),
 by the following manner: tape
- 7) Static water level measured at initiation of plugging: dry ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: yes
- 9) Were all plugging activities consistent with an approved plugging plan? yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

- For each interval plugged, describe within the following columns:**

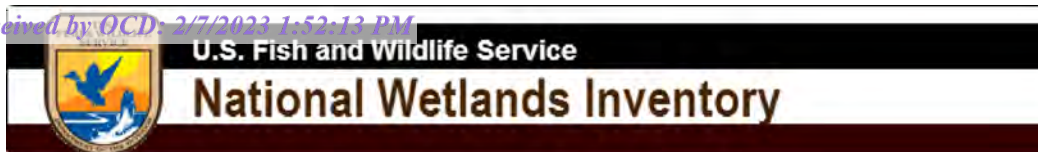
<u>Depth</u> (ft bgl)	<u>Plugging Material Used</u> (include any additives used)	<u>Volume of Material Placed</u> (gallons)	<u>Theoretical Volume of Borehole/ Casing</u> (gallons)	<u>Placement Method</u> (tremie pipe, other)	<u>Comments</u> ("casing perforated first", "open annular space also plugged", etc.)
	Baroid Hole Plug	155	154.21	Open Hole	

MULTIPLY		BY	AND OBTAIN
cubic feet	x	7.4805	= gallons
cubic yards	x	201.97	= gallons

I, Jason Maley, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.


Signature of Well Driller

12/19/22
Date



Hackberry 6 Federal 1 Well Pad 800 Feet (



December 2, 2022

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.

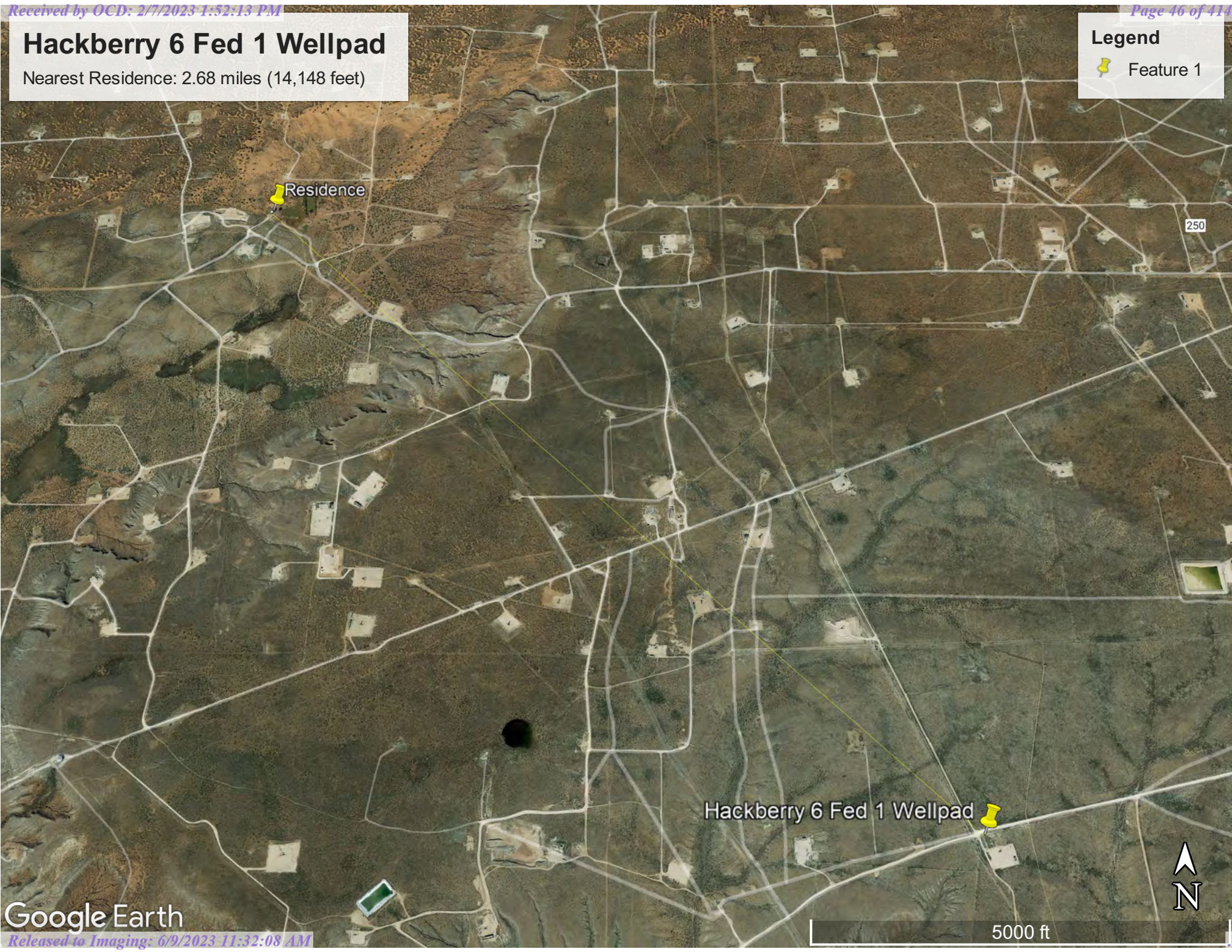


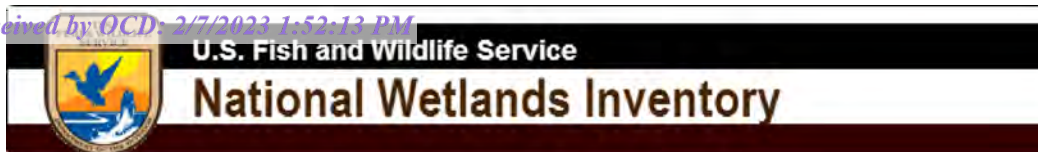
Hackberry 6 Fed 1 Wellpad

Nearest Residence: 2.68 miles (14,148 feet)

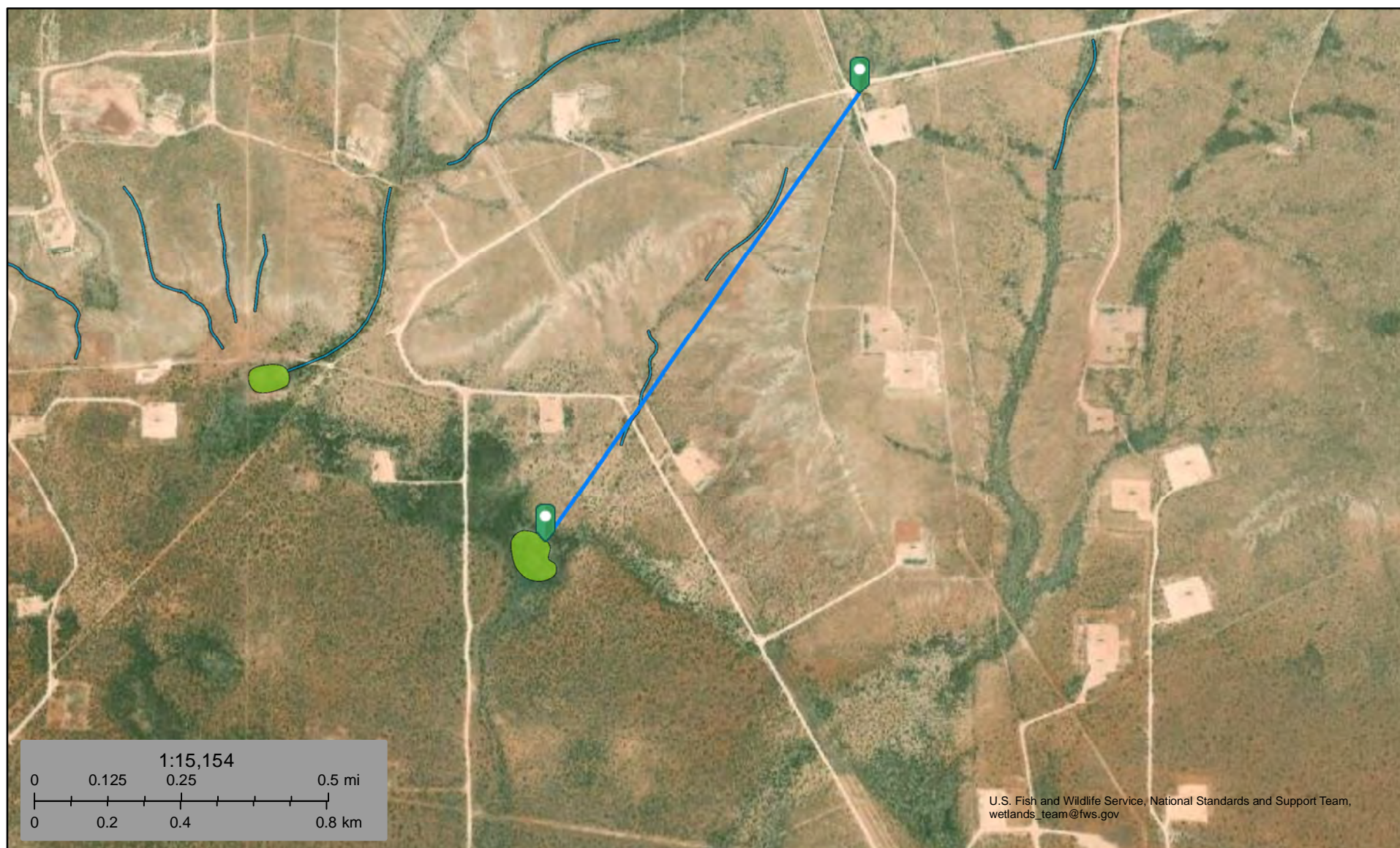
Legend

 Feature 1





7, Hackberry 6 Fed 1 Wellpad to Wetland



August 12, 2022

Wetlands

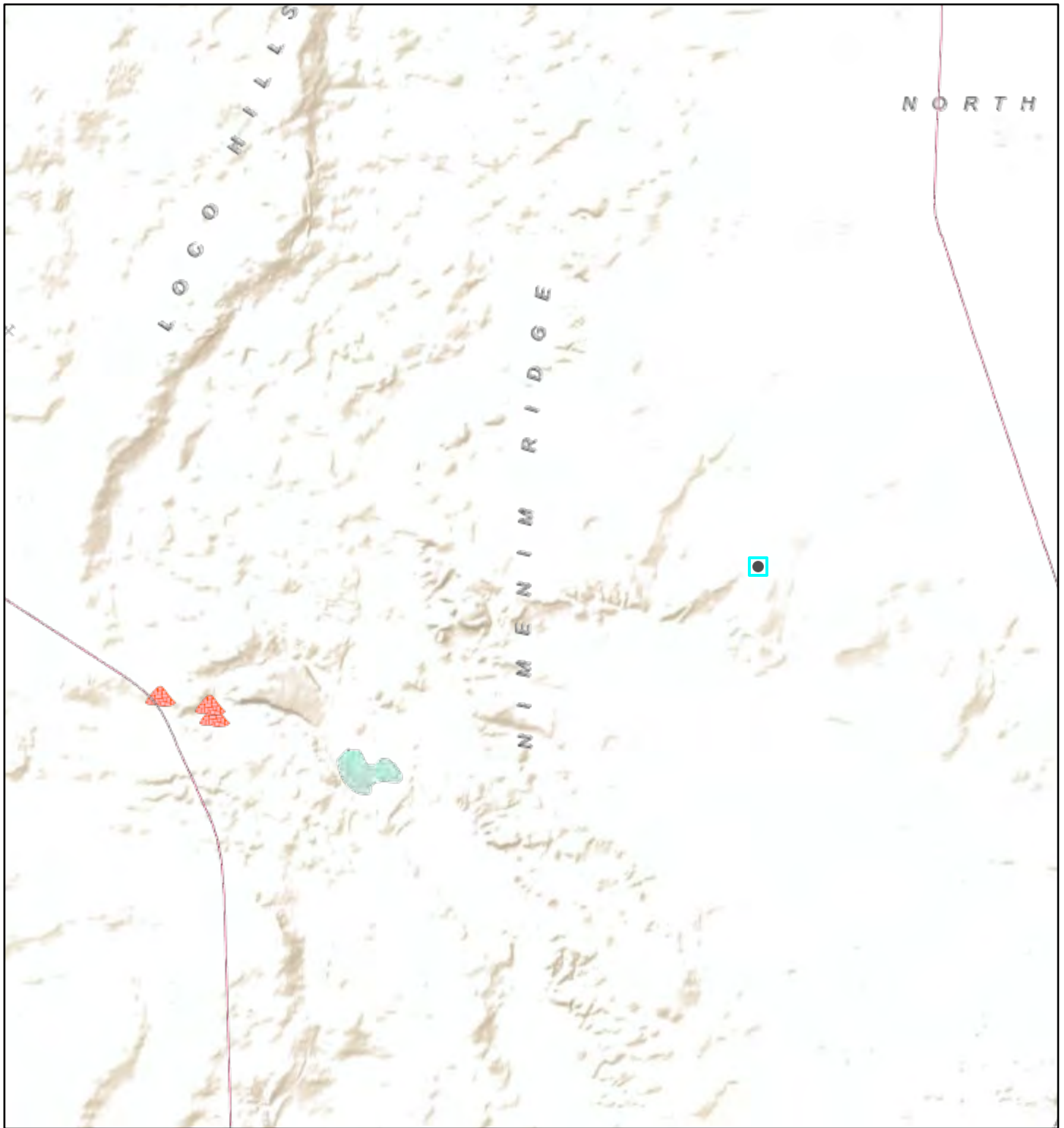
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- 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.

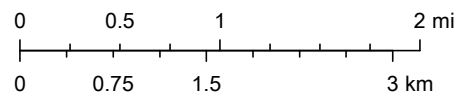
Active Mines in New Mexico



12/2/2022, 8:27:51 AM

1:72,224

Registered Mines



✕ Aggregate, Stone etc.

▲ Potash

Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

National Flood Hazard Layer FIRMMette



103°54'45"W 32°41'32"N



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 Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



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 8/12/2022 at 5:54 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.

Map Unit Description: Simona gravelly fine sandy loam, 0 to 3 percent slopes---Eddy Area,
New Mexico

Eddy Area, New Mexico

SG—Simona gravelly fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1w5w

Elevation: 2,750 to 5,000 feet

Mean annual precipitation: 8 to 16 inches

Mean annual air temperature: 57 to 70 degrees F

Frost-free period: 180 to 230 days

Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona

Setting

Landform: Plains, alluvial fans

Landform position (three-dimensional): Rise

Down-slope shape: Convex, linear

Across-slope shape: Linear

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 19 inches: gravelly fine sandy loam

H2 - 19 to 23 inches: indurated

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 7 to 20 inches to petrocalcic

Drainage class: Well drained

Runoff class: Very high

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: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R070BD002NM - Shallow Sandy

Map Unit Description: Simona gravelly fine sandy loam, 0 to 3 percent slopes---Eddy Area,
New Mexico

Hydric soil rating: No

Minor Components

Simona

Percent of map unit: 4 percent

Ecological site: R070BD002NM - Shallow Sandy

Hydric soil rating: No

Playa

Percent of map unit: 1 percent

Landform: Playas

Landform position (three-dimensional): Talf

Down-slope shape: Concave, convex

Across-slope shape: Concave, linear

Ecological site: R070BC017NM - Bottomland

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Eddy Area, New Mexico

Survey Area Data: Version 18, Sep 8, 2022

Ecological site R070BD002NM Shallow Sandy

Accessed: 12/02/2022

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 sites often occur in association or in a complex with Shallow Sandy Sites.
-------------	--------------------------------------------------------------------------------------------------

Similar sites

R070BD004NM	Sandy Sandy ecological sites are similar to Shallow Sandy sites in species composition and Transition pathways.
-------------	---------------------------------------------------------------------------------------------------------------------------

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on plains, alluvial fans, uplands, or fan piedmonts. The parent material consists of mixed loamy alluvium or eolian material derived from igneous and sedimentary bedrock. The petrocalcic layer is at a depth of 10 to 25 inches and undulating.

Slopes are nearly level to undulating, usually less than 9 percent. Elevations range from 2,842 to 4,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Fan piedmont (3) Alluvial fan
Elevation	2,842–4,500 ft
Slope	1–9%
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 from 207 to 220 days. The last killing frost is in late March or early April, and the first killing frost is in late 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 the site. The vegetation of this site can take advantage of the moisture and the time it falls. Because of the soil profile, little moisture can be stored in the soil for any length of time. Moisture is readily available to the plants from the time it falls. Strong winds from the southwest blow from January through June which rapidly dries out the soil profile during a critical period for 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 very shallow to shallow, less than 20 inches in depth. Surface and subsurface textures are gravelly loamy sand, gravelly fine sandy loam or fine sandy loam.

An indurated caliche layer occurs at depths of 6 to 25 inches and is at an average of 15 inches from the surface. Underlying material textures are very gravelly fine sandy loam, very gravelly sandy loam, gravelly fine sandy loam. Gravels are calcium carbonate concretions, calcium carbonate content ranges from 30 to 65 percent.

The indurated caliche layer typically holds water up in the profile for short periods within the root zone of plants. These soils will blow if left unprotected by vegetation.

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

Characteristic soils are:

Simona

Jerag

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Loamy fine sand (3) Gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderately slow to moderate

Soil depth	7–24 in
Surface fragment cover <=3"	5–25%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	1–2 in
Calcium carbonate equivalent (0-40in)	5–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8
Subsurface fragment volume <=3" (Depth not specified)	5–25%
Subsurface fragment volume >3" (Depth not specified)	0%

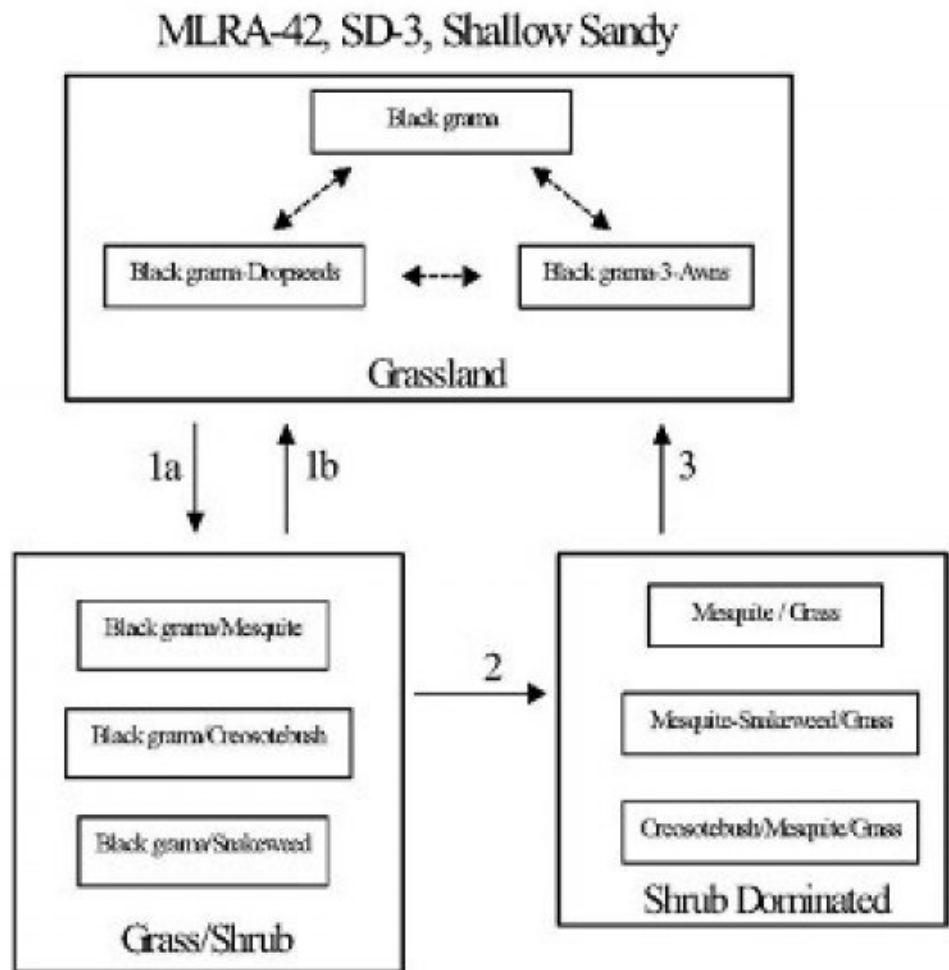
Ecological dynamics

Overview

The Shallow Sandy site occurs on upland plains, and tops of low ridges and mesas, associated with Sandy, Loamy Sand, and Shallow sites. Coarse to moderately coarse soil surface textures, shallow depth (<20 inches) to an indurated caliche layer (petrocalcic horizon), and an overwhelming dominance by black grama help to distinguish this site. The historic plant community of the Shallow Sandy site is a black grama dominated grassland sparsely dotted with shrubs. Shrubs, especially mesquite and creosotebush can increase or colonize due to the dispersal of shrub seeds by livestock or wildlife. This increase in mesquite and colonization of creosotebush may be enhanced by proximity to areas with existing high shrub densities. Fire suppression, and the loss of grass cover due to overgrazing or drought may facilitate the increase and encroachment of shrubs. Persistent loss of grass cover, competition for resources by shrubs, and periods of climate with increased winter precipitation and dry summers, may initiate the transition to a shrub-dominated state.

State and transition model

Plant Communities and Transitional Pathways (diagram)



1a. Seed dispersal, drought, overgrazing, fire suppression.

1b. Prescribed fire, brush control, prescribed grazing.

2. Persistent loss of grass cover, resource competition, increased winter precipitation.

3. Brush control, range seeding, prescribed grazing.

State 1

Historic Climax Plant Community

Community 1.1

Historic Climax Plant Community

Grassland: This site responds well to management and is resistant to state change, due to the shallow depth to petrocalcic horizon and sandy surface textures. The sandy surface textures allow rapid water infiltration and the petrocalcic horizon helps to keep water perched and available to shallow rooted grasses. Black grama is the dominant species in the historic plant community, averaging 50 to 60 percent of the total production for this site. Bush muhly, blue grama, and dropseeds are present as sub-dominants. Typically, yucca, javalinabush, range ratany, prickly pear, and mesquite are sparsely dotted across the landscape. Leatherweed croton, cutleaf

happlopappus, wooly groundsel, and threadleaf groundsel are common forbs. Continuous heavy grazing or extended periods of drought will cause a loss of grass cover characterized by a decrease in black grama, bush muhly, blue and sideoats grama, plains bristlegrass, and Arizona cottontop. Dropseeds and or threeawns may increase and become sub-dominant to black grama. Continued loss of grass cover in conjunction with dispersal of shrub seeds and fire suppression is believed to cause the transition to a state with increased amounts of shrubs (Grass/Shrub state). Diagnosis: Black grama is the dominant grass species. Grass cover uniformly distributed. Shrubs are a minor component averaging only two to five percent canopy cover. Litter cover is high (40-50 percent of area), and litter movement is limited to smaller size class litter and short distances (< . 5m). Other grasses that could appear on this site would include: six-weeks grama, fluffgrass, false-buffalograss, hairy grama, little bluestem, bristle panicum, cane bluestem, Indian ricegrass, tridens spp., and red lovegrass. Other woody plants include: pricklypear, cholla, fourwing saltbush, catclaw mimosa, winterfat, American tarbush and mesquite. Other forbs include: globemallow, verbena, desert holly, senna, plains blackfoot, trailing fleabane, fiddleneck, deerstongue, wooly Indianwheat, and locoweed.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	474	652	830
Forb	78	107	136
Shrub/Vine	48	66	84
Total	600	825	1050

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	30-35%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-25%

Figure 5. Plant community growth curve (percent production by month).
 NM2802, R042XC002NM-Shallow Sandy-HCPC. SD-3 Shallow Sandy - 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: This state is characterized by the notable presence of shrubs, especially mesquite, broom snakeweed, and/or creosotebush, however grasses remain as the dominant species. Black grama is the dominant

grass species. Threeawns and or dropseeds are sub-dominant. The susceptibility of the Shallow Sandy site to shrub encroachment may be higher when located adjacent to other sites with high densities of mesquite or creosotebush. Retrogression within this site is characterized by decreases in grass cover and increasing densities of shrubs. Diagnosis: Black grama remains as the dominant grass species. Grass cover varies in response to the amount of shrub increase, ranging from uniform to patchy. Shrubs are found at increased densities relative to the grassland state, especially mesquite, creosotebush, or broom snakeweed. Transition to Grass/Shrub (1a) Historically fire may have kept mesquite and other shrubs in check by completely killing some species and disrupting seed production cycles and suppressing the establishment of shrub seedlings in others. Fire suppression combined with seed dispersal by livestock and wildlife is believed to be the factors responsible for the establishment and increase in shrubs. 1, 3 Loss of grass cover due to overgrazing, prolonged periods of drought, or their combination, reduces fire fuel loads and increases the susceptibility of the site to shrub establishment. Key indicators of approach to transition: Increase in the relative abundance of dropseeds and threeawns Presence of shrub seedlings Loss of organic matter—evidenced by an increase in physical soil crusts 8 Transition back to Grassland (1b) Brush control is necessary to initiate the transition back to the grassland state. If adequate fuel loads remain, possibly the reintroduction of fire as a management tool will assist in the transition back, however, mixed results have been observed concerning the effects of fire on black grama grasslands. 6 Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover capable of sustaining fire.

State 3 Shrub Dominated

Community 3.1 Shrub Dominated

Shrub-Dominated: Across the range of soil types included in the Shallow Sandy site, mesquite is typically the dominant shrub, but it does occur as a co-dominant or sub-dominant species with creosotebush or broom snakeweed. Mesquite tends to dominate when the Shallow Sandy site occurs as part of a complex or in association with Sandy or Loamy Sand sites. Creosotebush tends to dominate on Shallow Sandy sites that occur as part of, or adjacent to Shallow Sites. Broom snakeweed increases in response to heavy grazing, but tends to cycle in and out depending on timing of rainfall. However, once the site is dominated by shrubs and snakeweed becomes well established, it tends to remain as a major component in the shrub dominated state. Diagnosis: Mesquite, creosotebush, or snakeweed cover is high, exceeding that of grasses. Grass cover is patchy with large connected bare areas present. Black grama, threeawns, or dropseeds may be the dominant grass. Evidence of accelerated wind erosion in the form of pedestalling of plants, and soil deposition around shrub bases may be common. Transition to Shrub-Dominated (2) Persistent loss of grass cover and the resulting increased competition between shrubs and remaining grasses for dwindling resources (especially soil moisture) may drive this transition. 5 Additionally periods of increased winter precipitation may facilitate periodic episodes of shrub expansion and establishment. 4 Key indicators of approach to transition: Increase in size and frequency of bare patches. Loss of grass cover in shrub interspaces. Increased signs of erosion, evidenced by pedestalling of plants, and soil and litter deposition on leeward side of plants. 7 Transition back to Grassland (3) Brush control is necessary to reduce competition from shrubs and reestablish grasses. Range seeding may be necessary if insufficient grasses remain, The benefits, and costs, will vary depending upon the degree of site degradation, and adequate precipitation following seeding.

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			413–495	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	413–495	–
2	Warm Season			41–83	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	41–83	–
3	Warm Season			41–83	

	blue grama	BOGR2	<i>Bouteloua gracilis</i>	41–83	–
4	Warm Season			25–41	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	25–41	–
5	Warm Season			41–83	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	41–83	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	41–83	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	41–83	–
6	Warm Season			17–41	
	threeawn	ARIST	<i>Aristida</i>	17–41	–
7	Warm Season			41–83	
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	41–83	–
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	41–83	–
8	Warm Season			41–83	
	mat sandbur	CELO3	<i>Cenchrus longispinus</i>	41–83	–
	hooded windmill grass	CHCU2	<i>Chloris cucullata</i>	41–83	–
9	Other Perennial Grasses			25–41	
	Grass, perennial	2GP	<i>Grass, perennial</i>	25–41	–
Shrub/Vine					
10	Shrub			8–25	
	javelina bush	COER5	<i>Condalia ericoides</i>	8–25	–
11	Shrub			8–25	
	yucca	YUCCA	<i>Yucca</i>	8–25	–
12	Shrub			8–25	
	jointfir	EPHED	<i>Ephedra</i>	8–25	–
	littleleaf ratany	KRER	<i>Krameria erecta</i>	8–25	–
13	Shrub			8–25	
	featherplume	DAFO	<i>Dalea formosa</i>	8–25	–
14	Shrub			8–25	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	8–25	–
15	Other Shrubs			25–41	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	25–41	–
Forb					
16	Forb			17–41	
	leatherweed	CRPOP	<i>Croton pottsii</i> var. <i>pottsii</i>	17–41	–
	Goodding's tansyaster	MAPIG2	<i>Machaeranthera pinnatifida</i> ssp. <i>gooddingii</i> var. <i>gooddingii</i>	17–41	–
17	Forb			17–41	
	woolly groundsel	PACA15	<i>Packera cana</i>	17–41	–
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus</i> var. <i>flaccidus</i>	17–41	–
18	Forb			8–25	
	whitest evening primrose	OEAL	<i>Oenothera albicaulis</i>	8–25	–
19	Other Forbs			8–25	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	8–25	–

Animal community

This site provides habitats which support a resident animal community that is characterized by pronghorn antelope, swift fox, black-tailed jackrabbit, spotted ground squirrel, Ord's kangaroo rat, northern grasshopper mouse, coyote, horned lark, meadowlark, lark bunting, scaled quail, morning dove, side-blotched lizard, round-tailed horned lizard, marbled whiptail, prairie rattlesnake and ornate box turtle.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series Hydrologic Group
Jarag D
Simona D

Recreational uses

This site offers recreation for hiking, horseback riding, nature observation and photography, and quail and dove hunting. During years of abundant spring moisture, this site displays a riot of color from wildflowers during May and June. A few summer and fall flowers also occur.

Wood products

The natural potential plant community of this site affords little or no wood products. Where the site has been invaded by mesquite or cholla cactus the roots and stems of these plants provide attractive material for a variety of curiosities, such as lamps and small furniture.

Other products

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. Because of the sandy textures and shallow profile, this site will respond rapidly to management. As this site deteriorates, plants such as black grama, bush muhly, blue and sideoats grama, plains bristlegrass and Arizona cottontop, will decrease and be replaced by plants such as threeawns, mesquite, creosote bush, and broom snakeweed. This also causes a decrease in ground cover, leaving the soil to blow. This site responds best to a system of management that rotates the season of use.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index Ac/AUM
100 - 76 2.5 – 3.5
75 – 51 3.2 – 4.6
50 – 26 4.5 – 7.5
25 – 0 7.6 +

Inventory data references

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Eddy County, Lea County, and Chaves County.

Other references

Literature References:

1. Brooks, M.L. and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species.
2. Hennessy, J.T., R.P. Gibbens, J.M. Tromble, and M. Cardenas. 1983. Water properties of caliche. J. Range Manage. 36: 723-726.
3. Humphrey, R.R. 1974. Fire in the deserts and desert grassland of North America. In: Kozlowski, T. T.; Ahlgren, C. E., eds. Fire and ecosystems. New York: Academic Press: 365-400.
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Contributors

David Trujillo
Don Sylvester

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

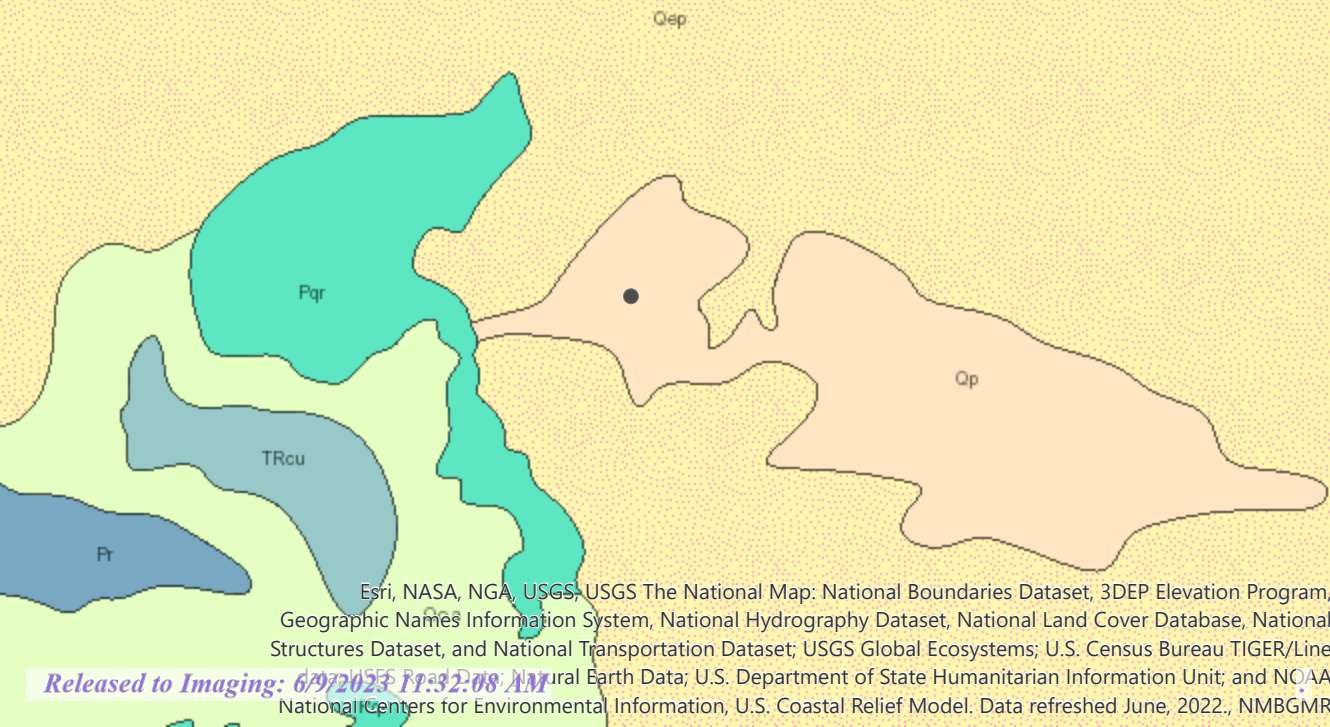
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

17. **Perennial plant reproductive capability:**



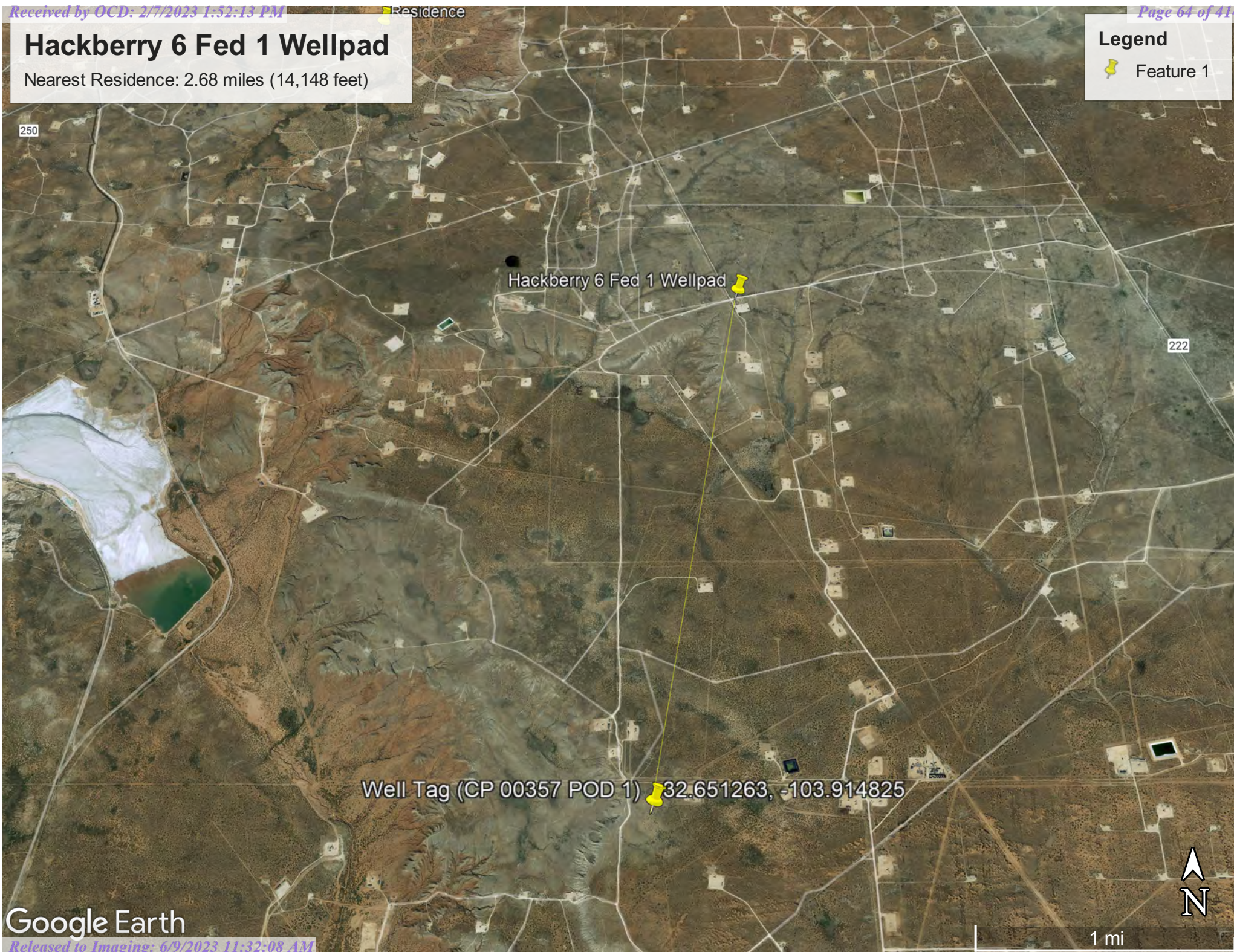
Esri, NASA, NGA, USGS, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USGS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022., NMBGMR

Hackberry 6 Fed 1 Wellpad

Nearest Residence: 2.68 miles (14,148 feet)

Legend

Feature 1





New Mexico Office of the State Engineer

Water Column/Average Depth to Water

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

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

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

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
CP 00767 POD1		CP	ED	3	2	35	18S	30E		599300	3619158*	3692	500		
CP 00873 POD1		CP	LE	1	1	19	19S	31E		601772	3613147*	4138	340	180	160
CP 00818 POD1		CP	LE	1	4	26	18S	30E		599289	3620364*	4450	240		
CP 00829 POD1		CP	LE	2	4	16	19S	31E		606165	3614009*	4917	120		
CP 00357 POD1		CP	ED	4	4	1	24	19S	30E	600667	3612631*	4932	630		
CP 00647 POD1	O	CP	ED	4	2	2	15	19S	30E	598235	3614621*	4956	200	92	108

Average Depth to Water: 136 feet

Minimum Depth: 92 feet

Maximum Depth: 180 feet

Record Count: 6

UTMNAD83 Radius Search (in meters):

Easting (X): 602448.65

Northing (Y): 3617230

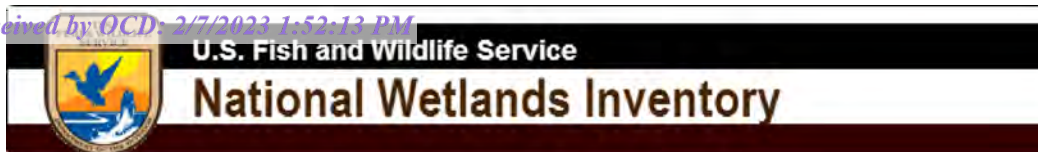
Radius: 5000

*UTM location was derived from PLSS - see Help

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

8/12/22 7:40 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER



Hackberry 6 Federal 1 Well Pad 800 Feet (



December 2, 2022

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.

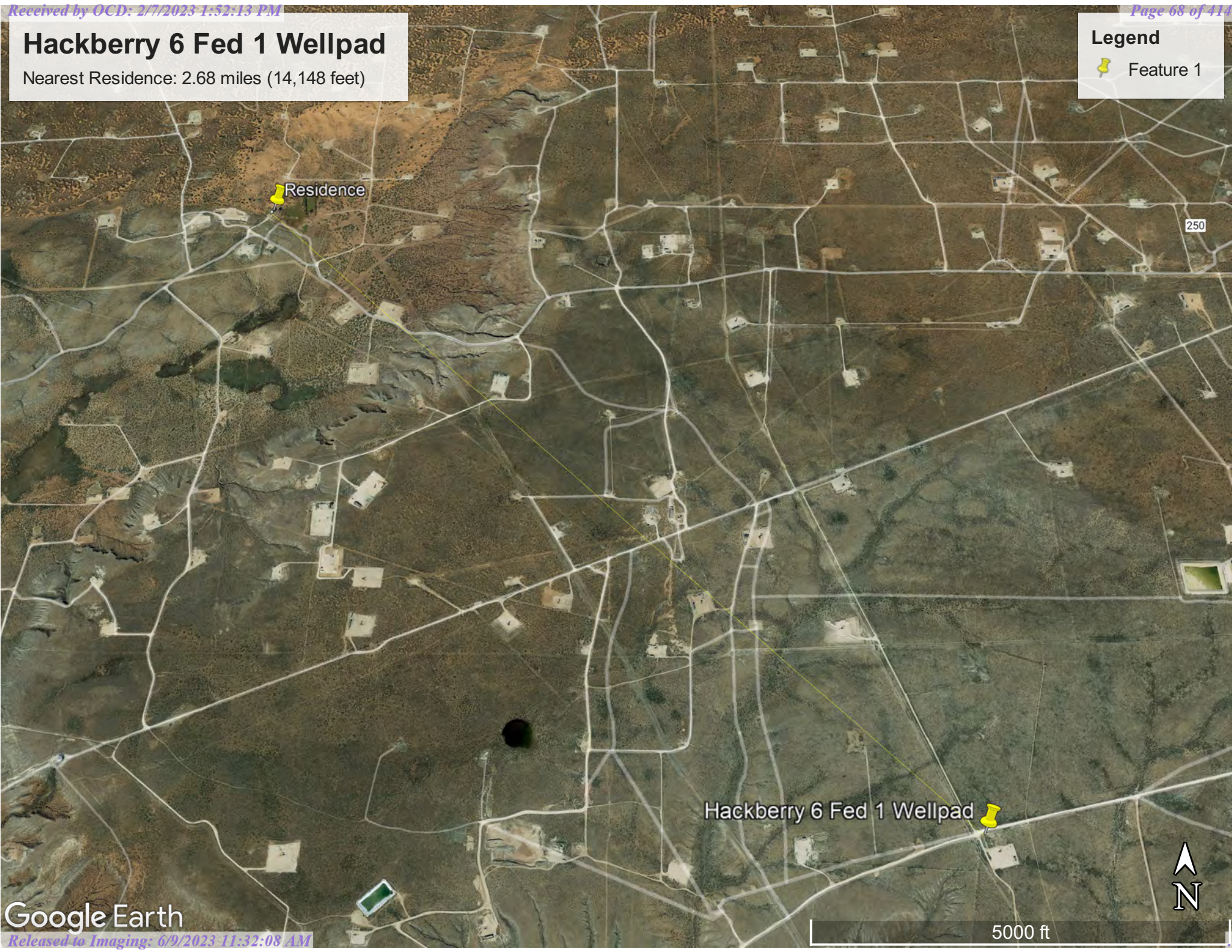


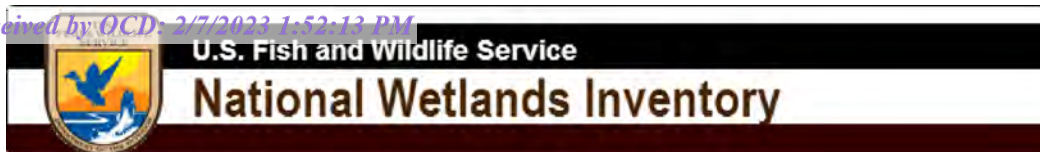
Hackberry 6 Fed 1 Wellpad

Nearest Residence: 2.68 miles (14,148 feet)

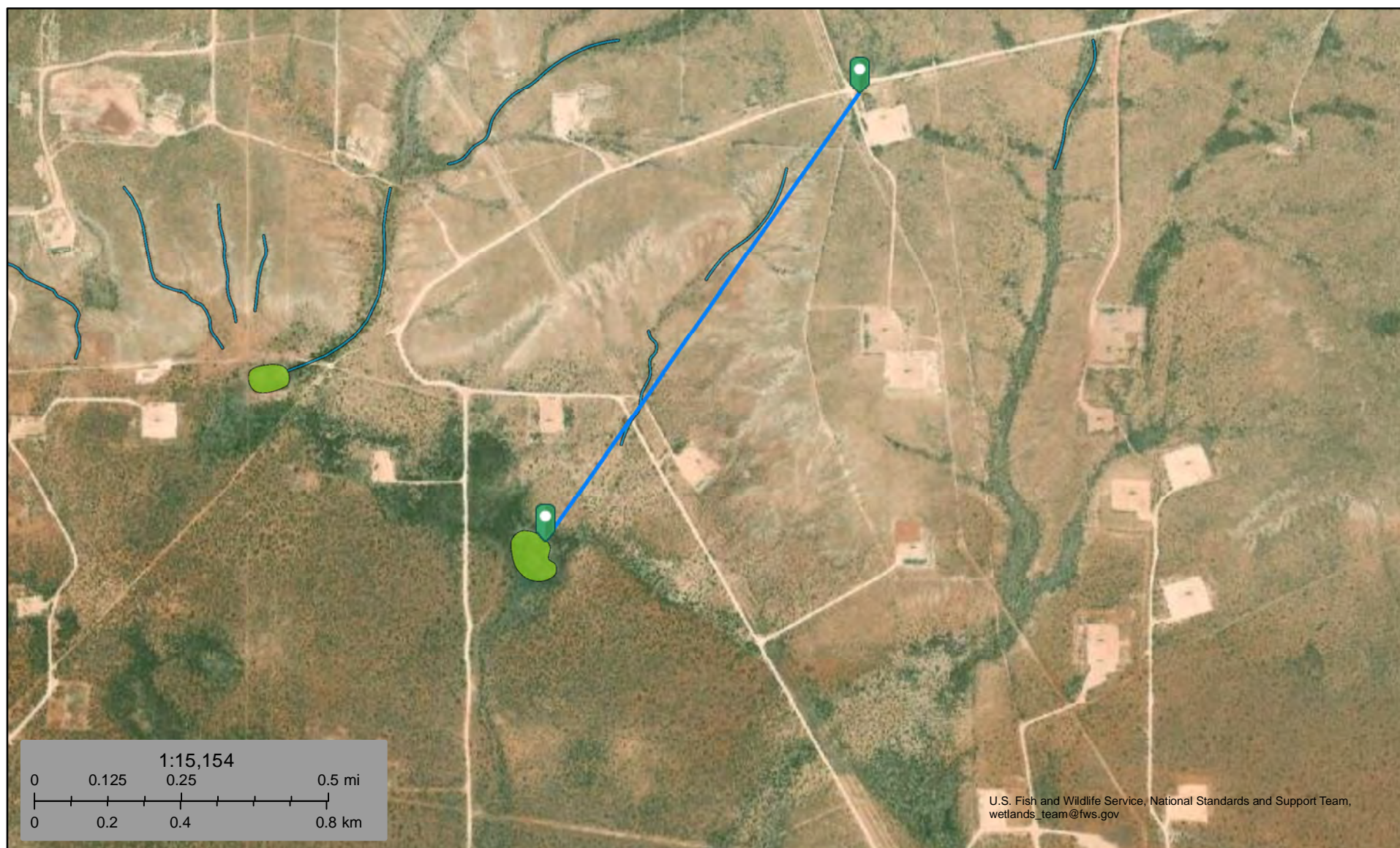
Legend

 Feature 1





7, Hackberry 6 Fed 1 Wellpad to Wetland



August 12, 2022

Wetlands

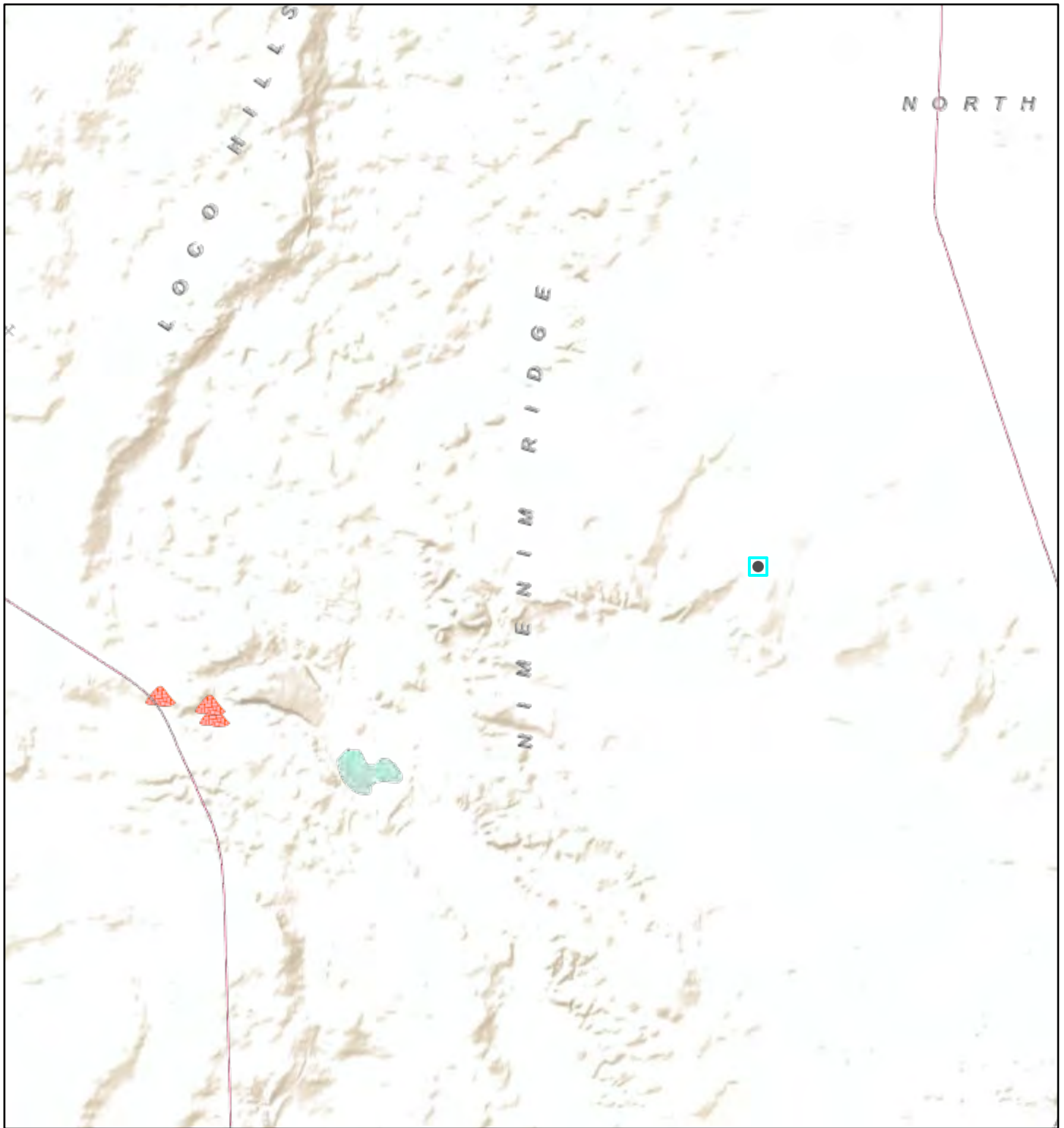
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- 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.

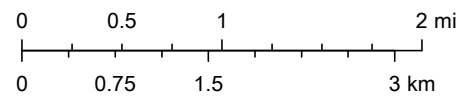
Active Mines in New Mexico



12/2/2022, 8:27:51 AM

1:72,224

Registered Mines



- ✕ Aggregate, Stone etc.
- ▲ Potash

Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

National Flood Hazard Layer FIRMette



103°54'45"W 32°41'32"N



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 Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

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 8/12/2022 at 5:54 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.

Map Unit Description: Simona gravelly fine sandy loam, 0 to 3 percent slopes---Eddy Area,
New Mexico

Eddy Area, New Mexico

SG—Simona gravelly fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1w5w

Elevation: 2,750 to 5,000 feet

Mean annual precipitation: 8 to 16 inches

Mean annual air temperature: 57 to 70 degrees F

Frost-free period: 180 to 230 days

Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona

Setting

Landform: Plains, alluvial fans

Landform position (three-dimensional): Rise

Down-slope shape: Convex, linear

Across-slope shape: Linear

Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 19 inches: gravelly fine sandy loam

H2 - 19 to 23 inches: indurated

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 7 to 20 inches to petrocalcic

Drainage class: Well drained

Runoff class: Very high

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: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum: 1.0

Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D

Ecological site: R070BD002NM - Shallow Sandy

Map Unit Description: Simona gravelly fine sandy loam, 0 to 3 percent slopes---Eddy Area,
New Mexico

Hydric soil rating: No

Minor Components

Simona

Percent of map unit: 4 percent

Ecological site: R070BD002NM - Shallow Sandy

Hydric soil rating: No

Playa

Percent of map unit: 1 percent

Landform: Playas

Landform position (three-dimensional): Talf

Down-slope shape: Concave, convex

Across-slope shape: Concave, linear

Ecological site: R070BC017NM - Bottomland

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Eddy Area, New Mexico

Survey Area Data: Version 18, Sep 8, 2022

Ecological site R070BD002NM Shallow Sandy

Accessed: 12/02/2022

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 sites often occur in association or in a complex with Shallow Sandy Sites.
-------------	--------------------------------------------------------------------------------------------------

Similar sites

R070BD004NM	Sandy Sandy ecological sites are similar to Shallow Sandy sites in species composition and Transition pathways.
-------------	---------------------------------------------------------------------------------------------------------------------------

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on plains, alluvial fans, uplands, or fan piedmonts. The parent material consists of mixed loamy alluvium or eolian material derived from igneous and sedimentary bedrock. The petrocalcic layer is at a depth of 10 to 25 inches and undulating.

Slopes are nearly level to undulating, usually less than 9 percent. Elevations range from 2,842 to 4,500 feet.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Fan piedmont (3) Alluvial fan
Elevation	2,842–4,500 ft
Slope	1–9%
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 from 207 to 220 days. The last killing frost is in late March or early April, and the first killing frost is in late 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 the site. The vegetation of this site can take advantage of the moisture and the time it falls. Because of the soil profile, little moisture can be stored in the soil for any length of time. Moisture is readily available to the plants from the time it falls. Strong winds from the southwest blow from January through June which rapidly dries out the soil profile during a critical period for 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 very shallow to shallow, less than 20 inches in depth. Surface and subsurface textures are gravelly loamy sand, gravelly fine sandy loam or fine sandy loam.

An indurated caliche layer occurs at depths of 6 to 25 inches and is at an average of 15 inches from the surface. Underlying material textures are very gravelly fine sandy loam, very gravelly sandy loam, gravelly fine sandy loam. Gravels are calcium carbonate concretions, calcium carbonate content ranges from 30 to 65 percent.

The indurated caliche layer typically holds water up in the profile for short periods within the root zone of plants. These soils will blow if left unprotected by vegetation.

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

Characteristic soils are:

Simona

Jerag

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Loamy fine sand (3) Gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderately slow to moderate

Soil depth	7–24 in
Surface fragment cover <=3"	5–25%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	1–2 in
Calcium carbonate equivalent (0-40in)	5–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8
Subsurface fragment volume <=3" (Depth not specified)	5–25%
Subsurface fragment volume >3" (Depth not specified)	0%

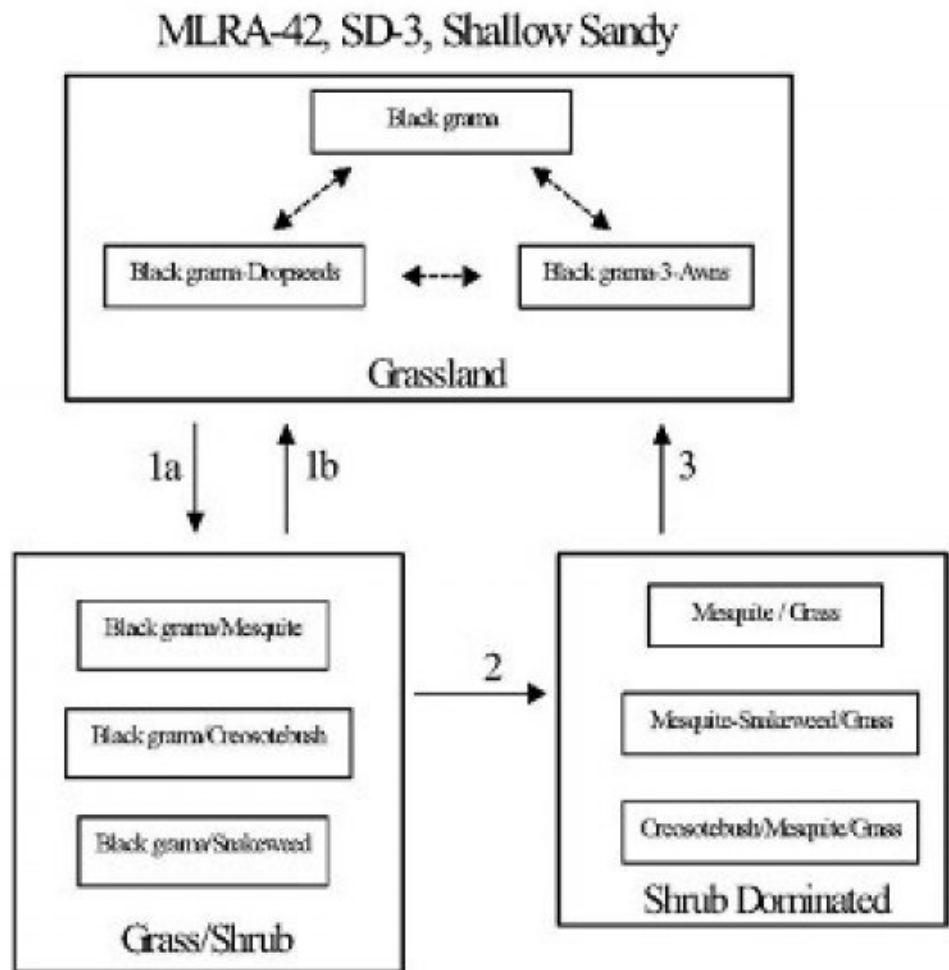
Ecological dynamics

Overview

The Shallow Sandy site occurs on upland plains, and tops of low ridges and mesas, associated with Sandy, Loamy Sand, and Shallow sites. Coarse to moderately coarse soil surface textures, shallow depth (<20 inches) to an indurated caliche layer (petrocalcic horizon), and an overwhelming dominance by black grama help to distinguish this site. The historic plant community of the Shallow Sandy site is a black grama dominated grassland sparsely dotted with shrubs. Shrubs, especially mesquite and creosotebush can increase or colonize due to the dispersal of shrub seeds by livestock or wildlife. This increase in mesquite and colonization of creosotebush may be enhanced by proximity to areas with existing high shrub densities. Fire suppression, and the loss of grass cover due to overgrazing or drought may facilitate the increase and encroachment of shrubs. Persistent loss of grass cover, competition for resources by shrubs, and periods of climate with increased winter precipitation and dry summers, may initiate the transition to a shrub-dominated state.

State and transition model

Plant Communities and Transitional Pathways (diagram)



1a. Seed dispersal, drought, overgrazing, fire suppression.

1b. Prescribed fire, brush control, prescribed grazing.

2. Persistent loss of grass cover, resource competition, increased winter precipitation.

3. Brush control, range seeding, prescribed grazing.

State 1

Historic Climax Plant Community

Community 1.1

Historic Climax Plant Community

Grassland: This site responds well to management and is resistant to state change, due to the shallow depth to petrocalcic horizon and sandy surface textures. The sandy surface textures allow rapid water infiltration and the petrocalcic horizon helps to keep water perched and available to shallow rooted grasses. Black grama is the dominant species in the historic plant community, averaging 50 to 60 percent of the total production for this site. Bush muhly, blue grama, and dropseeds are present as sub-dominants. Typically, yucca, javalinabush, range ratany, prickly pear, and mesquite are sparsely dotted across the landscape. Leatherweed croton, cutleaf

happlopappus, wooly groundsel, and threadleaf groundsel are common forbs. Continuous heavy grazing or extended periods of drought will cause a loss of grass cover characterized by a decrease in black grama, bush muhly, blue and sideoats grama, plains bristlegrass, and Arizona cottontop. Dropseeds and or threeawns may increase and become sub-dominant to black grama. Continued loss of grass cover in conjunction with dispersal of shrub seeds and fire suppression is believed to cause the transition to a state with increased amounts of shrubs (Grass/Shrub state). Diagnosis: Black grama is the dominant grass species. Grass cover uniformly distributed. Shrubs are a minor component averaging only two to five percent canopy cover. Litter cover is high (40-50 percent of area), and litter movement is limited to smaller size class litter and short distances (< . 5m). Other grasses that could appear on this site would include: six-weeks grama, fluffgrass, false-buffalograss, hairy grama, little bluestem, bristle panicum, cane bluestem, Indian ricegrass, tridens spp., and red lovegrass. Other woody plants include: pricklypear, cholla, fourwing saltbush, catclaw mimosa, winterfat, American tarbush and mesquite. Other forbs include: globemallow, verbena, desert holly, senna, plains blackfoot, trailing fleabane, fiddleneck, deerstongue, wooly Indianwheat, and locoweed.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	474	652	830
Forb	78	107	136
Shrub/Vine	48	66	84
Total	600	825	1050

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	30-35%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	40-50%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-25%

Figure 5. Plant community growth curve (percent production by month).
 NM2802, R042XC002NM-Shallow Sandy-HCPC. SD-3 Shallow Sandy - 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: This state is characterized by the notable presence of shrubs, especially mesquite, broom snakeweed, and/or creosotebush, however grasses remain as the dominant species. Black grama is the dominant

grass species. Threeawns and or dropseeds are sub-dominant. The susceptibility of the Shallow Sandy site to shrub encroachment may be higher when located adjacent to other sites with high densities of mesquite or creosotebush. Retrogression within this site is characterized by decreases in grass cover and increasing densities of shrubs. Diagnosis: Black grama remains as the dominant grass species. Grass cover varies in response to the amount of shrub increase, ranging from uniform to patchy. Shrubs are found at increased densities relative to the grassland state, especially mesquite, creosotebush, or broom snakeweed. Transition to Grass/Shrub (1a) Historically fire may have kept mesquite and other shrubs in check by completely killing some species and disrupting seed production cycles and suppressing the establishment of shrub seedlings in others. Fire suppression combined with seed dispersal by livestock and wildlife is believed to be the factors responsible for the establishment and increase in shrubs.1, 3 Loss of grass cover due to overgrazing, prolonged periods of drought, or their combination, reduces fire fuel loads and increases the susceptibility of the site to shrub establishment. Key indicators of approach to transition: Increase in the relative abundance of dropseeds and threeawns Presence of shrub seedlings Loss of organic matter—evidenced by an increase in physical soil crusts 8 Transition back to Grassland (1b) Brush control is necessary to initiate the transition back to the grassland state. If adequate fuel loads remain, possibly the reintroduction of fire as a management tool will assist in the transition back, however, mixed results have been observed concerning the effects of fire on black grama grasslands.6 Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover capable of sustaining fire.

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

Shrub-Dominated: Across the range of soil types included in the Shallow Sandy site, mesquite is typically the dominant shrub, but it does occur as a co-dominant or sub-dominant species with creosotebush or broom snakeweed. Mesquite tends to dominate when the Shallow Sandy site occurs as part of a complex or in association with Sandy or Loamy Sand sites. Creosotebush tends to dominate on Shallow Sandy sites that occur as part of, or adjacent to Shallow Sites. Broom snakeweed increases in response to heavy grazing, but tends to cycle in and out depending on timing of rainfall. However, once the site is dominated by shrubs and snakeweed becomes well established, it tends to remain as a major component in the shrub dominated state. Diagnosis: Mesquite, creosotebush, or snakeweed cover is high, exceeding that of grasses. Grass cover is patchy with large connected bare areas present. Black grama, threeawns, or dropseeds may be the dominant grass. Evidence of accelerated wind erosion in the form of pedestalling of plants, and soil deposition around shrub bases may be common. Transition to Shrub-Dominated (2) Persistent loss of grass cover and the resulting increased competition between shrubs and remaining grasses for dwindling resources (especially soil moisture) may drive this transition.5 Additionally periods of increased winter precipitation may facilitate periodic episodes of shrub expansion and establishment. 4 Key indicators of approach to transition: Increase in size and frequency of bare patches. Loss of grass cover in shrub interspaces. Increased signs of erosion, evidenced by pedestalling of plants, and soil and litter deposition on leeward side of plants. 7 Transition back to Grassland (3) Brush control is necessary to reduce competition from shrubs and reestablish grasses. Range seeding may be necessary if insufficient grasses remain, The benefits, and costs, will vary depending upon the degree of site degradation, and adequate precipitation following seeding.

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			413–495	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	413–495	–
2	Warm Season			41–83	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	41–83	–
3	Warm Season			41–83	

	blue grama	BOGR2	<i>Bouteloua gracilis</i>	41–83	–
4	Warm Season			25–41	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	25–41	–
5	Warm Season			41–83	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	41–83	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	41–83	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	41–83	–
6	Warm Season			17–41	
	threeawn	ARIST	<i>Aristida</i>	17–41	–
7	Warm Season			41–83	
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	41–83	–
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	41–83	–
8	Warm Season			41–83	
	mat sandbur	CELO3	<i>Cenchrus longispinus</i>	41–83	–
	hooded windmill grass	CHCU2	<i>Chloris cucullata</i>	41–83	–
9	Other Perennial Grasses			25–41	
	Grass, perennial	2GP	<i>Grass, perennial</i>	25–41	–
Shrub/Vine					
10	Shrub			8–25	
	javelina bush	COER5	<i>Condalia ericoides</i>	8–25	–
11	Shrub			8–25	
	yucca	YUCCA	<i>Yucca</i>	8–25	–
12	Shrub			8–25	
	jointfir	EPHED	<i>Ephedra</i>	8–25	–
	littleleaf ratany	KRER	<i>Krameria erecta</i>	8–25	–
13	Shrub			8–25	
	featherplume	DAFO	<i>Dalea formosa</i>	8–25	–
14	Shrub			8–25	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	8–25	–
15	Other Shrubs			25–41	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	25–41	–
Forb					
16	Forb			17–41	
	leatherweed	CRPOP	<i>Croton pottsii</i> var. <i>pottsii</i>	17–41	–
	Goodding's tansyaster	MAPIG2	<i>Machaeranthera pinnatifida</i> ssp. <i>gooddingii</i> var. <i>gooddingii</i>	17–41	–
17	Forb			17–41	
	woolly groundsel	PACA15	<i>Packera cana</i>	17–41	–
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus</i> var. <i>flaccidus</i>	17–41	–
18	Forb			8–25	
	whitest evening primrose	OEAL	<i>Oenothera albicaulis</i>	8–25	–
19	Other Forbs			8–25	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	8–25	–

Animal community

This site provides habitats which support a resident animal community that is characterized by pronghorn antelope, swift fox, black-tailed jackrabbit, spotted ground squirrel, Ord's kangaroo rat, northern grasshopper mouse, coyote, horned lark, meadowlark, lark bunting, scaled quail, morning dove, side-blotched lizard, round-tailed horned lizard, marbled whiptail, prairie rattlesnake and ornate box turtle.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series Hydrologic Group
Jarag D
Simona D

Recreational uses

This site offers recreation for hiking, horseback riding, nature observation and photography, and quail and dove hunting. During years of abundant spring moisture, this site displays a riot of color from wildflowers during May and June. A few summer and fall flowers also occur.

Wood products

The natural potential plant community of this site affords little or no wood products. Where the site has been invaded by mesquite or cholla cactus the roots and stems of these plants provide attractive material for a variety of curiosities, such as lamps and small furniture.

Other products

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. Because of the sandy textures and shallow profile, this site will respond rapidly to management. As this site deteriorates, plants such as black grama, bush muhly, blue and sideoats grama, plains bristlegrass and Arizona cottontop, will decrease and be replaced by plants such as threeawns, mesquite, creosote bush, and broom snakeweed. This also causes a decrease in ground cover, leaving the soil to blow. This site responds best to a system of management that rotates the season of use.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index Ac/AUM
100 - 76 2.5 – 3.5
75 – 51 3.2 – 4.6
50 – 26 4.5 – 7.5
25 – 0 7.6 +

Inventory data references

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Eddy County, Lea County, and Chaves County.

Other references

Literature References:

1. Brooks, M.L. and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species.
2. Hennessy, J.T., R.P. Gibbens, J.M. Tromble, and M. Cardenas. 1983. Water properties of caliche. J. Range Manage. 36: 723-726.
3. Humphrey, R.R. 1974. Fire in the deserts and desert grassland of North America. In: Kozlowski, T. T.; Ahlgren, C. E., eds. Fire and ecosystems. New York: Academic Press: 365-400.
4. Moir, W.H., and J. A. Ludwig. 1991. Plant succession and changing land features in desert grasslands. P. 15-18. In P.F. Ffolliott and W.T. Swank (eds.) People and the temperate region: a summary of research from the United States Man and the Biosphere Program 1991. U.S. Dept. State, Publ No. 9839, Nat. Tech. Info. Serv., U.S. Dept. Commerce, Springfield, Illinois. 63 p.
5. Tiedemann, A. R. and J. O. Klemmedson. 1977. Effect of mesquite trees on vegetation and soils in the desert grassland. J. Range Manage. 30: 361-367.
6. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, September). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/> [accessed 2/10/03].
7. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheets. Rangeland Soil Quality—Wind Erosion. Rangeland Sheet 10 [Online]. Available: <http://www.statlab.iastate.edu/survey/SQL/range.html>
8. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheets. Rangeland Soil Quality—Physical and Biological Soil Crusts. Rangeland Sheet 7 [Online]. Available: <http://www.statlab.iastate.edu/survey/SQL/range.html>

Contributors

David Trujillo
Don Sylvester

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

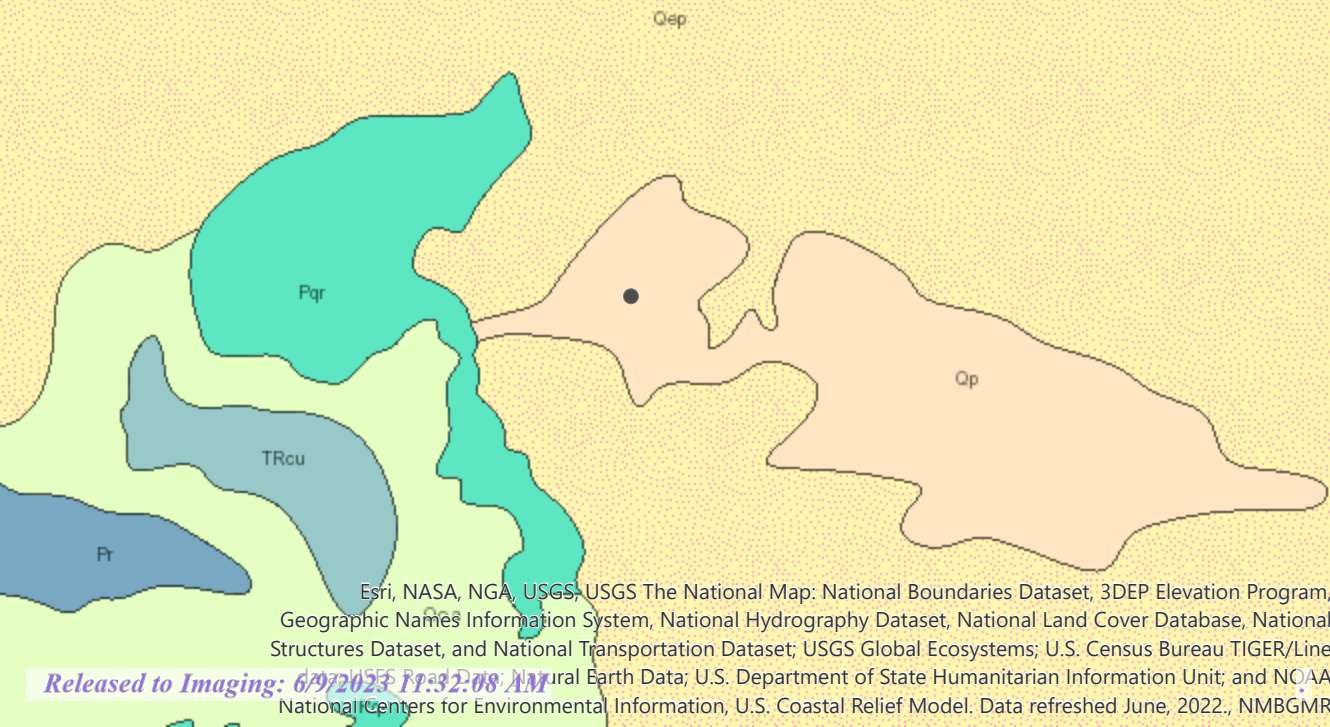
13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

17. **Perennial plant reproductive capability:**



Esri, NASA, NGA, USGS, 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 Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2022., NMBGMR

Closure Criteria Worksheet			
Site Name: Hackberry 6 Fed 1 Wellpad			
Spill Coordinates:		X: 32.688026	Y: -103.907163
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	>100	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	800	Feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	4,819	Feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	14,148	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	14,148	Feet
	ii) Within 1000 feet of any fresh water well or spring	14,148	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	4,129	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	Undetermined	Year
11	Soil Type	SG	Soil
12	Ecological Classification	Simona	Plant
13	Geology	Qp	Age
NMAC 19.15.29.12 E (Table 1) Closure Criteria		>100'	<50' 51-100' >100'

Closure Criteria Worksheet			
Site Name: Hackberry 6 Fed 1 Wellpad			
Spill Coordinates:		X: 32.688026	Y: -103.907163
Site Specific Conditions		Value	Unit
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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	14,148	Feet
	ii) Within 1000 feet of any fresh water well or spring	14,148	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	4,129	feet
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9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	Undetermined	Year
11	Soil Type	SG	Soil
12	Ecological Classification	Simona	Plant
13	Geology	Qp	Age
NMAC 19.15.29.12 E (Table 1) Closure Criteria		>100'	<50' 51-100' >100'

ATTACHMENT 5



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	6/21/2021
Site Location Name:	Helios 6 Fed Com 001H Battery	Report Run Date:	6/21/2021 9:19 PM
Client Contact Name:	Wes Matthews	API #:	30-015-38482
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	6/21/2021 8:00 AM
Departed Site	6/21/2021 12:00 PM

Field Notes

15:10 Arrived on site to white line the spill for locators.

Next Steps & Recommendations

1 Characterization

Daily Site Visit Report



Site Photos

Viewing Direction: South



Point of release

Viewing Direction: North



Center spill area

Viewing Direction: North



Spill area





Viewing Direction: North



Northern spill area towards POR







Daily Site Visit Report

Viewing Direction: North	Viewing Direction: South
<p>Date & Time: Mon Jun 21 16:57:48 MDT 2021 Position: -102.48794° / -102.90714° Altitude: 1077m Datum: WGS-84 Azimuth Bearing: 354° 18'45" 3502m (True) Zoom: 1X</p>  <p>Description: Photo: 1 Viewing Direction: North Topic: Northern portion of spill area near POR Created: 6/21/2021 3:17:24 PM Lat: 32.386711, Long: -104.237959</p>	<p>Date & Time: Mon Jun 21 16:34:57 MDT 2021 Position: -102.48805° / -102.90714° Altitude: 1077m Datum: WGS-84 Azimuth Bearing: 197° 55'01" 3502m (True) Zoom: 1X</p>  <p>Description: Photo: 2 Viewing Direction: South Topic: Spill area Created: 6/21/2021 3:14:40 PM Lat: 32.386742, Long: -104.237959</p>
Northern portion of spill area near POR	Spill area
Viewing Direction: South	Viewing Direction: South
<p>Date & Time: Mon Jun 21 16:36:20 MDT 2021 Position: -102.48801° / -102.90705° Altitude: 1077m Datum: WGS-84 Azimuth Bearing: 100° 52'01" 3502m (True) Zoom: 1X</p>  <p>Description: Photo: 3 Viewing Direction: South Topic: Spill area Created: 6/21/2021 3:15:15 PM Lat: 32.386711, Long: -104.237959</p>	<p>Date & Time: Mon Jun 21 16:35:12 MDT 2021 Position: -102.48804° / -102.90705° Altitude: 1077m Datum: WGS-84 Azimuth Bearing: 197° 51'44" 3502m (True) Zoom: 1X</p>  <p>Description: Photo: 4 Viewing Direction: South Topic: Spill area Created: 6/21/2021 3:14:32 PM Lat: 32.386711, Long: -104.237959</p>
Spill area	Spill area

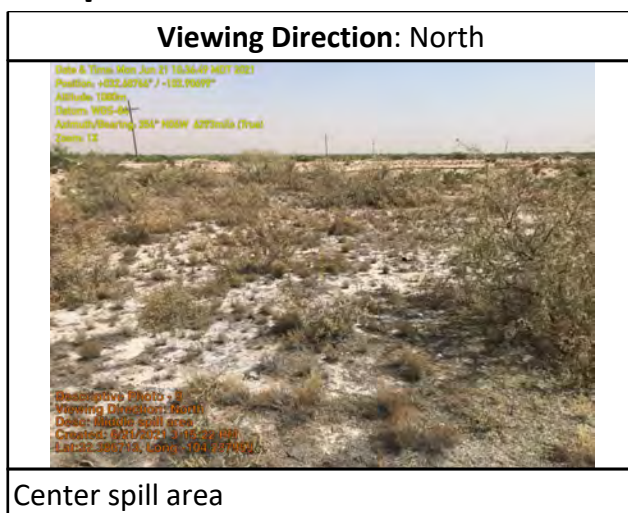


Daily Site Visit Report

<p>Viewing Direction: South</p> 	<p>Viewing Direction: Southwest</p> 
Spill area	Spill area towards southern end
<p>Viewing Direction: North</p> 	<p>Viewing Direction: Northwest</p> 
Southern end Spill area	Southern end of spill area



Daily Site Visit Report



Daily Site Visit Report



Daily Site Visit Signature

Inspector: Austin Harris

Signature:

A handwritten signature in black ink, appearing to be 'AH', written over a horizontal line.

Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	11/3/2022
Site Location Name:	Hackberry 6 Fed 1 Wellpad	Report Run Date:	11/3/2022 8:06 PM
Client Contact Name:	Jim Raley	API #:	
Client Contact Phone #:	575-748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	11/3/2022 8:45 AM
Departed Site	11/3/2022 12:00 PM

Field Notes

- 11:22** Arrived on site to assess the most recent release north of the pad. Line sweep was performed prior to collecting samples with a hand auger. No lines were detected in the sample areas.
Collected BH22-01 through BH22-06 around the release area for horizontal delineation to make sure the second release did not migrate further than the release labeled as "Helios".
- 11:14** Collected and field screened BH22-07 and BH22-08 down to 4' for vertical delineation.
- 11:15** BH22-01 through BH22-06 all field screened below strictest criteria at 0-2'. BH22-07 and BH22-08 field screened above strictest criteria on chlorides with EC and titration.
- 11:15** All samples will be sent to lab for analysis.
- 11:22** The recent release does not appear to have migrated further than the original release (Helios)

Next Steps & Recommendations

- 1 Send samples to lab for analysis and determine DTGW



Daily Site Visit Report

Site Photos

Viewing Direction: Northeast



Sample area for BH22-01 south side of release area

Viewing Direction: Northwest



Sample area for BH22-02 and BH22-03 east side of release area

Viewing Direction: West



Sample area for BH22-04 north side of release area

Viewing Direction: Southeast



Sample area for BH22-05 and BH22-06 west side of release area



Daily Site Visit Report

Viewing Direction: South



Sample area for BH22-07 and BH22-08

Viewing Direction: North



Sample area for BH22-08

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Chance Dixon

Signature:

A handwritten signature in black ink, appearing to be 'CD' with a long horizontal stroke extending to the right.

Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	12/13/2022
Site Location Name:	Hackberry 6 Fed 1 Wellpad	Report Run Date:	12/13/2022 8:16 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site 12/13/2022 10:50 AM

Departed Site 12/13/2022 12:15 PM

Field Notes

11:59 Arrived on site with Vision for DTGW borehole. Borehole was drilled to 105' on the southwest corner of the Helios 6 battery. Ran the sounder into the borehole to the bottom. No water was detected. Will run it again in 72 hours

Next Steps & Recommendations

- 1 Come back in 72 hours to run the sounder and remove the casing

Daily Site Visit Report



Site Photos

Viewing Direction: Southwest



Drilling rig

Viewing Direction: Southwest



Borehole has been covered

Viewing Direction: North



Helios placard

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Chance Dixon

Signature:

A handwritten signature in black ink, appearing to be 'CD', written over a horizontal line.

Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	12/16/2022
Site Location Name:	Hackberry 6 Fed 1 Wellpad	Report Run Date:	12/16/2022 10:41 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	12/16/2022 11:48 AM
Departed Site	12/16/2022 1:13 PM

Field Notes

- 12:44** Arrived on site to run sounder into the DTGW borehole and P&A it.
- 12:42** Sounder was ran all the way down to the bottom of the borehole at 105' with no water detected.
- 13:13** The borehole has been plugged to the surface with bentonite

Next Steps & Recommendations

- 1 Begin remediation for Hackberry/Helios with >100' criteria

Daily Site Visit Report



Site Photos

Viewing Direction: Northeast



Descriptive Photo - 1
Viewing Direction: Northeast
Desc: Sounder down to 105'
Created: 12/16/2022 12:37:15 PM
Lat:32.682466, Long:-103.901436

Sounder down to 105'

Viewing Direction: Northeast



Descriptive Photo - 2
Viewing Direction: Northeast
Desc: Sounder down to 105'
Created: 12/16/2022 12:40:34 PM
Lat:32.682466, Long:-103.901436

Sounder down to 105'

Viewing Direction: Northwest



Descriptive Photo - 3
Viewing Direction: Northwest
Desc: Borehole being filled with plugging material
Created: 12/16/2022 12:46:10 PM
Lat:32.682466, Long:-103.901436

Borehole being filled with plugging material

Viewing Direction: West



Descriptive Photo - 4
Viewing Direction: West
Desc: Borehole has been plugged
Created: 12/16/2022 1:00:07 PM
Lat:32.682466, Long:-103.901436

Borehole has been plugged



Daily Site Visit Report



Daily Site Visit Report



Daily Site Visit Signature

Inspector: Chance Dixon

Signature:

A handwritten signature in black ink, appearing to be 'CD' or similar initials, written over a horizontal line.

Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	1/20/2023
Site Location Name:	Hackberry 6 Fed 1 Wellpad	Report Run Date:	1/20/2023 11:07 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	1/20/2023 8:15 AM
Departed Site	1/20/2023 2:15 PM

Field Notes

8:25 Completed safety meeting.

8:36 Collecting samples beginning with 100

9:34 Collected WS23-43 through 45

11:44 Recollected 43 and 44

13:39 Finished screening all samples, prepared them for lab

Next Steps & Recommendations

1 Await lab results and closure

Daily Site Visit Report



Site Photos

Viewing Direction: Northeast



Excavation

Viewing Direction: Southeast



East lobe of excavation

Viewing Direction: Southwest



West wall of excavation





Viewing Direction: West



Hydrovac trenches







Daily Site Visit Report

<p>Viewing Direction: Southeast</p>  <p>Descriptive Photo - 13 Viewing Direction: Southeast Desc: Excavation Created: 1/20/2023 1:17:43 PM Lat:32.688044, Long:-103.607223</p> <p>Excavation</p>	<p>Viewing Direction: South</p>  <p>Descriptive Photo - 14 Viewing Direction: South Desc: West wall toward ramp Created: 1/20/2023 1:18:18 PM Lat:32.688044, Long:-103.607218</p> <p>West wall toward ramp</p>
<p>Viewing Direction: Southeast</p>  <p>Descriptive Photo - 15 Viewing Direction: Southeast Desc: Supported line Created: 1/20/2023 1:18:49 PM Lat:32.688044, Long:-103.607223</p> <p>Supported lines</p>	<p>Viewing Direction: East</p>  <p>Descriptive Photo - 16 Viewing Direction: East Desc: North half of excavation Created: 1/20/2023 1:19:24 PM Lat:32.688044, Long:-103.607218</p> <p>North half of excavation</p>







Daily Site Visit Report

<p>Viewing Direction: Northeast</p>  <p> <small> Description Photo - 17 Viewing Direction: Northeast Date: North half of excavation Created: 1/20/2023 1:50:07 PM Lat: 32.907496 Long: -103.907193 </small> </p> <p>North half of excavation</p>	<p>Viewing Direction: Southeast</p>  <p> <small> Description Photo - 18 Viewing Direction: Southeast Date: South half of excavation Created: 1/20/2023 1:50:52 PM Lat: 32.907743 Long: -103.907193 </small> </p> <p>South half of excavation</p>
<p>Viewing Direction: South</p>  <p> <small> Description Photo - 19 Viewing Direction: South Date: Berm Created: 1/20/2023 1:51:33 PM Lat: 32.907496 Long: -103.907193 </small> </p> <p>Berm</p>	<p>Viewing Direction: Northeast</p>  <p> <small> Description Photo - 20 Viewing Direction: Northeast Date: East side of excavation Created: 1/20/2023 1:52:05 AM Lat: 32.907496 Long: -103.906819 </small> </p> <p>East side of excavation</p>







Daily Site Visit Report

<p>Viewing Direction: Northeast</p>  <p>Descriptive Photo - 20 Viewing Direction: Northeast Desc: Berm and excavation Created: 1/20/2023 1:22:36 PM Lat:32.687616, Long:-103.906887</p>	<p>Viewing Direction: Northeast</p>  <p>Descriptive Photo - 3 Viewing Direction: Northeast Desc: East walls of excavation Created: 1/20/2023 8:26:41 AM Lat:32.687627, Long:-103.906843</p>
Berm and excavation	East walls of excavation
<p>Viewing Direction: Southeast</p>  <p>Descriptive Photo - 21 Viewing Direction: Southeast Desc: Southeast corner of the eastern lobe Created: 1/20/2023 8:36:10 AM Lat:32.687626, Long:-103.906921</p>	<p>Viewing Direction: West</p>  <p>Descriptive Photo - 4 Viewing Direction: West Desc: South wall of excavation Created: 1/20/2023 1:11:34 PM Lat:32.687617, Long:-103.906728</p>
Southeast corner of the eastern lobe	South wall of excavation



Daily Site Visit Report

<p>Viewing Direction: North</p>  <p><small>Describe Photo - 8 Viewing Direction: North Area: Eastern lobe of excavation Created: 1/20/2023 1:12:42 PM Lat: 32.880128 Long: -103.400000</small></p> <p>Eastern lobe of excavation</p>	<p>Viewing Direction: Northwest</p>  <p><small>Describe Photo - 8 Viewing Direction: Northwest Area: North wall of excavation Created: 1/20/2023 1:12:42 PM Lat: 32.880128 Long: -103.400000</small></p> <p>North wall of excavation</p>
<p>Viewing Direction: Southwest</p>  <p><small>Describe Photo - 8 Viewing Direction: Southwest Area: Excavation Created: 1/20/2023 1:12:42 PM Lat: 32.880128 Long: -103.400000</small></p> <p>Excavation</p>	<p>Viewing Direction: Southwest</p>  <p><small>Describe Photo - 8 Viewing Direction: Southwest Area: Supported lines Created: 1/20/2023 1:12:42 PM Lat: 32.880128 Long: -103.400000</small></p> <p>Supported lines</p>

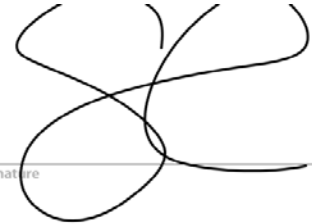
Daily Site Visit Report



Daily Site Visit Signature

Inspector: Sally Carttar

Signature:


Signature

ATTACHMENT 6



Dhugal Hanton <vertexresourcegroupusa@gmail.com>

48-Hour Notification - Helios 6 Fed Com Battery/Hackberry 6 Federal 1 Wellpad

8 messages

Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Wed, Dec 28, 2022 at 3:57 PM

To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>

Cc: wesley.mathews@dmv.com, KStallings@vertex.ca

All,

Please accept this email as a notification that Vertex Resource Services has scheduled a sampling event to be conducted at the following releases.

nAPP2116940090 (Helios)

nAPP2219226827 (Hackberry)

On Tuesday, January 3, 2023, Vertex will be on-site to conduct confirmation sampling. The sampling will continue through Tuesday, January 10, 2023. If you have any questions regarding this notification, please call me at 575-988-1472.

Thank you,

Chance Dixon B.Sc.

Sr Environmental Technologist

Vertex Resource Services Inc.

3101 Boyd Drive,

Carlsbad, NM 88220

C 575.988.1472**Enviro, OCD, EMNRD** <OCD.Enviro@emnrd.nm.gov>

Wed, Dec 28, 2022 at 4:10 PM

To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Cc: "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>, "Hamlet, Robert, EMNRD"

<Robert.Hamlet@emnrd.nm.gov>

Thank you for the notification. Please 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.

Jocelyn Harimon • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

1220 South St. Francis Drive | Santa Fe, NM 87505

(505)469-2821 | Jocelyn.Harimon@emnrd.nm.gov[http:// www.emnrd.nm.gov](http://www.emnrd.nm.gov)



From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Wednesday, December 28, 2022 3:57 PM
To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
Cc: wesley.mathews@dmv.com; KStallings@vertex.ca
Subject: [EXTERNAL] 48-Hour Notification - Helios 6 Fed Com Battery/Hackberry 6 Federal 1 Wellpad

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

[Quoted text hidden]

Dhugal Hanton <vertexresourcegroupusa@gmail.com>
To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>

Thu, Jan 5, 2023 at 8:16 AM

All,

Vertex respectfully requests that confirmation sampling for this location be extended to Monday, January 9, 2023, through January 13, 2023. If you have any questions, please call me at 575-988-1472.

Thank you,

Chance Dixon B.Sc.
Sr Environmental Technologist

Vertex Resource Services Inc.
3101 Boyd Drive,
Carlsbad, NM 88220

C 575.988.1472

[Quoted text hidden]

Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Cc: "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>

Thu, Jan 5, 2023 at 10:00 AM

Dhugal,

Thank you for the notification. Please 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.

JH

Jocelyn Harimon • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

1220 South St. Francis Drive | Santa Fe, NM 87505

(505)469-2821 | Jocelyn.Harimon@emnrd.nm.gov

[http:// www.emnrd.nm.gov](http://www.emnrd.nm.gov)



From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Sent: Thursday, January 5, 2023 8:17 AM

To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>

Subject: [EXTERNAL] Re: 48-Hour Notification - Helios 6 Fed Com Battery/Hackberry 6 Federal 1 Wellpad

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

All,

[Quoted text hidden]

[Quoted text hidden]

Dhugal Hanton <vertexresourcegroupusa@gmail.com>
To: "Enviro, OCD, EMNRD" <OCD.Enviro@emnrd.nm.gov>

Thu, Jan 12, 2023 at 11:35 AM

All,

Vertex respectfully requests that confirmation sampling for this location be extended to Monday, January 16, 2023, through January 20, 2023. If you have any questions, please call me at 575-988-1472.

Thank you,

Chance Dixon B.Sc.
Sr Environmental Technologist

Vertex Resource Services Inc.
3101 Boyd Drive,
Carlsbad, NM 88220

C 575.988.1472

[Quoted text hidden]

Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Thu, Jan 12, 2023 at 1:13 PM

Thank you for the notification. Please 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.

Jocelyn Harimon • Environmental Specialist

[Quoted text hidden]

Dhugal Hanton <vertexresourcegroupusa@gmail.com>
To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>

Thu, Jan 19, 2023 at 7:33 AM

All,

Vertex respectfully requests that confirmation sampling for this location be extended to Monday, January 23, 2023, through January 28, 2023. If you have any questions, please call me at 575-988-1472.

Thank you,

Chance Dixon B.Sc.
Sr Environmental Technologist

Vertex Resource Services Inc.
3101 Boyd Drive,
Carlsbad, NM 88220

C 575.988.1472

On Wed, Dec 28, 2022 at 3:57 PM Dhugal Hanton <vertexresourcegroupusa@gmail.com> wrote:

[Quoted text hidden]

Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Cc: "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>, "Hamlet, Robert, EMNRD" <Robert.Hamlet@emnrd.nm.gov>

Thu, Jan 19, 2023 at 8:08 AM

Mr. Hanton,

Thank you for the notification. Please 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.

JH

Jocelyn Harimon • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

1220 South St. Francis Drive | Santa Fe, NM 87505

(505)469-2821 | Jocelyn.Harimon@emnrd.nm.gov

[http:// www.emnrd.nm.gov](http://www.emnrd.nm.gov)



From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Sent: Thursday, January 19, 2023 7:33 AM

To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>

Subject: [EXTERNAL] Re: 48-Hour Notification - Helios 6 Fed Com Battery/Hackberry 6 Federal 1 Wellpad

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

All,

[Quoted text hidden]

[Quoted text hidden]

ATTACHMENT 7



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

July 06, 2021

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

RE: Helios 6 Fed Com 1H

OrderNo.: 2106D66

Dear John Hurt:

Hall Environmental Analysis Laboratory received 15 sample(s) on 6/25/2021 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BG21-01 0-0.5'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 10:00:00 AM

Lab ID: 2106D66-001

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/29/2021 11:18:56 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/29/2021 11:18:56 PM
Surr: DNOP	65.1	70-130	S	%Rec	1	6/29/2021 11:18:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 2:20:00 PM
Surr: BFB	91.5	70-130		%Rec	1	7/1/2021 2:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 2:20:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 2:20:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 2:20:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	7/1/2021 2:20:00 PM
Surr: 4-Bromofluorobenzene	88.4	70-130		%Rec	1	7/1/2021 2:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 2:43:56 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BG21-01 1.0'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 10:10:00 AM

Lab ID: 2106D66-002

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	6/29/2021 11:43:22 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	6/29/2021 11:43:22 PM
Surr: DNOP	56.1	70-130	S	%Rec	1	6/29/2021 11:43:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/1/2021 2:40:00 PM
Surr: BFB	91.4	70-130		%Rec	1	7/1/2021 2:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.025		mg/Kg	1	7/1/2021 2:40:00 PM
Toluene	ND	0.050		mg/Kg	1	7/1/2021 2:40:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/1/2021 2:40:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/1/2021 2:40:00 PM
Surr: 4-Bromofluorobenzene	88.2	70-130		%Rec	1	7/1/2021 2:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 2:56:20 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BG21-01 2.0'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 10:15:00 AM

Lab ID: 2106D66-003

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	6/30/2021 12:07:42 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/30/2021 12:07:42 AM
Surr: DNOP	58.6	70-130	S	%Rec	1	6/30/2021 12:07:42 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 3:00:00 PM
Surr: BFB	97.7	70-130		%Rec	1	7/1/2021 3:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 3:00:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 3:00:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 3:00:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	7/1/2021 3:00:00 PM
Surr: 4-Bromofluorobenzene	90.6	70-130		%Rec	1	7/1/2021 3:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 3:08:45 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-01 0-0.5'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 11:00:00 AM

Lab ID: 2106D66-004

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	6/30/2021 12:32:06 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/30/2021 12:32:06 AM
Surr: DNOP	77.2	70-130		%Rec	1	6/30/2021 12:32:06 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 3:20:00 PM
Surr: BFB	96.6	70-130		%Rec	1	7/1/2021 3:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 3:20:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 3:20:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 3:20:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/1/2021 3:20:00 PM
Surr: 4-Bromofluorobenzene	92.9	70-130		%Rec	1	7/1/2021 3:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	12000	600		mg/Kg	200	7/1/2021 7:50:42 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-02 0-0.5'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 11:30:00 AM

Lab ID: 2106D66-005

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	6/30/2021 12:56:24 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	6/30/2021 12:56:24 AM
Surr: DNOP	78.8	70-130		%Rec	1	6/30/2021 12:56:24 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 3:40:00 PM
Surr: BFB	95.8	70-130		%Rec	1	7/1/2021 3:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 3:40:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 3:40:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 3:40:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/1/2021 3:40:00 PM
Surr: 4-Bromofluorobenzene	92.2	70-130		%Rec	1	7/1/2021 3:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	11000	590		mg/Kg	200	7/1/2021 8:03:08 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-03 0-0.5'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 1:00:00 PM

Lab ID: 2106D66-006

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	6/30/2021 1:20:45 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/30/2021 1:20:45 AM
Surr: DNOP	84.4	70-130		%Rec	1	6/30/2021 1:20:45 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 4:00:00 PM
Surr: BFB	96.6	70-130		%Rec	1	7/1/2021 4:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 4:00:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 4:00:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 4:00:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	7/1/2021 4:00:00 PM
Surr: 4-Bromofluorobenzene	90.9	70-130		%Rec	1	7/1/2021 4:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	13000	600		mg/Kg	200	7/1/2021 8:15:33 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-04 0-0.5'

Project: Helios 6 Fed Com 1H

Collection Date: 6/22/2021 1:30:00 PM

Lab ID: 2106D66-007

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	28	9.7		mg/Kg	1	7/2/2021 11:52:35 AM
Motor Oil Range Organics (MRO)	98	48		mg/Kg	1	7/2/2021 11:52:35 AM
Surr: DNOP	105	70-130		%Rec	1	7/2/2021 11:52:35 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 5:00:00 PM
Surr: BFB	94.8	70-130		%Rec	1	7/1/2021 5:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 5:00:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 5:00:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 5:00:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/1/2021 5:00:00 PM
Surr: 4-Bromofluorobenzene	90.6	70-130		%Rec	1	7/1/2021 5:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	18000	1500		mg/Kg	500	7/1/2021 8:27:57 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-05

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 9:00:00 AM

Lab ID: 2106D66-008

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	6/30/2021 2:09:21 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/30/2021 2:09:21 AM
Surr: DNOP	60.6	70-130	S	%Rec	1	6/30/2021 2:09:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 5:20:00 PM
Surr: BFB	95.5	70-130		%Rec	1	7/1/2021 5:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 5:20:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 5:20:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 5:20:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/1/2021 5:20:00 PM
Surr: 4-Bromofluorobenzene	90.1	70-130		%Rec	1	7/1/2021 5:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 5:00:25 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-06

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 9:30:00 AM

Lab ID: 2106D66-009

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	6/30/2021 2:33:54 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	6/30/2021 2:33:54 AM
Surr: DNOP	65.9	70-130	S	%Rec	1	6/30/2021 2:33:54 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 5:40:00 PM
Surr: BFB	86.2	70-130		%Rec	1	7/1/2021 5:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 5:40:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 5:40:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 5:40:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/1/2021 5:40:00 PM
Surr: 4-Bromofluorobenzene	87.9	70-130		%Rec	1	7/1/2021 5:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 4:32:02 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-08

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 10:00:00 AM

Lab ID: 2106D66-010

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/30/2021 2:58:10 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	6/30/2021 2:58:10 AM
Surr: DNOP	68.2	70-130	S	%Rec	1	6/30/2021 2:58:10 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/1/2021 6:00:00 PM
Surr: BFB	94.9	70-130		%Rec	1	7/1/2021 6:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 6:00:00 PM
Toluene	ND	0.047		mg/Kg	1	7/1/2021 6:00:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	7/1/2021 6:00:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	7/1/2021 6:00:00 PM
Surr: 4-Bromofluorobenzene	88.2	70-130		%Rec	1	7/1/2021 6:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 5:09:16 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-09

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 10:15:00 AM

Lab ID: 2106D66-011

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	6/30/2021 3:22:25 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/30/2021 3:22:25 AM
Surr: DNOP	60.2	70-130	S	%Rec	1	6/30/2021 3:22:25 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 6:20:00 PM
Surr: BFB	96.3	70-130		%Rec	1	7/1/2021 6:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 6:20:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 6:20:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 6:20:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/1/2021 6:20:00 PM
Surr: 4-Bromofluorobenzene	88.9	70-130		%Rec	1	7/1/2021 6:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	120	60		mg/Kg	20	7/1/2021 6:11:19 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-11

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 10:30:00 AM

Lab ID: 2106D66-012

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	6/30/2021 3:46:40 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/30/2021 3:46:40 AM
Surr: DNOP	60.7	70-130	S	%Rec	1	6/30/2021 3:46:40 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 6:40:00 PM
Surr: BFB	96.1	70-130		%Rec	1	7/1/2021 6:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 6:40:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 6:40:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 6:40:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	7/1/2021 6:40:00 PM
Surr: 4-Bromofluorobenzene	91.3	70-130		%Rec	1	7/1/2021 6:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 6:23:43 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-12

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 11:00:00 AM

Lab ID: 2106D66-013

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	6/30/2021 4:10:52 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	6/30/2021 4:10:52 AM
Surr: DNOP	68.0	70-130	S	%Rec	1	6/30/2021 4:10:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/1/2021 7:00:00 PM
Surr: BFB	93.8	70-130		%Rec	1	7/1/2021 7:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 7:00:00 PM
Toluene	ND	0.049		mg/Kg	1	7/1/2021 7:00:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/1/2021 7:00:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/1/2021 7:00:00 PM
Surr: 4-Bromofluorobenzene	90.8	70-130		%Rec	1	7/1/2021 7:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 6:36:08 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-13

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 11:30:00 AM

Lab ID: 2106D66-014

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	6/30/2021 4:35:15 AM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	6/30/2021 4:35:15 AM
Surr: DNOP	58.9	70-130	S	%Rec	1	6/30/2021 4:35:15 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 7:20:00 PM
Surr: BFB	95.8	70-130		%Rec	1	7/1/2021 7:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 7:20:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 7:20:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 7:20:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	7/1/2021 7:20:00 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	7/1/2021 7:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	ND	60		mg/Kg	20	7/1/2021 6:48:33 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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Analytical Report

Lab Order 2106D66

Date Reported: 7/6/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH21-14

Project: Helios 6 Fed Com 1H

Collection Date: 6/23/2021 11:45:00 AM

Lab ID: 2106D66-015

Matrix: SOIL

Received Date: 6/25/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: BRM
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	6/30/2021 4:59:21 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/30/2021 4:59:21 AM
Surr: DNOP	61.5	70-130	S	%Rec	1	6/30/2021 4:59:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/1/2021 7:40:00 PM
Surr: BFB	98.2	70-130		%Rec	1	7/1/2021 7:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/1/2021 7:40:00 PM
Toluene	ND	0.048		mg/Kg	1	7/1/2021 7:40:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/1/2021 7:40:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	7/1/2021 7:40:00 PM
Surr: 4-Bromofluorobenzene	90.9	70-130		%Rec	1	7/1/2021 7:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	330	60		mg/Kg	20	7/1/2021 7:00:58 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2106D66

06-Jul-21

Client: Vertex Resources Services, Inc.**Project:** Helios 6 Fed Com 1H

Sample ID: MB-61035	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 61035	RunNo: 79492								
Prep Date: 6/30/2021	Analysis Date: 6/30/2021	SeqNo: 2794639 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-61035	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 61035	RunNo: 79492								
Prep Date: 6/30/2021	Analysis Date: 6/30/2021	SeqNo: 2794640 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	96.6	90	110			

Sample ID: MB-61040	SampType: MBLK	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 61040	RunNo: 79497								
Prep Date: 6/30/2021	Analysis Date: 7/1/2021	SeqNo: 2796246 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-61040	SampType: LCS	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 61040	RunNo: 79497								
Prep Date: 6/30/2021	Analysis Date: 7/1/2021	SeqNo: 2796247 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.8	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 Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2106D66
06-Jul-21

Client: Vertex Resources Services, Inc.
Project: Helios 6 Fed Com 1H

Sample ID: LCS-60965	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 60965	RunNo: 79472								
Prep Date: 6/28/2021	Analysis Date: 6/29/2021	SeqNo: 2793936		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.9	68.9	141			
Surr: DNOP	3.6		5.000		72.5	70	130			

Sample ID: MB-60965	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 60965	RunNo: 79472								
Prep Date: 6/28/2021	Analysis Date: 6/29/2021	SeqNo: 2793938		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	7.7		10.00		77.0	70	130			

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 Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2106D66

06-Jul-21

Client: Vertex Resources Services, Inc.**Project:** Helios 6 Fed Com 1H

Sample ID: mb-60961	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 60961	RunNo: 79532								
Prep Date: 6/28/2021	Analysis Date: 7/1/2021	SeqNo: 2796799 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	920		1000		92.3	70	130			

Sample ID: lcs-60961	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 60961	RunNo: 79532								
Prep Date: 6/28/2021	Analysis Date: 7/1/2021	SeqNo: 2796801 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	104	78.6	131			
Surr: BFB	1100		1000		108	70	130			

Sample ID: mb-60981	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 60981	RunNo: 79563								
Prep Date: 6/28/2021	Analysis Date: 7/2/2021	SeqNo: 2798482 Units: %Rec								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	970		1000		96.7	70	130			

Sample ID: lcs-60981	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 60981	RunNo: 79563								
Prep Date: 6/28/2021	Analysis Date: 7/2/2021	SeqNo: 2798484 Units: %Rec								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		114	70	130			

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 Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2106D66

06-Jul-21

Client: Vertex Resources Services, Inc.**Project:** Helios 6 Fed Com 1H

Sample ID: mb-60961	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 60961	RunNo: 79532								
Prep Date: 6/28/2021	Analysis Date: 7/1/2021	SeqNo: 2796853 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	0.90		1.000		90.1	70	130			

Sample ID: lcs-60961	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 60961	RunNo: 79532								
Prep Date: 6/28/2021	Analysis Date: 7/1/2021	SeqNo: 2796855 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	97.5	80	120			
Toluene	0.99	0.050	1.000	0	98.6	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.2	70	130			

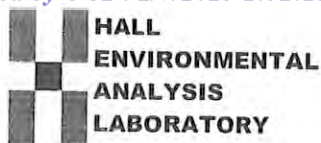
Sample ID: mb-60981	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 60981	RunNo: 79563								
Prep Date: 6/28/2021	Analysis Date: 7/2/2021	SeqNo: 2798540 Units: %Rec								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.93		1.000		92.6	70	130			

Sample ID: lcs-60981	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 60981	RunNo: 79563								
Prep Date: 6/28/2021	Analysis Date: 7/2/2021	SeqNo: 2798542 Units: %Rec								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.93		1.000		92.5	70	130			

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 Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit



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

Sample Log-In Check List

Client Name: **Vertex Resources
Services, Inc.**

Work Order Number: **2106D66**

RcptNo: 1

Received By: **Juan Rojas**

6/25/2021 7:30:00 AM

Juan Rojas

Completed By: **Cheyenne Cason**

6/25/2021 9:37:57 AM

Cheyenne Cason

Reviewed By: **DAD 6-25-21**

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 $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☐ No ☒ NA ☐
5. Sample(s) in proper container(s)? Not Frozen 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: **T.C. 6-25-21**

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:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	-0.1	Good				

Chain-of-Custody Record

Client:

Vertex

Mailing Address:

ON FILE

Phone #:

email or Fax#:

Permian@Vertex.ca

QA/QC Package:

☐ Standard☐ Level 4 (Full Validation)Accreditation: ☐ Az Compliance☐ NELAC☐ Other☐ EDD (Type)

Turn-Around Time:

5 DAY

☒ Standard☐ Rush

Project Name:

Helios 6 Fed Com 1H

Project #:

21E-00580-003

Project Manager:

John Hurt

Sampler:

Austin Harris

On Ice:

☒ Yes☐ No

of Coolers:

1

Cooler Temp (including CF):

U.I. -0 = -0.1 (°C)

Date

Time

Matrix

Sample Name

HEAL No.

Preservative Type

Container Type and #

Glass Jar

ICE

2106D66

001

002

003

004

005

006

007

008

009

010

011

012

013

014

015

016

017

018

019

020

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Chain-of-Custody Record

Client: VertexMailing Address: ON FILE

Phone #:

email or Fax#: Perman@vertex.ca

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)Accreditation: ☐ Az Compliance☐ NELAC ☐ Other☐ EDD (Type)

Turn-Around Time:

5 DAY☒ Standard ☐ Rush

Project Name:

Helios 6 Fed Com 114Project #: 21E-00580-003Project Manager: John HartSampler: Austin HarrisOn Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CP): -0.1 - 0 = -0.1 (°C)

Container Type and #

Preservative Type

HEAL No.

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

Time

Matrix

Sample Name

Date

Time

Date: 6-23-21Time: 0900Matrix: SoilSample Name: BH21-05Date: 6-23-21Time: 0930Matrix: SoilSample Name: BH21-06Date: 6-23-21Time: 1000Matrix: SoilSample Name: BH21-08Date: 6-23-21Time: 1015Matrix: SoilSample Name: BH21-09Date: 6-23-21Time: 1030Matrix: SoilSample Name: BH21-11Date: 6-23-21Time: 1100Matrix: SoilSample Name: BH21-12Date: 6-23-21Time: 1130Matrix: SoilSample Name: BH21-13Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145Matrix: SoilSample Name: BH21-14Date: 6-23-21Time: 1145



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

July 08, 2021

Wesley Mathews

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (505) 350-1336

FAX

RE: Helios 6

OrderNo.: 2107069

Dear Wesley Mathews:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/2/2021 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2107069

Date Reported: 7/8/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH21-01 11'

Project: Helios 6

Collection Date: 6/30/2021 9:00:00 AM

Lab ID: 2107069-001

Matrix: SOIL

Received Date: 7/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	7/6/2021 1:10:04 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/6/2021 1:10:04 PM
Surr: DNOP	102	70-130		%Rec	1	7/6/2021 1:10:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/6/2021 9:56:00 PM
Surr: BFB	98.1	70-130		%Rec	1	7/6/2021 9:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/6/2021 9:56:00 PM
Toluene	ND	0.049		mg/Kg	1	7/6/2021 9:56:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/6/2021 9:56:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	7/6/2021 9:56:00 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	7/6/2021 9:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	11000	600		mg/Kg	200	7/7/2021 2:22:37 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2107069

Date Reported: 7/8/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH21-02 12'

Project: Helios 6

Collection Date: 6/30/2021 10:00:00 AM

Lab ID: 2107069-002

Matrix: SOIL

Received Date: 7/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/6/2021 1:22:22 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/6/2021 1:22:22 PM
Surr: DNOP	97.7	70-130		%Rec	1	7/6/2021 1:22:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/6/2021 10:56:00 PM
Surr: BFB	99.3	70-130		%Rec	1	7/6/2021 10:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/6/2021 10:56:00 PM
Toluene	ND	0.049		mg/Kg	1	7/6/2021 10:56:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/6/2021 10:56:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	7/6/2021 10:56:00 PM
Surr: 4-Bromofluorobenzene	93.5	70-130		%Rec	1	7/6/2021 10:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	150	60		mg/Kg	20	7/7/2021 2:22:52 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2107069

Date Reported: 7/8/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH21-03 12'

Project: Helios 6

Collection Date: 6/30/2021 11:00:00 AM

Lab ID: 2107069-003

Matrix: SOIL

Received Date: 7/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	7/6/2021 1:34:32 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	7/6/2021 1:34:32 PM
Surr: DNOP	101	70-130		%Rec	1	7/6/2021 1:34:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/6/2021 11:16:00 PM
Surr: BFB	100	70-130		%Rec	1	7/6/2021 11:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.024		mg/Kg	1	7/6/2021 11:16:00 PM
Toluene	ND	0.048		mg/Kg	1	7/6/2021 11:16:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/6/2021 11:16:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	7/6/2021 11:16:00 PM
Surr: 4-Bromofluorobenzene	95.9	70-130		%Rec	1	7/6/2021 11:16:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	170	61		mg/Kg	20	7/7/2021 2:35:16 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Analytical Report

Lab Order 2107069

Date Reported: 7/8/2021

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BH21-04 15'

Project: Helios 6

Collection Date: 6/30/2021 12:00:00 PM

Lab ID: 2107069-004

Matrix: SOIL

Received Date: 7/2/2021 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	7/6/2021 1:46:37 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/6/2021 1:46:37 PM
Surr: DNOP	101	70-130		%Rec	1	7/6/2021 1:46:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: mb
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/6/2021 11:36:00 PM
Surr: BFB	104	70-130		%Rec	1	7/6/2021 11:36:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: mb
Benzene	ND	0.025		mg/Kg	1	7/6/2021 11:36:00 PM
Toluene	ND	0.050		mg/Kg	1	7/6/2021 11:36:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/6/2021 11:36:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/6/2021 11:36:00 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	7/6/2021 11:36:00 PM
EPA METHOD 300.0: ANIONS						Analyst: VP
Chloride	6700	300		mg/Kg	100	7/7/2021 2:35:01 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	Value above quantitation range
	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2107069
08-Jul-21

Client: Devon Energy
Project: Helios 6

Sample ID: MB-61148	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 61148	RunNo: 79587
Prep Date: 7/6/2021	Analysis Date: 7/6/2021	SeqNo: 2799455 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-61148	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 61148	RunNo: 79587
Prep Date: 7/6/2021	Analysis Date: 7/6/2021	SeqNo: 2799456 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	15	1.5 15.00 0 97.8 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 Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2107069
08-Jul-21

Client: Devon Energy
Project: Helios 6

Sample ID: MB-61118	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 61118	RunNo: 79594								
Prep Date: 7/3/2021	Analysis Date: 7/6/2021	SeqNo: 2799172	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		101	70	130			

Sample ID: LCS-61118	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 61118	RunNo: 79594								
Prep Date: 7/3/2021	Analysis Date: 7/6/2021	SeqNo: 2799173	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Diesel Range Organics (DRO)	47	10	50.00	0	94.7	68.9	141			
Surr: DNOP	5.2		5.000		104	70	130			

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 Quantitative Limit
- S

% Recovery outside of range due to dilution or matrix
- B

Analyte detected in the associated Method Blank
- E

Value above quantitation range
- J

Analyte detected below quantitation limits
- P

Sample pH Not In Range
- RL

Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2107069

08-Jul-21

Client: Devon Energy**Project:** Helios 6

Sample ID: mb-61115	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 61115	RunNo: 79580								
Prep Date: 7/2/2021	Analysis Date: 7/6/2021	SeqNo: 2799569 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	70	130			

Sample ID: lcs-61115	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 61115	RunNo: 79580								
Prep Date: 7/2/2021	Analysis Date: 7/6/2021	SeqNo: 2799571 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	95.5	78.6	131			
Surr: BFB	1100		1000		107	70	130			

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 Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2107069

08-Jul-21

Client: Devon Energy**Project:** Helios 6

Sample ID: mb-61115	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 61115	RunNo: 79580								
Prep Date: 7/2/2021	Analysis Date: 7/6/2021	SeqNo: 2799582 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		94.5	70	130			

Sample ID: lcs-61115	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 61115	RunNo: 79580								
Prep Date: 7/2/2021	Analysis Date: 7/6/2021	SeqNo: 2799584 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	99.3	80	120			
Toluene	0.99	0.050	1.000	0	99.0	80	120			
Ethylbenzene	1.0	0.050	1.000	0	100	80	120			
Xylenes, Total	3.0	0.10	3.000	0	100	80	120			
Surr: 4-Bromofluorobenzene	0.92		1.000		92.2	70	130			

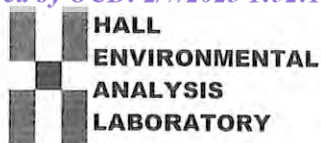
Sample ID: 2107069-001ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BH21-01 11'	Batch ID: 61115	RunNo: 79580								
Prep Date: 7/2/2021	Analysis Date: 7/6/2021	SeqNo: 2799586 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.024	0.9497	0	97.4	80	120			
Toluene	0.93	0.047	0.9497	0	97.9	80	120			
Ethylbenzene	0.95	0.047	0.9497	0	100	80	120			
Xylenes, Total	2.9	0.095	2.849	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.89		0.9497		93.5	70	130			

Sample ID: 2107069-001amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: BH21-01 11'	Batch ID: 61115	RunNo: 79580								
Prep Date: 7/2/2021	Analysis Date: 7/6/2021	SeqNo: 2799588 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	0.9921	0	98.6	80	120	5.62	20	
Toluene	0.98	0.050	0.9921	0	98.4	80	120	4.81	20	
Ethylbenzene	1.0	0.050	0.9921	0	102	80	120	6.46	20	
Xylenes, Total	3.1	0.099	2.976	0	104	80	120	6.56	20	
Surr: 4-Bromofluorobenzene	0.95		0.9921		96.2	70	130	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 Quantitative Limit
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit



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

Sample Log-In Check List

Client Name: Devon Energy

Work Order Number: 2107069

RcptNo: 1

Received By: Juan Rojas

7/2/2021 7:30:00 AM

Juan Rojas

Completed By: Cheyenne Cason

7/2/2021 8:21:01 AM

Cason

Reviewed By:

*JR 7/2/21*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 $>0^{\circ}\text{C}$ 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: *T.C. 7-2-21*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:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.6	Good				

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



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

November 17, 2022

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

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2211297

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 18 sample(s) on 11/5/2022 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-01 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:00:00 AM

Lab ID: 2211297-001

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/9/2022 10:07:03 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/9/2022 10:07:03 PM
Surr: DNOP	96.4	21-129		%Rec	1	11/9/2022 10:07:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/9/2022 11:20:44 PM
Surr: BFB	88.6	37.7-212		%Rec	1	11/9/2022 11:20:44 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/9/2022 11:20:44 PM
Toluene	ND	0.049		mg/Kg	1	11/9/2022 11:20:44 PM
Ethylbenzene	ND	0.049		mg/Kg	1	11/9/2022 11:20:44 PM
Xylenes, Total	ND	0.098		mg/Kg	1	11/9/2022 11:20:44 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	11/9/2022 11:20:44 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/11/2022 10:01:21 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-01 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:05:00 AM

Lab ID: 2211297-002

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	11/9/2022 10:17:35 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/9/2022 10:17:35 PM
Surr: DNOP	59.7	21-129		%Rec	1	11/9/2022 10:17:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/9/2022 11:44:15 PM
Surr: BFB	90.1	37.7-212		%Rec	1	11/9/2022 11:44:15 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/9/2022 11:44:15 PM
Toluene	ND	0.048		mg/Kg	1	11/9/2022 11:44:15 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/9/2022 11:44:15 PM
Xylenes, Total	ND	0.095		mg/Kg	1	11/9/2022 11:44:15 PM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	11/9/2022 11:44:15 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/11/2022 10:13:46 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-02 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:10:00 AM

Lab ID: 2211297-003

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/9/2022 10:28:06 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/9/2022 10:28:06 PM
Surr: DNOP	71.5	21-129		%Rec	1	11/9/2022 10:28:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/10/2022 12:07:40 AM
Surr: BFB	88.9	37.7-212		%Rec	1	11/10/2022 12:07:40 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 12:07:40 AM
Toluene	ND	0.049		mg/Kg	1	11/10/2022 12:07:40 AM
Ethylbenzene	ND	0.049		mg/Kg	1	11/10/2022 12:07:40 AM
Xylenes, Total	ND	0.098		mg/Kg	1	11/10/2022 12:07:40 AM
Surr: 4-Bromofluorobenzene	93.1	70-130		%Rec	1	11/10/2022 12:07:40 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/11/2022 10:26:10 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-02 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:15:00 AM

Lab ID: 2211297-004

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/9/2022 10:38:36 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/9/2022 10:38:36 PM
Surr: DNOP	68.3	21-129		%Rec	1	11/9/2022 10:38:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/10/2022 12:31:09 AM
Surr: BFB	86.6	37.7-212		%Rec	1	11/10/2022 12:31:09 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 12:31:09 AM
Toluene	ND	0.050		mg/Kg	1	11/10/2022 12:31:09 AM
Ethylbenzene	ND	0.050		mg/Kg	1	11/10/2022 12:31:09 AM
Xylenes, Total	ND	0.099		mg/Kg	1	11/10/2022 12:31:09 AM
Surr: 4-Bromofluorobenzene	91.5	70-130		%Rec	1	11/10/2022 12:31:09 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/14/2022 12:29:49 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-03 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:20:00 AM

Lab ID: 2211297-005

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	11/9/2022 10:49:06 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/9/2022 10:49:06 PM
Surr: DNOP	75.6	21-129		%Rec	1	11/9/2022 10:49:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/10/2022 12:54:34 AM
Surr: BFB	88.4	37.7-212		%Rec	1	11/10/2022 12:54:34 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 12:54:34 AM
Toluene	ND	0.048		mg/Kg	1	11/10/2022 12:54:34 AM
Ethylbenzene	ND	0.048		mg/Kg	1	11/10/2022 12:54:34 AM
Xylenes, Total	ND	0.097		mg/Kg	1	11/10/2022 12:54:34 AM
Surr: 4-Bromofluorobenzene	92.7	70-130		%Rec	1	11/10/2022 12:54:34 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/14/2022 1:07:04 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-03 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:25:00 AM

Lab ID: 2211297-006

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/9/2022 10:59:36 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/9/2022 10:59:36 PM
Surr: DNOP	72.6	21-129		%Rec	1	11/9/2022 10:59:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/10/2022 1:18:03 AM
Surr: BFB	87.0	37.7-212		%Rec	1	11/10/2022 1:18:03 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 1:18:03 AM
Toluene	ND	0.050		mg/Kg	1	11/10/2022 1:18:03 AM
Ethylbenzene	ND	0.050		mg/Kg	1	11/10/2022 1:18:03 AM
Xylenes, Total	ND	0.10		mg/Kg	1	11/10/2022 1:18:03 AM
Surr: 4-Bromofluorobenzene	92.2	70-130		%Rec	1	11/10/2022 1:18:03 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/14/2022 1:19:29 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-04 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:30:00 AM

Lab ID: 2211297-007

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/9/2022 11:10:08 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/9/2022 11:10:08 PM
Surr: DNOP	66.0	21-129		%Rec	1	11/9/2022 11:10:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/10/2022 1:41:29 AM
Surr: BFB	86.3	37.7-212		%Rec	1	11/10/2022 1:41:29 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 1:41:29 AM
Toluene	ND	0.050		mg/Kg	1	11/10/2022 1:41:29 AM
Ethylbenzene	ND	0.050		mg/Kg	1	11/10/2022 1:41:29 AM
Xylenes, Total	ND	0.099		mg/Kg	1	11/10/2022 1:41:29 AM
Surr: 4-Bromofluorobenzene	91.2	70-130		%Rec	1	11/10/2022 1:41:29 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/14/2022 1:31:53 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-04 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:35:00 AM

Lab ID: 2211297-008

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	11/9/2022 11:20:40 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/9/2022 11:20:40 PM
Surr: DNOP	71.5	21-129		%Rec	1	11/9/2022 11:20:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/10/2022 2:04:56 AM
Surr: BFB	86.9	37.7-212		%Rec	1	11/10/2022 2:04:56 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 2:04:56 AM
Toluene	ND	0.050		mg/Kg	1	11/10/2022 2:04:56 AM
Ethylbenzene	ND	0.050		mg/Kg	1	11/10/2022 2:04:56 AM
Xylenes, Total	ND	0.10		mg/Kg	1	11/10/2022 2:04:56 AM
Surr: 4-Bromofluorobenzene	91.3	70-130		%Rec	1	11/10/2022 2:04:56 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	130	60		mg/Kg	20	11/14/2022 1:44:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-05 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:40:00 AM

Lab ID: 2211297-009

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	11/9/2022 11:31:11 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/9/2022 11:31:11 PM
Surr: DNOP	67.8	21-129		%Rec	1	11/9/2022 11:31:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/10/2022 2:28:22 AM
Surr: BFB	86.9	37.7-212		%Rec	1	11/10/2022 2:28:22 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 2:28:22 AM
Toluene	ND	0.050		mg/Kg	1	11/10/2022 2:28:22 AM
Ethylbenzene	ND	0.050		mg/Kg	1	11/10/2022 2:28:22 AM
Xylenes, Total	ND	0.099		mg/Kg	1	11/10/2022 2:28:22 AM
Surr: 4-Bromofluorobenzene	91.3	70-130		%Rec	1	11/10/2022 2:28:22 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/14/2022 2:46:23 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-05 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:45:00 AM

Lab ID: 2211297-010

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/9/2022 11:41:44 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/9/2022 11:41:44 PM
Surr: DNOP	75.0	21-129		%Rec	1	11/9/2022 11:41:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/10/2022 3:15:12 AM
Surr: BFB	87.0	37.7-212		%Rec	1	11/10/2022 3:15:12 AM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	11/10/2022 3:15:12 AM
Toluene	ND	0.050		mg/Kg	1	11/10/2022 3:15:12 AM
Ethylbenzene	ND	0.050		mg/Kg	1	11/10/2022 3:15:12 AM
Xylenes, Total	ND	0.099		mg/Kg	1	11/10/2022 3:15:12 AM
Surr: 4-Bromofluorobenzene	92.2	70-130		%Rec	1	11/10/2022 3:15:12 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	59		mg/Kg	20	11/14/2022 2:58:48 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-06 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:50:00 AM

Lab ID: 2211297-011

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/11/2022 11:40:04 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/11/2022 11:40:04 AM
Surr: DNOP	112	21-129		%Rec	1	11/11/2022 11:40:04 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/10/2022 3:51:48 PM
Surr: BFB	90.3	37.7-212		%Rec	1	11/10/2022 3:51:48 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 3:51:48 PM
Toluene	ND	0.048		mg/Kg	1	11/10/2022 3:51:48 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/10/2022 3:51:48 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/10/2022 3:51:48 PM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	11/10/2022 3:51:48 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	59		mg/Kg	20	11/14/2022 3:11:13 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-06 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 9:55:00 AM

Lab ID: 2211297-012

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/14/2022 3:01:53 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/14/2022 3:01:53 PM
Surr: DNOP	111	21-129		%Rec	1	11/14/2022 3:01:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/10/2022 5:02:03 PM
Surr: BFB	86.1	37.7-212		%Rec	1	11/10/2022 5:02:03 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	11/10/2022 5:02:03 PM
Toluene	ND	0.047		mg/Kg	1	11/10/2022 5:02:03 PM
Ethylbenzene	ND	0.047		mg/Kg	1	11/10/2022 5:02:03 PM
Xylenes, Total	ND	0.093		mg/Kg	1	11/10/2022 5:02:03 PM
Surr: 4-Bromofluorobenzene	90.8	70-130		%Rec	1	11/10/2022 5:02:03 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	11/14/2022 3:23:38 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-07 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 10:00:00 AM

Lab ID: 2211297-013

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/11/2022 1:07:37 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/11/2022 1:07:37 PM
Surr: DNOP	100	21-129		%Rec	1	11/11/2022 1:07:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/10/2022 6:12:51 PM
Surr: BFB	89.8	37.7-212		%Rec	1	11/10/2022 6:12:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 6:12:51 PM
Toluene	ND	0.048		mg/Kg	1	11/10/2022 6:12:51 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/10/2022 6:12:51 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/10/2022 6:12:51 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	11/10/2022 6:12:51 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	9000	300		mg/Kg	100	11/14/2022 3:36:02 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-07 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 10:05:00 AM

Lab ID: 2211297-014

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	14		mg/Kg	1	11/11/2022 1:18:12 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/11/2022 1:18:12 PM
Surr: DNOP	132	21-129	S	%Rec	1	11/11/2022 1:18:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/10/2022 6:36:23 PM
Surr: BFB	87.8	37.7-212		%Rec	1	11/10/2022 6:36:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 6:36:23 PM
Toluene	ND	0.047		mg/Kg	1	11/10/2022 6:36:23 PM
Ethylbenzene	ND	0.047		mg/Kg	1	11/10/2022 6:36:23 PM
Xylenes, Total	ND	0.095		mg/Kg	1	11/10/2022 6:36:23 PM
Surr: 4-Bromofluorobenzene	93.1	70-130		%Rec	1	11/10/2022 6:36:23 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	7000	300		mg/Kg	100	11/14/2022 3:48:26 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-07 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 10:10:00 AM

Lab ID: 2211297-015

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	14	14		mg/Kg	1	11/14/2022 4:40:12 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/14/2022 4:40:12 PM
Surr: DNOP	116	21-129		%Rec	1	11/14/2022 4:40:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	11/10/2022 6:59:54 PM
Surr: BFB	88.7	37.7-212		%Rec	1	11/10/2022 6:59:54 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	11/10/2022 6:59:54 PM
Toluene	ND	0.046		mg/Kg	1	11/10/2022 6:59:54 PM
Ethylbenzene	ND	0.046		mg/Kg	1	11/10/2022 6:59:54 PM
Xylenes, Total	ND	0.092		mg/Kg	1	11/10/2022 6:59:54 PM
Surr: 4-Bromofluorobenzene	92.2	70-130		%Rec	1	11/10/2022 6:59:54 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	6600	300		mg/Kg	100	11/14/2022 4:00:51 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-08 0'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 10:15:00 AM

Lab ID: 2211297-016

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/11/2022 1:39:24 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/11/2022 1:39:24 PM
Surr: DNOP	107	21-129		%Rec	1	11/11/2022 1:39:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/10/2022 7:23:14 PM
Surr: BFB	92.7	37.7-212		%Rec	1	11/10/2022 7:23:14 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 7:23:14 PM
Toluene	ND	0.048		mg/Kg	1	11/10/2022 7:23:14 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/10/2022 7:23:14 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/10/2022 7:23:14 PM
Surr: 4-Bromofluorobenzene	97.3	70-130		%Rec	1	11/10/2022 7:23:14 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	7100	300		mg/Kg	100	11/14/2022 4:13:15 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-08 2'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 10:20:00 AM

Lab ID: 2211297-017

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	15		mg/Kg	1	11/11/2022 1:50:01 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/11/2022 1:50:01 PM
Surr: DNOP	105	21-129		%Rec	1	11/11/2022 1:50:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/10/2022 7:46:49 PM
Surr: BFB	89.0	37.7-212		%Rec	1	11/10/2022 7:46:49 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 7:46:49 PM
Toluene	ND	0.048		mg/Kg	1	11/10/2022 7:46:49 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/10/2022 7:46:49 PM
Xylenes, Total	ND	0.095		mg/Kg	1	11/10/2022 7:46:49 PM
Surr: 4-Bromofluorobenzene	92.6	70-130		%Rec	1	11/10/2022 7:46:49 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	5600	300		mg/Kg	100	11/14/2022 4:50:29 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2211297

Date Reported: 11/17/2022

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BH22-08 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 11/3/2022 10:25:00 AM

Lab ID: 2211297-018

Matrix: SOIL

Received Date: 11/5/2022 2:10:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	41	15		mg/Kg	1	11/14/2022 5:12:12 PM
Motor Oil Range Organics (MRO)	110	49		mg/Kg	1	11/14/2022 5:12:12 PM
Surr: DNOP	121	21-129		%Rec	1	11/14/2022 5:12:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/10/2022 8:10:22 PM
Surr: BFB	88.4	37.7-212		%Rec	1	11/10/2022 8:10:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	11/10/2022 8:10:22 PM
Toluene	ND	0.048		mg/Kg	1	11/10/2022 8:10:22 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/10/2022 8:10:22 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/10/2022 8:10:22 PM
Surr: 4-Bromofluorobenzene	92.7	70-130		%Rec	1	11/10/2022 8:10:22 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	7300	300		mg/Kg	100	11/14/2022 5:02:54 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2211297

17-Nov-22

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: MB-71445	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBS	Batch ID: 71445		RunNo: 92527							
Prep Date: 11/11/2022	Analysis Date: 11/11/2022		SeqNo: 3328186		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-71445	SampType: lcs		TestCode: EPA Method 300.0: Anions							
Client ID: LCSS	Batch ID: 71445		RunNo: 92527							
Prep Date: 11/11/2022	Analysis Date: 11/11/2022		SeqNo: 3328187		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.6	90	110			

Sample ID: MB-71469	SampType: mblk		TestCode: EPA Method 300.0: Anions							
Client ID: PBS	Batch ID: 71469		RunNo: 92581							
Prep Date: 11/14/2022	Analysis Date: 11/14/2022		SeqNo: 3329299		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-71469	SampType: lcs		TestCode: EPA Method 300.0: Anions							
Client ID: LCSS	Batch ID: 71469		RunNo: 92581							
Prep Date: 11/14/2022	Analysis Date: 11/14/2022		SeqNo: 3329300		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	96.7	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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2211297

17-Nov-22

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-71362	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 71362		RunNo: 92430							
Prep Date: 11/8/2022	Analysis Date: 11/9/2022		SeqNo: 3324031		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	15	50.00	0	90.7	64.4	127			
Surr: DNOP	5.3		5.000		106	21	129			

Sample ID: MB-71362	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 71362		RunNo: 92430							
Prep Date: 11/8/2022	Analysis Date: 11/9/2022		SeqNo: 3324033		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.5		10.00		95.2	21	129			

Sample ID: LCS-71411	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 71411		RunNo: 92519							
Prep Date: 11/10/2022	Analysis Date: 11/11/2022		SeqNo: 3325799		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	15	50.00	0	90.1	64.4	127			
Surr: DNOP	5.6		5.000		111	21	129			

Sample ID: MB-71411	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 71411		RunNo: 92519							
Prep Date: 11/10/2022	Analysis Date: 11/11/2022		SeqNo: 3325801		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	15								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		108	21	129			

Sample ID: LCS-71413	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 71413		RunNo: 92519							
Prep Date: 11/10/2022	Analysis Date: 11/11/2022		SeqNo: 3327399		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	6.1		5.000		121	21	129			

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 Quantitative 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#: 2211297

17-Nov-22

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: MB-71413	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 71413		RunNo: 92519							
Prep Date: 11/10/2022	Analysis Date: 11/11/2022		SeqNo: 3327400		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		117	21	129			

Sample ID: LCS-71461	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 71461		RunNo: 92557							
Prep Date: 11/14/2022	Analysis Date: 11/14/2022		SeqNo: 3327869		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.0		5.000		101	21	129			

Sample ID: MB-71461	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 71461		RunNo: 92557							
Prep Date: 11/14/2022	Analysis Date: 11/14/2022		SeqNo: 3327870		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.3		10.00		92.6	21	129			

Sample ID: 2211297-012AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BH22-06 2'	Batch ID: 71411		RunNo: 92557							
Prep Date: 11/10/2022	Analysis Date: 11/14/2022		SeqNo: 3329449		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	66	15	49.60	0	133	36.1	154			
Surr: DNOP	7.4		4.960		148	21	129			S

Sample ID: 2211297-012AMSD	SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BH22-06 2'	Batch ID: 71411		RunNo: 92557							
Prep Date: 11/10/2022	Analysis Date: 11/14/2022		SeqNo: 3329450		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	15	50.10	0	99.7	36.1	154	27.4	33.9	
Surr: DNOP	5.9		5.010		117	21	129	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 Quantitative 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#: 2211297

17-Nov-22

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: mb-71353	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch ID: 71353			RunNo: 92451						
Prep Date: 11/7/2022	Analysis Date: 11/9/2022			SeqNo: 3322711		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	930		1000		93.0	37.7	212			

Sample ID: lcs-71353	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: 71353			RunNo: 92451						
Prep Date: 11/7/2022	Analysis Date: 11/9/2022			SeqNo: 3322712		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	94.8	72.3	137			
Surr: BFB	1900		1000		190	37.7	212			

Sample ID: mb-71393	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch ID: 71393			RunNo: 92479						
Prep Date: 11/9/2022	Analysis Date: 11/10/2022			SeqNo: 3327238		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	900		1000		90.0	37.7	212			

Sample ID: LCS-71393	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: 71393			RunNo: 92479						
Prep Date: 11/9/2022	Analysis Date: 11/10/2022			SeqNo: 3327239		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.7	72.3	137			
Surr: BFB	1800		1000		184	37.7	212			

Sample ID: 2211297-011ams	SampType: MS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: BH22-06 0'	Batch ID: 71393			RunNo: 92479						
Prep Date: 11/9/2022	Analysis Date: 11/10/2022			SeqNo: 3327241		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.49	0	97.3	70	130			
Surr: BFB	1900		979.4		195	37.7	212			

Sample ID: 2211297-011amsd	SampType: MSD			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: BH22-06 0'	Batch ID: 71393			RunNo: 92479						
Prep Date: 11/9/2022	Analysis Date: 11/10/2022			SeqNo: 3327242		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 Quantitative 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

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2211297
17-Nov-22

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: 2211297-011amsd		SampType: MSD			TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BH22-06 0'		Batch ID: 71393			RunNo: 92479					
Prep Date: 11/9/2022		Analysis Date: 11/10/2022			SeqNo: 3327242		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	24.83	0	101	70	130	5.05	20	
Surr: BFB	2000		993.0		200	37.7	212	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 Quantitative 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#: 2211297

17-Nov-22

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: mb-71353	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 71353		RunNo: 92451							
Prep Date: 11/7/2022	Analysis Date: 11/9/2022		SeqNo: 3322823		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	0.96		1.000		95.9	70	130			

Sample ID: LCS-71353	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 71353		RunNo: 92451							
Prep Date: 11/7/2022	Analysis Date: 11/9/2022		SeqNo: 3322837		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	94.4	80	120			
Toluene	0.96	0.050	1.000	0	96.4	80	120			
Ethylbenzene	0.97	0.050	1.000	0	96.7	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.4	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	70	130			

Sample ID: mb-71393	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 71393		RunNo: 92479							
Prep Date: 11/9/2022	Analysis Date: 11/10/2022		SeqNo: 3327270		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		94.8	70	130			

Sample ID: lcs-71393	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 71393		RunNo: 92479							
Prep Date: 11/9/2022	Analysis Date: 11/10/2022		SeqNo: 3327271		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	92.9	80	120			
Toluene	0.95	0.050	1.000	0	95.4	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.1	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.7	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	70	130			

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 Quantitative 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#: 2211297

17-Nov-22

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: 2211297-012ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BH22-06 2'	Batch ID: 71393	RunNo: 92479								
Prep Date: 11/9/2022	Analysis Date: 11/10/2022	SeqNo: 3327274 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	0.9843	0	98.4	68.8	120			
Toluene	1.0	0.049	0.9843	0	103	73.6	124			
Ethylbenzene	1.0	0.049	0.9843	0	104	72.7	129			
Xylenes, Total	3.1	0.098	2.953	0.01740	104	75.7	126			
Surr: 4-Bromofluorobenzene	0.92		0.9843		93.2	70	130			

Sample ID: 2211297-012amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: BH22-06 2'	Batch ID: 71393	RunNo: 92479								
Prep Date: 11/9/2022	Analysis Date: 11/10/2022	SeqNo: 3327278 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	0.9960	0	99.7	68.8	120	2.48	20	
Toluene	1.0	0.050	0.9960	0	104	73.6	124	2.76	20	
Ethylbenzene	1.1	0.050	0.9960	0	106	72.7	129	3.26	20	
Xylenes, Total	3.2	0.10	2.988	0.01740	107	75.7	126	3.76	20	
Surr: 4-Bromofluorobenzene	0.95		0.9960		95.2	70	130	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 Quantitative 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

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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: 2211297

RcptNo: 1

Received By: Andy Freeman 11/5/2022 2:10:00 PM

Completed By: Juan Rojas 11/7/2022 7:09:44 AM

Reviewed By: KRC 11.7.22

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 $>0^{\circ}\text{C}$ 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: Juan 11/7/22

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:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.5	Good				
2	4.4	Good				
3	2.8	Good				



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

January 12, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Hackberry 6 Federal 1

OrderNo.: 2301225

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 4 sample(s) on 1/6/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301225

Date Reported: 1/12/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-01 0-4'

Project: Hackberry 6 Federal 1

Collection Date: 1/4/2023 11:30:00 AM

Lab ID: 2301225-001

Matrix: SOIL

Received Date: 1/6/2023 7:45:00 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	1/10/2023 2:51:55 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/10/2023 2:51:55 AM
Surr: DNOP	111	21-129		%Rec	1	1/10/2023 2:51:55 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/9/2023 12:20:00 PM
Surr: BFB	111	37.7-212		%Rec	1	1/9/2023 12:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/9/2023 12:20:00 PM
Toluene	ND	0.049		mg/Kg	1	1/9/2023 12:20:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/9/2023 12:20:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/9/2023 12:20:00 PM
Surr: 4-Bromofluorobenzene	130	70-130	S	%Rec	1	1/9/2023 12:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	1/9/2023 6:40:35 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301225

Date Reported: 1/12/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-02 0-4'

Project: Hackberry 6 Federal 1

Collection Date: 1/4/2023 11:35:00 AM

Lab ID: 2301225-002

Matrix: SOIL

Received Date: 1/6/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	9.6	9.2		mg/Kg	1	1/10/2023 10:29:41 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/10/2023 10:29:41 AM
Surr: DNOP	130	21-129	S	%Rec	1	1/10/2023 10:29:41 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/9/2023 1:19:00 PM
Surr: BFB	110	37.7-212		%Rec	1	1/9/2023 1:19:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/9/2023 1:19:00 PM
Toluene	ND	0.049		mg/Kg	1	1/9/2023 1:19:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/9/2023 1:19:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/9/2023 1:19:00 PM
Surr: 4-Bromofluorobenzene	127	70-130		%Rec	1	1/9/2023 1:19:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	110	60		mg/Kg	20	1/9/2023 6:52:55 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301225

Date Reported: 1/12/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-03 0-4'

Project: Hackberry 6 Federal 1

Collection Date: 1/4/2023 11:40:00 AM

Lab ID: 2301225-003

Matrix: SOIL

Received Date: 1/6/2023 7:45:00 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	1/10/2023 3:13:13 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/10/2023 3:13:13 AM
Surr: DNOP	112	21-129		%Rec	1	1/10/2023 3:13:13 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/9/2023 2:18:00 PM
Surr: BFB	105	37.7-212		%Rec	1	1/9/2023 2:18:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/9/2023 2:18:00 PM
Toluene	ND	0.050		mg/Kg	1	1/9/2023 2:18:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/9/2023 2:18:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/9/2023 2:18:00 PM
Surr: 4-Bromofluorobenzene	122	70-130		%Rec	1	1/9/2023 2:18:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	140	61		mg/Kg	20	1/9/2023 7:05:16 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301225

Date Reported: 1/12/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-07 0-4'

Project: Hackberry 6 Federal 1

Collection Date: 1/4/2023 3:20:00 PM

Lab ID: 2301225-004

Matrix: SOIL

Received Date: 1/6/2023 7:45:00 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	1/10/2023 3:23:53 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/10/2023 3:23:53 AM
Surr: DNOP	114	21-129		%Rec	1	1/10/2023 3:23:53 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/9/2023 2:38:00 PM
Surr: BFB	104	37.7-212		%Rec	1	1/9/2023 2:38:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/9/2023 2:38:00 PM
Toluene	ND	0.050		mg/Kg	1	1/9/2023 2:38:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/9/2023 2:38:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/9/2023 2:38:00 PM
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	1/9/2023 2:38:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	860	60		mg/Kg	20	1/9/2023 7:17:35 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 4 of 8

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2301225
12-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Federal 1

Sample ID: LCS-72511		SampType: lcs		TestCode: EPA Method 300.0: Anions						
Client ID: LCSS		Batch ID: 72511			RunNo: 93837					
Prep Date: 1/9/2023		Analysis Date: 1/9/2023			SeqNo: 3387328		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			

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 Quantitative 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#: 2301225

12-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Federal 1

Sample ID: LCS-72502	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72502	RunNo: 93818								
Prep Date: 1/6/2023	Analysis Date: 1/9/2023	SeqNo: 3386799	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	83.4	64.4	127			
Surr: DNOP	5.5		5.000		111	21	129			

Sample ID: MB-72502	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72502	RunNo: 93818								
Prep Date: 1/6/2023	Analysis Date: 1/9/2023	SeqNo: 3386803	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	11		10.00		112	21	129			

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 Quantitative 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

Page 6 of 8

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301225

12-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Federal 1

Sample ID: lcs-72494	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386844		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	102	72.3	137			
Surr: BFB	2300		1000		230	37.7	212			S

Sample ID: mb-72494	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386845		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		108	37.7	212			

Sample ID: 2301225-001AMS	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: WS23-01 0-4'	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386847		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.9	24.65	0	108	70	130			
Surr: BFB	2500		986.2		256	37.7	212			S

Sample ID: 2301225-001AMSD	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: WS23-01 0-4'	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386848		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	24.95	0	100	70	130	6.24	20	
Surr: BFB	2300		998.0		234	37.7	212	0	0	S

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 Quantitative 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

Page 7 of 8

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301225

12-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Federal 1

Sample ID: lcs-72494	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386882		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	109	80	120			
Toluene	1.1	0.050	1.000	0	113	80	120			
Ethylbenzene	1.1	0.050	1.000	0	113	80	120			
Xylenes, Total	3.4	0.10	3.000	0	113	80	120			
Surr: 4-Bromofluorobenzene	1.3		1.000		128	70	130			

Sample ID: mb-72494	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386883		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	1.3		1.000		128	70	130			

Sample ID: 2301225-002AMS	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: WS23-02 0-4'	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386886		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9950	0	104	68.8	120			
Toluene	1.1	0.050	0.9950	0	110	73.6	124			
Ethylbenzene	1.1	0.050	0.9950	0	111	72.7	129			
Xylenes, Total	3.3	0.10	2.985	0	112	75.7	126			
Surr: 4-Bromofluorobenzene	1.2		0.9950		121	70	130			

Sample ID: 2301225-002AMSD	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: WS23-02 0-4'	Batch ID: 72494		RunNo: 93823							
Prep Date: 1/6/2023	Analysis Date: 1/9/2023		SeqNo: 3386887		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9901	0	105	68.8	120	0.839	20	
Toluene	1.1	0.050	0.9901	0	110	73.6	124	0.0478	20	
Ethylbenzene	1.1	0.050	0.9901	0	112	72.7	129	0.115	20	
Xylenes, Total	3.3	0.099	2.970	0	113	75.7	126	0.407	20	
Surr: 4-Bromofluorobenzene	1.2		0.9901		123	70	130	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 Quantitative 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
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: 2301225

RcptNo: 1

Received By: Juan Rojas 1/6/2023 7:45:00 AM

Completed By: Sean Livingston 1/6/2023 8:01:42 AM

Reviewed By: TMC

1/6/23

[Signature]

[Signature]

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 $>0^{\circ}\text{C}$ 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? Yes ☒ No ☐

(Note discrepancies on chain of custody)

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? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: TMC 1/6/23

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good				

Chain-of-Custody Record

Client: Devon / Vertex

Mailing Address: On file

Phone #:

email or Fax#:

QA/QC Package:

- ☐ Standard
- ☐ Level 4 (Full Validation)

Accreditation

Accreditation: ☐ AZ Compliance

☐ NELAC

☐ Other

☐ NELAC

☐ Other

☐ EDD (Type)[illegible]

Date:	Time:	Relinquished by:
-------	-------	------------------

Date:	Time:	Relinquished by:
-------	-------	------------------

Date:	Time:	Relinquished by:
-------	-------	------------------

Date:	Time:	Relinquished by:
-------	-------	------------------

Received by:	Via:
--------------	------

Date Time

Received by: _____ Via: _____

Date Time

Remarks:

Direct Hill Devon

admission



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

January 13, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Huckberry 6 Fed 1

OrderNo.: 2301270

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 1 sample(s) on 1/7/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301270

Date Reported: 1/13/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-12 0-4'

Project: Huckberry 6 Fed 1

Collection Date: 1/5/2023 11:30:00 AM

Lab ID: 2301270-001

Matrix: SOIL

Received Date: 1/7/2023 8:00:00 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	1/11/2023 11:13:47 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/11/2023 11:13:47 AM
Surr: DNOP	126	21-129		%Rec	1	1/11/2023 11:13:47 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JR
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/11/2023 1:06:00 PM
Surr: BFB	105	37.7-212		%Rec	1	1/11/2023 1:06:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: JR
Benzene	ND	0.025		mg/Kg	1	1/11/2023 1:06:00 PM
Toluene	ND	0.050		mg/Kg	1	1/11/2023 1:06:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/11/2023 1:06:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/11/2023 1:06:00 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	1/11/2023 1:06:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	1000	60		mg/Kg	20	1/10/2023 5:39:45 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 Quantitative 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#: 2301270
13-Jan-23

Client: Vertex Resources Services, Inc.
Project: Huckberry 6 Fed 1

Sample ID: MB-72561	SampType: mblk	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 72561	RunNo: 93840
Prep Date: 1/10/2023	Analysis Date: 1/10/2023	SeqNo: 3388440 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-72561	SampType: lcs	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 72561	RunNo: 93840
Prep Date: 1/10/2023	Analysis Date: 1/10/2023	SeqNo: 3388441 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 92.6 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 Quantitative 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#: 2301270
13-Jan-23

Client: Vertex Resources Services, Inc.
Project: Huckberry 6 Fed 1

Sample ID: LCS-72541	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72541	RunNo: 93869								
Prep Date: 1/10/2023	Analysis Date: 1/11/2023	SeqNo: 3388577	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.0	64.4	127			
Surr: DNOP	5.7		5.000		113	21	129			

Sample ID: MB-72541	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72541	RunNo: 93869								
Prep Date: 1/10/2023	Analysis Date: 1/11/2023	SeqNo: 3388580	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	12		10.00		117	21	129			

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 Quantitative 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#: 2301270

13-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Huckberry 6 Fed 1

Sample ID: lcs-72532	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: 72532			RunNo: 93873						
Prep Date: 1/10/2023	Analysis Date: 1/11/2023			SeqNo: 3389575		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	94.8	72.3	137			
Surr: BFB	2200		1000		222	37.7	212			S

Sample ID: mb-72532	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch ID: 72532			RunNo: 93873						
Prep Date: 1/10/2023	Analysis Date: 1/11/2023			SeqNo: 3389576		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	37.7	212			

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 Quantitative 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#: 2301270

13-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Huckberry 6 Fed 1

Sample ID: lcs-72532	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 72532		RunNo: 93873							
Prep Date: 1/10/2023	Analysis Date: 1/11/2023		SeqNo: 3389628		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	1.000	0	116	80	120			
Toluene	1.2	0.050	1.000	0	116	80	120			
Ethylbenzene	1.2	0.050	1.000	0	116	80	120			
Xylenes, Total	3.5	0.10	3.000	0	116	80	120			
Surr: 4-Bromofluorobenzene	1.3		1.000		125	70	130			

Sample ID: mb-72532	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 72532		RunNo: 93873							
Prep Date: 1/10/2023	Analysis Date: 1/11/2023		SeqNo: 3389629		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	1.3		1.000		126	70	130			

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 Quantitative 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

Page 5 of 5



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: **2301270**

RcptNo: **1**

Received By: **Cheyenne Cason**

1/7/2023 8:30:00 AM

Completed By: **Cheyenne Cason**

1/7/2023 8:51:52 AM

Reviewed By:

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 $>0^{\circ}\text{C}$ 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: CMC 1/7/23

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.0	Good	Not Present	Yogi		



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

January 13, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Hackberry 6 Fed 1

OrderNo.: 2301321

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/10/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301321

Date Reported: 1/13/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-14 0-4'

Project: Hackberry 6 Fed 1

Collection Date: 1/6/2023 9:15:00 AM

Lab ID: 2301321-001

Matrix: SOIL

Received Date: 1/10/2023 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	9.9		mg/Kg	1	1/11/2023 7:46:30 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/11/2023 7:46:30 PM
Surr: DNOP	109	21-129		%Rec	1	1/11/2023 7:46:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JR
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/11/2023 1:25:00 PM
Surr: BFB	104	37.7-212		%Rec	1	1/11/2023 1:25:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: JR
Benzene	ND	0.024		mg/Kg	1	1/11/2023 1:25:00 PM
Toluene	ND	0.047		mg/Kg	1	1/11/2023 1:25:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/11/2023 1:25:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/11/2023 1:25:00 PM
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	1	1/11/2023 1:25:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	320	60		mg/Kg	20	1/11/2023 12:40:54 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301321

Date Reported: 1/13/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-15 0-4'

Project: Hackberry 6 Fed 1

Collection Date: 1/6/2023 9:20:00 AM

Lab ID: 2301321-002

Matrix: SOIL

Received Date: 1/10/2023 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	1/11/2023 7:56:56 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/11/2023 7:56:56 PM
Surr: DNOP	103	21-129		%Rec	1	1/11/2023 7:56:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JR
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/11/2023 1:45:00 PM
Surr: BFB	103	37.7-212		%Rec	1	1/11/2023 1:45:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: JR
Benzene	ND	0.025		mg/Kg	1	1/11/2023 1:45:00 PM
Toluene	ND	0.049		mg/Kg	1	1/11/2023 1:45:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/11/2023 1:45:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/11/2023 1:45:00 PM
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	1	1/11/2023 1:45:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	820	60		mg/Kg	20	1/11/2023 12:53:19 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 Quantitative 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#: 2301321

13-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1

Sample ID: MB-72561	SampType: mbk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72561	RunNo: 93840								
Prep Date: 1/10/2023	Analysis Date: 1/10/2023	SeqNo: 3388440	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72561	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72561	RunNo: 93840								
Prep Date: 1/10/2023	Analysis Date: 1/10/2023	SeqNo: 3388441	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.6	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 Quantitative 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

Page 3 of 6

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301321

13-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1

Sample ID: LCS-72541	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72541		RunNo: 93869							
Prep Date: 1/10/2023	Analysis Date: 1/11/2023		SeqNo: 3388577		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.0	64.4	127			
Surr: DNOP	5.7		5.000		113	21	129			

Sample ID: MB-72541	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72541		RunNo: 93869							
Prep Date: 1/10/2023	Analysis Date: 1/11/2023		SeqNo: 3388580		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	12		10.00		117	21	129			

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 Quantitative 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#: 2301321
13-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Fed 1

Sample ID: Ics-72532	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 72532	RunNo: 93873								
Prep Date: 1/10/2023	Analysis Date: 1/11/2023	SeqNo: 3389575			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	94.8	72.3	137			
Surr: BFB	2200		1000		222	37.7	212			S

Sample ID: mb-72532	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 72532	RunNo: 93873								
Prep Date: 1/10/2023	Analysis Date: 1/11/2023	SeqNo: 3389576			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	37.7	212			

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 Quantitative 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#: 2301321

13-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1

Sample ID: lcs-72532	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72532			RunNo: 93873						
Prep Date: 1/10/2023	Analysis Date: 1/11/2023			SeqNo: 3389628		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	1.000	0	116	80	120			
Toluene	1.2	0.050	1.000	0	116	80	120			
Ethylbenzene	1.2	0.050	1.000	0	116	80	120			
Xylenes, Total	3.5	0.10	3.000	0	116	80	120			
Surr: 4-Bromofluorobenzene	1.3		1.000		125	70	130			

Sample ID: mb-72532	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72532			RunNo: 93873						
Prep Date: 1/10/2023	Analysis Date: 1/11/2023			SeqNo: 3389629		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	1.3		1.000		126	70	130			

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 Quantitative 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

Page 6 of 6



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: 2301321

RcptNo: 1

Received By: Juan Rojas

1/10/2023 7:30:00 AM

Juan Rojas

Completed By: Sean Livingston

1/10/2023 7:50:01 AM

Sean Livingston

Reviewed By: *IO*

1/10/23

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 $>0^{\circ}\text{C}$ 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: *Jn-1/10/23*

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: _____

16. Additional remarks:


17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.0	Good				

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) _____

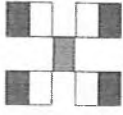
[illegible]

Date:	4/09	Time:	1045	Relinquished by:		F
Date:	4/03	Time:	900	Relinquished by:		F

Turn-Around Time:	<input type="checkbox"/> Standard	<input checked="" type="checkbox"/> Rush	4hr
Project Name:	Hackett & Co.		
Project #:	22E-02537		
Project Manager:	Chance Dixon		
Sampler:	Michael Barnes		
On Ice:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
# of Coolers:	1		
Cooler Temp (Including OFI):	0.0-0.0 (°C)		

[illegible]

Received by:	Via:	Date	Time
<i>Chunming</i>		1/9/23	10:45
Received by:	Via:	Date	Time
<i>[Signature]</i>		1/10/23	7:30



**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

BTX / 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		
CP, F, Br, NO ₃ , NO ₂ , PO ₄ , SO ₄	✓	✓
8260 (VOA)		
8270 (Semi-VOA)		
Total Coliform (Present/Absent)		

Remarks:

Direct bill Devon
Cc: Michael
James



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

January 17, 2023

Chance Dixon

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (575) 748-0176

FAX:

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301376

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 2 sample(s) on 1/11/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301376

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-01 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/9/2023 10:45:00 AM

Lab ID: 2301376-001

Matrix: SOIL

Received Date: 1/11/2023 7:35:00 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	1/13/2023 12:41:59 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/13/2023 12:41:59 AM
Surr: DNOP	106	69-147		%Rec	1	1/13/2023 12:41:59 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/12/2023 6:07:39 PM
Surr: BFB	101	37.7-212		%Rec	1	1/12/2023 6:07:39 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/12/2023 6:07:39 PM
Toluene	ND	0.049		mg/Kg	1	1/12/2023 6:07:39 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/12/2023 6:07:39 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/12/2023 6:07:39 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	1/12/2023 6:07:39 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	7800	300		mg/Kg	100	1/13/2023 11:30:59 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 1 of 6

Analytical Report

Lab Order 2301376

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-02 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/9/2023 10:50:00 AM

Lab ID: 2301376-002

Matrix: SOIL

Received Date: 1/11/2023 7:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	1/13/2023 12:52:35 AM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	1/13/2023 12:52:35 AM
Surr: DNOP	107	69-147		%Rec	1	1/13/2023 12:52:35 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/12/2023 6:54:28 PM
Surr: BFB	103	37.7-212		%Rec	1	1/12/2023 6:54:28 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/12/2023 6:54:00 PM
Toluene	ND	0.050		mg/Kg	1	1/12/2023 6:54:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/12/2023 6:54:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/12/2023 6:54:00 PM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	1/12/2023 6:54:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	8100	300		mg/Kg	100	1/13/2023 11:43:24 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Page 2 of 6

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2301376
17-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72586	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72586	RunNo: 93916								
Prep Date: 1/12/2023	Analysis Date: 1/12/2023	SeqNo: 3390974	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72586	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72586	RunNo: 93916								
Prep Date: 1/12/2023	Analysis Date: 1/12/2023	SeqNo: 3390975	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	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 Quantitative 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#: 2301376

17-Jan-23

Client: Devon Energy**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-72585	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72585		RunNo: 93911							
Prep Date: 1/12/2023	Analysis Date: 1/12/2023		SeqNo: 3390353		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.6		5.000		111	69	147			

Sample ID: MB-72585	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72585		RunNo: 93911							
Prep Date: 1/12/2023	Analysis Date: 1/12/2023		SeqNo: 3390355		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		106	69	147			

Sample ID: LCS-72584	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72584		RunNo: 93911							
Prep Date: 1/11/2023	Analysis Date: 1/12/2023		SeqNo: 3391719		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	41	10	50.00	0	82.0	61.9	130			
Surr: DNOP	5.3		5.000		106	69	147			

Sample ID: MB-72584	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72584		RunNo: 93911							
Prep Date: 1/11/2023	Analysis Date: 1/12/2023		SeqNo: 3391724		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	11		10.00		113	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 Quantitative 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#: 2301376

17-Jan-23

Client: Devon Energy**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: ics-72577	SampType: LCS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: LCSS	Batch ID: 72577				RunNo: 93928					
Prep Date: 1/11/2023	Analysis Date: 1/12/2023				SeqNo: 3391322	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	95.6	72.3	137			
Surr: BFB	2000		1000		195	37.7	212			

Sample ID: mb-72577	SampType: MBLK				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: PBS	Batch ID: 72577				RunNo: 93928					
Prep Date: 1/11/2023	Analysis Date: 1/12/2023				SeqNo: 3391323	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		102	37.7	212			

Sample ID: 2301376-001ams	SampType: MS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BS23-01 4'	Batch ID: 72577				RunNo: 93928					
Prep Date: 1/11/2023	Analysis Date: 1/12/2023				SeqNo: 3391462	Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.8	24.22	0	94.7	70	130			
Surr: BFB	1900		969.0		195	37.7	212			

Sample ID: 2301376-001AMSD	SampType: MSD				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BS23-01 4'	Batch ID: 72577				RunNo: 93928					
Prep Date: 1/11/2023	Analysis Date: 1/12/2023				SeqNo: 3391464	Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	5.0	24.78	0	78.1	70	130	16.9	20	
Surr: BFB	1800		991.1		181	37.7	212	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 Quantitative 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#: 2301376

17-Jan-23

Client: Devon Energy**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: 2301376-002ams	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-02 4'	Batch ID: 72577		RunNo: 93928							
Prep Date: 1/11/2023	Analysis Date: 1/12/2023		SeqNo: 3391515		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.024	0.9756	0	85.5	68.8	120			
Toluene	0.85	0.049	0.9756	0	86.6	73.6	124			
Ethylbenzene	0.84	0.049	0.9756	0	85.8	72.7	129			
Xylenes, Total	2.5	0.098	2.927	0	86.2	75.7	126			
Surr: 4-Bromofluorobenzene	0.96		0.9756		98.8	70	130			

Sample ID: 2301376-002amsd	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-02 4'	Batch ID: 72577		RunNo: 93928							
Prep Date: 1/11/2023	Analysis Date: 1/12/2023		SeqNo: 3391516		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	0.9814	0	84.4	68.8	120	0.720	20	
Toluene	0.84	0.049	0.9814	0	85.2	73.6	124	1.04	20	
Ethylbenzene	0.84	0.049	0.9814	0	85.1	72.7	129	0.197	20	
Xylenes, Total	2.5	0.098	2.944	0	84.7	75.7	126	1.24	20	
Surr: 4-Bromofluorobenzene	0.98		0.9814		99.4	70	130	0	0	

Sample ID: LCS-72577	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 72577		RunNo: 93928							
Prep Date: 1/11/2023	Analysis Date: 1/12/2023		SeqNo: 3391519		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	95.2	80	120			
Toluene	0.97	0.050	1.000	0	96.9	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.1	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		99.9	70	130			

Sample ID: mb-72577	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 72577		RunNo: 93928							
Prep Date: 1/11/2023	Analysis Date: 1/12/2023		SeqNo: 3391520		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	1.0		1.000		99.5	70	130			

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 Quantitative 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
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: 2301376

RcptNo: 1

Received By: Tracy Casarrubias 1/11/2023 7:35:00 AM

Completed By: Tracy Casarrubias 1/11/2023 7:52:52 AM

Reviewed By: *sa 1/11/23*

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? Yes ☒ No ☐
(Note discrepancies on chain of custody)
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? Yes ☒ No ☐
(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: *sa 1/11/23*

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.8	Good	Yes			

Chain-of-Custody Record

Client: DevonMailing 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: 48-Hour
☐ Standard ☒ Rush Signature
Project Name:Hackberry Fed 1 Well PadProject #: 22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 MartyCooler Temp (including CP): 5.8 - 5.8 (°C)

Container Type and #

Preservative Type

HEAL No.

403 jar ice 2301370

" " 001

" " 002

Date

Time

Matrix

Sample Name

1/9/23 10:45 Soil BS23-01 4'

" 10:50 " BS23-02 4'

Date: 1/9/23Time: 17:50Relinquished by: Jaely CarterDate: 1/10/23Time: 19:00Relinquished by: Signature

Received by:

Via:

Date

Time

Signature

Date

Time

Received by:

Via:

Date

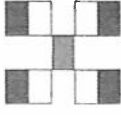
Time

Signature

Date

Time

Remarks:

cc Kent StallingsDirect Bill Devon, WO# 1007101301HALL ENVIRONMENTAL
ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

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⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)



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

January 17, 2023

Chance Dixon

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (575) 748-0176

FAX:

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301461

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 5 sample(s) on 1/12/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301461

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-27 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/10/2023 7:50:00 AM

Lab ID: 2301461-001

Matrix: SOIL

Received Date: 1/12/2023 7:35:00 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	1/13/2023 1:39:17 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/13/2023 1:39:17 PM
Surr: DNOP	105	69-147		%Rec	1	1/13/2023 1:39:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/13/2023 12:56:00 PM
Surr: BFB	101	37.7-212		%Rec	1	1/13/2023 12:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/13/2023 12:56:00 PM
Toluene	ND	0.049		mg/Kg	1	1/13/2023 12:56:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/13/2023 12:56:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/13/2023 12:56:00 PM
Surr: 4-Bromofluorobenzene	123	70-130		%Rec	1	1/13/2023 12:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	120	60		mg/Kg	20	1/13/2023 12:45:25 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301461

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-03 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/10/2023 7:55:00 AM

Lab ID: 2301461-002

Matrix: SOIL

Received Date: 1/12/2023 7:35:00 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	1/13/2023 1:50:05 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/13/2023 1:50:05 PM
Surr: DNOP	106	69-147		%Rec	1	1/13/2023 1:50:05 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/13/2023 1:16:00 PM
Surr: BFB	105	37.7-212		%Rec	1	1/13/2023 1:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/13/2023 1:16:00 PM
Toluene	ND	0.050		mg/Kg	1	1/13/2023 1:16:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/13/2023 1:16:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/13/2023 1:16:00 PM
Surr: 4-Bromofluorobenzene	124	70-130		%Rec	1	1/13/2023 1:16:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	150	60		mg/Kg	20	1/13/2023 12:57:49 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301461

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-04 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/10/2023 8:00:00 AM

Lab ID: 2301461-003

Matrix: SOIL

Received Date: 1/12/2023 7:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	13	9.0		mg/Kg	1	1/13/2023 2:00:57 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/13/2023 2:00:57 PM
Surr: DNOP	108	69-147		%Rec	1	1/13/2023 2:00:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/13/2023 1:35:00 PM
Surr: BFB	99.3	37.7-212		%Rec	1	1/13/2023 1:35:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/13/2023 1:35:00 PM
Toluene	ND	0.049		mg/Kg	1	1/13/2023 1:35:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/13/2023 1:35:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/13/2023 1:35:00 PM
Surr: 4-Bromofluorobenzene	121	70-130		%Rec	1	1/13/2023 1:35:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	790	60		mg/Kg	20	1/13/2023 1:10:13 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301461

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-05 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/10/2023 8:05:00 AM

Lab ID: 2301461-004

Matrix: SOIL

Received Date: 1/12/2023 7:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	24	8.9		mg/Kg	1	1/13/2023 2:22:22 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/13/2023 2:22:22 PM
Surr: DNOP	104	69-147		%Rec	1	1/13/2023 2:22:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/13/2023 1:55:00 PM
Surr: BFB	102	37.7-212		%Rec	1	1/13/2023 1:55:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/13/2023 1:55:00 PM
Toluene	ND	0.049		mg/Kg	1	1/13/2023 1:55:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/13/2023 1:55:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/13/2023 1:55:00 PM
Surr: 4-Bromofluorobenzene	122	70-130		%Rec	1	1/13/2023 1:55:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	1700	61		mg/Kg	20	1/13/2023 1:22:38 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301461

Date Reported: 1/17/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-29 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/10/2023 1:30:00 PM

Lab ID: 2301461-005

Matrix: SOIL

Received Date: 1/12/2023 7:35:00 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	1/13/2023 2:54:22 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/13/2023 2:54:22 PM
Surr: DNOP	103	69-147		%Rec	1	1/13/2023 2:54:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/13/2023 2:15:00 PM
Surr: BFB	104	37.7-212		%Rec	1	1/13/2023 2:15:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/13/2023 2:15:00 PM
Toluene	ND	0.049		mg/Kg	1	1/13/2023 2:15:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/13/2023 2:15:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/13/2023 2:15:00 PM
Surr: 4-Bromofluorobenzene	120	70-130		%Rec	1	1/13/2023 2:15:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	140	61		mg/Kg	20	1/13/2023 1:59:51 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 Quantitative 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#: 2301461
17-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72612	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 72612	RunNo: 93954
Prep Date: 1/13/2023	Analysis Date: 1/13/2023	SeqNo: 3392167 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-72612	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 72612	RunNo: 93954
Prep Date: 1/13/2023	Analysis Date: 1/13/2023	SeqNo: 3392168 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 96.1 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 Quantitative 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

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2301461
17-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-72610	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72610		RunNo: 93948							
Prep Date: 1/13/2023	Analysis Date: 1/13/2023		SeqNo: 3392044		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	79.8	61.9	130			
Surr: DNOP	5.3		5.000		107	69	147			

Sample ID: MB-72610	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72610		RunNo: 93948							
Prep Date: 1/13/2023	Analysis Date: 1/13/2023		SeqNo: 3392046		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	11		10.00		107	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 Quantitative 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#: 2301461
17-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: Ics-72605	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 72605	RunNo: 93931								
Prep Date: 1/12/2023	Analysis Date: 1/13/2023	SeqNo: 3391419		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	104	72.3	137			
Surr: BFB	2300		1000		228	37.7	212			S

Sample ID: mb-72605	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 72605	RunNo: 93931								
Prep Date: 1/12/2023	Analysis Date: 1/13/2023	SeqNo: 3391577		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	37.7	212			

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 Quantitative 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

Page 8 of 9

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301461

17-Jan-23

Client: Devon Energy**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: lcs-72605	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72605			RunNo: 93931						
Prep Date: 1/12/2023	Analysis Date: 1/13/2023			SeqNo: 3391420		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	114	80	120			
Toluene	1.2	0.050	1.000	0	116	80	120			
Ethylbenzene	1.2	0.050	1.000	0	115	80	120			
Xylenes, Total	3.5	0.10	3.000	0	115	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		122	70	130			

Sample ID: mb-72605	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72605			RunNo: 93931						
Prep Date: 1/12/2023	Analysis Date: 1/13/2023			SeqNo: 3391578		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	1.2		1.000		122	70	130			

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 Quantitative 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
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: 2301461

RcptNo: 1

Received By: Tracy Casarrubias 1/12/2023 7:35:00 AM

Completed By: Tracy Casarrubias 1/12/2023 8:03:35 AM

Reviewed By: *Jan 12/23*

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 $>0^{\circ}\text{C}$ 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: *KPA 1-12-23*

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.4	Good	Yes			



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

January 19, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301522

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 20 sample(s) on 1/13/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-06 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:10:00 AM

Lab ID: 2301522-001

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 9:29:03 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/17/2023 9:29:03 AM
Surr: DNOP	109	69-147		%Rec	1	1/17/2023 9:29:03 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 2:22:00 PM
Surr: BFB	99.0	37.7-212		%Rec	1	1/16/2023 2:22:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 2:22:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 2:22:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 2:22:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2023 2:22:00 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	1/16/2023 2:22:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	7100	300		mg/Kg	100	1/17/2023 10:06:31 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-07 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:15:00 AM

Lab ID: 2301522-002

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 9:55:44 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/17/2023 9:55:44 AM
Surr: DNOP	99.9	69-147		%Rec	1	1/17/2023 9:55:44 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 3:21:00 PM
Surr: BFB	106	37.7-212		%Rec	1	1/16/2023 3:21:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/16/2023 3:21:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 3:21:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 3:21:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2023 3:21:00 PM
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	1/16/2023 3:21:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	1900	60		mg/Kg	20	1/16/2023 8:58:46 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-08 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:20:00 AM

Lab ID: 2301522-003

Matrix: SOIL

Received Date: 1/13/2023 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)	11	9.1		mg/Kg	1	1/17/2023 10:06:16 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/17/2023 10:06:16 AM
Surr: DNOP	101	69-147		%Rec	1	1/17/2023 10:06:16 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 4:20:00 PM
Surr: BFB	93.1	37.7-212		%Rec	1	1/16/2023 4:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/16/2023 4:20:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 4:20:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 4:20:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2023 4:20:00 PM
Surr: 4-Bromofluorobenzene	110	70-130		%Rec	1	1/16/2023 4:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	4200	150		mg/Kg	50	1/17/2023 10:18:51 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-09 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:25:00 AM

Lab ID: 2301522-004

Matrix: SOIL

Received Date: 1/13/2023 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)	9.6	9.3		mg/Kg	1	1/17/2023 10:16:50 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/17/2023 10:16:50 AM
Surr: DNOP	76.6	69-147		%Rec	1	1/17/2023 10:16:50 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 4:40:00 PM
Surr: BFB	109	37.7-212		%Rec	1	1/16/2023 4:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 4:40:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 4:40:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 4:40:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2023 4:40:00 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	1/16/2023 4:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3000	150		mg/Kg	50	1/17/2023 10:31:11 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-10 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:30:00 AM

Lab ID: 2301522-005

Matrix: SOIL

Received Date: 1/13/2023 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)	15	9.8		mg/Kg	1	1/17/2023 10:27:22 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/17/2023 10:27:22 AM
Surr: DNOP	91.0	69-147		%Rec	1	1/17/2023 10:27:22 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 4:59:00 PM
Surr: BFB	97.4	37.7-212		%Rec	1	1/16/2023 4:59:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/16/2023 4:59:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 4:59:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 4:59:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2023 4:59:00 PM
Surr: 4-Bromofluorobenzene	111	70-130		%Rec	1	1/16/2023 4:59:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	6100	300		mg/Kg	100	1/17/2023 10:43:31 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-11 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:35:00 AM

Lab ID: 2301522-006

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 10:37:57 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/17/2023 10:37:57 AM
Surr: DNOP	107	69-147		%Rec	1	1/17/2023 10:37:57 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 5:19:00 PM
Surr: BFB	102	37.7-212		%Rec	1	1/16/2023 5:19:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/16/2023 5:19:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 5:19:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 5:19:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2023 5:19:00 PM
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	1/16/2023 5:19:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	7800	300		mg/Kg	100	1/17/2023 10:55:52 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-12 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:40:00 AM

Lab ID: 2301522-007

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 10:48:50 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/17/2023 10:48:50 AM
Surr: DNOP	75.8	69-147		%Rec	1	1/17/2023 10:48:50 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 5:39:00 PM
Surr: BFB	99.9	37.7-212		%Rec	1	1/16/2023 5:39:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 5:39:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 5:39:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 5:39:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2023 5:39:00 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	1/16/2023 5:39:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	7000	300		mg/Kg	100	1/17/2023 11:08:12 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-13 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:45:00 AM

Lab ID: 2301522-008

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 11:10:02 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/17/2023 11:10:02 AM
Surr: DNOP	109	69-147		%Rec	1	1/17/2023 11:10:02 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 5:59:00 PM
Surr: BFB	98.0	37.7-212		%Rec	1	1/16/2023 5:59:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 5:59:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 5:59:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 5:59:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2023 5:59:00 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	1/16/2023 5:59:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	5600	300		mg/Kg	100	1/17/2023 11:20:32 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-14 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:50:00 AM

Lab ID: 2301522-009

Matrix: SOIL

Received Date: 1/13/2023 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	9.2		mg/Kg	1	1/17/2023 11:20:39 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/17/2023 11:20:39 AM
Surr: DNOP	71.9	69-147		%Rec	1	1/17/2023 11:20:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 6:18:00 PM
Surr: BFB	105	37.7-212		%Rec	1	1/16/2023 6:18:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 6:18:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 6:18:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 6:18:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2023 6:18:00 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	1/16/2023 6:18:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	6500	300		mg/Kg	100	1/17/2023 11:32:53 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-15 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 9:55:00 AM

Lab ID: 2301522-010

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 11:41:48 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/17/2023 11:41:48 AM
Surr: DNOP	85.2	69-147		%Rec	1	1/17/2023 11:41:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 7:17:00 PM
Surr: BFB	96.9	37.7-212		%Rec	1	1/16/2023 7:17:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 7:17:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 7:17:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 7:17:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2023 7:17:00 PM
Surr: 4-Bromofluorobenzene	113	70-130		%Rec	1	1/16/2023 7:17:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	12000	600		mg/Kg	200	1/17/2023 11:45:13 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-16 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 10:00:00 AM

Lab ID: 2301522-011

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 11:52:27 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/17/2023 11:52:27 AM
Surr: DNOP	69.4	69-147		%Rec	1	1/17/2023 11:52:27 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 7:37:00 PM
Surr: BFB	100	37.7-212		%Rec	1	1/16/2023 7:37:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/16/2023 7:37:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 7:37:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 7:37:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2023 7:37:00 PM
Surr: 4-Bromofluorobenzene	115	70-130		%Rec	1	1/16/2023 7:37:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	8300	300		mg/Kg	100	1/17/2023 11:57:34 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-17 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 10:05:00 AM

Lab ID: 2301522-012

Matrix: SOIL

Received Date: 1/13/2023 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	9.8		mg/Kg	1	1/17/2023 1:09:48 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/17/2023 1:09:48 PM
Surr: DNOP	129	69-147		%Rec	1	1/17/2023 1:09:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 7:57:00 PM
Surr: BFB	99.3	37.7-212		%Rec	1	1/16/2023 7:57:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 7:57:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 7:57:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 7:57:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2023 7:57:00 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	1/16/2023 7:57:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	4600	150		mg/Kg	50	1/17/2023 12:34:36 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-18 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:00:00 AM

Lab ID: 2301522-013

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 1:20:27 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/17/2023 1:20:27 PM
Surr: DNOP	125	69-147		%Rec	1	1/17/2023 1:20:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 8:16:00 PM
Surr: BFB	100	37.7-212		%Rec	1	1/16/2023 8:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 8:16:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 8:16:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 8:16:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2023 8:16:00 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	1/16/2023 8:16:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	8500	300		mg/Kg	100	1/17/2023 12:46:57 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-19 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:05:00 AM

Lab ID: 2301522-014

Matrix: SOIL

Received Date: 1/13/2023 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)	26	9.3		mg/Kg	1	1/17/2023 1:31:06 PM
Motor Oil Range Organics (MRO)	67	46		mg/Kg	1	1/17/2023 1:31:06 PM
Surr: DNOP	113	69-147		%Rec	1	1/17/2023 1:31:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 8:36:00 PM
Surr: BFB	101	37.7-212		%Rec	1	1/16/2023 8:36:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 8:36:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 8:36:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 8:36:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2023 8:36:00 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	1/16/2023 8:36:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	6700	300		mg/Kg	100	1/17/2023 12:59:17 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-20 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:10:00 AM

Lab ID: 2301522-015

Matrix: SOIL

Received Date: 1/13/2023 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)	31	10		mg/Kg	1	1/17/2023 1:41:47 PM
Motor Oil Range Organics (MRO)	71	50		mg/Kg	1	1/17/2023 1:41:47 PM
Surr: DNOP	99.2	69-147		%Rec	1	1/17/2023 1:41:47 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 8:56:00 PM
Surr: BFB	103	37.7-212		%Rec	1	1/16/2023 8:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 8:56:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 8:56:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 8:56:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2023 8:56:00 PM
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	1/16/2023 8:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	9100	600		mg/Kg	200	1/17/2023 1:11:38 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-21 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:15:00 AM

Lab ID: 2301522-016

Matrix: SOIL

Received Date: 1/13/2023 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)	11	10		mg/Kg	1	1/17/2023 1:52:31 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/17/2023 1:52:31 PM
Surr: DNOP	107	69-147		%Rec	1	1/17/2023 1:52:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 9:15:00 PM
Surr: BFB	97.9	37.7-212		%Rec	1	1/16/2023 9:15:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 9:15:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 9:15:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 9:15:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/16/2023 9:15:00 PM
Surr: 4-Bromofluorobenzene	116	70-130		%Rec	1	1/16/2023 9:15:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	9200	300		mg/Kg	100	1/17/2023 1:23:58 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-22 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:20:00 AM

Lab ID: 2301522-017

Matrix: SOIL

Received Date: 1/13/2023 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	9.1		mg/Kg	1	1/17/2023 2:03:13 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/17/2023 2:03:13 PM
Surr: DNOP	109	69-147		%Rec	1	1/17/2023 2:03:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 9:35:00 PM
Surr: BFB	100	37.7-212		%Rec	1	1/16/2023 9:35:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/16/2023 9:35:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 9:35:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 9:35:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/16/2023 9:35:00 PM
Surr: 4-Bromofluorobenzene	118	70-130		%Rec	1	1/16/2023 9:35:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	6800	300		mg/Kg	100	1/17/2023 1:36:19 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-23 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:25:00 AM

Lab ID: 2301522-018

Matrix: SOIL

Received Date: 1/13/2023 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	1/17/2023 2:13:56 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/17/2023 2:13:56 PM
Surr: DNOP	116	69-147		%Rec	1	1/17/2023 2:13:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 9:55:00 PM
Surr: BFB	97.7	37.7-212		%Rec	1	1/16/2023 9:55:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 9:55:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 9:55:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 9:55:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/16/2023 9:55:00 PM
Surr: 4-Bromofluorobenzene	115	70-130		%Rec	1	1/16/2023 9:55:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	9000	300		mg/Kg	100	1/17/2023 1:48:40 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-24 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:30:00 AM

Lab ID: 2301522-019

Matrix: SOIL

Received Date: 1/13/2023 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	8.6		mg/Kg	1	1/17/2023 2:24:48 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	1/17/2023 2:24:48 PM
Surr: DNOP	119	69-147		%Rec	1	1/17/2023 2:24:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/16/2023 10:15:00 PM
Surr: BFB	98.7	37.7-212		%Rec	1	1/16/2023 10:15:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 10:15:00 PM
Toluene	ND	0.049		mg/Kg	1	1/16/2023 10:15:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/16/2023 10:15:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/16/2023 10:15:00 PM
Surr: 4-Bromofluorobenzene	114	70-130		%Rec	1	1/16/2023 10:15:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	7400	300		mg/Kg	100	1/17/2023 2:01:01 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301522

Date Reported: 1/19/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-25 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/11/2023 11:35:00 AM

Lab ID: 2301522-020

Matrix: SOIL

Received Date: 1/13/2023 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)	28	8.6		mg/Kg	1	1/17/2023 2:35:42 PM
Motor Oil Range Organics (MRO)	51	43		mg/Kg	1	1/17/2023 2:35:42 PM
Surr: DNOP	116	69-147		%Rec	1	1/17/2023 2:35:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/16/2023 10:54:00 PM
Surr: BFB	102	37.7-212		%Rec	1	1/16/2023 10:54:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/16/2023 10:54:00 PM
Toluene	ND	0.048		mg/Kg	1	1/16/2023 10:54:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/16/2023 10:54:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/16/2023 10:54:00 PM
Surr: 4-Bromofluorobenzene	117	70-130		%Rec	1	1/16/2023 10:54:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	10000	590		mg/Kg	200	1/17/2023 2:13:21 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2301522
19-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72640	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72640	RunNo: 93996								
Prep Date: 1/16/2023	Analysis Date: 1/16/2023	SeqNo: 3393481		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72640	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72640	RunNo: 93996								
Prep Date: 1/16/2023	Analysis Date: 1/16/2023	SeqNo: 3393482		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.0	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 Quantitative 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#: 2301522

19-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: 2301522-001AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BS23-06 4'	Batch ID: 72638	RunNo: 94003								
Prep Date: 1/16/2023	Analysis Date: 1/17/2023	SeqNo: 3393666 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.10	0	99.5	54.2	135			
Surr: DNOP	5.6		5.010		112	69	147			

Sample ID: LCS-72638	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72638	RunNo: 94003								
Prep Date: 1/16/2023	Analysis Date: 1/17/2023	SeqNo: 3393687 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.8	61.9	130			
Surr: DNOP	6.0		5.000		119	69	147			

Sample ID: MB-72638	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72638	RunNo: 94003								
Prep Date: 1/16/2023	Analysis Date: 1/17/2023	SeqNo: 3393688 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	12		10.00		117	69	147			

Sample ID: 2301522-001AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BS23-06 4'	Batch ID: 72638	RunNo: 94003								
Prep Date: 1/16/2023	Analysis Date: 1/17/2023	SeqNo: 3394250 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.6	48.17	0	108	54.2	135	3.98	29.2	
Surr: DNOP	5.4		4.817		112	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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301522

19-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: ics-72620	SampType: LCS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: LCSS	Batch ID: 72620				RunNo: 93975					
Prep Date: 1/13/2023	Analysis Date: 1/16/2023				SeqNo: 3393260	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	90.4	72.3	137			
Surr: BFB	2200		1000		222	37.7	212			S

Sample ID: mb-72620	SampType: MBLK				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: PBS	Batch ID: 72620				RunNo: 93975					
Prep Date: 1/13/2023	Analysis Date: 1/16/2023				SeqNo: 3393261	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		108	37.7	212			

Sample ID: 2301522-001ams	SampType: MS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BS23-06 4'	Batch ID: 72620				RunNo: 93975					
Prep Date: 1/13/2023	Analysis Date: 1/16/2023				SeqNo: 3393263	Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	23.79	0	93.6	70	130			
Surr: BFB	2200		951.5		226	37.7	212			S

Sample ID: 2301522-001amsd	SampType: MSD				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BS23-06 4'	Batch ID: 72620				RunNo: 93975					
Prep Date: 1/13/2023	Analysis Date: 1/16/2023				SeqNo: 3393264	Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	23.95	0	93.2	70	130	0.240	20	
Surr: BFB	2200		957.9		226	37.7	212	0	0	S

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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301522

19-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: ics-72620	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 72620		RunNo: 93975							
Prep Date: 1/13/2023	Analysis Date: 1/16/2023		SeqNo: 3393292		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	112	80	120			
Toluene	1.1	0.050	1.000	0	114	80	120			
Ethylbenzene	1.1	0.050	1.000	0	114	80	120			
Xylenes, Total	3.4	0.10	3.000	0	114	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		119	70	130			

Sample ID: mb-72620	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 72620		RunNo: 93975							
Prep Date: 1/13/2023	Analysis Date: 1/16/2023		SeqNo: 3393293		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	1.2		1.000		119	70	130			

Sample ID: 2301522-002ams	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-07 4'	Batch ID: 72620		RunNo: 93975							
Prep Date: 1/13/2023	Analysis Date: 1/16/2023		SeqNo: 3393298		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9643	0	109	68.8	120			
Toluene	1.1	0.048	0.9643	0	111	73.6	124			
Ethylbenzene	1.1	0.048	0.9643	0	112	72.7	129			
Xylenes, Total	3.2	0.096	2.893	0	112	75.7	126			
Surr: 4-Bromofluorobenzene	1.1		0.9643		114	70	130			

Sample ID: 2301522-002amsd	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-07 4'	Batch ID: 72620		RunNo: 93975							
Prep Date: 1/13/2023	Analysis Date: 1/16/2023		SeqNo: 3393299		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.024	0.9785	0	105	68.8	120	1.95	20	
Toluene	1.1	0.049	0.9785	0	109	73.6	124	0.775	20	
Ethylbenzene	1.1	0.049	0.9785	0	110	72.7	129	0.662	20	
Xylenes, Total	3.2	0.098	2.935	0	110	75.7	126	0.462	20	
Surr: 4-Bromofluorobenzene	1.1		0.9785		117	70	130	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 Quantitative 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

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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: 2301522

RcptNo: 1

Received By: Juan Rojas 1/13/2023 7:40:00 AM

Completed By: Sean Livingston 1/13/2023 8:03:38 AM

Reviewed By: Jn 1/13/23

[Signature]

[Signature]

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 $>0^{\circ}\text{C}$ 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: *[Signature]* 1-13-23

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.3	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 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50gCooler Temp (including CF): 0.3-0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

230152240g jar ice

Date

1/11/23

Time

9:10

Matrix

Soil

Sample Name

BS23-06 4'

Date

1/11/23

Time

9:15

Matrix

BS23-07 4'

Sample Name

BS23-08 4'

Date

1/11/23

Time

9:20

Matrix

BS23-09 4'

Sample Name

BS23-10 4'

Date

1/11/23

Time

9:30

Matrix

BS23-11 4'

Sample Name

BS23-12 4'

Date

1/11/23

Time

9:35

Matrix

BS23-13 4'

Sample Name

BS23-14 4'

Date

1/11/23

Time

9:40

Matrix

BS23-15 4'

Sample Name

BS23-16 4'

Date

1/11/23

Time

9:45

Matrix

BS23-17 4'

Sample Name

BS23-18 4'

Date

1/11/23

Time

9:50

Matrix

BS23-19 4'

Sample Name

BS23-20 4'

Date

1/11/23

Time

10:00

Matrix

BS23-21 4'

Sample Name

BS23-22 4'

Date

1/11/23

Time

10:05

Matrix

BS23-23 4'

Sample Name

BS23-24 4'

Date

1/11/23

Time

10:10

Matrix

BS23-25 4'

Sample Name

BS23-26 4'

Date

1/11/23

Time

10:15

Matrix

BS23-27 4'

Sample Name

BS23-28 4'

Turn-Around Time:

☐ Standard ☒ Rush 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50gCooler Temp (including CF): 0.3-0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

230152240g jar ice

Date

1/11/23

Time

001

Matrix

002

Sample Name

003

Date

004

Time

005

Matrix

006

Sample Name

007

Date

008

Time

009

Matrix

010

Sample Name

011

Turn-Around Time:

☐ Standard ☒ Rush 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50gCooler Temp (including CF): 0.3-0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

230152240g jar ice

Date

1/11/23

Time

001

Matrix

002

Sample Name

003

Date

004

Time

005

Matrix

006

Sample Name

007

Date

008

Time

009

Matrix

010

Sample Name

011

Turn-Around Time:

☐ Standard ☒ Rush 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50gCooler Temp (including CF): 0.3-0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

230152240g jar ice

Date

1/11/23

Time

001

Matrix

002

Sample Name

003

Date

004

Time

005

Matrix

006

Sample Name

007

Date

008

Time

009

Matrix

010

Sample Name

011

Turn-Around Time:

☐ Standard ☒ Rush 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50gCooler Temp (including CF): 0.3-0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

230152240g jar ice

Date

1/11/23

Time

001

Matrix

002

Sample Name

003

Date

004

Time

005

Matrix

006

Sample Name

007

Date

008

Time

009

Matrix

010

Sample Name

011

Turn-Around Time:

☐ Standard ☒ Rush 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50gCooler Temp (including CF): 0.3-0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

230152240g jar ice

Date

1/11/23

Time

001

Matrix

002

Sample Name

003

Date

004

Time

005

Matrix

006

Sample Name

007

Date

008

Time

009

Matrix

010

Sample Name

011

Turn-Around Time:

☐ Standard ☒ Rush 48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1 50g

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 ☒ Rush48 hr

Project Name:

Hackberry to Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance Dixon

Sampler:

8PC

On Ice:

☒ Yes ☐ No

of Coolers:

409 jarCooler Temp (including CF): 0.3-0=0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

Date Time Matrix Sample Name

1/11/23 11:00 Soil BS23-18 4'

11:05 BS23-19 4'

11:10 BS23-20 4'

11:15 BS23-21 4'

11:20 BS23-22 4'

11:25 BS23-23 4'

11:30 BS23-24 4'

11:35 BS23-25 4'

Date Time Relinquished by:

1/11/23 17:35 Sally Cotton

Date Time Relinquished by:

1/12/23 19:00

Received by:

Date Time

1/12/23 245

Received by:

Date Time

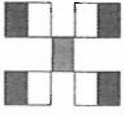
1/13/23 7:40

Remarks:

page 2/2

Direct bill Devon

WO # 1007101301



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

TPH:8015D(GRO / DRO / MRO)

8081 Pesticides/8082 PCB's

EDB (Method 504.1)

PAHs by 8310 or 8270SIMS

RCRA 8 Metals

Cl⁻, Br⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

MTBE / TMB's (8021)



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

January 25, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301574

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 10 sample(s) on 1/17/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-30 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/12/2023 8:05:00 AM

Lab ID: 2301574-001

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 11:54:48 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2023 11:54:48 AM
Surr: DNOP	89.8	69-147		%Rec	1	1/18/2023 11:54:48 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/18/2023 11:19:00 AM
Surr: BFB	96.4	37.7-212		%Rec	1	1/18/2023 11:19:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/18/2023 11:19:00 AM
Toluene	ND	0.050		mg/Kg	1	1/18/2023 11:19:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/18/2023 11:19:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/18/2023 11:19:00 AM
Surr: 4-Bromofluorobenzene	94.2	70-130		%Rec	1	1/18/2023 11:19:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	740	60		mg/Kg	20	1/17/2023 3:40:16 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-34 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/12/2023 10:15:00 AM

Lab ID: 2301574-002

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 12:05:21 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/18/2023 12:05:21 PM
Surr: DNOP	136	69-147		%Rec	1	1/18/2023 12:05:21 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 12:18:00 PM
Surr: BFB	99.4	37.7-212		%Rec	1	1/18/2023 12:18:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 12:18:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 12:18:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 12:18:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/18/2023 12:18:00 PM
Surr: 4-Bromofluorobenzene	95.2	70-130		%Rec	1	1/18/2023 12:18:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	540	60		mg/Kg	20	1/17/2023 4:17:19 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-37 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/12/2023 1:30:00 PM

Lab ID: 2301574-003

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 12:15:58 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2023 12:15:58 PM
Surr: DNOP	117	69-147		%Rec	1	1/18/2023 12:15:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 1:16:00 PM
Surr: BFB	93.0	37.7-212		%Rec	1	1/18/2023 1:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 1:16:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 1:16:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 1:16:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/18/2023 1:16:00 PM
Surr: 4-Bromofluorobenzene	88.7	70-130		%Rec	1	1/18/2023 1:16:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	730	60		mg/Kg	20	1/17/2023 5:19:03 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-38 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/12/2023 1:40:00 PM

Lab ID: 2301574-004

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 12:26:36 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/18/2023 12:26:36 PM
Surr: DNOP	114	69-147		%Rec	1	1/18/2023 12:26:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/18/2023 1:36:00 PM
Surr: BFB	89.1	37.7-212		%Rec	1	1/18/2023 1:36:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 1:36:00 PM
Toluene	ND	0.049		mg/Kg	1	1/18/2023 1:36:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/18/2023 1:36:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/18/2023 1:36:00 PM
Surr: 4-Bromofluorobenzene	89.0	70-130		%Rec	1	1/18/2023 1:36:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	780	60		mg/Kg	20	1/17/2023 5:31:23 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-39 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/12/2023 1:55:00 PM

Lab ID: 2301574-005

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 12:47:51 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2023 12:47:51 PM
Surr: DNOP	106	69-147		%Rec	1	1/18/2023 12:47:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 1:56:00 PM
Surr: BFB	93.8	37.7-212		%Rec	1	1/18/2023 1:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 1:56:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 1:56:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 1:56:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/18/2023 1:56:00 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	1/18/2023 1:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	100	61		mg/Kg	20	1/17/2023 5:43:44 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-40 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/12/2023 2:00:00 PM

Lab ID: 2301574-006

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 12:58:28 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2023 12:58:28 PM
Surr: DNOP	121	69-147		%Rec	1	1/18/2023 12:58:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 2:15:00 PM
Surr: BFB	93.1	37.7-212		%Rec	1	1/18/2023 2:15:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 2:15:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 2:15:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 2:15:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/18/2023 2:15:00 PM
Surr: 4-Bromofluorobenzene	91.4	70-130		%Rec	1	1/18/2023 2:15:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	ND	61		mg/Kg	20	1/17/2023 5:56:04 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-41 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/13/2023 9:25:00 AM

Lab ID: 2301574-007

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 1:09:06 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2023 1:09:06 PM
Surr: DNOP	101	69-147		%Rec	1	1/18/2023 1:09:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/18/2023 2:35:00 PM
Surr: BFB	90.4	37.7-212		%Rec	1	1/18/2023 2:35:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 2:35:00 PM
Toluene	ND	0.049		mg/Kg	1	1/18/2023 2:35:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/18/2023 2:35:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/18/2023 2:35:00 PM
Surr: 4-Bromofluorobenzene	92.8	70-130		%Rec	1	1/18/2023 2:35:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	79	60		mg/Kg	20	1/17/2023 6:08:25 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: WS23-42 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/13/2023 11:15:00 AM

Lab ID: 2301574-008

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 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	1/18/2023 1:19:48 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/18/2023 1:19:48 PM
Surr: DNOP	82.6	69-147		%Rec	1	1/18/2023 1:19:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 2:55:00 PM
Surr: BFB	97.4	37.7-212		%Rec	1	1/18/2023 2:55:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 2:55:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 2:55:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 2:55:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/18/2023 2:55:00 PM
Surr: 4-Bromofluorobenzene	92.2	70-130		%Rec	1	1/18/2023 2:55:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	170	60		mg/Kg	20	1/17/2023 6:20:46 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-26 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/13/2023 1:25:00 PM

Lab ID: 2301574-009

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	73	9.5		mg/Kg	1	1/18/2023 1:30:26 PM
Motor Oil Range Organics (MRO)	100	47		mg/Kg	1	1/18/2023 1:30:26 PM
Surr: DNOP	72.0	69-147		%Rec	1	1/18/2023 1:30:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/18/2023 3:14:00 PM
Surr: BFB	96.0	37.7-212		%Rec	1	1/18/2023 3:14:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 3:14:00 PM
Toluene	ND	0.047		mg/Kg	1	1/18/2023 3:14:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/18/2023 3:14:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/18/2023 3:14:00 PM
Surr: 4-Bromofluorobenzene	93.1	70-130		%Rec	1	1/18/2023 3:14:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	3500	150		mg/Kg	50	1/18/2023 9:01:33 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301574

Date Reported: 1/25/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-27 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/13/2023 1:30:00 PM

Lab ID: 2301574-010

Matrix: SOIL

Received Date: 1/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	64	10		mg/Kg	1	1/18/2023 2:23:43 PM
Motor Oil Range Organics (MRO)	90	50		mg/Kg	1	1/18/2023 2:23:43 PM
Surr: DNOP	84.2	69-147		%Rec	1	1/18/2023 2:23:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/18/2023 3:34:00 PM
Surr: BFB	95.2	37.7-212		%Rec	1	1/18/2023 3:34:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/18/2023 3:34:00 PM
Toluene	ND	0.048		mg/Kg	1	1/18/2023 3:34:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/18/2023 3:34:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/18/2023 3:34:00 PM
Surr: 4-Bromofluorobenzene	97.4	70-130		%Rec	1	1/18/2023 3:34:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	5100	300		mg/Kg	100	1/24/2023 4:40:20 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: 2301574
25-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72659	SampType: mblk	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 72659	RunNo: 94007
Prep Date: 1/17/2023	Analysis Date: 1/17/2023	SeqNo: 3393988 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-72659	SampType: lcs	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 72659	RunNo: 94007
Prep Date: 1/17/2023	Analysis Date: 1/17/2023	SeqNo: 3393989 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 94.7 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 Quantitative 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#: 2301574
25-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-72651	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72651	RunNo: 94027								
Prep Date: 1/17/2023	Analysis Date: 1/18/2023	SeqNo: 3394468		Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.9	61.9	130			
Surr: DNOP	5.6		5.000		112	69	147			

Sample ID: MB-72651	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72651	RunNo: 94027								
Prep Date: 1/17/2023	Analysis Date: 1/18/2023	SeqNo: 3394470		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	11		10.00		108	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 Quantitative 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#: 2301574

25-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: lcs-72649	SampType: LCS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: LCSS	Batch ID: 72649				RunNo: 94040					
Prep Date: 1/17/2023	Analysis Date: 1/18/2023				SeqNo: 3394797		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	83.7	72.3	137			
Surr: BFB	2000		1000		200	37.7	212			

Sample ID: mb-72649	SampType: MBLK				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: PBS	Batch ID: 72649				RunNo: 94040					
Prep Date: 1/17/2023	Analysis Date: 1/18/2023				SeqNo: 3394799		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		96.0	37.7	212			

Sample ID: 2301574-001ams	SampType: MS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: WS23-30 0-4'	Batch ID: 72649				RunNo: 94040					
Prep Date: 1/17/2023	Analysis Date: 1/18/2023				SeqNo: 3394801		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	24.22	0	89.7	70	130			
Surr: BFB	2000		969.0		209	37.7	212			

Sample ID: 2301574-001amsd	SampType: MSD				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: WS23-30 0-4'	Batch ID: 72649				RunNo: 94040					
Prep Date: 1/17/2023	Analysis Date: 1/18/2023				SeqNo: 3394802		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.70	0	95.4	70	130	8.09	20	
Surr: BFB	2200		988.1		218	37.7	212	0	0	S

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 Quantitative 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#: 2301574

25-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: lcs-72649	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72649			RunNo: 94040						
Prep Date: 1/17/2023	Analysis Date: 1/18/2023			SeqNo: 3395112		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.0	80	120			
Toluene	0.96	0.050	1.000	0	96.1	80	120			
Ethylbenzene	0.95	0.050	1.000	0	94.9	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.5	80	120			
Surr: 4-Bromofluorobenzene	0.95		1.000		94.5	70	130			

Sample ID: mb-72649	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72649			RunNo: 94040						
Prep Date: 1/17/2023	Analysis Date: 1/18/2023			SeqNo: 3395113		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	70	130			

Sample ID: 2301574-002ams	SampType: MS			TestCode: EPA Method 8021B: Volatiles						
Client ID: WS23-34 0-4'	Batch ID: 72649			RunNo: 94040						
Prep Date: 1/17/2023	Analysis Date: 1/18/2023			SeqNo: 3395116		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.024	0.9634	0	92.8	68.8	120			
Toluene	0.90	0.048	0.9634	0	93.7	73.6	124			
Ethylbenzene	0.90	0.048	0.9634	0	93.3	72.7	129			
Xylenes, Total	2.7	0.096	2.890	0	92.7	75.7	126			
Surr: 4-Bromofluorobenzene	0.89		0.9634		92.7	70	130			

Sample ID: 2301574-002amsd	SampType: MSD			TestCode: EPA Method 8021B: Volatiles						
Client ID: WS23-34 0-4'	Batch ID: 72649			RunNo: 94040						
Prep Date: 1/17/2023	Analysis Date: 1/18/2023			SeqNo: 3395117		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.024	0.9615	0	92.6	68.8	120	0.488	20	
Toluene	0.90	0.048	0.9615	0	94.0	73.6	124	0.0526	20	
Ethylbenzene	0.90	0.048	0.9615	0	94.0	72.7	129	0.529	20	
Xylenes, Total	2.7	0.096	2.885	0	93.5	75.7	126	0.716	20	
Surr: 4-Bromofluorobenzene	0.89		0.9615		92.4	70	130	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 Quantitative 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

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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: 2301574

RcptNo: 1

Received By: Juan Rojas 1/17/2023 7:45:00 AM

Completed By: Sean Livingston 1/17/2023 7:50:16 AM

Reviewed By: *KPC*

1.17.23

[Signature]

[Signature]

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? Yes ☒ No ☐

(Note discrepancies on chain of custody)

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? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted? _____

Checked by: *ju-117/23*

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.9	Good	Not Present	Morty		

Chain-of-Custody Record

Client: Devon (Vertex)

Mailing Address: on file

Phone #: _____

Turn-Around Time:

☐ Standard☒ Rush48 hrs

Project Name:

Hackberry to Fed 1 well Pad

Project #:

22E-02537

email or Fax#:

QA/QC Package:

☐ Standard☐ Level 4 (Full Validation)Accreditation: ☐ Az Compliance☐ NELAC☐ Other☐ EDD (Type)

Project Manager:

Chance Dixon

Sampler:

SPC

On Ice:

☒ Yes☐ No

of Coolers:

1

Cooler Temp (including CF):

2.8 ± 0.1 = 2.9 (°C)

Container Type and #

Preservative Type

HEAL No.

Date	Time	Matrix	Sample Name
1/13/23	9:25	Soil	WS23-41 0-4'
1/13/23	11:15		WS23-42 0-4'
1/13/23	13:25		BS23-26 4'
1/13/23	13:30		BS23-27 4'

40g jarice007008009010

Analysis Request

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)
----------------------------	----------------------------	--------------------	--------------------------	---------------	----------------------------------------------------------------------------------	------------	-----------------	---------------------------------

<input checked="" type="checkbox"/> BTEX MTBE / TMB's (8021)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
--------------------------------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------	-------------------------------------

Date: Time: Relinquished by:

1/13/23 14:30

Sally Cartan

Date: Time: Relinquished by:

1/16/23 1900

Columbus

Received by:

Date

Time

Columbus

1/16/23 1000

Received by:

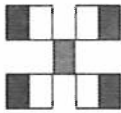
Date

Time

Columbus

1/17/23 745

Remarks:

Direct will DevonWO # 1007101301cc: scartan@vertex.ca

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107



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

January 24, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301631

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 20 sample(s) on 1/18/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-28 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 9:30:00 AM

Lab ID: 2301631-001

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	220	9.4		mg/Kg	1	1/19/2023 7:02:40 PM
Motor Oil Range Organics (MRO)	260	47		mg/Kg	1	1/19/2023 7:02:40 PM
Surr: DNOP	97.1	69-147		%Rec	1	1/19/2023 7:02:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/19/2023 10:21:45 PM
Surr: BFB	99.8	37.7-212		%Rec	1	1/19/2023 10:21:45 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/19/2023 10:21:45 PM
Toluene	ND	0.049		mg/Kg	1	1/19/2023 10:21:45 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/19/2023 10:21:45 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/19/2023 10:21:45 PM
Surr: 4-Bromofluorobenzene	92.9	70-130		%Rec	1	1/19/2023 10:21:45 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	2600	150		mg/Kg	50	1/20/2023 11:24:42 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-29 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 9:35:00 AM

Lab ID: 2301631-002

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	170	9.5		mg/Kg	1	1/19/2023 8:47:31 PM
Motor Oil Range Organics (MRO)	210	47		mg/Kg	1	1/19/2023 8:47:31 PM
Surr: DNOP	107	69-147		%Rec	1	1/19/2023 8:47:31 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/19/2023 11:31:10 PM
Surr: BFB	99.6	37.7-212		%Rec	1	1/19/2023 11:31:10 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/19/2023 11:31:10 PM
Toluene	ND	0.049		mg/Kg	1	1/19/2023 11:31:10 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/19/2023 11:31:10 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/19/2023 11:31:10 PM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	1/19/2023 11:31:10 PM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	3000	150		mg/Kg	50	1/20/2023 11:37:04 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-30 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 9:40:00 AM

Lab ID: 2301631-003

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	310	98		mg/Kg	10	1/19/2023 12:58:00 PM
Motor Oil Range Organics (MRO)	520	490		mg/Kg	10	1/19/2023 12:58:00 PM
Surr: DNOP	0	69-147	S	%Rec	10	1/19/2023 12:58:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/20/2023 12:40:35 AM
Surr: BFB	100	37.7-212		%Rec	1	1/20/2023 12:40:35 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 12:40:35 AM
Toluene	ND	0.048		mg/Kg	1	1/20/2023 12:40:35 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/20/2023 12:40:35 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/20/2023 12:40:35 AM
Surr: 4-Bromofluorobenzene	95.0	70-130		%Rec	1	1/20/2023 12:40:35 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	3100	150		mg/Kg	50	1/20/2023 11:49:24 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-31 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 9:45:00 AM

Lab ID: 2301631-004

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	12	9.8		mg/Kg	1	1/19/2023 5:39:19 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2023 5:39:19 PM
Surr: DNOP	97.6	69-147		%Rec	1	1/19/2023 5:39:19 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 1:03:42 AM
Surr: BFB	100	37.7-212		%Rec	1	1/20/2023 1:03:42 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/20/2023 1:03:42 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 1:03:42 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 1:03:42 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/20/2023 1:03:42 AM
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	1/20/2023 1:03:42 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	2700	150		mg/Kg	50	1/20/2023 12:01:45 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-32 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 9:50:00 AM

Lab ID: 2301631-005

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	25	9.5		mg/Kg	1	1/19/2023 9:29:29 PM
Motor Oil Range Organics (MRO)	56	47		mg/Kg	1	1/19/2023 9:29:29 PM
Surr: DNOP	143	69-147		%Rec	1	1/19/2023 9:29:29 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 1:26:44 AM
Surr: BFB	99.8	37.7-212		%Rec	1	1/20/2023 1:26:44 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/20/2023 1:26:44 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 1:26:44 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 1:26:44 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/20/2023 1:26:44 AM
Surr: 4-Bromofluorobenzene	95.5	70-130		%Rec	1	1/20/2023 1:26:44 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	3400	150		mg/Kg	50	1/20/2023 12:14:05 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-33 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 9:55:00 AM

Lab ID: 2301631-006

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	30	8.7		mg/Kg	1	1/19/2023 5:49:52 PM
Motor Oil Range Organics (MRO)	48	43		mg/Kg	1	1/19/2023 5:49:52 PM
Surr: DNOP	129	69-147		%Rec	1	1/19/2023 5:49:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/20/2023 1:49:52 AM
Surr: BFB	100	37.7-212		%Rec	1	1/20/2023 1:49:52 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 1:49:52 AM
Toluene	ND	0.047		mg/Kg	1	1/20/2023 1:49:52 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/20/2023 1:49:52 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/20/2023 1:49:52 AM
Surr: 4-Bromofluorobenzene	96.2	70-130		%Rec	1	1/20/2023 1:49:52 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	2200	59		mg/Kg	20	1/19/2023 3:42:09 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-34 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 10:00:00 AM

Lab ID: 2301631-007

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	26	9.7		mg/Kg	1	1/19/2023 6:21:07 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2023 6:21:07 PM
Surr: DNOP	108	69-147		%Rec	1	1/19/2023 6:21:07 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 2:13:00 AM
Surr: BFB	98.3	37.7-212		%Rec	1	1/20/2023 2:13:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 2:13:00 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 2:13:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 2:13:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/20/2023 2:13:00 AM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	1/20/2023 2:13:00 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1200	60		mg/Kg	20	1/19/2023 3:54:30 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-35 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 10:05:00 AM

Lab ID: 2301631-008

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	13	9.8		mg/Kg	1	1/19/2023 6:41:54 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2023 6:41:54 PM
Surr: DNOP	104	69-147		%Rec	1	1/19/2023 6:41:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 2:36:02 AM
Surr: BFB	102	37.7-212		%Rec	1	1/20/2023 2:36:02 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 2:36:02 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 2:36:02 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 2:36:02 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/20/2023 2:36:02 AM
Surr: 4-Bromofluorobenzene	97.2	70-130		%Rec	1	1/20/2023 2:36:02 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	730	60		mg/Kg	20	1/19/2023 4:06:51 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-36 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 10:10:00 AM

Lab ID: 2301631-009

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 10:01:09 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2023 10:01:09 PM
Surr: DNOP	124	69-147		%Rec	1	1/19/2023 10:01:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/20/2023 2:59:05 AM
Surr: BFB	101	37.7-212		%Rec	1	1/20/2023 2:59:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 2:59:05 AM
Toluene	ND	0.048		mg/Kg	1	1/20/2023 2:59:05 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/20/2023 2:59:05 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/20/2023 2:59:05 AM
Surr: 4-Bromofluorobenzene	95.8	70-130		%Rec	1	1/20/2023 2:59:05 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1200	60		mg/Kg	20	1/19/2023 4:19:11 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-37 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 10:15:00 AM

Lab ID: 2301631-010

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 10:22:18 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	1/19/2023 10:22:18 PM
Surr: DNOP	106	69-147		%Rec	1	1/19/2023 10:22:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 3:22:10 AM
Surr: BFB	101	37.7-212		%Rec	1	1/20/2023 3:22:10 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 3:22:10 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 3:22:10 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 3:22:10 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/20/2023 3:22:10 AM
Surr: 4-Bromofluorobenzene	96.8	70-130		%Rec	1	1/20/2023 3:22:10 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	490	60		mg/Kg	20	1/19/2023 4:31:32 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-38 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 11:35:00 AM

Lab ID: 2301631-011

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 10:33:00 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/19/2023 10:33:00 PM
Surr: DNOP	115	69-147		%Rec	1	1/19/2023 10:33:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 4:08:24 AM
Surr: BFB	99.7	37.7-212		%Rec	1	1/20/2023 4:08:24 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/20/2023 4:08:24 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 4:08:24 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 4:08:24 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/20/2023 4:08:24 AM
Surr: 4-Bromofluorobenzene	94.8	70-130		%Rec	1	1/20/2023 4:08:24 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1200	60		mg/Kg	20	1/19/2023 4:43:53 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-39 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 11:40:00 AM

Lab ID: 2301631-012

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 10:43:40 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2023 10:43:40 PM
Surr: DNOP	119	69-147		%Rec	1	1/19/2023 10:43:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 4:31:33 AM
Surr: BFB	100	37.7-212		%Rec	1	1/20/2023 4:31:33 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/20/2023 4:31:33 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 4:31:33 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 4:31:33 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/20/2023 4:31:33 AM
Surr: 4-Bromofluorobenzene	94.7	70-130		%Rec	1	1/20/2023 4:31:33 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	2100	60		mg/Kg	20	1/19/2023 4:56:14 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-40 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 11:45:00 AM

Lab ID: 2301631-013

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 10:54:20 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/19/2023 10:54:20 PM
Surr: DNOP	102	69-147		%Rec	1	1/19/2023 10:54:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 4:54:38 AM
Surr: BFB	101	37.7-212		%Rec	1	1/20/2023 4:54:38 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 4:54:38 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 4:54:38 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 4:54:38 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/20/2023 4:54:38 AM
Surr: 4-Bromofluorobenzene	95.2	70-130		%Rec	1	1/20/2023 4:54:38 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1600	60		mg/Kg	20	1/19/2023 5:08:34 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-41 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 11:50:00 AM

Lab ID: 2301631-014

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 11:04:58 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/19/2023 11:04:58 PM
Surr: DNOP	105	69-147		%Rec	1	1/19/2023 11:04:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/20/2023 5:17:45 AM
Surr: BFB	99.6	37.7-212		%Rec	1	1/20/2023 5:17:45 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/20/2023 5:17:45 AM
Toluene	ND	0.050		mg/Kg	1	1/20/2023 5:17:45 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/20/2023 5:17:45 AM
Xylenes, Total	ND	0.10		mg/Kg	1	1/20/2023 5:17:45 AM
Surr: 4-Bromofluorobenzene	94.1	70-130		%Rec	1	1/20/2023 5:17:45 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1200	60		mg/Kg	20	1/19/2023 5:45:37 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-42 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 11:55:00 AM

Lab ID: 2301631-015

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 11:15:36 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/19/2023 11:15:36 PM
Surr: DNOP	79.2	69-147		%Rec	1	1/19/2023 11:15:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/20/2023 5:40:53 AM
Surr: BFB	99.7	37.7-212		%Rec	1	1/20/2023 5:40:53 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 5:40:53 AM
Toluene	ND	0.048		mg/Kg	1	1/20/2023 5:40:53 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/20/2023 5:40:53 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/20/2023 5:40:53 AM
Surr: 4-Bromofluorobenzene	95.0	70-130		%Rec	1	1/20/2023 5:40:53 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	230	60		mg/Kg	20	1/19/2023 5:57:57 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-43 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 12:00:00 PM

Lab ID: 2301631-016

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 11:26:12 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/19/2023 11:26:12 PM
Surr: DNOP	96.8	69-147		%Rec	1	1/19/2023 11:26:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/20/2023 6:03:58 AM
Surr: BFB	101	37.7-212		%Rec	1	1/20/2023 6:03:58 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 6:03:58 AM
Toluene	ND	0.048		mg/Kg	1	1/20/2023 6:03:58 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/20/2023 6:03:58 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/20/2023 6:03:58 AM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	1/20/2023 6:03:58 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	650	60		mg/Kg	20	1/19/2023 6:10:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-44 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 12:05:00 PM

Lab ID: 2301631-017

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	1/19/2023 11:36:48 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/19/2023 11:36:48 PM
Surr: DNOP	109	69-147		%Rec	1	1/19/2023 11:36:48 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/20/2023 6:27:05 AM
Surr: BFB	99.4	37.7-212		%Rec	1	1/20/2023 6:27:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 6:27:05 AM
Toluene	ND	0.049		mg/Kg	1	1/20/2023 6:27:05 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/20/2023 6:27:05 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/20/2023 6:27:05 AM
Surr: 4-Bromofluorobenzene	93.8	70-130		%Rec	1	1/20/2023 6:27:05 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	1600	60		mg/Kg	20	1/19/2023 6:22:39 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-45 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 12:10:00 PM

Lab ID: 2301631-018

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/19/2023 11:47:23 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/19/2023 11:47:23 PM
Surr: DNOP	115	69-147		%Rec	1	1/19/2023 11:47:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/20/2023 6:50:10 AM
Surr: BFB	99.4	37.7-212		%Rec	1	1/20/2023 6:50:10 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 6:50:10 AM
Toluene	ND	0.048		mg/Kg	1	1/20/2023 6:50:10 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/20/2023 6:50:10 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/20/2023 6:50:10 AM
Surr: 4-Bromofluorobenzene	94.8	70-130		%Rec	1	1/20/2023 6:50:10 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	2300	150		mg/Kg	50	1/20/2023 12:26:26 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-46 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 12:15:00 PM

Lab ID: 2301631-019

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	9.6	9.1		mg/Kg	1	1/19/2023 11:57:57 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/19/2023 11:57:57 PM
Surr: DNOP	122	69-147		%Rec	1	1/19/2023 11:57:57 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/20/2023 7:13:14 AM
Surr: BFB	100	37.7-212		%Rec	1	1/20/2023 7:13:14 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/20/2023 7:13:14 AM
Toluene	ND	0.050		mg/Kg	1	1/20/2023 7:13:14 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/20/2023 7:13:14 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/20/2023 7:13:14 AM
Surr: 4-Bromofluorobenzene	96.1	70-130		%Rec	1	1/20/2023 7:13:14 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	910	60		mg/Kg	20	1/19/2023 6:47:20 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301631

Date Reported: 1/24/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-47 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/16/2023 12:20:00 PM

Lab ID: 2301631-020

Matrix: SOIL

Received Date: 1/18/2023 7:20:00 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	1/20/2023 12:08:30 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/20/2023 12:08:30 AM
Surr: DNOP	75.8	69-147		%Rec	1	1/20/2023 12:08:30 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/20/2023 7:36:19 AM
Surr: BFB	98.7	37.7-212		%Rec	1	1/20/2023 7:36:19 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/20/2023 7:36:19 AM
Toluene	ND	0.048		mg/Kg	1	1/20/2023 7:36:19 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/20/2023 7:36:19 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/20/2023 7:36:19 AM
Surr: 4-Bromofluorobenzene	93.9	70-130		%Rec	1	1/20/2023 7:36:19 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	510	60		mg/Kg	20	1/19/2023 6:59:40 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 2301631
24-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72699	SampType: mblk	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 72699	RunNo: 94086
Prep Date: 1/18/2023	Analysis Date: 1/19/2023	SeqNo: 3396794 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-72699	SampType: lcs	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 72699	RunNo: 94086
Prep Date: 1/18/2023	Analysis Date: 1/19/2023	SeqNo: 3396795 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 96.1 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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301631

24-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-72696	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72696		RunNo: 94064							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3395763		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.8	61.9	130			
Surr: DNOP	6.4		5.000		127	69	147			

Sample ID: MB-72696	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72696		RunNo: 94064							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3395767		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	12		10.00		123	69	147			

Sample ID: 2301631-001AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BS23-28 4'	Batch ID: 72696		RunNo: 94064							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3396919		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	86	8.6	43.22	218.7	-308	54.2	135			S
Surr: DNOP	3.9		4.322		91.4	69	147			

Sample ID: 2301631-001AMSD	SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BS23-28 4'	Batch ID: 72696		RunNo: 94064							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3396920		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	130	9.8	48.97	218.7	-177	54.2	135	42.4	29.2	RS
Surr: DNOP	6.1		4.897		125	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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301631

24-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: 2301631-001ams	SampType: MS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: BS23-28 4'	Batch ID: 72692	RunNo: 94070								
Prep Date: 1/18/2023	Analysis Date: 1/19/2023	SeqNo: 3396115	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.53	0	87.8	70	130			
Surr: BFB	2000		981.4		205	37.7	212			

Sample ID: 2301631-001amsd	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: BS23-28 4'	Batch ID: 72692	RunNo: 94070								
Prep Date: 1/18/2023	Analysis Date: 1/19/2023	SeqNo: 3396117	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.9	24.34	0	92.5	70	130	4.50	20	
Surr: BFB	2000		973.7		207	37.7	212	0	0	

Sample ID: lcs-72692	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: LCSS	Batch ID: 72692	RunNo: 94070								
Prep Date: 1/18/2023	Analysis Date: 1/19/2023	SeqNo: 3396143	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	84.1	72.3	137			
Surr: BFB	1900		1000		195	37.7	212			

Sample ID: mb-72692	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: PBS	Batch ID: 72692	RunNo: 94070								
Prep Date: 1/18/2023	Analysis Date: 1/19/2023	SeqNo: 3396144	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	37.7	212			

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 Quantitative 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#: 2301631

24-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: 2301631-002ams	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-29 4'	Batch ID: 72692		RunNo: 94070							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3396165		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.024	0.9785	0	92.1	68.8	120			
Toluene	0.94	0.049	0.9785	0.01681	94.2	73.6	124			
Ethylbenzene	0.95	0.049	0.9785	0	97.4	72.7	129			
Xylenes, Total	2.8	0.098	2.935	0.02825	95.6	75.7	126			
Surr: 4-Bromofluorobenzene	0.96		0.9785		97.8	70	130			

Sample ID: 2301631-002amsd	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-29 4'	Batch ID: 72692		RunNo: 94070							
Prep Date: 1/18/2023	Analysis Date: 1/20/2023		SeqNo: 3396166		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	0.9823	0	93.3	68.8	120	1.75	20	
Toluene	0.97	0.049	0.9823	0.01681	97.4	73.6	124	3.67	20	
Ethylbenzene	0.99	0.049	0.9823	0	101	72.7	129	3.91	20	
Xylenes, Total	2.9	0.098	2.947	0.02825	99.0	75.7	126	3.81	20	
Surr: 4-Bromofluorobenzene	0.96		0.9823		97.4	70	130	0	0	

Sample ID: LCS-72692	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 72692		RunNo: 94070							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3396187		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	80	120			
Toluene	0.92	0.050	1.000	0	91.9	80	120			
Ethylbenzene	0.93	0.050	1.000	0	93.3	80	120			
Xylenes, Total	2.8	0.10	3.000	0	93.3	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	70	130			

Sample ID: mb-72692	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 72692		RunNo: 94070							
Prep Date: 1/18/2023	Analysis Date: 1/19/2023		SeqNo: 3396188		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	0.98		1.000		97.7	70	130			

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 Quantitative 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

Sample Log-In Check List

Client Name: **Vertex Resources
Services, Inc.**

Work Order Number: 2301631

RcptNo: 1

Received By: **Juan Rojas**

1/18/2023 7:20:00 AM

Harry

Completed By: **Cheyenne Cason**

1/18/2023 7:50:31 AM

Chad

Reviewed By:

Jan 18/23

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 <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/> |
| 4. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/> |
| 5. Sample(s) in proper container(s)? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 6. Sufficient sample volume for indicated test(s)? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 7. Are samples (except VOA and ONG) properly preserved? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 8. Was preservative added to bottles? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | NA <input type="checkbox"/> |
| 9. Received at least 1 vial with headspace $<1/4"$ for AQ VOA? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| 10. Were any sample containers received broken? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> | |
| 11. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 12. Are matrices correctly identified on Chain of Custody? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 13. Is it clear what analyses were requested? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| 14. Were all holding times able to be met?
(If no, notify customer for authorization.) | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
- # of preserved bottles checked for pH: (<2)

Adjusted? Adjusted?

Checked by: Checked by:

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by:

1-18-23

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: _____

16. Additional remarks:

Client Information not complete.

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.0	Good	Not Present	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☒ Rush48hr

Project Name:

Hackberry 6 Fed 1 Well Pad

Project #:

22E-02537

Project Manager:

Chance Dixon

Sampler:

SPCOn Ice: ☐ Yes ☐ No# of Coolers: 1Cooler Temp (including CF): 2.9 to 3.0°C

Container Type and #

Preservative Type

HEAL No.

2301631013014015016017018019020021022023024025026027028029030031032033034035036037038039040041042043044045046047048049050051052053054055056057058059060061062063064065066067068069070071072073074075076077078079080081082083084085086087088089090091092093094095096097098099100101102103104105106107108109110111112113114115116117118119120121122123124125126127128129130131132133134135136137138139140141142143144145146147148149150151152153154155156157158159160161162163164165166167168169170171172173174175176177178179180181182183184185186187188189190191192193194195196197198199200201202203204205206207208209210211212213214215216217218219220221222223224225226227228229230231232233234235236237238239240241242243244245246247248249250251252253254255256257258259260261262263264265266267268269270271272273274275276277278279280281282283284285286287288289290291292293294295296297298299300301302303304305306307308309310311312313314



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

January 26, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX:

RE: Hackberry 6 Feb 1 Well Pad

OrderNo.: 2301711

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 10 sample(s) on 1/19/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-48 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:37:00 AM

Lab ID: 2301711-001

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	33	9.9		mg/Kg	1	1/23/2023 3:31:33 PM
Motor Oil Range Organics (MRO)	64	50		mg/Kg	1	1/23/2023 3:31:33 PM
Surr: DNOP	90.2	69-147		%Rec	1	1/23/2023 3:31:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 6:28:27 AM
Surr: BFB	99.1	37.7-212		%Rec	1	1/21/2023 6:28:27 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 6:28:27 AM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 6:28:27 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 6:28:27 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/21/2023 6:28:27 AM
Surr: 4-Bromofluorobenzene	94.1	70-130		%Rec	1	1/21/2023 6:28:27 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	1100	60		mg/Kg	20	1/20/2023 9:17:21 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-49 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:37:00 AM

Lab ID: 2301711-002

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	65	9.8		mg/Kg	1	1/23/2023 5:46:17 PM
Motor Oil Range Organics (MRO)	100	49		mg/Kg	1	1/23/2023 5:46:17 PM
Surr: DNOP	105	69-147		%Rec	1	1/23/2023 5:46:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 7:37:51 AM
Surr: BFB	99.2	37.7-212		%Rec	1	1/21/2023 7:37:51 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 7:37:51 AM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 7:37:51 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 7:37:51 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/21/2023 7:37:51 AM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	1/21/2023 7:37:51 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	1400	60		mg/Kg	20	1/20/2023 9:54:22 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-50 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:40:00 AM

Lab ID: 2301711-003

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	52	9.8		mg/Kg	1	1/23/2023 6:17:35 PM
Motor Oil Range Organics (MRO)	96	49		mg/Kg	1	1/23/2023 6:17:35 PM
Surr: DNOP	99.8	69-147		%Rec	1	1/23/2023 6:17:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 8:00:56 AM
Surr: BFB	98.7	37.7-212		%Rec	1	1/21/2023 8:00:56 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 8:00:56 AM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 8:00:56 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 8:00:56 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/21/2023 8:00:56 AM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	1/21/2023 8:00:56 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	1600	60		mg/Kg	20	1/20/2023 10:06:43 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-51 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:40:00 AM

Lab ID: 2301711-004

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	39	9.8		mg/Kg	1	1/23/2023 6:48:45 PM
Motor Oil Range Organics (MRO)	85	49		mg/Kg	1	1/23/2023 6:48:45 PM
Surr: DNOP	91.0	69-147		%Rec	1	1/23/2023 6:48:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/21/2023 8:24:01 AM
Surr: BFB	98.0	37.7-212		%Rec	1	1/21/2023 8:24:01 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 8:24:01 AM
Toluene	ND	0.050		mg/Kg	1	1/21/2023 8:24:01 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/21/2023 8:24:01 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/21/2023 8:24:01 AM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	1/21/2023 8:24:01 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	1600	60		mg/Kg	20	1/20/2023 10:19:04 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-52 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:45:00 AM

Lab ID: 2301711-005

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	76	9.4		mg/Kg	1	1/23/2023 7:20:04 PM
Motor Oil Range Organics (MRO)	160	47		mg/Kg	1	1/23/2023 7:20:04 PM
Surr: DNOP	94.4	69-147		%Rec	1	1/23/2023 7:20:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 8:47:04 AM
Surr: BFB	97.7	37.7-212		%Rec	1	1/21/2023 8:47:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/21/2023 8:47:04 AM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 8:47:04 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 8:47:04 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/21/2023 8:47:04 AM
Surr: 4-Bromofluorobenzene	93.0	70-130		%Rec	1	1/21/2023 8:47:04 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	3100	150		mg/Kg	50	1/21/2023 11:27:28 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-53 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:45:00 AM

Lab ID: 2301711-006

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	88	9.5		mg/Kg	1	1/23/2023 4:26:49 PM
Motor Oil Range Organics (MRO)	160	47		mg/Kg	1	1/23/2023 4:26:49 PM
Surr: DNOP	91.5	69-147		%Rec	1	1/23/2023 4:26:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/21/2023 9:10:08 AM
Surr: BFB	99.9	37.7-212		%Rec	1	1/21/2023 9:10:08 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 9:10:08 AM
Toluene	ND	0.050		mg/Kg	1	1/21/2023 9:10:08 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/21/2023 9:10:08 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/21/2023 9:10:08 AM
Surr: 4-Bromofluorobenzene	95.9	70-130		%Rec	1	1/21/2023 9:10:08 AM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	2600	150		mg/Kg	50	1/21/2023 11:39:49 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-54 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:50:00 AM

Lab ID: 2301711-007

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	32	9.8		mg/Kg	1	1/23/2023 3:33:44 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/23/2023 3:33:44 PM
Surr: DNOP	102	69-147		%Rec	1	1/23/2023 3:33:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 10:42:34 AM
Surr: BFB	99.0	37.7-212		%Rec	1	1/21/2023 10:42:34 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 10:42:34 AM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 10:42:34 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 10:42:34 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/21/2023 10:42:34 AM
Surr: 4-Bromofluorobenzene	95.6	70-130		%Rec	1	1/21/2023 10:42:34 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	2200	60		mg/Kg	20	1/20/2023 10:56:06 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-55 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:50:00 AM

Lab ID: 2301711-008

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/23/2023 3:57:16 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/23/2023 3:57:16 PM
Surr: DNOP	98.8	69-147		%Rec	1	1/23/2023 3:57:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 11:51:55 AM
Surr: BFB	101	37.7-212		%Rec	1	1/21/2023 11:51:55 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/21/2023 11:51:55 AM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 11:51:55 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 11:51:55 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/21/2023 11:51:55 AM
Surr: 4-Bromofluorobenzene	97.7	70-130		%Rec	1	1/21/2023 11:51:55 AM
EPA METHOD 300.0: ANIONS						Analyst: JTT
Chloride	1100	60		mg/Kg	20	1/20/2023 11:33:08 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-56 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:54:00 AM

Lab ID: 2301711-009

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	230	9.9		mg/Kg	1	1/23/2023 7:52:46 PM
Motor Oil Range Organics (MRO)	310	50		mg/Kg	1	1/23/2023 7:52:46 PM
Surr: DNOP	116	69-147		%Rec	1	1/23/2023 7:52:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 1:01:34 PM
Surr: BFB	101	37.7-212		%Rec	1	1/21/2023 1:01:34 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/21/2023 1:01:34 PM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 1:01:34 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 1:01:34 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/21/2023 1:01:34 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	1/21/2023 1:01:34 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	3700	150		mg/Kg	50	1/21/2023 11:52:10 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301711

Date Reported: 1/26/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-57 4'

Project: Hackberry 6 Feb 1 Well Pad

Collection Date: 1/17/2023 9:55:00 AM

Lab ID: 2301711-010

Matrix: SOIL

Received Date: 1/19/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	290	9.6		mg/Kg	1	1/24/2023 5:08:10 PM
Motor Oil Range Organics (MRO)	440	48		mg/Kg	1	1/24/2023 5:08:10 PM
Surr: DNOP	124	69-147		%Rec	1	1/24/2023 5:08:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/21/2023 1:24:47 PM
Surr: BFB	101	37.7-212		%Rec	1	1/21/2023 1:24:47 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/21/2023 1:24:47 PM
Toluene	ND	0.049		mg/Kg	1	1/21/2023 1:24:47 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/21/2023 1:24:47 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/21/2023 1:24:47 PM
Surr: 4-Bromofluorobenzene	96.3	70-130		%Rec	1	1/21/2023 1:24:47 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	7100	300		mg/Kg	100	1/22/2023 12:04:31 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 Quantitative 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#: 2301711
26-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Feb 1 Well Pad

Sample ID: MB-72729	SampType: MBLK	TestCode: EPA Method 300.0: Anions
Client ID: PBS	Batch ID: 72729	RunNo: 94097
Prep Date: 1/20/2023	Analysis Date: 1/20/2023	SeqNo: 3397311 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	ND	1.5

Sample ID: LCS-72729	SampType: LCS	TestCode: EPA Method 300.0: Anions
Client ID: LCSS	Batch ID: 72729	RunNo: 94097
Prep Date: 1/20/2023	Analysis Date: 1/20/2023	SeqNo: 3397312 Units: mg/Kg
Analyte	Result	PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual
Chloride	14	1.5 15.00 0 94.2 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 Quantitative 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#: 2301711

26-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Feb 1 Well Pad

Sample ID: LCS-72738	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72738		RunNo: 94119							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3398450		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.9	61.9	130			
Surr: DNOP	5.6		5.000		111	69	147			

Sample ID: MB-72738	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72738		RunNo: 94119							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3398451		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	9.8		10.00		97.6	69	147			

Sample ID: 2301711-007AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BS23-54 4'	Batch ID: 72726		RunNo: 94119							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3399089		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	55	9.7	48.45	31.80	47.0	54.2	135			S
Surr: DNOP	5.2		4.845		107	69	147			

Sample ID: 2301711-007AMSD	SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BS23-54 4'	Batch ID: 72726		RunNo: 94119							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3399090		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	9.7	48.45	31.80	49.4	54.2	135	2.13	29.2	S
Surr: DNOP	4.7		4.845		96.8	69	147	0	0	

Sample ID: LCS-72726	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72726		RunNo: 94119							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3399135		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	41	10	50.00	0	83.0	61.9	130			
Surr: DNOP	5.4		5.000		107	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 Quantitative 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#: 2301711

26-Jan-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Feb 1 Well Pad

Sample ID: MB-72726	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72726	RunNo: 94119								
Prep Date: 1/20/2023	Analysis Date: 1/23/2023	SeqNo: 3399139	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	9.9		10.00		98.5	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 Quantitative 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#: 2301711

26-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Feb 1 Well Pad

Sample ID: ics-72715	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: 72715			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/20/2023			SeqNo: 3397800		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.9	72.3	137			
Surr: BFB	2000		1000		200	37.7	212			

Sample ID: ics-72717	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch ID: 72717			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/21/2023			SeqNo: 3397801		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	5.0	25.00	0	80.0	72.3	137			
Surr: BFB	1900		1000		191	37.7	212			

Sample ID: mb-72715	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch ID: 72715			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/20/2023			SeqNo: 3397803		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		102	37.7	212			

Sample ID: mb-72717	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch ID: 72717			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/21/2023			SeqNo: 3397804		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	37.7	212			

Sample ID: 2301711-007ams	SampType: MS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: BS23-54 4'	Batch ID: 72717			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/21/2023			SeqNo: 3397850		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.32	0	86.0	70	130			
Surr: BFB	2000		972.8		202	37.7	212			

Sample ID: 2301711-007amsd	SampType: MSD			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: BS23-54 4'	Batch ID: 72717			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/21/2023			SeqNo: 3397851		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

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 Quantitative 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#: 2301711
26-Jan-23

Client: Vertex Resources Services, Inc.
Project: Hackberry 6 Feb 1 Well Pad

Sample ID: 2301711-007amsd		SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range						
Client ID: BS23-54 4'		Batch ID: 72717		RunNo: 94108						
Prep Date: 1/19/2023		Analysis Date: 1/21/2023		SeqNo: 3397851		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	24.80	0	92.1	70	130	8.84	20	
Surr: BFB	2000		992.1		205	37.7	212	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 Quantitative 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#: 2301711

26-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Feb 1 Well Pad

Sample ID: LCS-72715	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72715			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/20/2023			SeqNo: 3397872			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	88.4	80	120			
Toluene	0.93	0.050	1.000	0	92.7	80	120			
Ethylbenzene	0.93	0.050	1.000	0	92.9	80	120			
Xylenes, Total	2.8	0.10	3.000	0	93.2	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.2	70	130			

Sample ID: LCS-72717	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72717			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/21/2023			SeqNo: 3397873			Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.025	1.000	0	89.1	80	120			
Toluene	0.93	0.050	1.000	0	92.9	80	120			
Ethylbenzene	0.93	0.050	1.000	0	93.1	80	120			
Xylenes, Total	2.8	0.10	3.000	0	92.2	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.2	70	130			

Sample ID: mb-72715	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72715			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/20/2023			SeqNo: 3397875			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	0.96		1.000		96.4	70	130			

Sample ID: mb-72717	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72717			RunNo: 94108						
Prep Date: 1/19/2023	Analysis Date: 1/21/2023			SeqNo: 3397876			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	0.97		1.000		96.7	70	130			

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 Quantitative 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#: 2301711

26-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Feb 1 Well Pad

Sample ID: 2301711-008ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BS23-55 4'	Batch ID: 72717	RunNo: 94108								
Prep Date: 1/19/2023	Analysis Date: 1/21/2023	SeqNo: 3397918	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	0.9950	0	99.7	68.8	120			
Toluene	1.1	0.050	0.9950	0.01657	105	73.6	124			
Ethylbenzene	1.1	0.050	0.9950	0	108	72.7	129			
Xylenes, Total	3.2	0.10	2.985	0.02814	106	75.7	126			
Surr: 4-Bromofluorobenzene	0.99		0.9950		99.4	70	130			

Sample ID: 2301711-008amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: BS23-55 4'	Batch ID: 72717	RunNo: 94108								
Prep Date: 1/19/2023	Analysis Date: 1/21/2023	SeqNo: 3397919	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	0.9823	0	97.2	68.8	120	3.86	20	
Toluene	1.0	0.049	0.9823	0.01657	102	73.6	124	3.49	20	
Ethylbenzene	1.0	0.049	0.9823	0	105	72.7	129	3.86	20	
Xylenes, Total	3.1	0.098	2.947	0.02814	104	75.7	126	3.40	20	
Surr: 4-Bromofluorobenzene	0.95		0.9823		96.6	70	130	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 Quantitative 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

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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: 2301711

RcptNo: 1

Received By: Juan Rojas

1/19/2023 7:20:00 AM

[Signature]

Completed By: Sean Livingston

1/19/2023 8:11:30 AM

[Signature]

Reviewed By: *[Signature]* 1/19-23

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 $>0^{\circ}\text{C}$ 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: _____

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:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Not Present	Morty		
2	2.3	Good	Not Present	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 48 hour

Project Name:

Hackberry 6 Feb 1 wellpad

Project #:

22E-02537

Project Manager:

Chance Dixon

Sampler:

On Ice: ☒ Yes ☐ No# of Coolers: 2Cooler Temp (including CF): See Remarks

Container

Type and #

4oz jar

Preservative

Type

ice

HEAL No.

230171

Date

Time

Matrix

Sample Name

1/17/239:37SoilBS23-48 4'1/17/239:37BS23-49 4'1/17/239:40BS23-50 4'1/17/239:40BS23-51 4'1/17/239:45BS23-52 4'1/17/239:45BS23-53 4'1/17/239:50BS23-54 4'1/17/239:50BS23-55 4'1/17/239:54BS23-56 4'1/17/239:55BS23-57 4'

Relinquished by:

Date:

Time:

Relinquished by:

Date:

Time:

Received by:

Via:

Date:

Time:

Received by:

Via:

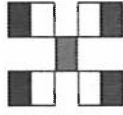
Date:

Time:

Remarks:

1-2-0=1.2

2-3-0=2.3

HALL ENVIRONMENTAL
ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

TPH:8015D(GRO / DRO / MRO)

8081 Pesticides/8082 PCB's

EDB (Method 504.1)

PAHs by 8310 or 8270SIMS

RCRA 8 Metals

Cl⁻, Br⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

BTEX / MTBE / TMB's (8021)

✓

✓

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✓

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

January 30, 2023

Chance Dixon

Vertex Resources Services, Inc.

3101 Boyd Drive

Carlsbad, NM 88220

TEL: (505) 506-0040

FAX

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301764

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 18 sample(s) on 1/20/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-58 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:25:00 AM

Lab ID: 2301764-001

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	180	19		mg/Kg	2	1/24/2023 3:20:43 PM
Motor Oil Range Organics (MRO)	340	97		mg/Kg	2	1/24/2023 3:20:43 PM
Surr: DNOP	117	69-147		%Rec	2	1/24/2023 3:20:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/23/2023 11:41:57 AM
Surr: BFB	104	37.7-212		%Rec	1	1/23/2023 11:41:57 AM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 11:41:57 AM
Toluene	ND	0.047		mg/Kg	1	1/23/2023 11:41:57 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/23/2023 11:41:57 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/23/2023 11:41:57 AM
Surr: 4-Bromofluorobenzene	96.5	70-130		%Rec	1	1/23/2023 11:41:57 AM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	9700	300		mg/Kg	100	1/23/2023 10:38:35 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-59 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:29:00 AM

Lab ID: 2301764-002

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	170	10		mg/Kg	1	1/24/2023 1:58:37 PM
Motor Oil Range Organics (MRO)	240	50		mg/Kg	1	1/24/2023 1:58:37 PM
Surr: DNOP	109	69-147		%Rec	1	1/24/2023 1:58:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/23/2023 12:52:17 PM
Surr: BFB	107	37.7-212		%Rec	1	1/23/2023 12:52:17 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 12:52:17 PM
Toluene	ND	0.048		mg/Kg	1	1/23/2023 12:52:17 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/23/2023 12:52:17 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/23/2023 12:52:17 PM
Surr: 4-Bromofluorobenzene	99.6	70-130		%Rec	1	1/23/2023 12:52:17 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	4500	150		mg/Kg	50	1/23/2023 10:51:27 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-60 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:30:00 AM

Lab ID: 2301764-003

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	150	9.7		mg/Kg	1	1/24/2023 2:12:38 PM
Motor Oil Range Organics (MRO)	240	49		mg/Kg	1	1/24/2023 2:12:38 PM
Surr: DNOP	106	69-147		%Rec	1	1/24/2023 2:12:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/23/2023 2:02:42 PM
Surr: BFB	105	37.7-212		%Rec	1	1/23/2023 2:02:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/23/2023 2:02:42 PM
Toluene	ND	0.046		mg/Kg	1	1/23/2023 2:02:42 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/23/2023 2:02:42 PM
Xylenes, Total	ND	0.092		mg/Kg	1	1/23/2023 2:02:42 PM
Surr: 4-Bromofluorobenzene	96.9	70-130		%Rec	1	1/23/2023 2:02:42 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	2200	60		mg/Kg	20	1/21/2023 1:12:53 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-61 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:33:00 AM

Lab ID: 2301764-004

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	70	10		mg/Kg	1	1/24/2023 5:00:11 PM
Motor Oil Range Organics (MRO)	100	50		mg/Kg	1	1/24/2023 5:00:11 PM
Surr: DNOP	121	69-147		%Rec	1	1/24/2023 5:00:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/23/2023 2:26:11 PM
Surr: BFB	106	37.7-212		%Rec	1	1/23/2023 2:26:11 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/23/2023 2:26:11 PM
Toluene	ND	0.050		mg/Kg	1	1/23/2023 2:26:11 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/23/2023 2:26:11 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/23/2023 2:26:11 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	1/23/2023 2:26:11 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	8100	300		mg/Kg	100	1/23/2023 11:04:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-62 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:35:00 AM

Lab ID: 2301764-005

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	310	50		mg/Kg	5	1/24/2023 5:27:55 PM
Motor Oil Range Organics (MRO)	460	250		mg/Kg	5	1/24/2023 5:27:55 PM
Surr: DNOP	107	69-147		%Rec	5	1/24/2023 5:27:55 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/23/2023 2:49:43 PM
Surr: BFB	104	37.7-212		%Rec	1	1/23/2023 2:49:43 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 2:49:43 PM
Toluene	ND	0.047		mg/Kg	1	1/23/2023 2:49:43 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/23/2023 2:49:43 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/23/2023 2:49:43 PM
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	1/23/2023 2:49:43 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	4200	150		mg/Kg	50	1/23/2023 11:17:10 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-63 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:36:00 AM

Lab ID: 2301764-006

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	190	17		mg/Kg	2	1/24/2023 3:06:43 PM
Motor Oil Range Organics (MRO)	300	86		mg/Kg	2	1/24/2023 3:06:43 PM
Surr: DNOP	121	69-147		%Rec	2	1/24/2023 3:06:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/23/2023 3:13:14 PM
Surr: BFB	105	37.7-212		%Rec	1	1/23/2023 3:13:14 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 3:13:14 PM
Toluene	ND	0.047		mg/Kg	1	1/23/2023 3:13:14 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/23/2023 3:13:14 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/23/2023 3:13:14 PM
Surr: 4-Bromofluorobenzene	96.6	70-130		%Rec	1	1/23/2023 3:13:14 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	8700	600		mg/Kg	200	1/23/2023 11:30:02 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-64 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:39:00 AM

Lab ID: 2301764-007

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	56	9.7		mg/Kg	1	1/24/2023 1:44:45 PM
Motor Oil Range Organics (MRO)	81	48		mg/Kg	1	1/24/2023 1:44:45 PM
Surr: DNOP	110	69-147		%Rec	1	1/24/2023 1:44:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/23/2023 3:36:42 PM
Surr: BFB	106	37.7-212		%Rec	1	1/23/2023 3:36:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/23/2023 3:36:42 PM
Toluene	ND	0.050		mg/Kg	1	1/23/2023 3:36:42 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/23/2023 3:36:42 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/23/2023 3:36:42 PM
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	1/23/2023 3:36:42 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	17000	600		mg/Kg	200	1/23/2023 11:42:53 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-65 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:39:00 AM

Lab ID: 2301764-008

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	120	9.8		mg/Kg	1	1/24/2023 1:50:54 PM
Motor Oil Range Organics (MRO)	150	49		mg/Kg	1	1/24/2023 1:50:54 PM
Surr: DNOP	120	69-147		%Rec	1	1/24/2023 1:50:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/23/2023 4:00:09 PM
Surr: BFB	108	37.7-212		%Rec	1	1/23/2023 4:00:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/23/2023 4:00:09 PM
Toluene	ND	0.046		mg/Kg	1	1/23/2023 4:00:09 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/23/2023 4:00:09 PM
Xylenes, Total	ND	0.092		mg/Kg	1	1/23/2023 4:00:09 PM
Surr: 4-Bromofluorobenzene	99.3	70-130		%Rec	1	1/23/2023 4:00:09 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	12000	600		mg/Kg	200	1/23/2023 11:55:45 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-66 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:45:00 AM

Lab ID: 2301764-009

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	160	9.6		mg/Kg	1	1/24/2023 2:01:37 PM
Motor Oil Range Organics (MRO)	220	48		mg/Kg	1	1/24/2023 2:01:37 PM
Surr: DNOP	108	69-147		%Rec	1	1/24/2023 2:01:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/23/2023 4:23:37 PM
Surr: BFB	104	37.7-212		%Rec	1	1/23/2023 4:23:37 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 4:23:37 PM
Toluene	ND	0.048		mg/Kg	1	1/23/2023 4:23:37 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/23/2023 4:23:37 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/23/2023 4:23:37 PM
Surr: 4-Bromofluorobenzene	95.2	70-130		%Rec	1	1/23/2023 4:23:37 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	6800	300		mg/Kg	100	1/23/2023 12:08:36 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-67 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:43:00 AM

Lab ID: 2301764-010

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	390	48		mg/Kg	5	1/24/2023 2:33:27 PM
Motor Oil Range Organics (MRO)	670	240		mg/Kg	5	1/24/2023 2:33:27 PM
Surr: DNOP	143	69-147		%Rec	5	1/24/2023 2:33:27 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/23/2023 4:47:08 PM
Surr: BFB	106	37.7-212		%Rec	1	1/23/2023 4:47:08 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/23/2023 4:47:08 PM
Toluene	ND	0.047		mg/Kg	1	1/23/2023 4:47:08 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/23/2023 4:47:08 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/23/2023 4:47:08 PM
Surr: 4-Bromofluorobenzene	97.8	70-130		%Rec	1	1/23/2023 4:47:08 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	5900	300		mg/Kg	100	1/23/2023 12:21:27 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-68 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:50:00 AM

Lab ID: 2301764-011

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	330	47		mg/Kg	5	1/24/2023 2:44:10 PM
Motor Oil Range Organics (MRO)	590	240		mg/Kg	5	1/24/2023 2:44:10 PM
Surr: DNOP	144	69-147		%Rec	5	1/24/2023 2:44:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/23/2023 5:34:01 PM
Surr: BFB	102	37.7-212		%Rec	1	1/23/2023 5:34:01 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/23/2023 5:34:01 PM
Toluene	ND	0.049		mg/Kg	1	1/23/2023 5:34:01 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/23/2023 5:34:01 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/23/2023 5:34:01 PM
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	1	1/23/2023 5:34:01 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	5200	300		mg/Kg	100	1/23/2023 12:34:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-69 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:51:00 AM

Lab ID: 2301764-012

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	440	49		mg/Kg	5	1/25/2023 4:00:20 PM
Motor Oil Range Organics (MRO)	510	240		mg/Kg	5	1/25/2023 4:00:20 PM
Surr: DNOP	118	69-147		%Rec	5	1/25/2023 4:00:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/23/2023 5:57:27 PM
Surr: BFB	104	37.7-212		%Rec	1	1/23/2023 5:57:27 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 5:57:27 PM
Toluene	ND	0.048		mg/Kg	1	1/23/2023 5:57:27 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/23/2023 5:57:27 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/23/2023 5:57:27 PM
Surr: 4-Bromofluorobenzene	96.7	70-130		%Rec	1	1/23/2023 5:57:27 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	4900	150		mg/Kg	50	1/23/2023 1:12:53 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-70 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:54:00 AM

Lab ID: 2301764-013

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	540	98		mg/Kg	10	1/24/2023 4:04:54 PM
Motor Oil Range Organics (MRO)	890	490		mg/Kg	10	1/24/2023 4:04:54 PM
Surr: DNOP	0	69-147	S	%Rec	10	1/24/2023 4:04:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/23/2023 6:20:48 PM
Surr: BFB	105	37.7-212		%Rec	1	1/23/2023 6:20:48 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/23/2023 6:20:48 PM
Toluene	ND	0.046		mg/Kg	1	1/23/2023 6:20:48 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/23/2023 6:20:48 PM
Xylenes, Total	ND	0.091		mg/Kg	1	1/23/2023 6:20:48 PM
Surr: 4-Bromofluorobenzene	97.1	70-130		%Rec	1	1/23/2023 6:20:48 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	3300	150		mg/Kg	50	1/23/2023 1:25:46 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-71 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:54:00 AM

Lab ID: 2301764-014

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	390	97		mg/Kg	10	1/24/2023 3:54:16 PM
Motor Oil Range Organics (MRO)	690	480		mg/Kg	10	1/24/2023 3:54:16 PM
Surr: DNOP	0	69-147	S	%Rec	10	1/24/2023 3:54:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/23/2023 6:44:10 PM
Surr: BFB	102	37.7-212		%Rec	1	1/23/2023 6:44:10 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/23/2023 6:44:10 PM
Toluene	ND	0.049		mg/Kg	1	1/23/2023 6:44:10 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/23/2023 6:44:10 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/23/2023 6:44:10 PM
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	1/23/2023 6:44:10 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	2400	150		mg/Kg	50	1/23/2023 1:38:38 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-72 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 8:50:00 AM

Lab ID: 2301764-015

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	410	49		mg/Kg	5	1/24/2023 2:43:06 PM
Motor Oil Range Organics (MRO)	610	250		mg/Kg	5	1/24/2023 2:43:06 PM
Surr: DNOP	104	69-147		%Rec	5	1/24/2023 2:43:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/23/2023 7:07:36 PM
Surr: BFB	100	37.7-212		%Rec	1	1/23/2023 7:07:36 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 7:07:36 PM
Toluene	ND	0.047		mg/Kg	1	1/23/2023 7:07:36 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/23/2023 7:07:36 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/23/2023 7:07:36 PM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	1/23/2023 7:07:36 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	2700	150		mg/Kg	50	1/23/2023 1:51:29 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-73 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 9:00:00 AM

Lab ID: 2301764-016

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	150	19		mg/Kg	2	1/24/2023 6:07:16 PM
Motor Oil Range Organics (MRO)	240	93		mg/Kg	2	1/24/2023 6:07:16 PM
Surr: DNOP	118	69-147		%Rec	2	1/24/2023 6:07:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/23/2023 7:30:55 PM
Surr: BFB	101	37.7-212		%Rec	1	1/23/2023 7:30:55 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 7:30:55 PM
Toluene	ND	0.049		mg/Kg	1	1/23/2023 7:30:55 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/23/2023 7:30:55 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/23/2023 7:30:55 PM
Surr: 4-Bromofluorobenzene	93.9	70-130		%Rec	1	1/23/2023 7:30:55 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	7800	300		mg/Kg	100	1/23/2023 2:04:20 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-74 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 9:03:00 AM

Lab ID: 2301764-017

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	160	9.5		mg/Kg	1	1/24/2023 2:19:11 PM
Motor Oil Range Organics (MRO)	220	48		mg/Kg	1	1/24/2023 2:19:11 PM
Surr: DNOP	126	69-147		%Rec	1	1/24/2023 2:19:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/23/2023 7:54:13 PM
Surr: BFB	103	37.7-212		%Rec	1	1/23/2023 7:54:13 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 7:54:13 PM
Toluene	ND	0.047		mg/Kg	1	1/23/2023 7:54:13 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/23/2023 7:54:13 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/23/2023 7:54:13 PM
Surr: 4-Bromofluorobenzene	96.2	70-130		%Rec	1	1/23/2023 7:54:13 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	11000	600		mg/Kg	200	1/23/2023 2:17:11 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301764

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.

Client Sample ID: BS23-75 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/18/2023 9:03:00 AM

Lab ID: 2301764-018

Matrix: SOIL

Received Date: 1/20/2023 7:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	66	9.6		mg/Kg	1	1/24/2023 2:22:49 PM
Motor Oil Range Organics (MRO)	140	48		mg/Kg	1	1/24/2023 2:22:49 PM
Surr: DNOP	118	69-147		%Rec	1	1/24/2023 2:22:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/23/2023 8:17:29 PM
Surr: BFB	103	37.7-212		%Rec	1	1/23/2023 8:17:29 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/23/2023 8:17:29 PM
Toluene	ND	0.048		mg/Kg	1	1/23/2023 8:17:29 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/23/2023 8:17:29 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/23/2023 8:17:29 PM
Surr: 4-Bromofluorobenzene	96.3	70-130		%Rec	1	1/23/2023 8:17:29 PM
EPA METHOD 300.0: ANIONS						Analyst: CAS
Chloride	7700	300		mg/Kg	100	1/23/2023 2:30:03 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301764

30-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72743	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72743	RunNo: 94110								
Prep Date: 1/21/2023	Analysis Date: 1/21/2023	SeqNo: 3398042 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72743	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72743	RunNo: 94110								
Prep Date: 1/21/2023	Analysis Date: 1/21/2023	SeqNo: 3398043 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.1	90	110			

Sample ID: MB-72744	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72744	RunNo: 94110								
Prep Date: 1/21/2023	Analysis Date: 1/21/2023	SeqNo: 3398072 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72744	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72744	RunNo: 94110								
Prep Date: 1/21/2023	Analysis Date: 1/21/2023	SeqNo: 3398073 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.7	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 Quantitative 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#: 2301764

30-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-72740	SampType: LCS			TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: LCSS	Batch ID: 72740			RunNo: 94119						
Prep Date: 1/20/2023	Analysis Date: 1/23/2023			SeqNo: 3399136		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.7	61.9	130			
Surr: DNOP	5.4		5.000		108	69	147			

Sample ID: MB-72740	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: PBS	Batch ID: 72740			RunNo: 94119						
Prep Date: 1/20/2023	Analysis Date: 1/23/2023			SeqNo: 3399140		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	12		10.00		116	69	147			

Sample ID: LCS-72755	SampType: LCS			TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: LCSS	Batch ID: 72755			RunNo: 94153						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3399719		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	6.5		5.000		129	69	147			

Sample ID: LCS-72769	SampType: LCS			TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: LCSS	Batch ID: 72769			RunNo: 94153						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3399720		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.5		5.000		109	69	147			

Sample ID: MB-72755	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: PBS	Batch ID: 72755			RunNo: 94153						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3399722		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	13		10.00		126	69	147			

Sample ID: MB-72769	SampType: MBLK			TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: PBS	Batch ID: 72769			RunNo: 94153						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3399723		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		106	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 Quantitative 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#: 2301764

30-Jan-23

Client: Vertex Resources Services, Inc.

Project: Hackberry 6 Fed 1 Well Pad

Sample ID: 2301764-001AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BS23-58 4'	Batch ID: 72740	RunNo: 94153								
Prep Date: 1/20/2023	Analysis Date: 1/24/2023	SeqNo: 3400095	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	180	19	48.26	182.6	-9.97	54.2	135			S
Surr: DNOP	6.9		4.826		144	69	147			

Sample ID: 2301764-001AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BS23-58 4'	Batch ID: 72740	RunNo: 94153								
Prep Date: 1/20/2023	Analysis Date: 1/24/2023	SeqNo: 3400096	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	240	19	48.73	182.6	125	54.2	135	31.3	29.2	R
Surr: DNOP	6.8		4.873		140	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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301764

30-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: lcs-72733	SampType: LCS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: LCSS	Batch ID: 72733				RunNo: 94128					
Prep Date: 1/20/2023	Analysis Date: 1/23/2023				SeqNo: 3398776		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	83.0	72.3	137			
Surr: BFB	2000		1000		197	37.7	212			

Sample ID: mb-72733	SampType: MBLK				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: PBS	Batch ID: 72733				RunNo: 94128					
Prep Date: 1/20/2023	Analysis Date: 1/23/2023				SeqNo: 3398778		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		107	37.7	212			

Sample ID: 2301764-001ams	SampType: MS				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BS23-58 4'	Batch ID: 72733				RunNo: 94128					
Prep Date: 1/20/2023	Analysis Date: 1/23/2023				SeqNo: 3398802		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.8	23.81	0	115	70	130			
Surr: BFB	1100		952.4		120	37.7	212			

Sample ID: 2301764-001amsd	SampType: MSD				TestCode: EPA Method 8015D: Gasoline Range					
Client ID: BS23-58 4'	Batch ID: 72733				RunNo: 94128					
Prep Date: 1/20/2023	Analysis Date: 1/23/2023				SeqNo: 3398803		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	4.7	23.56	0	117	70	130	0.823	20	
Surr: BFB	1100		942.5		121	37.7	212	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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301764

30-Jan-23

Client: Vertex Resources Services, Inc.**Project:** Hackberry 6 Fed 1 Well Pad

Sample ID: LCS-72733	SampType: LCS		TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	Batch ID: 72733		RunNo: 94128							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3398826		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.025	1.000	0	83.1	80	120			
Toluene	0.88	0.050	1.000	0	88.2	80	120			
Ethylbenzene	0.90	0.050	1.000	0	89.6	80	120			
Xylenes, Total	2.7	0.10	3.000	0	89.7	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		97.8	70	130			

Sample ID: mb-72733	SampType: MBLK		TestCode: EPA Method 8021B: Volatiles							
Client ID: PBS	Batch ID: 72733		RunNo: 94128							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3398828		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	70	130			

Sample ID: 2301764-002ams	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-59 4'	Batch ID: 72733		RunNo: 94128							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3398853		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.023	0.9328	0	88.4	68.8	120			
Toluene	0.88	0.047	0.9328	0.01844	92.9	73.6	124			
Ethylbenzene	0.91	0.047	0.9328	0	97.0	72.7	129			
Xylenes, Total	2.7	0.093	2.799	0.02886	95.2	75.7	126			
Surr: 4-Bromofluorobenzene	0.94		0.9328		101	70	130			

Sample ID: 2301764-002amsd	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-59 4'	Batch ID: 72733		RunNo: 94128							
Prep Date: 1/20/2023	Analysis Date: 1/23/2023		SeqNo: 3398854		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.024	0.9560	0	86.8	68.8	120	0.582	20	
Toluene	0.89	0.048	0.9560	0.01844	90.7	73.6	124	0.0653	20	
Ethylbenzene	0.91	0.048	0.9560	0	95.0	72.7	129	0.331	20	
Xylenes, Total	2.7	0.096	2.868	0.02886	93.8	75.7	126	0.961	20	
Surr: 4-Bromofluorobenzene	0.96		0.9560		101	70	130	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 Quantitative 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

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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: 2301764

RcptNo: 1

Received By: Juan Rojas

1/20/2023 7:20:00 AM

[Signature]

Completed By: Sean Livingston

1/20/2023 7:55:37 AM

[Signature]

Reviewed By: *[Signature]* 1-20-23

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 $>0^{\circ}\text{C}$ 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: *Jul 1/20/23*

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: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.1	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 ☒ Rush48 hr

Project Name:

Hackberry Le Fed 1 Well Pad

Project #:

WE-02537

Project Manager:

Chance Dixon

Sampler:

SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CF): 1.3-0.2 = 1.1 (°C)

Container Type and #

Preservative Type

HEAL No.

Date Time Matrix Sample Name

1/10/23 8:54 Soil BS23-70 4' 4oz jar ice 013

8:54 BS23-71 4' 014

8:50 BS23-72 4' 015

9:00 BS23-73 4' 016

9:03 BS23-74 4' 017

9:03 BS23-75 4' 018

Date: Time: Relinquished by:

1/18/23 16:22

Sally Cartan

Date: Time: Relinquished by:

1/19/23 1900

Sally Cartan

Received by: Via: Date Time

XXXXXXXXXX

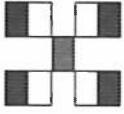
1/19/23 900

Received by: Via: Date Time

XXXXXXXXXX

1/20/23 7120

Remarks:

Direct bill DevonWO # 1007101301CC Sally Cartanpage 2/2HALL ENVIRONMENTAL
ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

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⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻ ☒

8260 (VOA) ☐

8270 (Semi-VOA) ☐

Total Coliform (Present/Absent) ☐



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

January 30, 2023

Chance Dixon

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (575) 748-0176

FAX:

RE: Hackberry 6 Fed 1

OrderNo.: 2301754

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 24 sample(s) on 1/21/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman".

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-76 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:41:00 AM

Lab ID: 2301754-001

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	49	9.6		mg/Kg	1	1/25/2023 10:30:09 AM
Motor Oil Range Organics (MRO)	79	48		mg/Kg	1	1/25/2023 10:30:09 AM
Surr: DNOP	114	69-147		%Rec	1	1/25/2023 10:30:09 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/24/2023 1:13:31 PM
Surr: BFB	108	37.7-212		%Rec	1	1/24/2023 1:13:31 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/24/2023 1:13:31 PM
Toluene	ND	0.050		mg/Kg	1	1/24/2023 1:13:31 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/24/2023 1:13:31 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/24/2023 1:13:31 PM
Surr: 4-Bromofluorobenzene	98.6	70-130		%Rec	1	1/24/2023 1:13:31 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	9800	300		mg/Kg	100	1/25/2023 10:08:32 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-77 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:40:00 AM

Lab ID: 2301754-002

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	27	9.5		mg/Kg	1	1/25/2023 4:00:52 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/25/2023 4:00:52 AM
Surr: DNOP	119	69-147		%Rec	1	1/25/2023 4:00:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2023 2:24:14 PM
Surr: BFB	105	37.7-212		%Rec	1	1/24/2023 2:24:14 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 2:24:14 PM
Toluene	ND	0.047		mg/Kg	1	1/24/2023 2:24:14 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2023 2:24:14 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/24/2023 2:24:14 PM
Surr: 4-Bromofluorobenzene	97.2	70-130		%Rec	1	1/24/2023 2:24:14 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	8200	300		mg/Kg	100	1/25/2023 10:20:52 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-78 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:50:00 AM

Lab ID: 2301754-003

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	96	9.4		mg/Kg	1	1/24/2023 11:08:39 AM
Motor Oil Range Organics (MRO)	140	47		mg/Kg	1	1/24/2023 11:08:39 AM
Surr: DNOP	131	69-147		%Rec	1	1/24/2023 11:08:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/24/2023 3:34:38 PM
Surr: BFB	106	37.7-212		%Rec	1	1/24/2023 3:34:38 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/24/2023 3:34:38 PM
Toluene	ND	0.050		mg/Kg	1	1/24/2023 3:34:38 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/24/2023 3:34:38 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/24/2023 3:34:38 PM
Surr: 4-Bromofluorobenzene	98.3	70-130		%Rec	1	1/24/2023 3:34:38 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	6000	300		mg/Kg	100	1/25/2023 10:33:13 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-79 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:50:00 AM

Lab ID: 2301754-004

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	76	9.6		mg/Kg	1	1/24/2023 12:44:00 PM
Motor Oil Range Organics (MRO)	120	48		mg/Kg	1	1/24/2023 12:44:00 PM
Surr: DNOP	114	69-147		%Rec	1	1/24/2023 12:44:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/24/2023 3:58:04 PM
Surr: BFB	107	37.7-212		%Rec	1	1/24/2023 3:58:04 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/24/2023 3:58:04 PM
Toluene	ND	0.048		mg/Kg	1	1/24/2023 3:58:04 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/24/2023 3:58:04 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/24/2023 3:58:04 PM
Surr: 4-Bromofluorobenzene	99.3	70-130		%Rec	1	1/24/2023 3:58:04 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	4200	150		mg/Kg	50	1/25/2023 10:45:34 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-80 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:55:00 AM

Lab ID: 2301754-005

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	380	48		mg/Kg	5	1/24/2023 9:49:00 PM
Motor Oil Range Organics (MRO)	600	240		mg/Kg	5	1/24/2023 9:49:00 PM
Surr: DNOP	114	69-147		%Rec	5	1/24/2023 9:49:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/24/2023 4:21:36 PM
Surr: BFB	106	37.7-212		%Rec	1	1/24/2023 4:21:36 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 4:21:36 PM
Toluene	ND	0.046		mg/Kg	1	1/24/2023 4:21:36 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/24/2023 4:21:36 PM
Xylenes, Total	ND	0.092		mg/Kg	1	1/24/2023 4:21:36 PM
Surr: 4-Bromofluorobenzene	97.7	70-130		%Rec	1	1/24/2023 4:21:36 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2400	150		mg/Kg	50	1/25/2023 10:57:54 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-81 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:56:00 AM

Lab ID: 2301754-006

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	170	48		mg/Kg	5	1/24/2023 10:36:21 PM
Motor Oil Range Organics (MRO)	320	240		mg/Kg	5	1/24/2023 10:36:21 PM
Surr: DNOP	122	69-147		%Rec	5	1/24/2023 10:36:21 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2023 4:45:05 PM
Surr: BFB	108	37.7-212		%Rec	1	1/24/2023 4:45:05 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 4:45:05 PM
Toluene	ND	0.047		mg/Kg	1	1/24/2023 4:45:05 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2023 4:45:05 PM
Xylenes, Total	ND	0.093		mg/Kg	1	1/24/2023 4:45:05 PM
Surr: 4-Bromofluorobenzene	98.8	70-130		%Rec	1	1/24/2023 4:45:05 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2100	60		mg/Kg	20	1/24/2023 2:22:54 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-82 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 8:59:00 AM

Lab ID: 2301754-007

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	200	9.6		mg/Kg	1	1/24/2023 1:31:35 PM
Motor Oil Range Organics (MRO)	220	48		mg/Kg	1	1/24/2023 1:31:35 PM
Surr: DNOP	122	69-147		%Rec	1	1/24/2023 1:31:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/24/2023 5:08:35 PM
Surr: BFB	105	37.7-212		%Rec	1	1/24/2023 5:08:35 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/24/2023 5:08:35 PM
Toluene	ND	0.050		mg/Kg	1	1/24/2023 5:08:35 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/24/2023 5:08:35 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/24/2023 5:08:35 PM
Surr: 4-Bromofluorobenzene	97.6	70-130		%Rec	1	1/24/2023 5:08:35 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1900	60		mg/Kg	20	1/24/2023 2:35:14 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-83 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:00:00 AM

Lab ID: 2301754-008

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	310	9.5		mg/Kg	1	1/24/2023 3:30:37 PM
Motor Oil Range Organics (MRO)	370	48		mg/Kg	1	1/24/2023 3:30:37 PM
Surr: DNOP	122	69-147		%Rec	1	1/24/2023 3:30:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/24/2023 5:32:03 PM
Surr: BFB	104	37.7-212		%Rec	1	1/24/2023 5:32:03 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 5:32:03 PM
Toluene	ND	0.046		mg/Kg	1	1/24/2023 5:32:03 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/24/2023 5:32:03 PM
Xylenes, Total	ND	0.092		mg/Kg	1	1/24/2023 5:32:03 PM
Surr: 4-Bromofluorobenzene	96.0	70-130		%Rec	1	1/24/2023 5:32:03 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1300	60		mg/Kg	20	1/24/2023 2:47:34 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-84 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:04:00 AM

Lab ID: 2301754-009

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	540	48		mg/Kg	5	1/24/2023 11:23:40 PM
Motor Oil Range Organics (MRO)	890	240		mg/Kg	5	1/24/2023 11:23:40 PM
Surr: DNOP	118	69-147		%Rec	5	1/24/2023 11:23:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/24/2023 5:55:31 PM
Surr: BFB	105	37.7-212		%Rec	1	1/24/2023 5:55:31 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/24/2023 5:55:31 PM
Toluene	ND	0.049		mg/Kg	1	1/24/2023 5:55:31 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/24/2023 5:55:31 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/24/2023 5:55:31 PM
Surr: 4-Bromofluorobenzene	98.9	70-130		%Rec	1	1/24/2023 5:55:31 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2400	150		mg/Kg	50	1/25/2023 11:10:14 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-85 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:05:00 AM

Lab ID: 2301754-010

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	140	49		mg/Kg	5	1/25/2023 12:10:55 AM
Motor Oil Range Organics (MRO)	ND	240		mg/Kg	5	1/25/2023 12:10:55 AM
Surr: DNOP	116	69-147		%Rec	5	1/25/2023 12:10:55 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/24/2023 6:19:00 PM
Surr: BFB	106	37.7-212		%Rec	1	1/24/2023 6:19:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 6:19:00 PM
Toluene	ND	0.046		mg/Kg	1	1/24/2023 6:19:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/24/2023 6:19:00 PM
Xylenes, Total	ND	0.093		mg/Kg	1	1/24/2023 6:19:00 PM
Surr: 4-Bromofluorobenzene	98.0	70-130		%Rec	1	1/24/2023 6:19:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3200	150		mg/Kg	50	1/25/2023 11:22:35 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-86 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:08:00 AM

Lab ID: 2301754-011

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	21	9.5		mg/Kg	1	1/24/2023 4:18:10 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/24/2023 4:18:10 PM
Surr: DNOP	108	69-147		%Rec	1	1/24/2023 4:18:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/24/2023 7:05:53 PM
Surr: BFB	107	37.7-212		%Rec	1	1/24/2023 7:05:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 7:05:53 PM
Toluene	ND	0.046		mg/Kg	1	1/24/2023 7:05:53 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/24/2023 7:05:53 PM
Xylenes, Total	ND	0.092		mg/Kg	1	1/24/2023 7:05:53 PM
Surr: 4-Bromofluorobenzene	98.8	70-130		%Rec	1	1/24/2023 7:05:53 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1400	60		mg/Kg	20	1/24/2023 3:24:35 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-87 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:08:00 AM

Lab ID: 2301754-012

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	28	9.1		mg/Kg	1	1/24/2023 4:41:53 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/24/2023 4:41:53 PM
Surr: DNOP	84.9	69-147		%Rec	1	1/24/2023 4:41:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/24/2023 7:29:19 PM
Surr: BFB	104	37.7-212		%Rec	1	1/24/2023 7:29:19 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/24/2023 7:29:19 PM
Toluene	ND	0.048		mg/Kg	1	1/24/2023 7:29:19 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/24/2023 7:29:19 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/24/2023 7:29:19 PM
Surr: 4-Bromofluorobenzene	96.7	70-130		%Rec	1	1/24/2023 7:29:19 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1400	60		mg/Kg	20	1/24/2023 3:36:56 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-88 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:12:00 AM

Lab ID: 2301754-013

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	15	9.3		mg/Kg	1	1/24/2023 5:05:42 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/24/2023 5:05:42 PM
Surr: DNOP	112	69-147		%Rec	1	1/24/2023 5:05:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2023 7:52:44 PM
Surr: BFB	106	37.7-212		%Rec	1	1/24/2023 7:52:44 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 7:52:44 PM
Toluene	ND	0.047		mg/Kg	1	1/24/2023 7:52:44 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2023 7:52:44 PM
Xylenes, Total	ND	0.093		mg/Kg	1	1/24/2023 7:52:44 PM
Surr: 4-Bromofluorobenzene	99.7	70-130		%Rec	1	1/24/2023 7:52:44 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	3100	150		mg/Kg	50	1/25/2023 11:34:56 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-89 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:12:00 AM

Lab ID: 2301754-014

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	10	9.7		mg/Kg	1	1/24/2023 5:29:32 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/24/2023 5:29:32 PM
Surr: DNOP	112	69-147		%Rec	1	1/24/2023 5:29:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/24/2023 8:16:09 PM
Surr: BFB	105	37.7-212		%Rec	1	1/24/2023 8:16:09 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/24/2023 8:16:09 PM
Toluene	ND	0.048		mg/Kg	1	1/24/2023 8:16:09 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/24/2023 8:16:09 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/24/2023 8:16:09 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	1/24/2023 8:16:09 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	5200	150		mg/Kg	50	1/25/2023 12:11:57 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-90 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:14:00 AM

Lab ID: 2301754-015

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 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	1/24/2023 5:53:04 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/24/2023 5:53:04 PM
Surr: DNOP	117	69-147		%Rec	1	1/24/2023 5:53:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2023 8:39:34 PM
Surr: BFB	106	37.7-212		%Rec	1	1/24/2023 8:39:34 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 8:39:34 PM
Toluene	ND	0.047		mg/Kg	1	1/24/2023 8:39:34 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2023 8:39:34 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/24/2023 8:39:34 PM
Surr: 4-Bromofluorobenzene	98.8	70-130		%Rec	1	1/24/2023 8:39:34 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	1000	60		mg/Kg	20	1/24/2023 4:38:40 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-91 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:14:00 AM

Lab ID: 2301754-016

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 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	1/24/2023 6:16:30 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/24/2023 6:16:30 PM
Surr: DNOP	117	69-147		%Rec	1	1/24/2023 6:16:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/24/2023 9:03:00 PM
Surr: BFB	105	37.7-212		%Rec	1	1/24/2023 9:03:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/24/2023 9:03:00 PM
Toluene	ND	0.049		mg/Kg	1	1/24/2023 9:03:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/24/2023 9:03:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/24/2023 9:03:00 PM
Surr: 4-Bromofluorobenzene	97.7	70-130		%Rec	1	1/24/2023 9:03:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2400	60		mg/Kg	20	1/24/2023 4:51:00 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-92 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:24:00 AM

Lab ID: 2301754-017

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	44	9.6		mg/Kg	1	1/24/2023 6:39:51 PM
Motor Oil Range Organics (MRO)	60	48		mg/Kg	1	1/24/2023 6:39:51 PM
Surr: DNOP	104	69-147		%Rec	1	1/24/2023 6:39:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/24/2023 9:26:20 PM
Surr: BFB	104	37.7-212		%Rec	1	1/24/2023 9:26:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.025		mg/Kg	1	1/24/2023 9:26:20 PM
Toluene	ND	0.049		mg/Kg	1	1/24/2023 9:26:20 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/24/2023 9:26:20 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/24/2023 9:26:20 PM
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	1/24/2023 9:26:20 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	4300	150		mg/Kg	50	1/25/2023 12:24:17 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-93 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 9:24:00 AM

Lab ID: 2301754-018

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	13	9.6		mg/Kg	1	1/24/2023 7:27:00 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/24/2023 7:27:00 PM
Surr: DNOP	128	69-147		%Rec	1	1/24/2023 7:27:00 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/24/2023 9:49:42 PM
Surr: BFB	104	37.7-212		%Rec	1	1/24/2023 9:49:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 9:49:42 PM
Toluene	ND	0.046		mg/Kg	1	1/24/2023 9:49:42 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/24/2023 9:49:42 PM
Xylenes, Total	ND	0.091		mg/Kg	1	1/24/2023 9:49:42 PM
Surr: 4-Bromofluorobenzene	97.8	70-130		%Rec	1	1/24/2023 9:49:42 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	4900	150		mg/Kg	50	1/25/2023 12:36:38 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-94 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 1:27:00 PM

Lab ID: 2301754-019

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	80	9.3		mg/Kg	1	1/24/2023 7:50:39 PM
Motor Oil Range Organics (MRO)	130	47		mg/Kg	1	1/24/2023 7:50:39 PM
Surr: DNOP	126	69-147		%Rec	1	1/24/2023 7:50:39 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2023 10:13:07 PM
Surr: BFB	101	37.7-212		%Rec	1	1/24/2023 10:13:07 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.023		mg/Kg	1	1/24/2023 10:13:07 PM
Toluene	ND	0.047		mg/Kg	1	1/24/2023 10:13:07 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2023 10:13:07 PM
Xylenes, Total	ND	0.094		mg/Kg	1	1/24/2023 10:13:07 PM
Surr: 4-Bromofluorobenzene	94.6	70-130		%Rec	1	1/24/2023 10:13:07 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2600	150		mg/Kg	50	1/25/2023 12:48:58 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-95 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 1:27:00 PM

Lab ID: 2301754-020

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	33	10		mg/Kg	1	1/24/2023 8:37:58 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/24/2023 8:37:58 PM
Surr: DNOP	115	69-147		%Rec	1	1/24/2023 8:37:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: JJP
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/24/2023 10:36:28 PM
Surr: BFB	104	37.7-212		%Rec	1	1/24/2023 10:36:28 PM
EPA METHOD 8021B: VOLATILES						Analyst: JJP
Benzene	ND	0.024		mg/Kg	1	1/24/2023 10:36:28 PM
Toluene	ND	0.049		mg/Kg	1	1/24/2023 10:36:28 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/24/2023 10:36:28 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/24/2023 10:36:28 PM
Surr: 4-Bromofluorobenzene	96.9	70-130		%Rec	1	1/24/2023 10:36:28 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2100	60		mg/Kg	20	1/24/2023 5:40:22 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-96 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 1:32:00 PM

Lab ID: 2301754-021

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	470	49		mg/Kg	5	1/25/2023 12:58:06 AM
Motor Oil Range Organics (MRO)	610	250		mg/Kg	5	1/25/2023 12:58:06 AM
Surr: DNOP	114	69-147		%Rec	5	1/25/2023 12:58:06 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/24/2023 9:20:00 PM
Surr: BFB	93.1	37.7-212		%Rec	1	1/24/2023 9:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.023		mg/Kg	1	1/24/2023 9:20:00 PM
Toluene	ND	0.046		mg/Kg	1	1/24/2023 9:20:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	1/24/2023 9:20:00 PM
Xylenes, Total	ND	0.093		mg/Kg	1	1/24/2023 9:20:00 PM
Surr: 4-Bromofluorobenzene	92.8	70-130		%Rec	1	1/24/2023 9:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2700	150		mg/Kg	50	1/25/2023 1:01:19 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-97 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 1:32:00 PM

Lab ID: 2301754-022

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: DGH
Diesel Range Organics (DRO)	63	9.9		mg/Kg	1	1/24/2023 9:01:39 PM
Motor Oil Range Organics (MRO)	94	50		mg/Kg	1	1/24/2023 9:01:39 PM
Surr: DNOP	119	69-147		%Rec	1	1/24/2023 9:01:39 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/24/2023 10:19:00 PM
Surr: BFB	93.6	37.7-212		%Rec	1	1/24/2023 10:19:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/24/2023 10:19:00 PM
Toluene	ND	0.047		mg/Kg	1	1/24/2023 10:19:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/24/2023 10:19:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/24/2023 10:19:00 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	1/24/2023 10:19:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2200	150		mg/Kg	50	1/25/2023 1:13:39 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-98 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 1:35:00 PM

Lab ID: 2301754-023

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	39	9.5		mg/Kg	1	1/24/2023 11:50:51 AM
Motor Oil Range Organics (MRO)	69	47		mg/Kg	1	1/24/2023 11:50:51 AM
Surr: DNOP	90.7	69-147		%Rec	1	1/24/2023 11:50:51 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/24/2023 11:18:00 PM
Surr: BFB	93.1	37.7-212		%Rec	1	1/24/2023 11:18:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/24/2023 11:18:00 PM
Toluene	ND	0.048		mg/Kg	1	1/24/2023 11:18:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/24/2023 11:18:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/24/2023 11:18:00 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	1/24/2023 11:18:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2300	60		mg/Kg	20	1/24/2023 7:06:48 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301754

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-99 4'

Project: Hackberry 6 Fed 1

Collection Date: 1/19/2023 1:35:00 PM

Lab ID: 2301754-024

Matrix: SOIL

Received Date: 1/21/2023 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	39	9.4		mg/Kg	1	1/24/2023 12:19:28 PM
Motor Oil Range Organics (MRO)	80	47		mg/Kg	1	1/24/2023 12:19:28 PM
Surr: DNOP	93.8	69-147		%Rec	1	1/24/2023 12:19:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/24/2023 11:37:00 PM
Surr: BFB	91.2	37.7-212		%Rec	1	1/24/2023 11:37:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/24/2023 11:37:00 PM
Toluene	ND	0.048		mg/Kg	1	1/24/2023 11:37:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/24/2023 11:37:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/24/2023 11:37:00 PM
Surr: 4-Bromofluorobenzene	92.1	70-130		%Rec	1	1/24/2023 11:37:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2300	60		mg/Kg	20	1/24/2023 7:43:50 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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: MB-72771	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72771	RunNo: 94168								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400465	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72771	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72771	RunNo: 94168								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400466	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.3	90	110			

Sample ID: MB-72790	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBS	Batch ID: 72790	RunNo: 94168								
Prep Date: 1/24/2023	Analysis Date: 1/24/2023	SeqNo: 3400495	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72790	SampType: lcs	TestCode: EPA Method 300.0: Anions								
Client ID: LCSS	Batch ID: 72790	RunNo: 94168								
Prep Date: 1/24/2023	Analysis Date: 1/24/2023	SeqNo: 3400496	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.1	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 Quantitative 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

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QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: MB-72763	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72763	RunNo: 94149								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3399774 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	9.8		10.00		98.4	69	147			

Sample ID: LCS-72763	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72763	RunNo: 94149								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3399775 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10	50.00	0	84.3	61.9	130			
Surr: DNOP	4.5		5.000		90.2	69	147			

Sample ID: MB-72760	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72760	RunNo: 94149								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400226 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	12		10.00		122	69	147			

Sample ID: LCS-72760	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72760	RunNo: 94149								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400227 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.6	61.9	130			
Surr: DNOP	5.5		5.000		110	69	147			

Sample ID: LCS-72784	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72784	RunNo: 94184								
Prep Date: 1/24/2023	Analysis Date: 1/25/2023	SeqNo: 3401254 Units: %Rec								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.8		5.000		116	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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: MB-72784	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72784		RunNo: 94184							
Prep Date: 1/24/2023	Analysis Date: 1/25/2023		SeqNo: 3401255		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	10		10.00		104	69	147			

Sample ID: MB-72768	SampType: MBLK		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch ID: 72768		RunNo: 94143							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3402245		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		100	69	147			

Sample ID: LCS-72768	SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: LCSS	Batch ID: 72768		RunNo: 94143							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3402246		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	5.4		5.000		108	69	147			

Sample ID: 2301754-003AMS	SampType: MS		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BS23-78 4'	Batch ID: 72768		RunNo: 94143							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3402250		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	150	8.9	44.52	96.37	129	54.2	135			
Surr: DNOP	5.4		4.452		121	69	147			

Sample ID: 2301754-003AMSD	SampType: MSD		TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: BS23-78 4'	Batch ID: 72768		RunNo: 94143							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3402251		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	230	9.4	46.95	96.37	293	54.2	135	41.3	29.2	RS
Surr: DNOP	5.2		4.695		112	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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: lcs-72751	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 72751		RunNo: 94163							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3399948		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	31	5.0	25.00	0	123	72.3	137			
Surr: BFB	1200		1000		121	37.7	212			

Sample ID: lcs-72773	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 72773		RunNo: 94163							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3399950		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1200		1000		116	37.7	212			

Sample ID: mb-72751	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 72751		RunNo: 94163							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3399952		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		109	37.7	212			

Sample ID: mb-72773	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 72773		RunNo: 94163							
Prep Date: 1/23/2023	Analysis Date: 1/25/2023		SeqNo: 3399954		Units: %Rec					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		102	37.7	212			

Sample ID: 2301754-001ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BS23-76 4'	Batch ID: 72751		RunNo: 94163							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3399987		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	29	4.9	24.68	0	117	70	130			
Surr: BFB	1200		987.2		122	37.7	212			

Sample ID: 2301754-001amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BS23-76 4'	Batch ID: 72751		RunNo: 94163							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3399988		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	30	5.0	24.95	0	119	70	130	2.72	20	
Surr: BFB	1200		998.0		122	37.7	212	0	0	

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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: ics-72758	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 72758		RunNo: 94152							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3400159		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	106	72.3	137			
Surr: BFB	1100		1000		109	37.7	212			

Sample ID: mb-72758	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 72758		RunNo: 94152							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3400160		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	950		1000		94.8	37.7	212			

Sample ID: 2301754-021ams	SampType: MS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BS23-96 4'	Batch ID: 72758		RunNo: 94152							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3400164		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.6	23.13	0	103	70	130			
Surr: BFB	950		925.1		103	37.7	212			

Sample ID: 2301754-021amsd	SampType: MSD		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: BS23-96 4'	Batch ID: 72758		RunNo: 94152							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3400165		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.6	23.21	0	99.3	70	130	2.96	20	
Surr: BFB	1000		928.5		111	37.7	212	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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: LCS-72751	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72751			RunNo: 94163						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3400008		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	91.0	80	120			
Toluene	0.95	0.050	1.000	0	95.4	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.0	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	70	130			

Sample ID: LCS-72773	SampType: LCS			TestCode: EPA Method 8021B: Volatiles						
Client ID: LCSS	Batch ID: 72773			RunNo: 94163						
Prep Date: 1/23/2023	Analysis Date: 1/25/2023			SeqNo: 3400009		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.98		1.000		97.6	70	130			

Sample ID: mb-72751	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72751			RunNo: 94163						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3400010		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	1.0		1.000		101	70	130			

Sample ID: mb-72773	SampType: MBLK			TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch ID: 72773			RunNo: 94163						
Prep Date: 1/23/2023	Analysis Date: 1/25/2023			SeqNo: 3400011		Units: %Rec				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.96		1.000		95.5	70	130			

Sample ID: 2301754-002ams	SampType: MS			TestCode: EPA Method 8021B: Volatiles						
Client ID: BS23-77 4'	Batch ID: 72751			RunNo: 94163						
Prep Date: 1/23/2023	Analysis Date: 1/24/2023			SeqNo: 3400030		Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.023	0.9363	0	88.8	68.8	120			
Toluene	0.88	0.047	0.9363	0.01662	92.5	73.6	124			
Ethylbenzene	0.91	0.047	0.9363	0	97.1	72.7	129			
Xylenes, Total	2.7	0.094	2.809	0.02836	95.1	75.7	126			

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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: 2301754-002ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BS23-77 4'	Batch ID: 72751	RunNo: 94163								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400030 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.93		0.9363		99.4	70	130			

Sample ID: 2301754-002amsd	SampType: MSD	TestCode: EPA Method 8021B: Volatiles								
Client ID: BS23-77 4'	Batch ID: 72751	RunNo: 94163								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400031 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.023	0.9355	0	88.4	68.8	120	0.568	20	
Toluene	0.88	0.047	0.9355	0.01662	92.6	73.6	124	0.0724	20	
Ethylbenzene	0.91	0.047	0.9355	0	97.2	72.7	129	0.0505	20	
Xylenes, Total	2.7	0.094	2.806	0.02836	96.1	75.7	126	0.910	20	
Surr: 4-Bromofluorobenzene	0.94		0.9355		101	70	130	0	0	

Sample ID: lcs-72758	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 72758	RunNo: 94152								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400370 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	93.0	80	120			
Toluene	0.93	0.050	1.000	0	92.6	80	120			
Ethylbenzene	0.91	0.050	1.000	0	91.4	80	120			
Xylenes, Total	2.7	0.10	3.000	0	91.3	80	120			
Surr: 4-Bromofluorobenzene	0.97		1.000		97.4	70	130			

Sample ID: mb-72758	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 72758	RunNo: 94152								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400371 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		93.7	70	130			

Sample ID: 2301754-022ams	SampType: MS	TestCode: EPA Method 8021B: Volatiles								
Client ID: BS23-97 4'	Batch ID: 72758	RunNo: 94152								
Prep Date: 1/23/2023	Analysis Date: 1/24/2023	SeqNo: 3400376 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 Quantitative 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#: 2301754

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1

Sample ID: 2301754-022ams	SampType: MS		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-97 4'	Batch ID: 72758		RunNo: 94152							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3400376		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.024	0.9506	0	92.3	68.8	120			
Toluene	0.88	0.048	0.9506	0	92.6	73.6	124			
Ethylbenzene	0.87	0.048	0.9506	0	91.8	72.7	129			
Xylenes, Total	2.6	0.095	2.852	0	91.2	75.7	126			
Surr: 4-Bromofluorobenzene	0.90		0.9506		94.9	70	130			

Sample ID: 2301754-022amsd	SampType: MSD		TestCode: EPA Method 8021B: Volatiles							
Client ID: BS23-97 4'	Batch ID: 72758		RunNo: 94152							
Prep Date: 1/23/2023	Analysis Date: 1/24/2023		SeqNo: 3400377		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.024	0.9533	0	98.0	68.8	120	6.29	20	
Toluene	0.93	0.048	0.9533	0	98.0	73.6	124	5.93	20	
Ethylbenzene	0.92	0.048	0.9533	0	96.9	72.7	129	5.67	20	
Xylenes, Total	2.8	0.095	2.860	0	96.6	75.7	126	6.08	20	
Surr: 4-Bromofluorobenzene	0.92		0.9533		96.2	70	130	0	0	

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 Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		



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: 2301754

RcptNo: 1

Received By: Juan Rojas

1/21/2023 10:30:00 AM

Juan Rojas

Completed By: Juan Rojas

1/21/2023 10:55:15 AM

Juan Rojas

Reviewed By:

JR 1-23-23

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 $>0^{\circ}\text{C}$ 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: *JR 4/21/23*

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: _____

16. Additional remarks:

Missing phone number and email address. JR 1/21/23

17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.3	Good	No	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)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
1/19/23	8:41		BS23-76 4'	4oz jar	ice	2301754
	8:40		BS23-77 4'			-002
	8:50		BS23-78 4'			-003
	8:50		BS23-79 4'			-004
	8:55		BS23-80 4'			-005
	8:56		BS23-81 4'			-006
	8:59		BS23-82 4'			-007
	9:00		BS23-83 4'			-008
	9:04		BS23-84 4'			-009
	9:05		BS23-85 4'			-010
	9:08		BS23-86 4'			-011
	9:08		BS23-87 4'			-012

Date: 1/19/23 Time: 16:24Relinquished by: Steph McCartyDate: 1/19/23 Time: 19:00Relinquished by: CCUMP

Turn-Around Time:

☐ Standard ☒ Rush48 hr

Project Name:

Hackberry 6 Fed 1

Project #:

22 E - 02537

Project Manager:

Chance DixonSampler: SPCOn Ice: ☒ Yes ☐ No# of Coolers: 1Cooler Temp (including CP): 0.30 ± 0.3 (°C)

Container Type and #

Preservative Type

HEAL No.

2301754

Type and #

ice

-001

-002

-003

-004

-005

-006

-007

-008

-009

-010

-011

-012

Received by:

Via:

Date

Time

CCUMP 1/20/23 700

Received by:

Via:

Date

Time

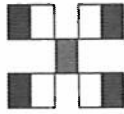
CCUMP 1/20/23 10:30

Remarks:

Direct Bill Devon: WO 1007101301

cc Sally Carttar

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**HALL ENVIRONMENTAL
ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

TPH:8015D(GRO / DRO / MRO)

8081 Pesticides/8082 PCB's

EDB (Method 504.1)

PAHs by 8310 or 8270SIMS

RCRA 8 Metals

Cl⁻, Br⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)



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

January 30, 2023

Chance Dixon

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (505) 350-1336

FAX

RE: Hackberry 6 Fed 1 Well Pad

OrderNo.: 2301870

Dear Chance Dixon:

Hall Environmental Analysis Laboratory received 15 sample(s) on 1/24/2023 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-100 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:36:00 AM

Lab ID: 2301870-001

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/26/2023 10:41:23 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/26/2023 10:41:23 AM
Surr: DNOP	75.9	69-147		%Rec	1	1/26/2023 10:41:23 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/26/2023 8:42:00 AM
Surr: BFB	96.1	37.7-212		%Rec	1	1/26/2023 8:42:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 8:42:00 AM
Toluene	ND	0.049		mg/Kg	1	1/26/2023 8:42:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/26/2023 8:42:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	1/26/2023 8:42:00 AM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	1/26/2023 8:42:00 AM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2800	150		mg/Kg	50	1/26/2023 12:30:35 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-101 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:37:00 AM

Lab ID: 2301870-002

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/26/2023 11:09:35 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/26/2023 11:09:35 AM
Surr: DNOP	118	69-147		%Rec	1	1/26/2023 11:09:35 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/26/2023 12:02:00 PM
Surr: BFB	105	37.7-212		%Rec	1	1/26/2023 12:02:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 12:02:00 PM
Toluene	ND	0.050		mg/Kg	1	1/26/2023 12:02:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/26/2023 12:02:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/26/2023 12:02:00 PM
Surr: 4-Bromofluorobenzene	99.8	70-130		%Rec	1	1/26/2023 12:02:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	1700	60		mg/Kg	20	1/25/2023 4:46:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-102 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:42:00 AM

Lab ID: 2301870-003

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	20	8.7		mg/Kg	1	1/26/2023 11:23:22 AM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	1/26/2023 11:23:22 AM
Surr: DNOP	129	69-147		%Rec	1	1/26/2023 11:23:22 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/26/2023 12:21:00 PM
Surr: BFB	96.4	37.7-212		%Rec	1	1/26/2023 12:21:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 12:21:00 PM
Toluene	ND	0.050		mg/Kg	1	1/26/2023 12:21:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/26/2023 12:21:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/26/2023 12:21:00 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	1/26/2023 12:21:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	2000	60		mg/Kg	20	1/25/2023 4:59:10 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-103 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:42:00 AM

Lab ID: 2301870-004

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	39	9.7		mg/Kg	1	1/26/2023 12:05:35 PM
Motor Oil Range Organics (MRO)	64	48		mg/Kg	1	1/26/2023 12:05:35 PM
Surr: DNOP	114	69-147		%Rec	1	1/26/2023 12:05:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/26/2023 12:41:00 PM
Surr: BFB	102	37.7-212		%Rec	1	1/26/2023 12:41:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 12:41:00 PM
Toluene	ND	0.050		mg/Kg	1	1/26/2023 12:41:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/26/2023 12:41:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/26/2023 12:41:00 PM
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	1	1/26/2023 12:41:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	1800	60		mg/Kg	20	1/25/2023 5:12:02 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-104 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:47:00 AM

Lab ID: 2301870-005

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	43	9.5		mg/Kg	1	1/26/2023 9:37:39 AM
Motor Oil Range Organics (MRO)	63	47		mg/Kg	1	1/26/2023 9:37:39 AM
Surr: DNOP	118	69-147		%Rec	1	1/26/2023 9:37:39 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/26/2023 1:00:00 PM
Surr: BFB	97.5	37.7-212		%Rec	1	1/26/2023 1:00:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/26/2023 1:00:00 PM
Toluene	ND	0.048		mg/Kg	1	1/26/2023 1:00:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/26/2023 1:00:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/26/2023 1:00:00 PM
Surr: 4-Bromofluorobenzene	99.5	70-130		%Rec	1	1/26/2023 1:00:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	2300	60		mg/Kg	20	1/25/2023 5:24:54 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-105 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:46:00 AM

Lab ID: 2301870-006

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	100	9.5		mg/Kg	1	1/26/2023 10:24:52 AM
Motor Oil Range Organics (MRO)	180	47		mg/Kg	1	1/26/2023 10:24:52 AM
Surr: DNOP	130	69-147		%Rec	1	1/26/2023 10:24:52 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/26/2023 1:20:00 PM
Surr: BFB	99.5	37.7-212		%Rec	1	1/26/2023 1:20:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/26/2023 1:20:00 PM
Toluene	ND	0.048		mg/Kg	1	1/26/2023 1:20:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/26/2023 1:20:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/26/2023 1:20:00 PM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	1/26/2023 1:20:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2300	150		mg/Kg	50	1/26/2023 12:42:57 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-106 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:51:00 AM

Lab ID: 2301870-007

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	76	9.1		mg/Kg	1	1/26/2023 11:12:15 AM
Motor Oil Range Organics (MRO)	130	46		mg/Kg	1	1/26/2023 11:12:15 AM
Surr: DNOP	130	69-147		%Rec	1	1/26/2023 11:12:15 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/26/2023 1:40:00 PM
Surr: BFB	96.4	37.7-212		%Rec	1	1/26/2023 1:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 1:40:00 PM
Toluene	ND	0.050		mg/Kg	1	1/26/2023 1:40:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/26/2023 1:40:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/26/2023 1:40:00 PM
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	1/26/2023 1:40:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2200	150		mg/Kg	50	1/26/2023 12:55:18 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-107 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:51:00 AM

Lab ID: 2301870-008

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	40	9.3		mg/Kg	1	1/26/2023 11:59:30 AM
Motor Oil Range Organics (MRO)	62	46		mg/Kg	1	1/26/2023 11:59:30 AM
Surr: DNOP	126	69-147		%Rec	1	1/26/2023 11:59:30 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/26/2023 1:59:00 PM
Surr: BFB	98.7	37.7-212		%Rec	1	1/26/2023 1:59:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/26/2023 1:59:00 PM
Toluene	ND	0.049		mg/Kg	1	1/26/2023 1:59:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/26/2023 1:59:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/26/2023 1:59:00 PM
Surr: 4-Bromofluorobenzene	98.8	70-130		%Rec	1	1/26/2023 1:59:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2300	150		mg/Kg	50	1/26/2023 1:07:40 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-108 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:55:00 AM

Lab ID: 2301870-009

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	38	9.3		mg/Kg	1	1/26/2023 12:19:44 PM
Motor Oil Range Organics (MRO)	63	47		mg/Kg	1	1/26/2023 12:19:44 PM
Surr: DNOP	95.2	69-147		%Rec	1	1/26/2023 12:19:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/26/2023 2:19:00 PM
Surr: BFB	98.0	37.7-212		%Rec	1	1/26/2023 2:19:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/26/2023 2:19:00 PM
Toluene	ND	0.048		mg/Kg	1	1/26/2023 2:19:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/26/2023 2:19:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/26/2023 2:19:00 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	1/26/2023 2:19:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	2200	60		mg/Kg	20	1/25/2023 6:16:21 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-109 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:55:00 AM

Lab ID: 2301870-010

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	25	9.9		mg/Kg	1	1/26/2023 12:34:06 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/26/2023 12:34:06 PM
Surr: DNOP	104	69-147		%Rec	1	1/26/2023 12:34:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/26/2023 2:38:00 PM
Surr: BFB	98.2	37.7-212		%Rec	1	1/26/2023 2:38:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 2:38:00 PM
Toluene	ND	0.049		mg/Kg	1	1/26/2023 2:38:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/26/2023 2:38:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/26/2023 2:38:00 PM
Surr: 4-Bromofluorobenzene	98.3	70-130		%Rec	1	1/26/2023 2:38:00 PM
EPA METHOD 300.0: ANIONS						Analyst: JMT
Chloride	2900	150		mg/Kg	50	1/26/2023 1:20:01 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-110 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:58:00 AM

Lab ID: 2301870-011

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	1/26/2023 12:48:23 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/26/2023 12:48:23 PM
Surr: DNOP	93.0	69-147		%Rec	1	1/26/2023 12:48:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/26/2023 3:17:00 PM
Surr: BFB	96.6	37.7-212		%Rec	1	1/26/2023 3:17:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 3:17:00 PM
Toluene	ND	0.049		mg/Kg	1	1/26/2023 3:17:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/26/2023 3:17:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/26/2023 3:17:00 PM
Surr: 4-Bromofluorobenzene	99.6	70-130		%Rec	1	1/26/2023 3:17:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	1600	60		mg/Kg	20	1/25/2023 7:07:49 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS23-111 4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 8:58:00 AM

Lab ID: 2301870-012

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	21	9.2		mg/Kg	1	1/26/2023 1:02:43 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/26/2023 1:02:43 PM
Surr: DNOP	118	69-147		%Rec	1	1/26/2023 1:02:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/26/2023 3:37:00 PM
Surr: BFB	98.2	37.7-212		%Rec	1	1/26/2023 3:37:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 3:37:00 PM
Toluene	ND	0.049		mg/Kg	1	1/26/2023 3:37:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/26/2023 3:37:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/26/2023 3:37:00 PM
Surr: 4-Bromofluorobenzene	97.6	70-130		%Rec	1	1/26/2023 3:37:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	960	60		mg/Kg	20	1/25/2023 7:20:40 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-43 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 11:31:00 AM

Lab ID: 2301870-013

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/26/2023 1:16:56 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/26/2023 1:16:56 PM
Surr: DNOP	120	69-147		%Rec	1	1/26/2023 1:16:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/26/2023 3:57:00 PM
Surr: BFB	102	37.7-212		%Rec	1	1/26/2023 3:57:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.024		mg/Kg	1	1/26/2023 3:57:00 PM
Toluene	ND	0.048		mg/Kg	1	1/26/2023 3:57:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/26/2023 3:57:00 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/26/2023 3:57:00 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	1/26/2023 3:57:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	1/25/2023 7:33:32 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

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Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-44 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 11:39:00 AM

Lab ID: 2301870-014

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/26/2023 12:24:15 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/26/2023 12:24:15 PM
Surr: DNOP	119	69-147		%Rec	1	1/26/2023 12:24:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/26/2023 4:17:00 PM
Surr: BFB	96.7	37.7-212		%Rec	1	1/26/2023 4:17:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 4:17:00 PM
Toluene	ND	0.050		mg/Kg	1	1/26/2023 4:17:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/26/2023 4:17:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/26/2023 4:17:00 PM
Surr: 4-Bromofluorobenzene	99.0	70-130		%Rec	1	1/26/2023 4:17:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	1/25/2023 7:46:23 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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report

Lab Order 2301870

Date Reported: 1/30/2023

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS23-45 0-4'

Project: Hackberry 6 Fed 1 Well Pad

Collection Date: 1/20/2023 12:42:00 PM

Lab ID: 2301870-015

Matrix: SOIL

Received Date: 1/24/2023 1:40:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: SB
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	1/26/2023 12:48:04 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	1/26/2023 12:48:04 PM
Surr: DNOP	135	69-147		%Rec	1	1/26/2023 12:48:04 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: CCM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/26/2023 4:36:00 PM
Surr: BFB	97.0	37.7-212		%Rec	1	1/26/2023 4:36:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: CCM
Benzene	ND	0.025		mg/Kg	1	1/26/2023 4:36:00 PM
Toluene	ND	0.050		mg/Kg	1	1/26/2023 4:36:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/26/2023 4:36:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	1/26/2023 4:36:00 PM
Surr: 4-Bromofluorobenzene	96.5	70-130		%Rec	1	1/26/2023 4:36:00 PM
EPA METHOD 300.0: ANIONS						Analyst: NAI
Chloride	ND	60		mg/Kg	20	1/25/2023 7:59:15 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 Quantitative 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#: 2301870

30-Jan-23

Client: Devon Energy

Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72815		SampType: mblk			TestCode: EPA Method 300.0: Anions					
Client ID: PBS		Batch ID: 72815			RunNo: 94198					
Prep Date: 1/25/2023		Analysis Date: 1/25/2023			SeqNo: 3401847		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: LCS-72815		SampType: lcs			TestCode: EPA Method 300.0: Anions					
Client ID: LCSS		Batch ID: 72815			RunNo: 94198					
Prep Date: 1/25/2023		Analysis Date: 1/25/2023			SeqNo: 3401848		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			

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 Quantitative 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

Page 16 of 19

QC SUMMARY REPORT**Hall Environmental Analysis Laboratory, Inc.**

WO#: 2301870

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: MB-72814	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch ID: 72814	RunNo: 94191								
Prep Date: 1/25/2023	Analysis Date: 1/26/2023	SeqNo: 3401999 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	9.8		10.00		97.6	69	147			

Sample ID: LCS-72814	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: LCSS	Batch ID: 72814	RunNo: 94191								
Prep Date: 1/25/2023	Analysis Date: 1/26/2023	SeqNo: 3402000 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	10	50.00	0	118	61.9	130			
Surr: DNOP	4.7		5.000		94.0	69	147			

Sample ID: 2301870-001AMS	SampType: MS	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BS23-100 4'	Batch ID: 72814	RunNo: 94195								
Prep Date: 1/25/2023	Analysis Date: 1/26/2023	SeqNo: 3402860 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	9.1	45.41	9.499	78.2	54.2	135			
Surr: DNOP	4.3		4.541		94.3	69	147			

Sample ID: 2301870-001AMSD	SampType: MSD	TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: BS23-100 4'	Batch ID: 72814	RunNo: 94195								
Prep Date: 1/25/2023	Analysis Date: 1/26/2023	SeqNo: 3402863 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	9.6	47.94	9.499	90.5	54.2	135	16.1	29.2	
Surr: DNOP	4.8		4.794		99.2	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 Quantitative 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#: 2301870

30-Jan-23

Client: Devon Energy

Project: Hackberry 6 Fed 1 Well Pad

Sample ID: lcs-72799	SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 72799		RunNo: 94183							
Prep Date: 1/24/2023	Analysis Date: 1/26/2023		SeqNo: 3401214		Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	106	72.3	137			
Surr: BFB	1000		1000		104	37.7	212			

Sample ID: mb-72799	SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 72799		RunNo: 94183							
Prep Date: 1/24/2023	Analysis Date: 1/26/2023		SeqNo: 3401215		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	920		1000		91.7	37.7	212			

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 Quantitative 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#: 2301870

30-Jan-23

Client: Devon Energy
Project: Hackberry 6 Fed 1 Well Pad

Sample ID: lcs-72799	SampType: LCS	TestCode: EPA Method 8021B: Volatiles								
Client ID: LCSS	Batch ID: 72799	RunNo: 94183								
Prep Date: 1/24/2023	Analysis Date: 1/26/2023	SeqNo: 3401309	Units: mg/Kg							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.2	80	120			
Toluene	0.96	0.050	1.000	0	95.8	80	120			
Ethylbenzene	0.93	0.050	1.000	0	93.3	80	120			
Xylenes, Total	2.8	0.10	3.000	0	92.1	80	120			
Surr: 4-Bromofluorobenzene	0.95		1.000		94.6	70	130			

Sample ID: mb-72799	SampType: MBLK	TestCode: EPA Method 8021B: Volatiles								
Client ID: PBS	Batch ID: 72799	RunNo: 94183								
Prep Date: 1/24/2023	Analysis Date: 1/26/2023	SeqNo: 3401310	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		94.7	70	130			

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 Quantitative Limit
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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

Sample Log-In Check List

Client Name: Devon Energy

Work Order Number: 2301870

RcptNo: 1

Received By: Joseph Alderette 1/24/2023 2:40:00 PM

Completed By: Desiree Dominguez 1/24/2023 2:02:53 PM

Reviewed By: SEA 1/24/23

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 $>0^{\circ}\text{C}$ 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? Yes ☒ No ☐

(Note discrepancies on chain of custody)

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? Yes ☒ No ☐

(If no, notify customer for authorization.)

of preserved
bottles checked
for pH:

(<2 or >12 unless noted)

Adjusted?

Checked by: *AS* 1-24-23

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: _____

16. Additional remarks:

COC missing client info (on file) - DAD 1/24/23

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good	Not Present	Yogi		
2	1.6	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)# of Coolers: 2 0.4-0.2-0.2°CCooler Temp (including CFI: 1.8-0.2-1.6 log (°C))

Container Type and #

Preservative Type

HEAL No.

Date Time Matrix Sample Name

1/20/23 8:36 Soil BS23-100 4'

8:37 BS23-101 4'

8:42 BS23-102 4'

8:42 BS23-103 4'

8:47 BS23-104 4'

8:46 BS23-105 4'

8:51 BS23-106 4'

8:51 BS23-107 4'

8:55 BS23-108 4'

8:55 BS23-109 4'

8:58 BS23-110 4'

8:58 BS23-111 4'

Date Time

1/20/23 15:24

Date Time

1/20/23 19:00

Relinquished by:

Steph McLeod

Relinquished by:

[Signature]

Received by:

[Signature]

Received by:

[Signature]

Date

1/19/23

Date

1-24-23

Via:

[Signature]

Via:

carrier

Time

9:15

Time

11:40

Turn-Around Time:

☐ Standard ☒ Rush

Project Name:

Hackberry 6 Fed 1 well pad

Project #:

22 E - 02537

Project Manager:

Chance Dixon

Sampler: SPC

On Ice: ☒ Yes ☐ No# of Coolers: 2 0.4-0.2-0.2°CCooler Temp (including CFI: 1.8-0.2-1.6 log (°C))

Container Type and #

Preservative Type

HEAL No.

Date Time Matrix Sample Name

1/20/23 8:36 Soil BS23-100 4'

8:37 BS23-101 4'

8:42 BS23-102 4'

8:42 BS23-103 4'

8:47 BS23-104 4'

8:46 BS23-105 4'

8:51 BS23-106 4'

8:51 BS23-107 4'

8:55 BS23-108 4'

8:55 BS23-109 4'

8:58 BS23-110 4'

8:58 BS23-111 4'

Relinquished by:

Steph McLeod

Relinquished by:

[Signature]

Received by:

[Signature]

Received by:

[Signature]

Date

1/19/23

Date

1-24-23

Via:

[Signature]

Via:

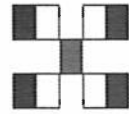
carrier

Time

9:15

Time

11:40

HALL ENVIRONMENTAL
ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

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⁻, NO₃⁻, NO₂⁻, PO₄³⁻, SO₄²⁻

8260 (VOA)

8270 (Semi-VOA)

Total Coliform (Present/Absent)

Remarks:

Direct Bill Devon

WO 1007101301

cc Sally Cartier

Page 1/2

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)# of Coolers: 2 0.4-0.2=0.2°C 40gCooler Temp (Including CF): 1.8-0.2=1.6 (°C)

Container Type and #

Preservative Type

HEAL No.

Date Time Matrix Sample Name

1/20/23 11:31 Soil WS23-43 0-4'

11:39 1 WS23-44 0-4'

12:42 1 WS23-45 0-4'

Date Time

Relinquished by:

1/20/23 15:24 Sally Cartan

Received by:

Date Time

1/20/23 9:15

Via:

Date Time

1-24-23 13:40

Received by:

Date Time

1-24-23 13:40

Via:

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Limitations

This report has been prepared for the sole benefit of Devon Energy Production Company (Devon). This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division, without the express written consent of Vertex Resource Services Inc. (Vertex) and Devon. Any use of this report by a third party, 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 judgment 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.

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1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 183720

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 183720
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	We have received your closure report and final C-141 for Incident #NAPP2219226827 PASTURE NORTH OF HACKBERRY 6 FEDERAL 1, thank you. This closure is approved.	6/9/2023