November 26, 2024 Vertex Project #: 24E-04980-02

**Spill Closure Report:** Todd 22 I Federal #009
Unit I, Section 22, Township 23 South, Range 31 East
API: 30-015-32730
County: Eddy
Incident ID: nAB1729753198, 2RP-4453

**Prepared For:** **Devon Energy Production Company, LP**
33 West Sheridan Ave
Oklahoma City, Oklahoma 73102

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

Devon Energy Production Company, LP (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment for a release of produced water and crude oil from a flow line rupture at Todd 22 I Federal #009 API: 30-015-32730 (hereafter referred to as "Todd"). Devon provided notification to the New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM), who own the property. The initial C-141 Notification of Release was approved on October 24, 2017 and is included in Attachment 1. The coordinates of the spill area are N 32.287855, W -103.758804. The NMOCD tracking and administrative work order numbers assigned to this incident are nAB1729753198 and 2RP-4453, respectively.

This letter provides a description of the Spill Assessment and demonstrates that closure criteria established in 19.15.29.12 and 19.15.29.13 *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) have been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NMOCD and the BLM for closure of this release.

## Incident Description

The spill occurred on October 9, 2017, due to a flow line rupture. The well and flow line were shut in to stop the release. The spill was reported immediately on October 9, 2017, and involved the release of approximately four barrels (bbl.) of produced water and oil, off-site, in the pasture near the pad entrance. Approximately three bbl. of free fluid was removed during initial spill clean-up. The release was off-site and did not affect any sensitive areas or waterways.

## Background

The site is located approximately 18.5 miles west-southwest Malaga, New Mexico. The legal location for the site is Unit I, Section 22, Township 23 South and Range 31 East in Eddy County, New Mexico. The release area is located on BLM property. An aerial photograph and site schematic are presented on Figure 1 (Attachment 2).

*The Geological Map of New Mexico* (New Mexico Bureau of Geology and Mineral Resources, 2024) indicates the site's surface geology is comprised primarily of Qep - Eolian and piedmont deposits (Holocene to middle Pleistocene) Interlayed eolian sands and piedmont-slope deposits. The Natural Resources Conservation Service *Web Soil Survey* characterizes the predominant soil textures on the site as Kermit-Berino fine sands. It tends to be well to excessively drained with negligible to low runoff and low to moderate available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2023). There is low potential for karst geology to be present near Todd, though some erosional karst is possible (United States Department of the Interior, Bureau of Land Management, 2018).

The surrounding landscape is associated with alluvial fans, plains, and fan piedmonts. The parent material consists of mixed alluvium and or eolian sands derived from sedimentary rock. Elevations range from 3,100 to 4,200 feet above sea level. The climate is semi-arid, with an annual precipitation ranging between 10 to 14 inches. Historically, the plant community was dominated by grasses, which stabilized the potentially erosive sandy soils; however, more recent conditions, resulting from fire suppression and extensive grazing, show increased woody plant abundance. The dominant grass species are dropseeds black grama, and bluestem interspersed with mesquite. Short grasses are a significant proportion of ground cover while shrubs, litter and, to a lesser extent, bare ground compose the remainder (United States Department of Agriculture, Natural Resources Conservation Service, 2023). Limited to no vegetation is allowed to grow on the compacted facility pad.

There is no surface water located at Todd. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 Mexico Administrative Code (NMAC; New Mexico Oil Conservation Division, 2018), is the intermittent stream located approximately 2.75 miles north of Todd (United States Fish and Wildlife Service, 2023). 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.

## Closure Criteria Determination

Using site characterization information, a closure criteria determination table (Table 1) was completed to determine if the release was subject to any of the special case scenarios in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

Based on data included in the closure criteria determination worksheet, the release at the site is subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC. As the nearest groundwater reference well is not within 0.5 miles of the release site, the depth to groundwater (DTGW) cannot be accurately determined and closure criteria defaults to the most stringent criteria. Further, as the release occurred off-pad, the most stringent closure criteria apply in order to meet restoration and reclamation requirements associated with releases into undisturbed areas, as outlined in Paragraph (1) of Subsection D of 19.15.29.13 NMAC. This regulation requires a minimum of four feet of non-waste containing, uncontaminated, earthen material with chloride concentrations of less than 600 mg/kg. Documentation used in Closure Criteria Determination research is included in Attachment 4.

| **Table 1. Closure Criteria Determination** | | | |
|---|---|---|---|
| **Site Name: Todd 22 I Federal #009** | | | |
| **Spill Coordinates: 32.287855,-103.758804** | | **X: 616874** | **Y: 3573019** |
| **Site Specific Conditions** | | **Value** | **Unit** |
| 1 | Depth to Groundwater (nearest reference) | **>55** | feet |
| | Distance between release and nearest DTGW reference | **4,777** | feet |
| | | **0.90** | miles |
| | Date of nearest DTGW reference measurement | **March 9, 2023** | |
| 2 | Within 300 feet of any continuously flowing watercourse or any other significant watercourse | 14,537 | feet |
| 3 | Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark) | 10,832 | feet |
| 4 | Within 300 feet from an occupied residence, school, hospital, institution or church | 20,617 | 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** | 6,885 | feet |
| | ii) Within 1000 feet of any fresh water well or spring | 5,444 | 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 | 16,706 | feet |
| 8 | Within the area overlying a subsurface mine | No | (Y/N) |
| | Distance between release and nearest registered mine | 45,593 | feet |
| 9 | Within an unstable area (Karst Map) | Low | Critical<br>High<br>Medium<br>Low |
| | Distance between release and nearest Critical/High/Medium Karst | 20,029 | feet |
| 10 | Within a 100-year Floodplain | >500 | year |
| | Distance between release and nearest FEMA Zone A (100-year Floodplain) | 30,450 | feet |
| 11 | Soil Type | Fine sand, fine sandy loam | |
| 12 | Ecological Classification | Loamy Sand | |
| 13 | Geology | Eolian and piedmont deposits | |
| | **NMAC 19.15.29.12 E (Table 1) Closure Criteria** | <50' | <50'<br>51-100'<br>>100' |

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

**Table 2. Closure Criteria for Soils Impacted by a Release**

| Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS | Constituent | Limit |
|---|---|---|
| < 50 feet | Chloride | 600 mg/kg |
| | TPH (GRO+DRO+MRO) | 100 mg/kg |
| | BTEX | 50 mg/kg |
| | Benzene | 10 mg/kg |

Total Dissolved Solids (TDS)
Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)
Benzene, toluene, ethylbenzene, and xylenes (BTEX)

## Initial Site Investigation

An initial site assessment of the spill area was completed on July 28, 2021, which identified the area of the spill specified in the Notification of Release. The impacted area was horizontally and vertically delineated using field screening and laboratory results. In total, 12 sample points were established, 18 samples were collected and 12 samples were sent for laboratory analysis. Vertical delineation was completed at two borehole locations (BH21-01 and BH21-07). Horizontal delineation was achieved at six borehole locations (BH21-02, BH21-04, BH21-06, BH21-08, BH21-11 and BH21-12). Field screening consisted of analysis using a Photo Ionization Detector (volatile hydrocarbons), Dexsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and an electrical conductivity (EC) meter to estimate chloride concentration. Samples submitted for lab analysis were submitted to a National Environmental Laboratory Accreditation Program-approved laboratory. The impacted area was determined to be approximately 510 square feet, as presented on Figure 1 (Attachment 2). Characterization sampling field screening and analytical data are summarized in Table 3 (Attachment 3).

## Remedial Actions

Remediation activities began on February 21, 2022, and were completed on February 22, 2022. Vertex personnel supervised the excavation of impacted soils. Field screening results were used to identify areas requiring further remediation from those areas showing concentrations below determined closure criteria levels. Field screening consisted of analysis using a Photo Ionization Detector (volatile hydrocarbons), Dexsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons), and EC meter or titration for estimating chloride concentration. Soils were removed to a depth of 6 feet below ground surface (bgs). Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility. Daily Field Reports and their associated photographs for this release are included in Attachment 5.

Notification that confirmatory samples were being collected was provided to the NMOCD on February 18, March 8 and March 11, 2022. Confirmatory composite samples were collected on February 22, 2022, from the base and walls of the excavation in 200 square foot increments. After mapping the sample points, eight additional composite confirmatory samples were needed to meet the 200 square foot rule, and these were collected on March 10, 2022. During transportation, seven of eight samples taken on March 10, 2022, were compromised by ice water entering the jars. Sample point WS22-05 was not compromised. NMOCD was notified of this incident and the seven compromised samples were re-collected on March 11, 2022. In total, 15 composite confirmatory sample points were established and collected for laboratory analysis following NMOCD soil sampling procedures. The 48-hour sampling notifications are included in Attachment 6.

All samples were placed in laboratory-provided containers, preserved on ice, and submitted to Hall Environmental Analysis Laboratory under chain-of-custody protocols and analyzed for BTEX (EPA Method 8021B), Total Petroleum Hydrocarbons (GRO, DRO, MRO – EPA Method 8015D and EPA Method 8015M) and Total Chlorides (EPA Method 300.0). Confirmatory sampling laboratory results are presented in Table 4 (Attachment 3). All laboratory data reports associated with this site are included in Attachment 7. All confirmatory samples collected and analyzed were below closure criteria for the site. The final confirmatory sampling locations are presented on Figure 2 (Attachment 2).

A GeoExplorer 7000 Series Trimble global positioning system (GPS) unit, or equivalent, was used to map the approximate center of the five-point composite samples.

## Closure Request

Vertex recommends no additional remediation action to address the release at Todd 22 I Federal #009. Laboratory analyses of the final confirmatory samples showed constituent of concern concentration levels below NMOCD closure criteria for areas where depth to groundwater is less than 50 feet bgs as shown in Table 2. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

The excavation was backfilled with non-waste-containing, uncontaminated, earthen material, sourced locally and placed to meet the site's existing grade to prevent ponding of water and erosion in accordance with 19.15.29.13 NMAC.

Vertex requests that this incident (nAB1729753198, 2RP-4453) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Devon certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain closure on the October 9, 2017, release at Todd 22 I Federal #009.

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

Lakin Pullman

November 26, 2024

Lakin Pullman, B.Sc.
ENVIRONMENTAL SPECIALIST, REPORTING

Date

November 27,2024

Chad Hensley, B. Sc., GCNR
SENIOR PROJECT MANAGER, REPORT REVIEW

Date

## Attachments

Attachment 1. Initial C-141 Notification of Release
Attachment 2. Figures
Attachment 3. Initial Characterization and Confirmatory Sampling Field Screening and Laboratory Results
Attachment 4. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
Attachment 5. Daily Field Reports with Pictures
Attachment 6. 48-hour Sampling Notification to the New Mexico Oil Conservation Division
Attachment 7. Laboratory Data Reports and Chain of Custody Forms

## References

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

New Mexico Energy, Minerals and Natural Resources Department, Mining and Minerals Division. (2024). *Registered Mines and Permits Search.* Retrieved from https://wwwapps.emnrd.state.nm.us/MMD/MMDWebInfo/.

New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System. (2024). *Water Column/Average Depth to Water Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html.

New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.

United States Department of Agriculture, Natural Resources Conservation Service. (2022). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

United States Department of the Interior, Bureau of Land Management. (2018). *CFO Karst Public*. https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html

United States Fish and Wildlife Service. (2022). *National Wetlands Inventory*. Retrieved from https://www.fws.gov/wetlands/data/Mapper.html.

## Limitations

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

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

# ATTACHMENT 1

District I
1625 N French Dr., Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

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

RECEIVED
SEP 02 2009
HOBBSOCD

Form C-141
Revised March 17, 1999

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

# Release Notification and Corrective Action

## OPERATOR

☒ Initial Report ☐ Final Report

| | |
|---|---|
| Name of Company Devon Energy | Contact Roger Hernandez |
| Address P. O. Box 250<br>Artesia, NM 88211 | Telephone No. 575-748-5238 |
| Facility Name Mesa Verde 6 Fed #5 | Facility Type Oil Well |

| Surface Owner FEDERAL | Mineral Owner | Lease No. |
|---|---|---|

## LOCATION OF RELEASE

API # 30-025-32504-00-00

| Unit Letter | Section | Township | Range | Feet from the | North/South Line | Feet from the | East/West Line | County |
|---|---|---|---|---|---|---|---|---|
| F | 6 | 024S | 032E | 1980 | North | 1980 | East | Lea County, NM |

## NATURE OF RELEASE

| | | |
|---|---|---|
| Type of Release Oil and Produced Water | Volume of Release 5 bbls | Volume Recovered 0 |
| Source of Release Flowline | Date and Hour of Occurrence<br>8-27-2009 2:30 PM | Date and Hour of Discovery 8-27-2009<br>2.30 PM |
| Was Immediate Notice Given?<br>☒ Yes ☐ No ☐ Not Required | If YES, To Whom? BLM – Lea County, NM<br>Trish BadBear | |
| By Whom? Roger Hernandez | Date and Hour 8-28-2009 7:30 AM | |
| Was a Watercourse Reached?<br>☐ Yes ☒ No | If YES, Volume Impacting the Watercourse. | |

If a Watercourse was Impacted, Describe Fully.*

N/A

WATER @ 335

Describe Cause of Problem and Remedial Action Taken.*
Leak in buried flowline, shut well in while making repairs. Replaced with poly line.

Describe Area Affected and Cleanup Action Taken.*
8' radious around wellhead, and an area 1'x100', back dragged the location.

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

Signature:

Printed Name: Roger Hernandez

Title: Production Foreman

Date: August 31, 2009 Phone 575-748-4238

## OIL CONSERVATION DIVISION

Approved by ENV ENGINEER: Jeffrey Labine

Approval Date: 09/03/09 Expiration Date: 11/03/09

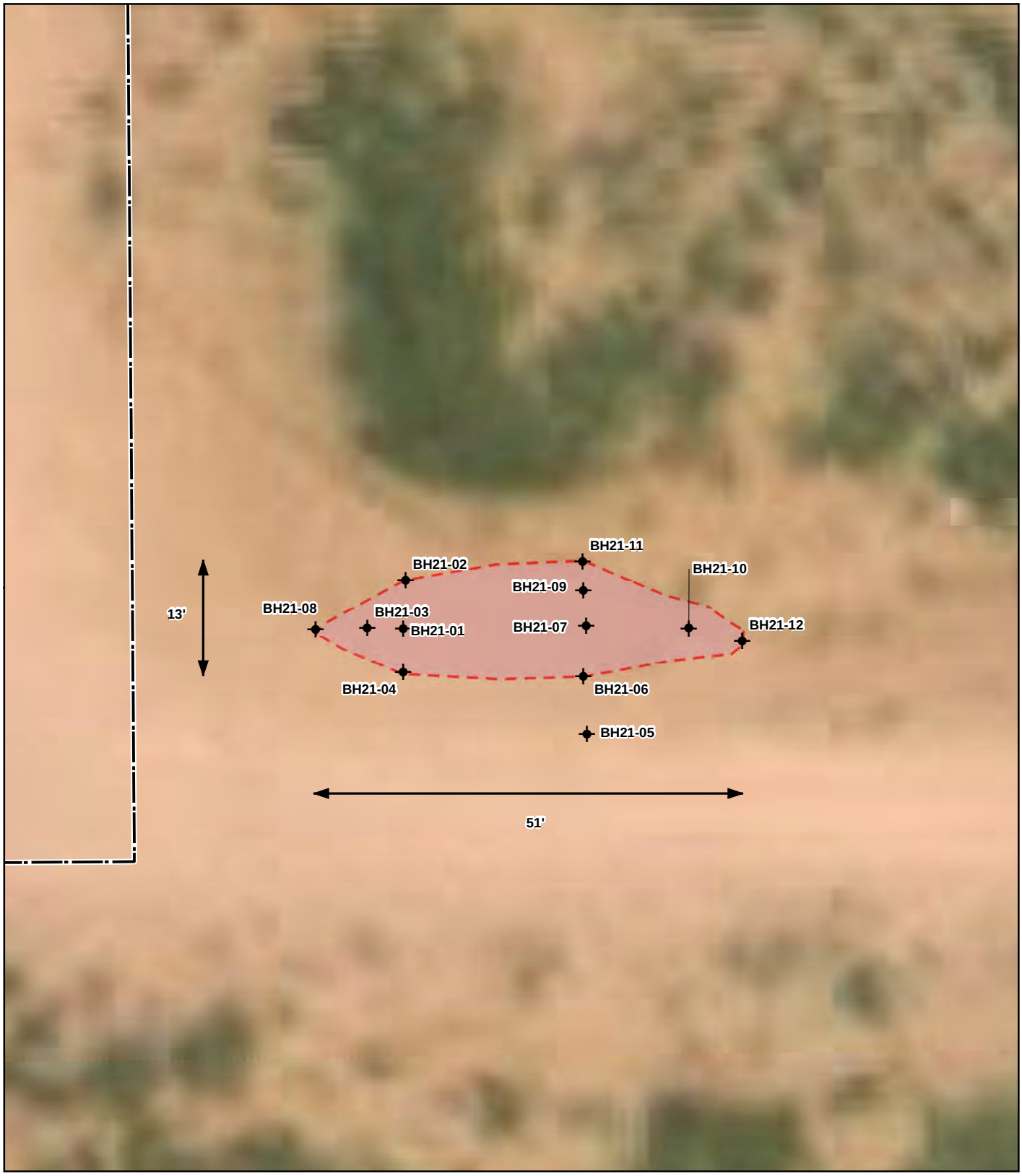
Conditions of Approval: SAMPLING CONFIRMATION CLEAN CONCENTRATIONS HAVE BEEN REACHED MUST BE PERFORMED AND ANALYSIS RESULTS SUBMITTED TO NMOCD.

Attached ☐ IRP-09-9-2288

* Attach Additional Sheets If Necessary

FGRL0927341991

# ATTACHMENT 2




Borehole

Approximate Extent of Spill (~510 sq. ft.)

Approximate Lease Boundary

VERTEX

0 3 6 12 ft.

NAD 1983 UTM Zone 13N

Date: Jul 29/21

Map Center:
Lat: 32.287863,
Long:-103.758730

N

**Initial Characterization Sampling Locations**
**Todd 22 I Federal 9**

FIGURE: 1

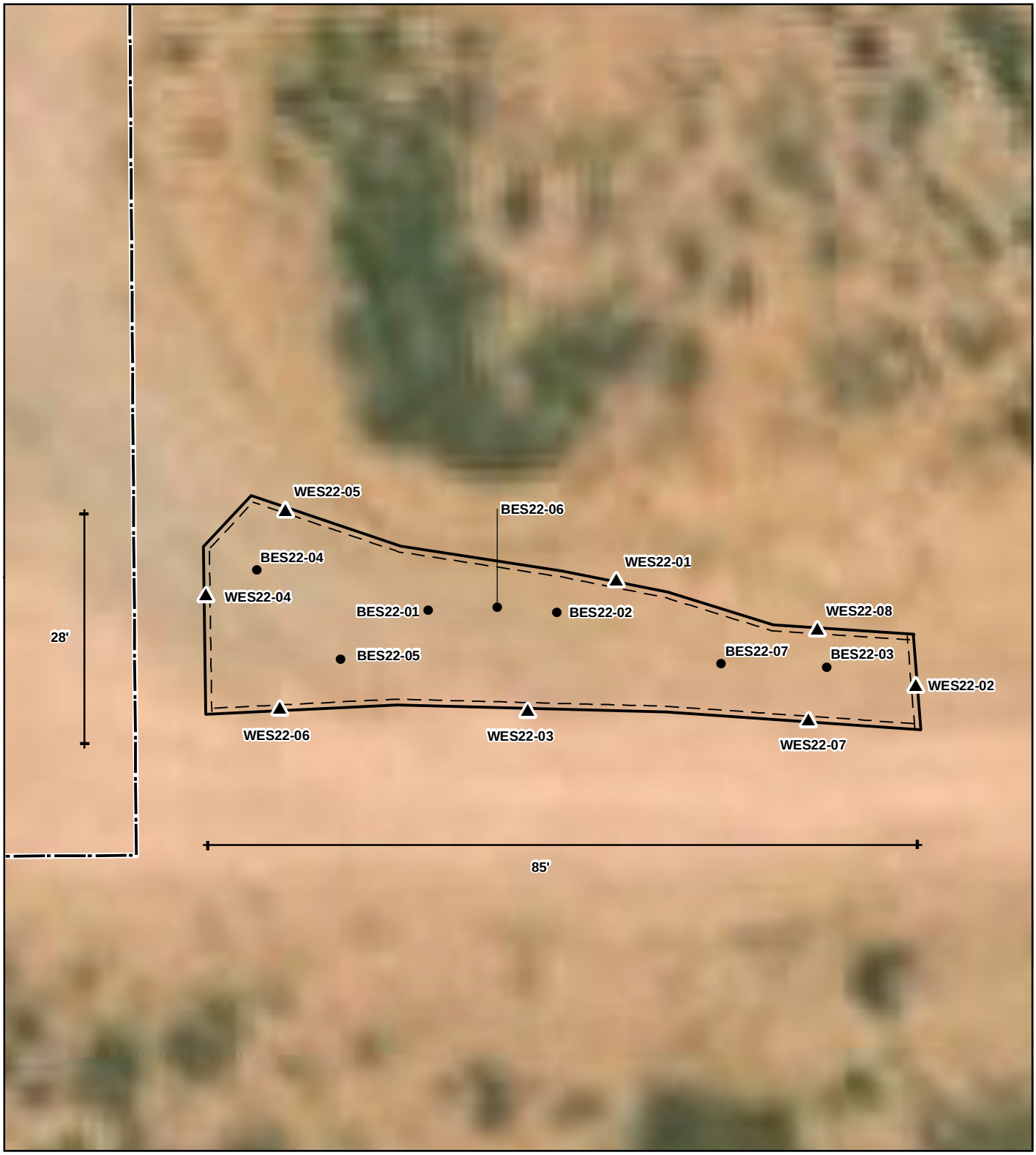
devon

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

Note: Background imagery from ESRI, 2020.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\21E-02816\Todd 22 Federal 9\Figure 1 Initial Characterization Todd 22 Federal 9.mxd




- Base Sample
- Wall Sample
- Approximate Lease Boundary
- Excavation (1,401 sq. ft.)

VERTEX

0 2.5 5 10 ft.

NAD 1983 UTM Zone 13N
Date: Apr 04/22

Map Center:
Lat: 32.287863,
Long:-103.758730

N

**Confirmation Sampling Locations**
**Todd 22 I Federal 9**

FIGURE: 2

devon

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

Note: Background imagery from ESRI, 2021.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\21E-02816\Todd 22 Federal 9\Figure 2 Confirmatory Sampling Locations Todd 22 Federal 9.mxd

# ATTACHMENT 3

**Client Name: Devon Energy Production Company, LP**
**Site Name: Todd 22 I Federal #009**
**NM OCD Tracking #: nAB1729753198**
**Project #: 24E-04980-02**
**Lab Report: 2107F48**

**Table 3. Initial Characterization Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs**

| Sample Description | | | Field Screening | | | Petroleum Hydrocarbons | | | | | | | Inorganic |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Volatile | | Extractable | | | | | |
| Sample ID | Depth (ft) | Sample Date | Volatile Organic Compounds (PID) | Extractable Organic Compounds (PetroFlag) | Chloride Concentration | Benzene | BTEX (Total) | Gasoline Range Organics (GRO) | Diesel Range Organics (DRO) | Motor Oil Range Organics (MRO) | (GRO + DRO) | Total Petroleum Hydrocarbons (TPH) | Chloride Concentration |
| | | | (ppm) | (ppm) | (ppm) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| BH21-01 | 0-0.5 | July 28, 2021 | 29 | 4,940 | 103 | ND | ND | ND | 2,800 | 2,200 | **2,800** | **5,000** | 230 |
| | 2 | July 28, 2021 | 107 | - | - | - | - | - | - | - | - | - | - |
| | 4 | July 28, 2021 | 360 | - | - | ND | ND | 69 | 5,400 | 2,600 | **5,469** | **8,069** | **730** |
| | 6 | July 28, 2021 | 0 | 76 | 27 | ND | ND | ND | ND | ND | ND | ND | ND |
| BH21-02 | 0-0.5 | July 28, 2021 | 0 | 98 | 0 | ND | ND | ND | 13 | ND | 13 | 13 | ND |
| BH21-03 | 0-0.5 | July 28, 2021 | 0 | 350 | 0 | - | - | - | - | - | - | - | - |
| BH21-04 | 0-0.5 | July 28, 2021 | 0 | 12 | 0 | ND | ND | ND | ND | ND | ND | ND | ND |
| BH21-05 | 0-0.5 | July 28, 2021 | 0 | 40 | 147 | - | - | - | - | - | - | - | - |
| BH21-06 | 0-0.5 | July 28, 2021 | 0 | 29 | 0 | ND | ND | ND | ND | ND | ND | ND | ND |
| BH21-07 | 0-0.5 | July 28, 2021 | 0 | 414 | 0 | ND | ND | ND | 75 | 110 | 75 | **185** | ND |
| | 2 | July 28, 2021 | 0 | 0 | 7 | ND | ND | ND | ND | ND | ND | ND | ND |
| | 4 | July 28, 2021 | 0 | 29 | 25 | - | - | - | - | - | - | - | - |
| | 6 | July 28, 2021 | 0 | 76 | 96 | ND | ND | ND | 11 | ND | 11 | 11 | 120 |
| BH21-08 | 0-0.5 | July 28, 2021 | 0 | 94 | 0 | ND | ND | ND | 15 | ND | 15 | 15 | ND |
| BH21-09 | 0-0.5 | July 28, 2021 | 0 | 231 | 0 | - | - | - | - | - | - | - | - |
| BH21-10 | 0-0.5 | July 28, 2021 | 0 | 326 | 165 | - | - | - | - | - | - | - | - |
| BH21-11 | 0-0.5 | July 28, 2021 | 0 | 18 | 0 | ND | ND | ND | ND | ND | ND | ND | ND |
| BH21-12 | 0-0.5 | July 28, 2021 | 0 | 39 | 0 | ND | ND | ND | ND | ND | ND | ND | ND |

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

**Client Name: Devon Energy Production Company, LP**
**Site Name: Todd 22 I Federal #009**
**NM OCD Tracking #: nAB1729753198**
**Project #: 24E-04980-02**
**Lab Reports: 2202B36, 2203707, and 2203743**

**Table 4. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs**

| Sample Description | | | Field Screening | | | Petroleum Hydrocarbons | | | | | | | Inorganic |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Volatile | | Extractable | | | | | |
| Sample ID | Depth (ft) | Sample Date | Volatile Organic Compounds (PID) | Extractable Organic Compounds (PetroFlag) | Chloride Concentration | Benzene | BTEX (Total) | Gasoline Range Organics (GRO) | Diesel Range Organics (DRO) | Motor Oil Range Organics (MRO) | (GRO + DRO) | Total Petroleum Hydrocarbons (TPH) | Chloride Concentration |
| | | | (ppm) | (ppm) | (ppm) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) | (mg/kg) |
| BES22-01 | 6 | February 22, 2022 | 0 | 17 | 190 | ND | ND | ND | ND | ND | ND | ND | 250 |
| BES22-02 | 6 | February 22, 2022 | 0 | 10 | 60 | ND | ND | ND | ND | ND | ND | ND | ND |
| BES22-03 | 6 | February 22, 2022 | 0 | 9 | 25 | ND | ND | ND | ND | ND | ND | ND | ND |
| BES22-04 | 6 | March 11, 2022 | - | - | 438 | ND | ND | ND | 31 | ND | 31 | 31 | 61 |
| BES22-05 | 6 | March 11, 2022 | - | - | 326 | ND | ND | ND | 30 | ND | 30 | 30 | ND |
| BES22-06 | 6 | March 11, 2022 | - | - | 308 | ND | ND | ND | 26 | ND | 26 | 26 | ND |
| BES22-07 | 6 | March 11, 2022 | - | - | 253 | ND | ND | ND | 27 | ND | 27 | 27 | ND |
| WES22-01 | 0-6 | February 22, 2022 | 0 | 21 | 350 | ND | ND | ND | ND | ND | ND | ND | 360 |
| WES22-02 | 0-4 | February 22, 2022 | 0 | 8 | 50 | ND | ND | ND | ND | ND | ND | ND | ND |
| WES22-03 | 0-6 | February 22, 2022 | 0 | 32 | 80 | ND | ND | ND | ND | ND | ND | ND | ND |
| WES22-04 | 0-6 | February 22, 2022 | 0 | 14 | 165 | ND | ND | ND | ND | ND | ND | ND | 290 |
| WES22-05 | 0-6 | March 10, 2022 | 0 | 12 | 100 | ND | ND | ND | ND | ND | ND | ND | ND |
| WES22-06 | 0-6 | March 11, 2022 | - | - | 151 | ND | ND | ND | 28 | ND | 28 | 28 | 61 |
| WES22-07 | 0-6 | March 11, 2022 | - | - | 131 | ND | ND | ND | 24 | ND | 24 | 24 | 60 |
| WES22-08 | 0-6 | March 11, 2022 | - | - | 287 | ND | ND | ND | 30 | ND | 30 | 30 | ND |

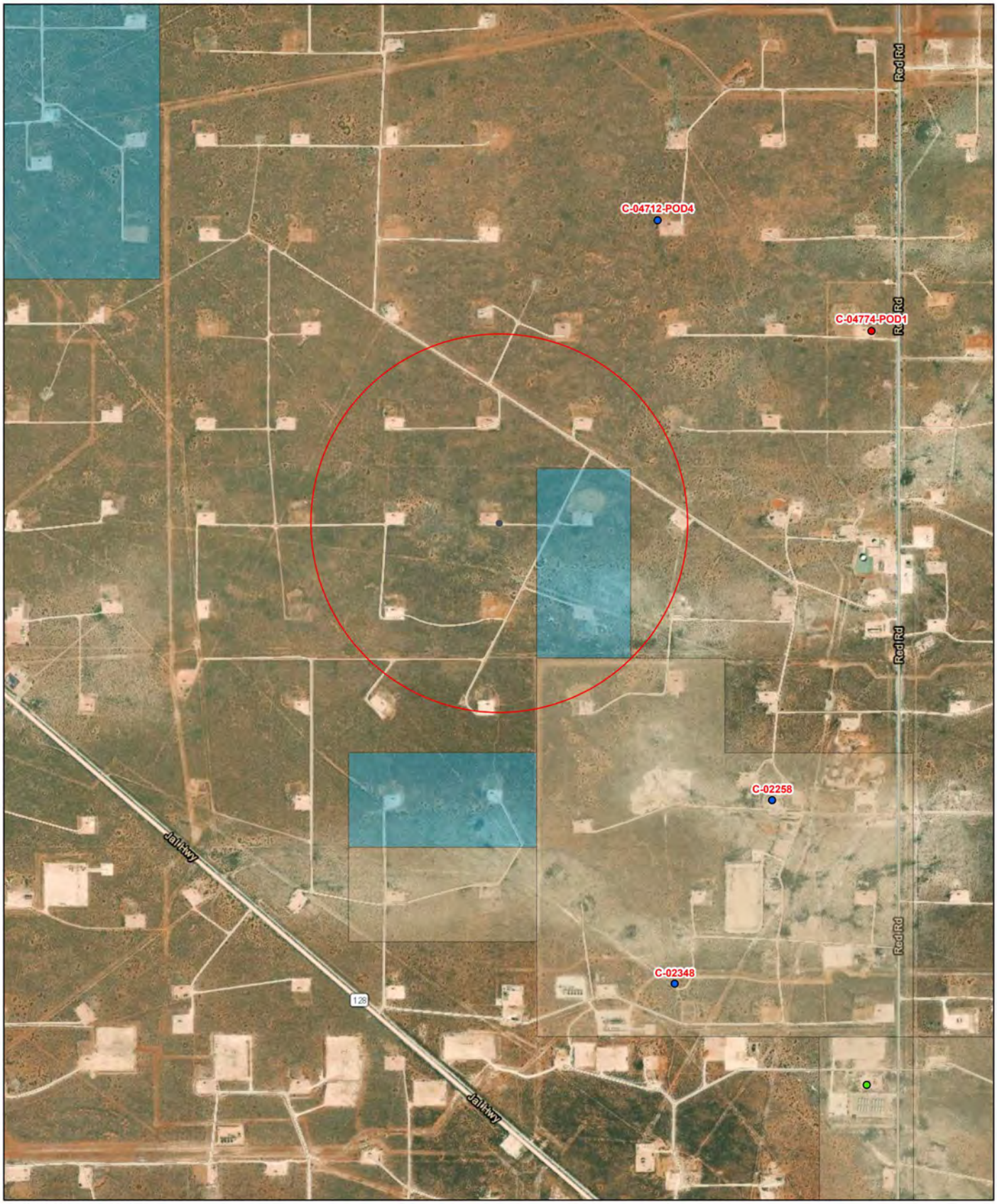
"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
**Bold and grey shaded indicates exceedance outside of NMOCD Reclamation Closure Criteria**

VERTEX

# ATTACHMENT 4

# Todd 22 I Federal #009 OSE Map






11/23/2024, 7:39:55 PM

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

Water Right Regulations
- Artesian Planning Area

New Mexico State Trust Lands
- Subsurface Estate
- Both Estates

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

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

Online web user

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

# Water Column/Average Depth to Water

| (A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.) | (R=POD has been replaced, O=orphaned, C=the file is closed) | | | (quarters are smallest to largest) | | | | | | (NAD83 UTM in meters) | | | | (In feet) | (In feet) | (In feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **POD Number** | **Code** | **Sub basin** | **County** | **Q64** | **Q16** | **Q4** | **Sec** | **Tws** | **Range** | **X** | **Y** | **Map** | **Distance** | **Well Depth** | **Depth Water** | **Water Column** |
| C 04712 POD4 | | CUB | ED | NW | SE | SW | 14 | 23S | 31E | 617535.4 | 3574316.2 | | 1456 | 55 | | |
| C 02258 | | C | ED | | SW | NE | 26 | 23S | 31E | 618055.0 | 3571853.0 * | | 1659 | 662 | | |
| C 04774 POD1 | | CUB | ED | SE | NE | NE | 23 | 23S | 31E | 618456.0 | 3573856.4 | | 1789 | 105 | | |
| | | | | | | | | | | | | | | Average Depth to Water: **0 feet** | | |
| | | | | | | | | | | | | | | Minimum Depth: **0 feet** | | |
| | | | | | | | | | | | | | | Maximum Depth: **0 feet** | | |

**Record Count:** 3

**UTM Filters (in meters):**
**Easting:** 616874
**Northing:** 3573019
**Radius:** 002000

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

# Point of Diversion Summary

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

NAD83 UTM in meters

| Well Tag | POD Nbr | Q64 | Q16 | Q4 | Sec | Tws | Rng | X | Y | Map |
|---|---|---|---|---|---|---|---|---|---|---|
| NA | C 04712 POD4 | NW | SE | SW | 14 | 23S | 31E | 617535.4 | 3574316.2 | |

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

| | | | | | |
|---|---|---|---|---|---|
| **Driller License:** | 1833 | **Driller Company:** | VISION RESOURCES, INC | | |
| **Driller Name:** | JASON MALEY | | | | |
| **Drill Start Date:** | 2023-03-09 | **Drill Finish Date:** | 2023-03-09 | **Plug Date:** | 2023-03-14 |
| **Log File Date:** | 2023-04-04 | **PCW Rcv Date:** | | **Source:** | |
| **Pump Type:** | | **Pipe Discharge Size:** | | **Estimated Yield:** | |
| **Casing Size:** | 6.00 | **Depth Well:** | 55 | **Depth Water:** | |

# Water Right Summary

get image list

| | | | | |
|---|---|---|---|---|
| **WR File Number:** | C 04712 | **Subbasin:** | CUB | **Cross Reference:** |
| **Primary Purpose:** | MON MONITORING WELL | | | |
| **Primary Status:** | PMT Permit | | | |
| **Total Acres:** | | **Subfile:** | | **Header:** |
| **Total Diversion:** | 0.000 | **Cause/Case:** | | |
| **Owner:** | VERTEX RESOURCES | | | |
| **Owner:** | HARVARD PETROLEUM COMPANY LLC | | | |
| **Contact:** | JUSTIN WARREN | | | |

## Documents on File

(acre-feet per annum)

| Transaction Images | Trn # | Doc | File/Act | Status 1 | Status 2 | Transaction Desc. | From/To | Acres | Diversion | Consumptive |
|---|---|---|---|---|---|---|---|---|---|---|
| get images | 743189 | EXPL | 2023-02-21 | PMT | APR | C 04712 POD1-6 | T | 0.000 | 0.000 | |

## Current Points of Diversion

| POD Number | Well Tag | Source | Q64 | Q16 | Q4 | Sec | Tws | Rng | X | Y | Map | Other Location Desc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 04712 POD1 | NA | | NW | SE | NW | 31 | 23S | 32E | 620917.2 | 3570289.2 | | SDE |
| C 04712 POD2 | NA | | SE | SE | SE | 17 | 23S | 32E | 623331.9 | 3574331.5 | | TOMCAT17 |
| C 04712 POD3 | NA | | SE | NW | NE | 24 | 23S | 31E | 619650.7 | 3573877.9 | | TODD24 |
| C 04712 POD4 | NA | | NW | SE | SW | 14 | 23S | 31E | 617535.4 | 3574316.2 | | TODD14 |
| C 04712 POD5 | NA | | SE | SE | SW | 09 | 23S | 31E | 614392.9 | 3575754.4 | | NPG9 |
| C 04712 POD6 | NA | | SW | SW | SE | 08 | 23S | 31E | 613146.6 | 3575740.1 | | NPG8 |

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

# WELL RECORD & LOG

## OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

**1. GENERAL AND WELL LOCATION**

| | | |
|---|---|---|
| OSE POD NO. (WELL NO.): ~~C-4712~~ POD4 | WELL TAG ID NO. | OSE FILE NO(S.): C-4712 |
| WELL OWNER NAME(S): Harvard Petroleum Company | | PHONE (OPTIONAL): |
| WELL OWNER MAILING ADDRESS: PO Box 936 | | CITY: Roswell STATE: NM ZIP: 88202 |

| WELL LOCATION (FROM GPS) | DEGREES | MINUTES | SECONDS | |
|---|---|---|---|---|
| LATITUDE | 32 | 17 | 58.2 | N |
| LONGITUDE | 103 | 45 | 05.8 | W |

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

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

**2. DRILLING & CASING INFORMATION**

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

| DRILLING STARTED | DRILLING ENDED | DEPTH OF COMPLETED WELL (FT) | BORE HOLE DEPTH (FT) | DEPTH WATER FIRST ENCOUNTERED (FT) |
|---|---|---|---|---|
| 3/9/23 | 3/8/23 | 55 | 55 | Dry |

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

STATIC WATER LEVEL IN COMPLETED WELL (FT): Dry DATE STATIC MEASURED:

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

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

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

| DEPTH (feet bgl) FROM | DEPTH (feet bgl) TO | BORE HOLE DIAM (inches) | CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen) | CASING CONNECTION TYPE (add coupling diameter) | CASING INSIDE DIAM. (inches) | CASING WALL THICKNESS (inches) | SLOT SIZE (inches) |
|---|---|---|---|---|---|---|---|
| 0 | 45 | 6 | 2" PVC sch 40 | Thread | 2" | sch 40 | — |
| 45 | 55 | 6 | 2" PVC sch 40 | Thread | 2" | sch 40 | .02 |

OSE DII APR 4 2023 PM 1:23

**3. ANNULAR MATERIAL**

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

FOR OSE INTERNAL USE

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

| FILE NO. C-4712-POD4 | POD NO. 4 | TRN NO. 743189 | |
|---|---|---|---|
| LOCATION Chen 23.31.14.143 | | WELL TAG ID NO. ——— | PAGE 1 OF 2 |

**4. HYDROGEOLOGIC LOG OF WELL**

| DEPTH (feet bgl) FROM | DEPTH (feet bgl) TO | THICKNESS (feet) | COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units) | WATER BEARING? (YES / NO) | ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm) |
|---|---|---|---|---|---|
| 0 | 25 | 25 | White Caliche | Y (N) | |
| 25 | 55 | 30 | Red Sand And Caliche | Y (N) | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
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| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |
| | | | | Y N | |

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): Dry

**5. TEST; RIG SUPERVISION**

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

MISCELLANEOUS INFORMATION:

OSE DIT APR 4 2023 PM1:23

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

**6. SIGNATURE**

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

Jason Maley — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

3/24/23 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 09/22/2022)

| FILE NO. C-4712-POD 4 | POD NO. 4 | TRN NO. 743189 | |
|---|---|---|---|
| LOCATION Unm 23.31.14.143 | | WELL TAG ID NO. — | PAGE 2 OF 2 |

Mike A. Hamman, P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

**STATE OF NEW MEXICO**
**OFFICE OF THE STATE ENGINEER**

Trn Nbr: 743189
File Nbr: C 04712
Well File Nbr: C 04712 POD4

Apr. 04, 2023

VERTEX RESOURCES
P.O. BOX 936
ROSWELL, NM 88202

Greetings:

The above numbered permit was issued in your name on 02/21/2023.

The Well Record was received in this office on 04/04/2023, stating that it had been completed on 03/09/2023, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 02/21/2024.

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

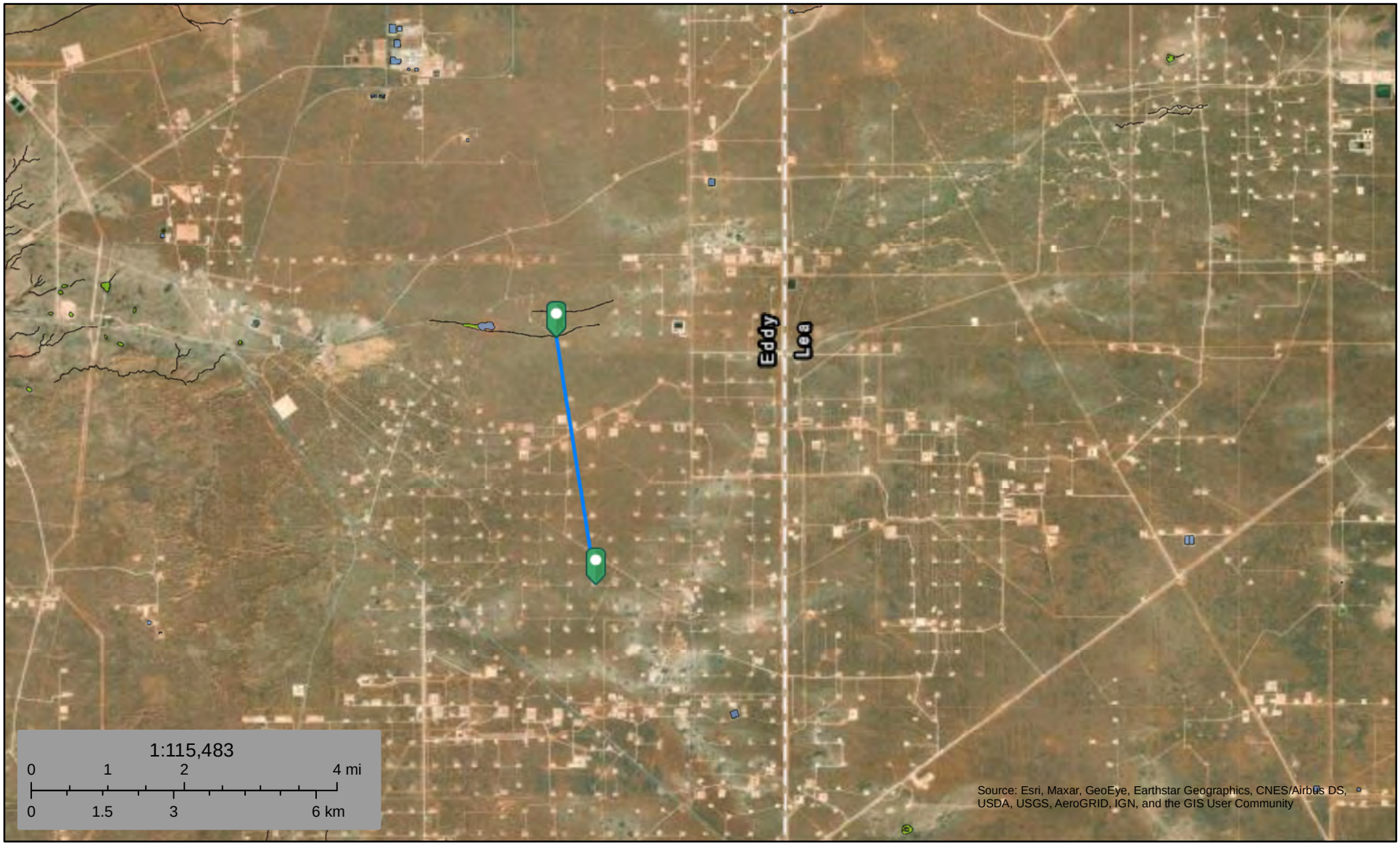
Sincerely,

Maret Thompson
(575)622-6521

drywell

U.S. Fish and Wildlife Service
National Wetlands Inventory

# Todd 22 I Fed 9, Intermittent 14537 feet




August 17, 2021

**Wetlands**

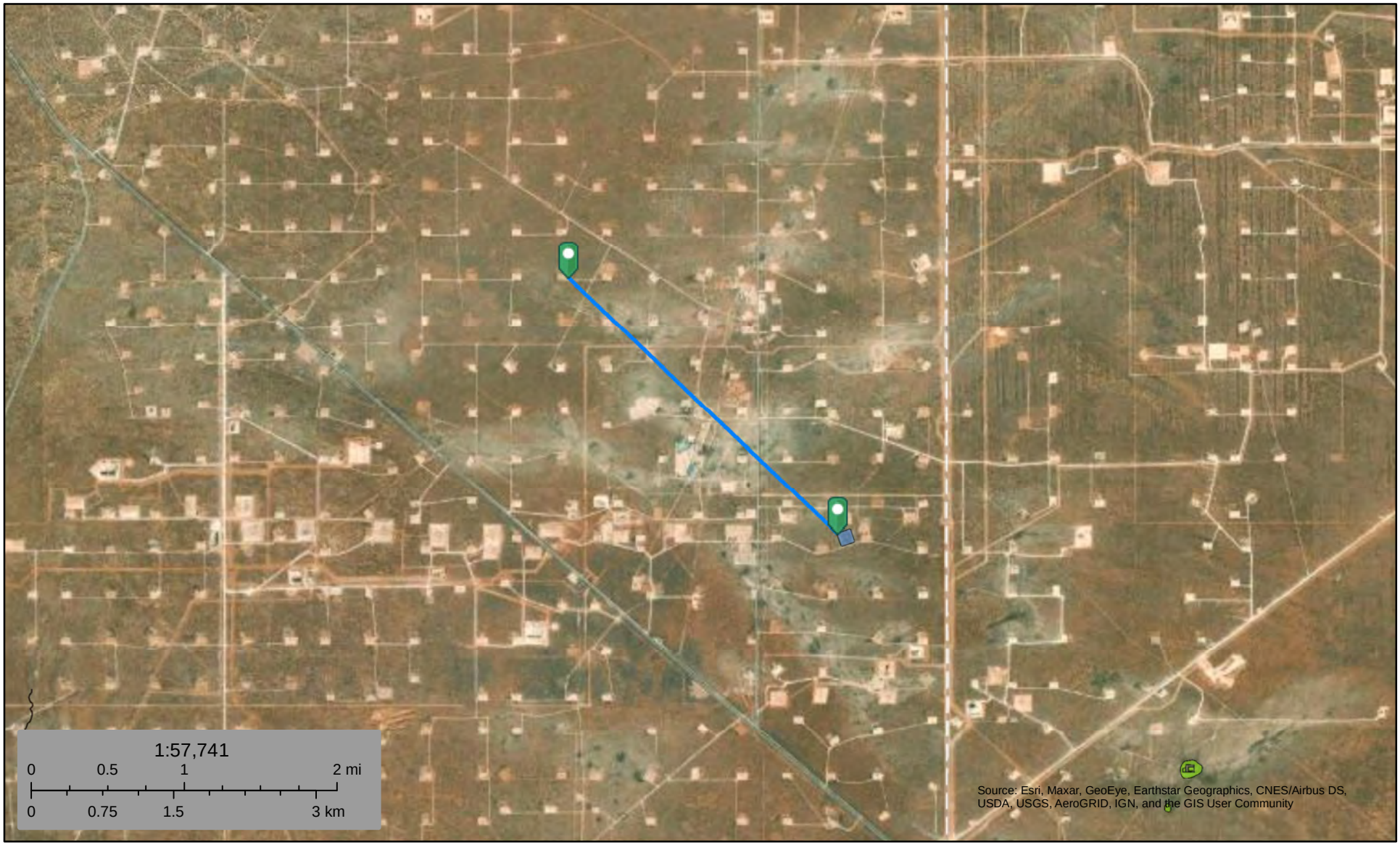
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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.

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

# Todd 22 I Fed 9, Pond 10832 feet




August 17, 2021

**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.

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

# Todd 22 I Federal #009

Proximity Map



**Legend**

- FEMA Zone A (100-year floodplain)
- High Karst
- Medium Karst
- Nearest FEMA Zone A (100-year floodplain) 30,450 feet (5.77 miles)
- Nearest High Karst 25,319 feet (4.8 miles)
- Nearest Medium Karst 20,029 feet (3.79 miles)
- Nearest Residence 20,617 feet (3.90 miles)
- Residence
- Todd 22 I Federal #009 Release

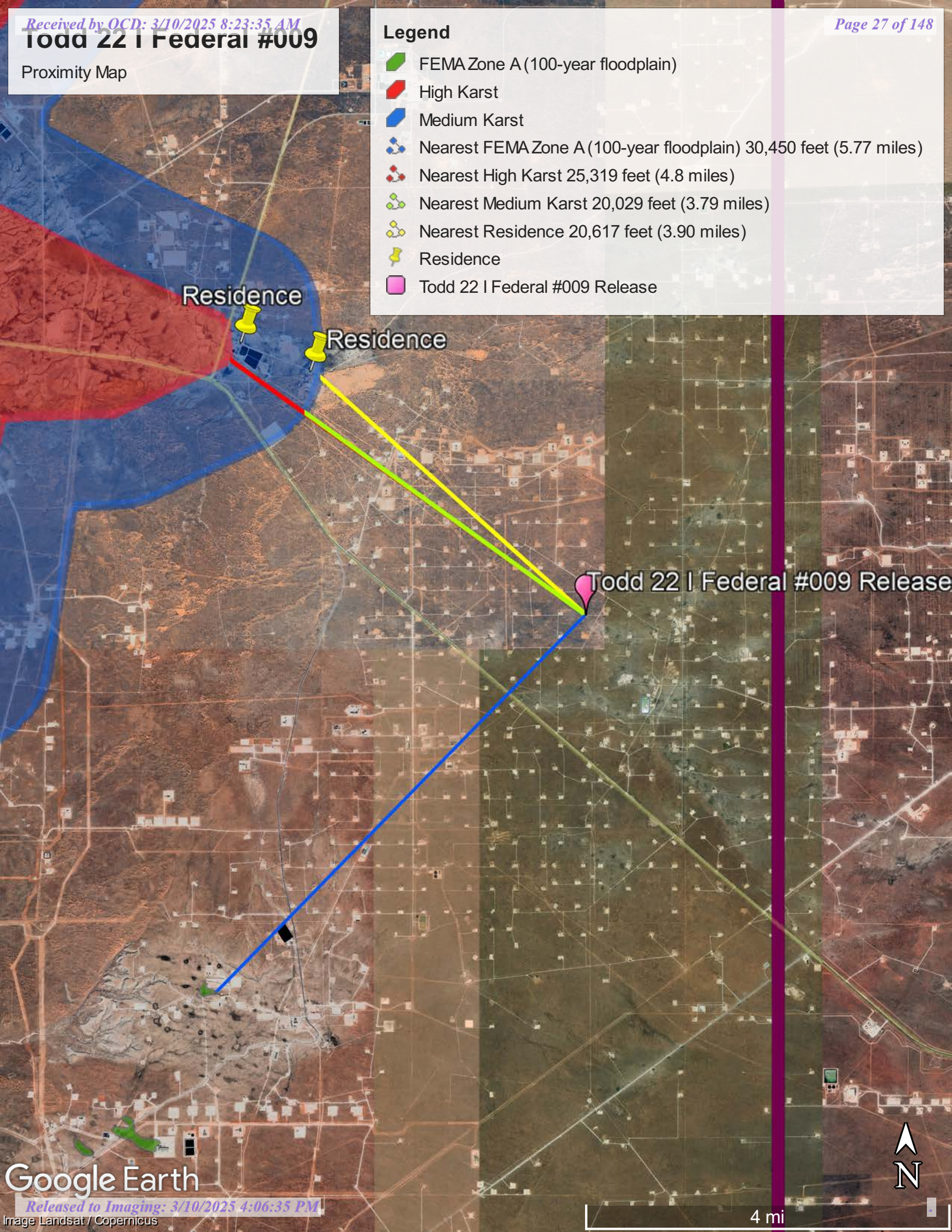





Image Landsat / Copernicus

# Active & Inactive Points of Diversion

(with Ownership Information)

| | | (acre ft per annum) | | | | (R=POD has been replaced and no longer serves this file, C=the file is closed) | | | | (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) | | | | | | (NAD83 UTM in meters) | | | (meters) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WR File Nbr | Sub basin | Use | Diversion | Owner | County | POD Number | Well Tag | Code | Grant | Source | q64 | q16 | q4 | Sec | Tws | Range | X | Y | Map | Distance |
| C 04712 | CUB | MON | 0.000 | HARVARD PETROLEUM COMPANY LLC | ED | C 04712 POD4 | NA | | | | NW | SE | SW | 14 | 23S | 31E | 617535.4 | 3574316.2 | | 1,456.1 |
| C 02258 | C | PRO | 0.000 | DEVON ENERGY CORP. (NEVADA) | ED | C 02258 | | | | | | SW | NE | 26 | 23S | 31E | 618055.0 | 3571853.0 * | | 1,659.6 |
| C 04774 | CUB | MON | 0.000 | DEVON ENGERGY RESOURCES | ED | C 04774 POD1 | NA | | | | SE | NE | NE | 23 | 23S | 31E | 618456.0 | 3573856.4 | | 1,790.0 |
| C 02348 | C | STK | 3.000 | NGL NORTH RANCH LLC A TEXAS LIMITED LIABILITY CO | ED | C 02348 | | | | Shallow | NW | SE | SW | 26 | 23S | 31E | 617647.5 | 3571068.0 | | 2,098.7 |
| C 04897 | CUB | MON | 0.000 | OXY USA INC. | ED | C 04897 POD1 | NA | | | | NW | NE | SW | 21 | 23S | 31E | 614374.0 | 3573036.6 | | 2,500.1 |
| C 04709 | CUB | MON | 0.000 | DEVON ENERGY | ED | C 04709 POD1 | NA | | | | SW | NW | NW | 15 | 23S | 31E | 615508.8 | 3575262.4 | | 2,626.1 |
| C 02777 | CUB | MON | 0.000 | US DEPT OF ENERGY WIPP | ED | C 02777 | | | | | SE | SE | SE | 10 | 23S | 31E | 616973.8 | 3575662.1 | | 2,645.0 |
| C 03749 | CUB | MON | 0.000 | US DEPARTMENT OF ENERGY | ED | C 03749 POD1 | | | | Shallow | | NE | NE | 15 | 23S | 31E | 616973.8 | 3575662.1 | | 2,645.0 |
| C 02602 | C | SAN | 0.000 | POGO PRODUCING COMPANY | ED | C 02602 | | | | | | NE | NE | 35 | 23S | 31E | 618471.0 | 3570650.0 * | | 2,857.0 |
| C 04712 | CUB | MON | 0.000 | HARVARD PETROLEUM COMPANY LLC | ED | C 04712 POD3 | NA | | | | SE | NW | NE | 24 | 23S | 31E | 619650.7 | 3573877.9 | | 2,906.5 |
| C 04724 | CUB | MON | 0.000 | DEVON ENERGY | ED | C 04724 POD1 | NA | | | | SE | SW | SW | 10 | 23S | 31E | 615709.7 | 3575738.3 | | 2,958.1 |
| C 04855 | CUB | MON | 0.000 | DEVON ENERGY PRODUCTION | ED | C 04855 POD1 | NA | | | | NE | SW | SW | 11 | 23S | 31E | 617417.6 | 3575936.7 | | 2,967.9 |
| C 04790 | CUB | MON | 0.000 | DEVON ENERGY RESOURCES | ED | C 04790 POD1 | NA | | | | SE | SE | SW | 25 | 23S | 31E | 619309.4 | 3570904.8 | | 3,225.1 |
| C 04712 | CUB | MON | 0.000 | HARVARD PETROLEUM COMPANY LLC | ED | C 04712 POD5 | NA | | | | SE | SE | SW | 09 | 23S | 31E | 614392.9 | 3575754.4 | | 3,693.0 |
| C 04877 | CUB | EXP | 0.000 | DEVON ENERGY CORP | LE | C 04877 POD1 | NA | | | | SE | NW | NW | 30 | 23S | 32E | 620540.4 | 3572234.6 | | 3,749.4 |
| C 02954 | CUB | EXP | 0.000 | U.S. DEPARTMENT OF ENERGYCARLSBAD FIELD OFFICE, WIPP | ED | C 02954 EXPL | | | | Shallow | SW | NW | SE | 20 | 23S | 31E | 613114.0 | 3572906.0 * | | 3,761.7 |
| C 04704 | CUB | MON | 0.000 | DEVON ENERGY | ED | C 04704 POD1 | NA | | | | SW | NE | NE | 13 | 23S | 31E | 619854.4 | 3575363.5 | | 3,792.0 |
| C 04776 | CUB | MON | 0.000 | DEVON ENERGY RESOURCES | ED | C 04776 POD1 | NA | | | | SW | SW | SW | 09 | 23S | 31E | 613953.1 | 3575651.8 | | 3,932.3 |
| C 04553 | CUB | MON | 0.000 | OXY USA INC | ED | C 04553 POD1 | NA | | | | SE | NW | SE | 29 | 23S | 31E | 613255.5 | 3571369.8 | | 3,976.6 |
| C 04746 | CUB | MON | 0.000 | DEVON ENERGY RESOURCES | ED | C 04746 POD1 | NA | | | | SW | SE | SW | 36 | 23S | 31E | 619225.7 | 3569417.8 | | 4,301.1 |
| C 00225 A | CUB | IRR | 8.400 | GREGORY ROCKHOUSE RANCH | ED | C 02405 | | | | Shallow | | SE | NW | 02 | 24S | 31E | 617690.0 | 3568631.0 * | | 4,463.2 |
| C 01246 AO | CUB | IRR | 47.820 | CATHLEEN MC INTIRE | ED | C 02405 | | | | Shallow | | SE | NW | 02 | 24S | 31E | 617690.0 | 3568631.0 * | | 4,463.2 |
| C 02405 | C | PRO | 0.000 | TEXACO EXPLORATION & PROD. IND | ED | C 02405 | | | | Shallow | | SE | NW | 02 | 24S | 31E | 617690.0 | 3568631.0 * | | 4,463.2 |
| C 02452 | C | PRO | 0.000 | TEXACO EXPLORATION & PROD INC. | ED | C 02405 | | | | Shallow | | SE | NW | 02 | 24S | 31E | 617690.0 | 3568631.0 * | | 4,463.2 |
| | | | | | ED | C 02452 | | | | | | SE | NW | 02 | 24S | 31E | 617690.0 | 3568631.0 * | | 4,463.2 |
| C 02576 | C | PRO | 0.000 | SONAT EXPLORATION COMPANY | ED | C 02405 | | | | Shallow | | SE | NW | 02 | 24S | 31E | 617690.0 | 3568631.0 * | | 4,463.2 |
| C 02464 | C | PRO | 0.000 | COMMISSIONER OF PUBLIC LANDS | ED | C 02464 | | | | Shallow | NE | SW | NW | 02 | 24S | 31E | 617644.7 | 3568581.6 | | 4,503.8 |
| C 02901 | C | PUB | 0.000 | B & H MAINTENANCE & CONST. | ED | C 02901 | NA | | | | SW | SE | NW | 02 | 24S | 31E | 617585.7 | 3568531.4 | | 4,543.7 |
| C 04859 | CUB | MON | 0.000 | BUREAU OF LAND MANAGEMENT | ED | C 02901 | NA | | | | SW | SE | NW | 02 | 24S | 31E | 617585.7 | 3568531.4 | | 4,543.7 |
| C 04712 | CUB | MON | 0.000 | HARVARD PETROLEUM COMPANY LLC | ED | C 04712 POD6 | NA | | | | SW | SW | SE | 08 | 23S | 31E | 613146.6 | 3575740.1 | | 4,615.0 |

(acre ft per annum) (R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters) (meters)

| WR File Nbr | Sub basin | Use | Diversion | Owner | County | POD Number | Well Tag | Code | Grant | Source | q64 | q16 | q4 | Sec | Tws | Range | X | Y | Map | Distance |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 03389 | C | STK | 3.000 | JIMMY MILLS 2005 GST TRUST | ED | C 03389 | | | | | NW | NW | SW | 17 | 23S | 31E | 612316.0 | 3574683.0 | | 4,852.2 |
| C 03394 | C | PUB | 0.000 | JAMES HAMILTON CONSTRUCTION CO | ED | C 03389 | | | | | NW | NW | SW | 17 | 23S | 31E | 612316.0 | 3574683.0 | | 4,852.2 |
| C 04712 | CUB | MON | 0.000 | HARVARD PETROLEUM COMPANY LLC | LE | C 04712 POD1 | NA | | | | NW | SE | NW | 31 | 23S | 32E | 620917.2 | 3570289.2 | | 4,878.4 |
| C 02773 | CUB | MON | 0.000 | U.S. DEPT. OF ENERGY - WIPP | ED | C 02773 | | | | | SE | NW | SW | 03 | 23S | 31E | 615668.0 | 3577762.0 * | | 4,893.9 |

**Record Count:** 34

**Filters Applied:**

**UTM Filters (in meters):**
**Easting:** 616874
**Northing:** 3573019
**Radius:** 005000

**Sorted By:** Distance

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



**11/23/24 6:57 PM MST** **Active & Inactive Points of Diversion**

# Point of Diversion Summary

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

NAD83 UTM in meters

| Well Tag | POD Nbr | Q64 | Q16 | Q4 | Sec | Tws | Rng | X | Y | Map |
|---|---|---|---|---|---|---|---|---|---|---|
| | C 02348 | NW | SE | SW | 26 | 23S | 31E | 617647.5 | 3571068.0 | |

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

| | | | | | |
|---|---|---|---|---|---|
| **Driller License:** | 1654 | **Driller Company:** | NOT WORKING FOR HIRE--SIRMAN DRILLING AND CONSTRUC | | |
| **Driller Name:** | JOHN SIRMAN | | | | |
| **Drill Start Date:** | 2013-10-31 | **Drill Finish Date:** | 2013-11-01 | **Plug Date:** | |
| **Log File Date:** | 2013-11-07 | **PCW Rcv Date:** | | **Source:** | Shallow |
| **Pump Type:** | | **Pipe Discharge Size:** | | **Estimated Yield:** | 10 |
| **Casing Size:** | 6.00 | **Depth Well:** | 700 | **Depth Water:** | 430 |

## Water Bearing Stratifications:

| Top | Bottom | Description |
|---|---|---|
| 15 | 125 | Sandstone/Gravel/Conglomerate |
| 315 | 700 | Sandstone/Gravel/Conglomerate |

## Casing Perforations:

| Top | Bottom |
|---|---|
| 560 | 620 |
| 680 | 700 |

# Water Right Summary

get image list

| | | | | |
|---|---|---|---|---|
| **WR File Number:** | C 02348 | **Subbasin:** | C | **Cross Reference:** |
| **Primary Purpose:** | STK 72-12-1 LIVESTOCK WATERING | | | |
| **Primary Status:** | PMT Permit | | | |
| **Total Acres:** | | **Subfile:** | | **Header:** |
| **Total Diversion:** | 3.000 | **Cause/Case:** | | |
| **Owner:** | NGL NORTH RANCH LLC A TEXAS LIMITED LIABILITY CO | | | |
| **Contact:** | JIM WINTER | | | |

## Documents on File

(acre-feet per annum)

| Transaction Images | Trn # | Doc | File/Act | Status 1 | Status 2 | Transaction Desc. | From/To | Acres | Diversion | Consumptiv |
|---|---|---|---|---|---|---|---|---|---|---|
| | 755955 | COWNF | 2024-01-31 | CHG | PRC | C 02348 | T | 0.000 | 0.000 | |
| get images | 633178 | COWNF | 2018-09-17 | CHG | PRC | C 02348 | T | | 0.000 | |
| get images | 491413 | 72121 | 2011-12-14 | PMT | LOG | C 02348: SUBSEQUENT STK PERMIT | T | | 3.000 | |
| | 422940 | COWNF | 2009-02-02 | CHG | PRC | C 02348 | T | | 0.000 | |
| | 154822 | COWNF | 1998-09-09 | CHG | PRC | C 02348 | T | 0.000 | 0.000 | |
| | 154817 | DCL | 1998-09-09 | DCL | PRC | C 02348 | T | 0.000 | 3.000 | |

## Current Points of Diversion

| POD Number | Well Tag | Source | Q64 | Q16 | Q4 | Sec | Tws | Rng | X | Y | Map | Other Location Desc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 02348 | | Shallow | NW | SE | SW | 26 | 23S | 31E | 617647.5 | 3571068.0 | | |

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

# Point of Diversion Summary

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

NAD83 UTM in meters

| Well Tag | POD Nbr | Q64 | Q16 | Q4 | Sec | Tws | Rng | X | Y | Map |
|---|---|---|---|---|---|---|---|---|---|---|
| | C 02258 | | SW | NE | 26 | 23S | 31E | 618055.0 | 3571853.0 * | |

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

| | | | | |
|---|---|---|---|---|
| **Driller License:** | 421 | **Driller Company:** | GLENN'S WATER WELL SERVICE | |
| **Driller Name:** | CORKY GLENN | | | |
| **Drill Start Date:** | 1992-09-18 | **Drill Finish Date:** | 1992-09-18 | **Plug Date:** |
| **Log File Date:** | 1992-09-25 | **PCW Rcv Date:** | | **Source:** |
| **Pump Type:** | | **Pipe Discharge Size:** | | **Estimated Yield:** |
| **Casing Size:** | | **Depth Well:** | 662 | **Depth Water:** |

# Water Right Summary

get image list

| | | | | |
|---|---|---|---|---|
| **WR File Number:** | C 02258 | **Subbasin:** | C | **Cross Reference:** |
| **Primary Purpose:** | PRO 72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE | | | |
| **Primary Status:** | PMT Permit | | | |
| **Total Acres:** | | **Subfile:** | | **Header:** |
| **Total Diversion:** | 0.000 | **Cause/Case:** | | |
| **Owner:** | DEVON ENERGY CORP.(NEVADA) | | | |
| **Contact:** | CHARLES W. HORSMAN | | | |

## Documents on File

(acre-feet per annum)

| Transaction Images | Trn # | Doc | File/Act | Status 1 | Status 2 | Transaction Desc. | From/To | Acres | Diversion | Consumptive |
|---|---|---|---|---|---|---|---|---|---|---|
| get images | 469242 | 72121 | 1992-05-27 | EXP | EXP | C 02258 | T | | 3.000 | |

## Current Points of Diversion

| POD Number | Well Tag | Source | Q64 | Q16 | Q4 | Sec | Tws | Rng | X | Y | Map | Other Location Desc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 02258 | | | | SW | NE | 26 | 23S | 31E | 618055.0 | 3571853.0 * | | |

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



**11/23/24 7:17 PM MST** **Water Rights Summary**

U.S. Fish and Wildlife Service
National Wetlands Inventory

# Todd 22 I Fed 9 Wetlands


July 22, 2021

**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.

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

# Potash Mine, 45,593 feet




11/24/2024, 7:50:41 AM

Registered Mines

- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Potash
- Salt
- PLSS Townships

1:144,448

0 1.25 2.5 5 mi

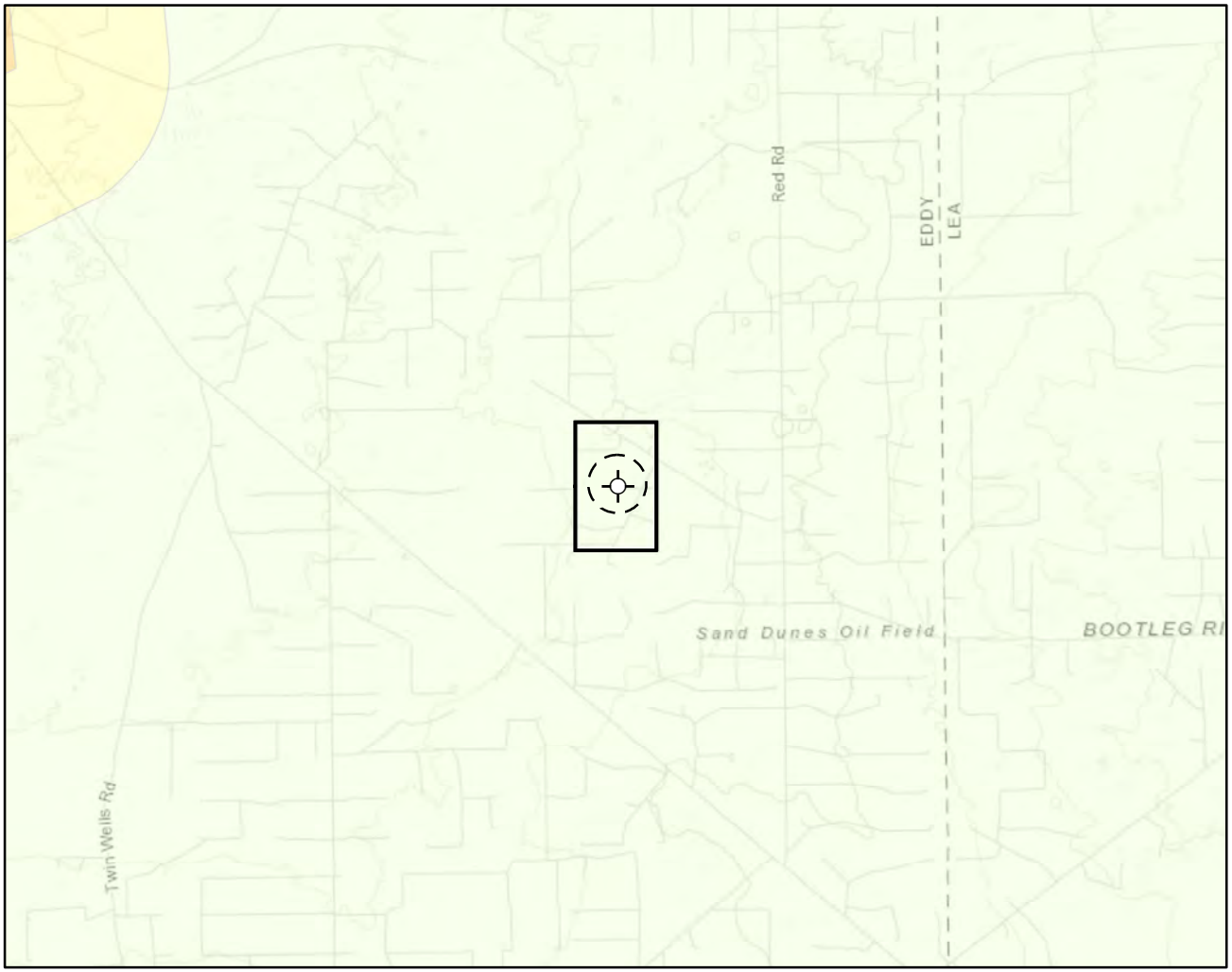
0 2.25 4.5 9 km

Esri, NASA, NGA, USGS, Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS, BLM



EMNRD MMD GIS Coordinator

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




**Karst Potential**

- Critical
- High
- Medium
- Low

Site Location

Site Buffer (1,000 ft.)

**Overview Map**

0 0.25 0.5 1 mi

**Detail Map**

0 150 300 600 ft.

VERTEX

Map Center:
Lat/Long: 32.288094, -103.759262

NAD 1983 UTM Zone 13N
Date: Jul 22/21

N

**Karst Potential Map**
**Todd Federal 9**

FIGURE:
**X**

devon

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

Note: Inset Map, ESRI 2020; Overview Map: ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\21E-02816\Todd 22 Federal 9\Figure x Karst Potential Map Todd Federal 9.mxd

# National Flood Hazard Layer FIRMette

FEMA

103°45'52"W 32°17'32"N


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

1:6,000

103°45'15"W 32°17'2"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

## Legend

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

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/22/2021 at 4:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

United States Department of Agriculture

NRCS

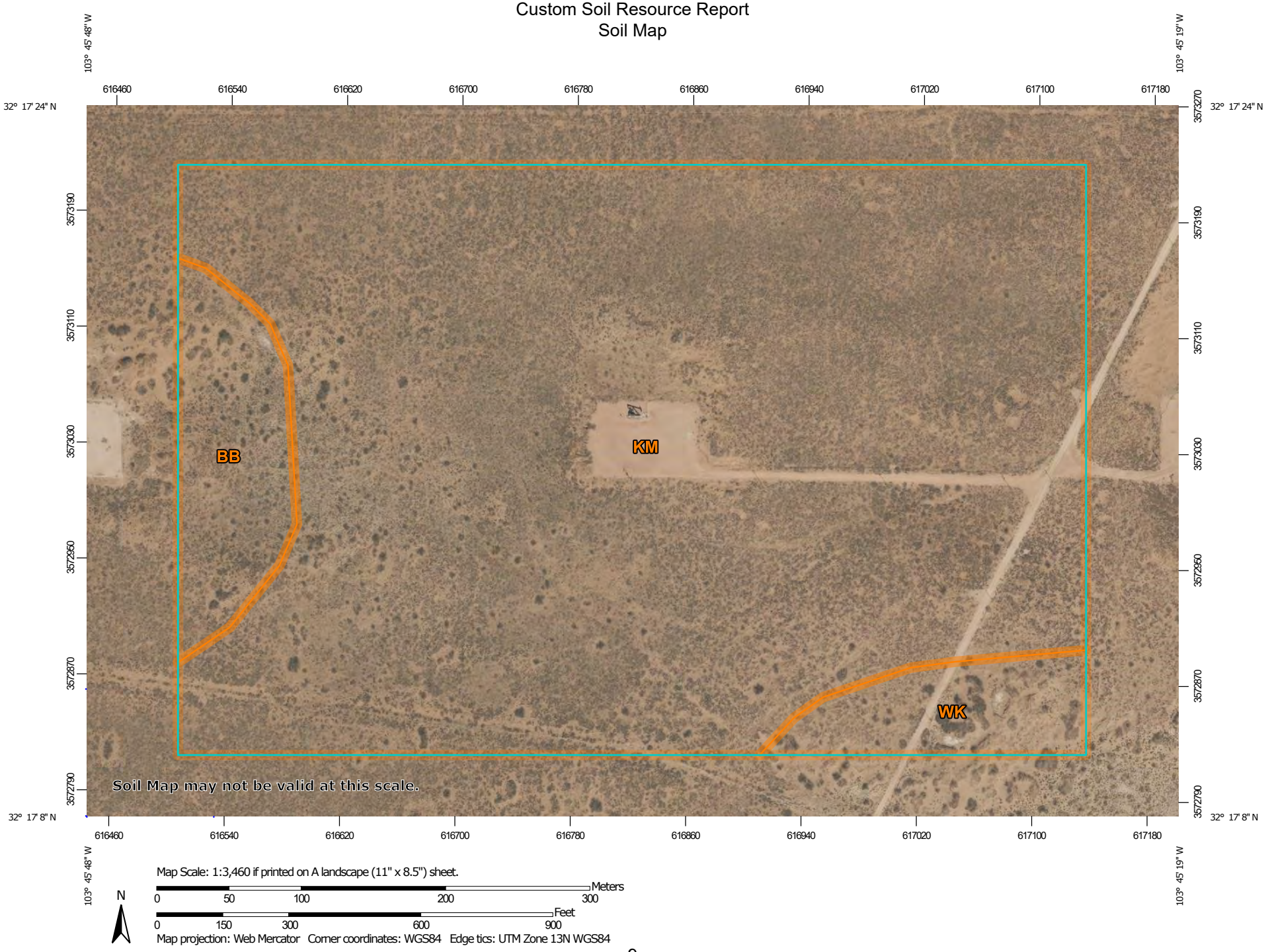
Natural Resources Conservation Service

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

# Custom Soil Resource Report for Eddy Area, New Mexico


July 23, 2021

# Custom Soil Resource Report
## Soil Map



## MAP LEGEND

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

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

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

**Water Features**
- Streams and Canals

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

**Background**
- Aerial Photography

## MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 16, Jun 8, 2020

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

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

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

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| BB | Berino complex, 0 to 3 percent slopes, eroded | 4.3 | 6.7% |
| KM | Kermit-Berino fine sands, 0 to 3 percent slopes | 56.3 | 88.5% |
| WK | Wink loamy fine sand, 0 to 3 percent slopes, eroded | 3.0 | 4.7% |
| **Totals for Area of Interest** | | **63.6** | **100.0%** |

# Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

# Eddy Area, New Mexico

## BB—Berino complex, 0 to 3 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 1w43
*Elevation:* 2,000 to 5,700 feet
*Mean annual precipitation:* 5 to 15 inches
*Mean annual air temperature:* 57 to 70 degrees F
*Frost-free period:* 180 to 260 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Berino and similar soils:* 60 percent
*Pajarito and similar soils:* 25 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Berino

#### Setting

*Landform:* Fan piedmonts, plains
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium and/or eolian sands

#### Typical profile

*H1 - 0 to 17 inches:* fine sand
*H2 - 17 to 58 inches:* sandy clay loam
*H3 - 58 to 60 inches:* loamy sand

#### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 40 percent
*Maximum salinity:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 1.0
*Available water capacity:* Moderate (about 8.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Ecological site:* R042XC003NM - Loamy Sand
*Hydric soil rating:* No

### Description of Pajarito

#### Setting

*Landform:* Interdunes, plains, dunes
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear, convex
*Parent material:* Mixed alluvium and/or eolian sands

#### Typical profile

*H1 - 0 to 9 inches:* loamy fine sand
*H2 - 9 to 72 inches:* fine sandy loam

#### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 40 percent
*Maximum salinity:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 1.0
*Available water capacity:* Moderate (about 8.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2e
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* A
*Ecological site:* R042XC003NM - Loamy Sand
*Hydric soil rating:* No

### Minor Components

#### Cacique

*Percent of map unit:* 4 percent
*Ecological site:* R042XC004NM - Sandy
*Hydric soil rating:* No

#### Pajarito

*Percent of map unit:* 4 percent
*Ecological site:* R042XC003NM - Loamy Sand
*Hydric soil rating:* No

#### Wink

*Percent of map unit:* 4 percent
*Ecological site:* R042XC003NM - Loamy Sand
*Hydric soil rating:* No

#### Kermit

*Percent of map unit:* 3 percent
*Ecological site:* R042XC005NM - Deep Sand
*Hydric soil rating:* No

## KM—Kermit-Berino fine sands, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 1w4q
*Elevation:* 3,100 to 4,200 feet
*Mean annual precipitation:* 10 to 14 inches
*Mean annual air temperature:* 60 to 64 degrees F
*Frost-free period:* 190 to 230 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Kermit and similar soils:* 50 percent
*Berino and similar soils:* 35 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Kermit

#### Setting

*Landform:* Alluvial fans, plains
*Landform position (three-dimensional):* Rise, talf
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium and/or eolian sands

#### Typical profile

*H1 - 0 to 7 inches:* fine sand
*H2 - 7 to 60 inches:* fine sand

#### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Excessively drained
*Runoff class:* Negligible
*Capacity of the most limiting layer to transmit water (Ksat):* Very high (20.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 1.0
*Available water capacity:* Low (about 3.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* A
*Ecological site:* R042XC005NM - Deep Sand
*Hydric soil rating:* No

**Description of Berino**

**Setting**

*Landform:* Fan piedmonts, plains
*Landform position (three-dimensional):* Riser
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Parent material:* Mixed alluvium and/or eolian sands

**Typical profile**

*H1 - 0 to 17 inches:* fine sand
*H2 - 17 to 50 inches:* fine sandy loam
*H3 - 50 to 58 inches:* loamy sand

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 40 percent
*Maximum salinity:* Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 1.0
*Available water capacity:* Moderate (about 7.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4e
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Ecological site:* R042XC003NM - Loamy Sand
*Hydric soil rating:* No

**Minor Components**

**Active dune land**

*Percent of map unit:* 15 percent
*Hydric soil rating:* No

## WK—Wink loamy fine sand, 0 to 3 percent slopes, eroded

**Map Unit Setting**

*National map unit symbol:* 1w6c
*Elevation:* 2,700 to 5,000 feet
*Mean annual precipitation:* 5 to 14 inches
*Mean annual air temperature:* 57 to 70 degrees F

*Frost-free period:* 180 to 250 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Wink and similar soils:* 98 percent
*Minor components:* 2 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Wink**

**Setting**

*Landform:* Depressions, swales
*Landform position (three-dimensional):* Talf
*Down-slope shape:* Convex
*Across-slope shape:* Convex
*Parent material:* Mixed alluvium and/or eolian sands

**Typical profile**

*H1 - 0 to 8 inches:* loamy fine sand
*H2 - 8 to 38 inches:* fine sandy loam
*H3 - 38 to 60 inches:* fine sandy loam

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum content:* 30 percent
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum:* 1.0
*Available water capacity:* Low (about 5.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* A
*Ecological site:* R042XC003NM - Loamy Sand
*Hydric soil rating:* No

**Minor Components**

**Wink**

*Percent of map unit:* 1 percent
*Ecological site:* R042XC004NM - Sandy
*Hydric soil rating:* No

**Simona**

*Percent of map unit:* 1 percent
*Ecological site:* R042XC002NM - Shallow Sandy
*Hydric soil rating:* No

USDA Natural Resources Conservation Service

# Ecological site R042XC003NM
# Loamy Sand

Accessed: 07/19/2021

## 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

| | |
|---|---|
| R042XC004NM | **Sandy** Sandy |
| R042XC005NM | **Deep Sand** Deep Sand |

**Table 1. Dominant plant species**

| | |
|---|---|
| Tree | Not specified |
| Shrub | Not specified |
| Herbaceous | Not specified |

## Physiographic features

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

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

**Table 2. Representative physiographic features**

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

## Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms.
Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.
The average frost-free season is 207 to 220 days. The last killing frost being late March or early April and the first killing frost being in later October or early November.
Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of this site. Strong winds blow from the southwest from January through June, which accelerates soil drying during a critical period for cool season plant growth.

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

**Table 3. Representative climatic features**

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

## Influencing water features

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

## Soil features

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

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

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

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

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

Characteristic soils are:

Maljamar
Berino
Parjarito
Palomas
Wink
Pyote

**Table 4. Representative soil features**

| | |
|---|---|
| Surface texture | (1) Fine sand<br>(2) Fine sandy loam<br>(3) Loamy fine sand |
| Family particle size | (1) Sandy |
| Drainage class | Well drained to somewhat excessively drained |
| Permeability class | Moderate to moderately rapid |
| Soil depth | 40–72 in |
| Surface fragment cover <=3" | 0–10% |
| Surface fragment cover >3" | 0% |
| Available water capacity (0-40in) | 5–7 in |
| Calcium carbonate equivalent (0-40in) | 3–40% |
| Electrical conductivity (0-40in) | 2–4 mmhos/cm |
| Sodium adsorption ratio (0-40in) | 0–2 |
| Soil reaction (1:1 water) (0-40in) | 6.6–8.4 |
| Subsurface fragment volume <=3" (Depth not specified) | 4–12% |
| Subsurface fragment volume >3" (Depth not specified) | 0% |

## Ecological dynamics

Overview

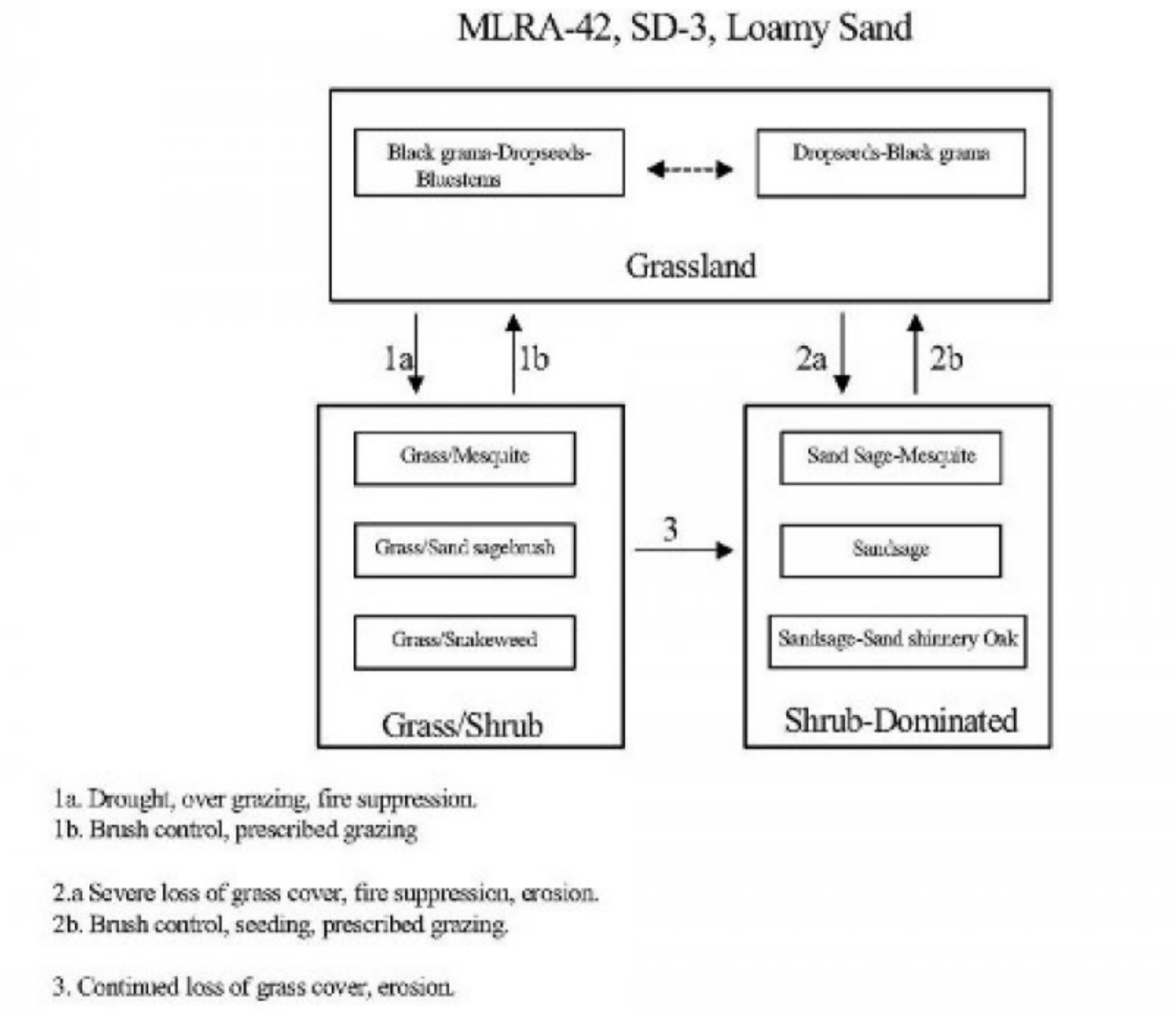
The Loamy Sand site intergrades with the Deep Sand and Sandy sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured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

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

encourages shrub pervasiveness and a competitive advantage over grass species (McPherson 1995). Brush and grazing management, however, may reverse grass/shrub and shrub-dominated states toward the grassland-dominated historic plant community.

## State and transition model

**Plant Communities and Transitional Pathways (diagram):**




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

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

3. Continued loss of grass cover, erosion.

**Figure 4.**

## State 1

## Historic Climax Plant Community

### Community 1.1
### Historic Climax Plant Community

Grassland: The historic plant community is a uniformly distributed grassland dominated by black grama, dropseeds, and bluestems. Sand sage and shinnery oak are evenly dispersed throughout the grassland due to the coarse soil surface texture. Perennial and annual forbs are common but their abundance and distribution are reflective of precipitation. Bluestems initially, followed by black grama, decrease with drought and heavy grazing intensity. Historical fire frequency is unknown but likely occurred enough to remove small shrubs to the competitive advantage of grass species. Fire suppression, drought conditions, and excessive grazing drive most grass species out of competition with shrub species.

Diagnosis: Grassland dominated by black grama, dropseeds, and bluestems. Shrubs, such as sand sage, shinnery oak, and mesquite are dispersed throughout the grassland. Forbs are present and populations fluctuate with precipitation variability.

**Table 5. Annual production by plant type**

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

**Table 6. Ground cover**

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

**Figure 6. Plant community growth curve (percent production by month). NM2803, R042XC003NM-Loamy Sand-HCPC. SD-3 Loamy Sand - Warm season plant community .**

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

## State 2
## Grass/Shrub

### Community 2.1
### Grass/Shrub


Grass/Shrub State: The grass/shrub state is dominated by communities of grasses/mesquite, grasses/snakeweed, or grasses/sand sage. Decreases in black grama and bluestem species lead to an increase in bare patches and mesquite which further competes with grass species. An increase of dropseeds and threeawns occurs. Grass distribution becomes more patchy with an absence or severe decrease in black grama and bluestems. Mesquite provides nitrogen and soil organic matter to co-dominant grasses (Ansley and Jacoby 1998, Ansley et al. 1998). Mesquite mortality when exposed to fire is low due to aggressive resprouting abilities. Herbicide application combined with subsequent prescribed fire may be more effective in mesquite reduction (Britton and Wright 1971).

Diagnosis: This state is dominated by an increased abundance of communities including grass/mesquite, grass/snakeweed, or grass/sand sage. Dropseeds and threeawns have a patchy distribution.

Transition to Grass/Shrub State (1a): The historic plant community begins to shift toward the grass/shrub state as drivers such as drought, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by a decrease in black grama with a subsequent increase of dropseeds, threeawns, mesquite, and snakeweed. Snakeweed has been documented to outcompete black grama especially under conditions of fire suppression and drought (McDaniel et al. 1984).
Key indicators of approach to transition:
• Loss of black grama cover
• Surface soil erosion
• Bare patch expansion
• Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances

Transition to Historic Plant Community (1b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community.

**State 3**
**Shrub Dominated**

## Community 3.1
## Shrub Dominated

Shrub-Dominated State: The shrub-dominated state results from a severe loss of grass cover. This state's primary species is sand sage. Shinnery oak and mesquite also occur; however, grass cover is limited to intershrub distribution. Sand sage stabilizes light sandy soils from wind erosion, which enhances protected grass/forb cover (Davis and Bonham 1979). However, shinnery oak also responds to the sandy soils with dense stands due to an aggressive rhizome system. Shinnery oak's extensive root system promotes competitive exclusion of grasses and forbs. Sand sage, shinnery oak, and mesquite can be controlled with herbicide (Herbel et al. 1979, Pettit 1986).

Transition to Shrub-Dominated (2a): Severe loss of grass species with increased erosion and fire suppression will result in a transition to a shrub-dominated state with sand sage, Shin oak, and honey mesquite directly from the grassland-dominated state.

Key indicators of approach to transition:

• Severe loss of grass species cover
• Surface soil erosion
• Bare patch expansion
• Increased sand sage, shinnery oak, and mesquite abundance

Transition to Historic Plant Community (2b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community. In addition, seeding with native grass species will augment the transition to a grassland-dominated state.

Transition to Shrub-Dominated (3): If the grass/shrub site continues to lose grass cover with soil erosion, the site will transition to a shrub-dominated state with sand sage, shinnery oak, and honey mesquite.

Key indicators of approach to transition:

• Continual loss of dropseeds/threeawns cover
• Surface soil erosion
• Bare patch expansion
• Increased sand sage, shinnery oak, and mesquite/dropseed/threeawn and mesquite/snakeweed abundance

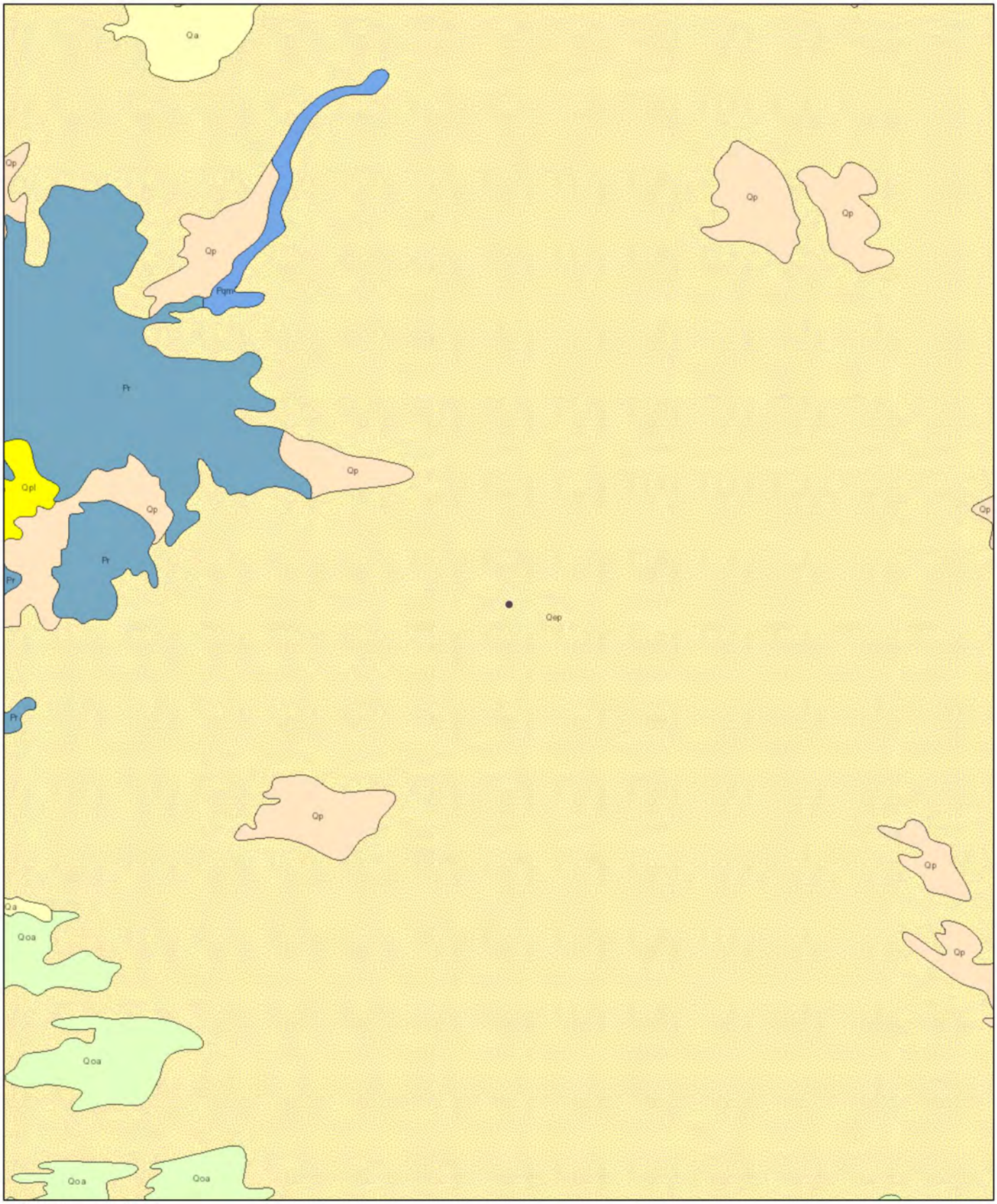
## Additional community tables

**Table 7. Community 1.1 plant community composition**

| Group | Common Name | Symbol | Scientific Name | Annual Production (Lb/Acre) | Foliar Cover (%) |
|---|---|---|---|---|---|
| **Grass/Grasslike** | | | | | |
| 1 | **Warm Season** | | | 61–123 | |
| | little bluestem | SCSC | *Schizachyrium scoparium* | 61–123 | – |
| 2 | **Warm Season** | | | 37–61 | |
| | sand bluestem | ANHA | *Andropogon hallii* | 37–61 | – |
| 3 | **Warm Season** | | | 37–61 | |
| | cane bluestem | BOBA3 | *Bothriochloa barbinodis* | 37–61 | – |
| | silver bluestem | BOSA | *Bothriochloa saccharoides* | 37–61 | – |
| 4 | **Warm Season** | | | 123–184 | |
| | black grama | BOER4 | *Bouteloua eriopoda* | 123–184 | – |
| | bush muhly | MUPO2 | *Muhlenbergia porteri* | 123–184 | – |
| 5 | **Warm Season** | | | 123–184 | |
| | thin paspalum | PASE5 | *Paspalum setaceum* | 123–184 | – |
| | plains bristlegrass | SEVU2 | *Setaria vulpiseta* | 123–184 | |

# Todd 22 I Federal #009 Geology






11/24/2024, 5:13:29 AM

Lithologic Units

- Playa—Alluvium and evaporite deposits (Holocene)
- Water—Perenial standing water
- Qa—Alluvium (Holocene to upper Pleistocene)

1:144,448

0 1.25 2.5 5 mi

0 2.25 4.5 9 km

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

# ATTACHMENT 5

# Daily Site Visit Report

| | | | |
|---|---|---|---|
| Client: | Devon Energy Corporation | Inspection Date: | 7/28/2021 |
| Site Location Name: | Todd 22 I Fed 9 | Report Run Date: | 7/28/2021 8:50 PM |
| Client Contact Name: | Wes Matthews | API #: | 30-015-32730 |
| Client Contact Phone #: | (575) 748-0176 | | |
| Unique Project ID | | Project Owner: | |
| Project Reference # | | Project Manager: | |

## Summary of Times

| | |
|---|---|
| Arrived at Site | 7/28/2021 7:46 AM |
| Departed Site | 7/28/2021 12:30 PM |

## Field Notes

**14:44** Arrived on site to delineate historic spill

**14:44** Ran BH1 and got a hit on TPH. Used BH1 as vertical borehole

**14:45** Stepped out from BH1. BH2, BH4-6, BH8, and BH11-12 came clean at 0.5ft to horizontally delineate the spill

**14:46** Used BH7 as another vertical borehole

**14:46** BH1 got clean at 6ft

## Next Steps & Recommendations

**1**

# Daily Site Visit Report

## Site Photos

**Viewing Direction**: East

Spill area along the road

**Viewing Direction**: North


End of spill on west side

**Viewing Direction**: North

End of spill on east side

**Viewing Direction**: West

Spill went as far as flowline currently sits on north side

# Daily Site Visit Report

## Daily Site Visit Signature

**Inspector:** Chance Dixon

**Signature:** 
Signature

# Daily Site Visit Report

| | | | |
|---|---|---|---|
| Client: | Devon Energy Corporation | Inspection Date: | 2/22/2022 |
| Site Location Name: | Todd 22 I Fed 9 | Report Run Date: | 3/3/2022 11:05 PM |
| Client Contact Name: | Wes Matthews | API #: | 30-015-32730 |
| Client Contact Phone #: | (575) 748-0176 | | |
| Unique Project ID | | Project Owner: | |
| Project Reference # | | Project Manager: | |

## Summary of Times

| | |
|---|---|
| Arrived at Site | 2/22/2022 8:45 AM |
| Departed Site | 2/22/2022 2:31 PM |

## Field Notes

**8:51** Collect and field screen base and wall samples

**10:10** Base samples field screening high, taking excavation down another foot

**14:23** Clean dirt reached and samples collected.

## Next Steps & Recommendations

**1** Send samples to lab and await results

# Daily Site Visit Report

## Site Photos

| **Viewing Direction**: East | **Viewing Direction**: East |
|---|---|
|  |  |
| Excavation in progress | Completed excavation |
| **Viewing Direction**: North | **Viewing Direction**: East |
|  |  |
| Spoil pile | Spoil pile |

# Daily Site Visit Report

**Viewing Direction**: East

Completed and fenced off excavation

# Daily Site Visit Report

## Daily Site Visit Signature

**Inspector:** Jason Crabtree

**Signature:**

# Daily Site Visit Report

| | | | |
|---|---|---|---|
| Client: | Devon Energy Corporation | Inspection Date: | 3/10/2022 |
| Site Location Name: | Todd 22 I Fed 9 | Report Run Date: | 3/11/2022 12:56 AM |
| Client Contact Name: | Wes Matthews | API #: | 30-015-32730 |
| Client Contact Phone #: | (575) 748-0176 | | |
| Unique Project ID | | Project Owner: | |
| Project Reference # | | Project Manager: | |

## Summary of Times

| | |
|---|---|
| Arrived at Site | 3/10/2022 10:45 AM |
| Departed Site | 3/10/2022 4:33 PM |

## Field Notes

**16:28** Arrived on site to obtain further confirmation samples for closure.

**16:29** Lots of blow over sand in excavation

## Next Steps & Recommendations

**1** Send samples to lab

# Daily Site Visit Report

## Site Photos

**Viewing Direction**: East


West end of excavation looking East

**Viewing Direction**: West

East end of excavation looking West

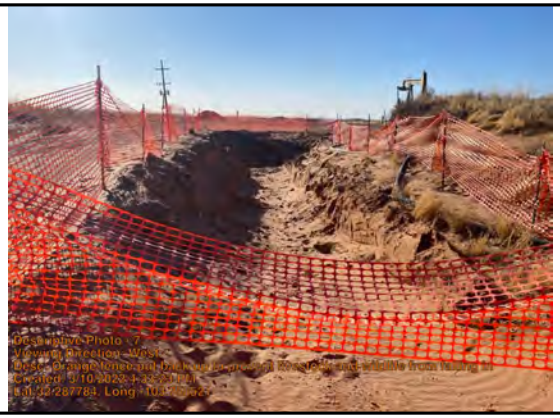
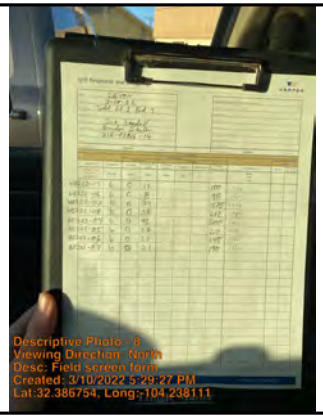
**Viewing Direction**: Northeast


North wall

**Viewing Direction**: Southeast

South wall

# Daily Site Visit Report

| **Viewing Direction**: Northwest | **Viewing Direction**: Southwest |
|---|---|
|  |  |
| North wall | South wall |
| **Viewing Direction**: West | **Viewing Direction**: North |
|  |  |
| Orange fence put back up to prevent livestock and wildlife from falling in | Field screen form |

# Daily Site Visit Report

## Daily Site Visit Signature

**Inspector:** Austin Harris

**Signature:** 

Signature

# Daily Site Visit Report

| | | | |
|---|---|---|---|
| Client: | Devon Energy Corporation | Inspection Date: | 3/11/2022 |
| Site Location Name: | Todd 22 I Fed 9 | Report Run Date: | 3/12/2022 12:33 AM |
| Client Contact Name: | Wes Matthews | API #: | 30-015-32730 |
| Client Contact Phone #: | (575) 748-0176 | | |
| Unique Project ID | | Project Owner: | |
| Project Reference # | | Project Manager: | |

## Summary of Times

| | |
|---|---|
| Arrived at Site | 3/11/2022 2:15 PM |
| Departed Site | 3/11/2022 4:21 PM |

## Field Notes

**16:19** Return to site to recollect samples that were compromised in transporting.

**16:20** Recollected WES22-06, 07, and 08.
As well as BES22-04, 05, 06, and 07.

**16:20** Did not recollect WES22-05 as it was not affected in transport.

## Next Steps & Recommendations

**1** Send samples to lab

# Daily Site Visit Report

## Site Photos

| **Viewing Direction**: West | **Viewing Direction**: East |
|---|---|
|  |  |
| Excavation | Excavation |

# Daily Site Visit Report

## Daily Site Visit Signature

**Inspector:** Austin Harris

**Signature:** 

Signature

# ATTACHMENT 6

Gmail

**Dhugal Hanton <vertexresourcegroupusa@gmail.com>**

# 48-hour notice nAB1729753198 Todd 22 I Federal 9

1 message

**Dhugal Hanton** <vertexresourcegroupusa@gmail.com> Fri, Feb 18, 2022 at 11:14 AM
To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>, "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>
Cc: "Bratcher, Mike, EMNRD" <Mike.Bratcher@state.nm.us>, dale.woodall@dvn.com, bschafer@vertex.ca

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled confirmation sampling to be conducted at Todd 22 I Federal 9 for the following releases:

NAB1729753198 DOR: 10/9/2017

This work will be completed on behalf of Devon Energy and Harvard Petroleum.

On Tuesday, February 22, 2022 at approximately 8:00 a.m., Jason Crabtree, will be onsite to guide remediation activities and conduct confirmatory sampling. Remedial activities and confirmatory sampling could continue through Wednesday, February 23, 2022. He can be reached at 432-250-3456. If you need directions to the site, please do not hesitate to contact him. If you have any questions or concerns regarding this notification, please give me a call at 701-301-1564.

Thank you,

**Brandon Schafer**
Project Manager

Vertex Resource Services Inc.
1405 22nd Ave NW
Watford City, ND 58854

**P 701.645.3111 Ext. 706**
**C 701.301.1564**
**F 780.464.3731**

www.vertex.ca

Gmail

**Dhugal Hanton <vertexresourcegroupusa@gmail.com>**

# 48-hour notice nAB1729753198 Todd 22 I Federal 9

6 messages

**Dhugal Hanton** <vertexresourcegroupusa@gmail.com> Tue, Mar 8, 2022 at 11:02 AM
To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>, "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>
Cc: "Bratcher, Mike, EMNRD" <Mike.Bratcher@state.nm.us>, dale.woodall@dvn.com, bschafer@vertex.ca

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled confirmation sampling to be conducted at Todd 22 I Federal 9 for the following releases:

NAB1729753198 DOR: 10/9/2017

This work will be completed on behalf of Devon Energy and Harvard Petroleum.

On Tuesday, February 10, 2022 at approximately 11:15 a.m., Austin Harris, will be onsite to conduct confirmatory sampling. Remedial activities have concluded and additional confirmation samples are needed for the area. He can be reached at 432-250-5003. If you need directions to the site, please do not hesitate to contact him. If you have any questions or concerns regarding this notification, please give me a call at 701-301-1564.

Thank you,

**Brandon Schafer**
Project Manager

Vertex Resource Services Inc.
1405 22nd Ave NW
Watford City, ND 58854

**P 701.645.3111 Ext. 706**
**C 701.301.1564**
**F 780.464.3731**

www.vertex.ca



**Dhugal Hanton** <vertexresourcegroupusa@gmail.com> Tue, Mar 8, 2022 at 11:42 AM
To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>, "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>
Cc: "Bratcher, Mike, EMNRD" <Mike.Bratcher@state.nm.us>, dale.woodall@dvn.com, bschafer@vertex.ca

All,

A correction to my previous email regarding confirmation sampling at the Todd 22 I Federal 9 (nAB1729753198); it will be **THURSDAY** (not Tuesday), February 10th, 2022.

Thank you,

**Brandon Schafer**
Project Manager

Vertex Resource Services Inc.
1405 22nd Ave NW
Watford City, ND 58854

**P 701.645.3111 Ext. 706**
**C 701.301.1564**
**F 780.464.3731**

www.vertex.ca


[Quoted text hidden]

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**Enviro, OCD, EMNRD** <OCD.Enviro@state.nm.us> Thu, Mar 10, 2022 at 8:11 AM
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>, "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>, "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>
Cc: "Bratcher, Mike, EMNRD" <mike.bratcher@state.nm.us>, "dale.woodall@dvn.com" <dale.woodall@dvn.com>, "bschafer@vertex.ca" <bschafer@vertex.ca>

Thank you. Please copy this communication to report for file purposes.

Bradford Billings

EMNRD/OCD

---

**From:** Dhugal Hanton <vertexresourcegroupusa@gmail.com>
**Sent:** Tuesday, March 8, 2022 11:02 AM
**To:** Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; CFO_Spill, BLM_NM <blm_nm_cfo_spill@blm.gov>
**Cc:** Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; dale.woodall@dvn.com; bschafer@vertex.ca
**Subject:** [EXTERNAL] 48-hour notice nAB1729753198 Todd 22 I Federal 9

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

[Quoted text hidden]

---

**Enviro, OCD, EMNRD** <OCD.Enviro@state.nm.us> Thu, Mar 10, 2022 at 8:12 AM
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Thank you. Please copy this communication to report for file purposes.

Bradford Billings

EMNRD/OCD

---

**From:** Dhugal Hanton <vertexresourcegroupusa@gmail.com>
**Sent:** Tuesday, March 8, 2022 11:42 AM
**To:** Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>; CFO_Spill, BLM_NM <blm_nm_cfo_spill@blm.gov>
**Cc:** Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; dale.woodall@dvn.com; bschafer@vertex.ca
**Subject:** [EXTERNAL] Re: 48-hour notice nAB1729753198 Todd 22 I Federal 9

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> Fri, Mar 11, 2022 at 9:04 AM
To: "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>, "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>
Cc: "Bratcher, Mike, EMNRD" <Mike.Bratcher@state.nm.us>, dale.woodall@dvn.com, bschafer@vertex.ca, "Billings, Bradford, EMNRD" <bradford.billings@state.nm.us>

Hi all,

Vertex collected confirmation samples as planned yesterday at Todd 22 I Federal 9 (NAB1729753198). During transport, sample integrity was compromised from ice water entering 7 of the 8 jarred samples.

We are requesting a variance to the 48-hr notification in order to re-collect these 7 samples, today.

Further, all field screens of the original samples were below the strictest criteria.

Thank you,

**Brandon Schafer**
Project Manager

Vertex Resource Services Inc.
1405 22nd Ave NW
Watford City, ND 58854

**P 701.645.3111 Ext. 706**
**C 701.301.1564**
**F 780.464.3731**

www.vertex.ca

this message and any attachment is prohibited. If you have received this communication in error, please notify us by reply email and immediately and permanently delete this message and any attachments. Thank you.

[Quoted text hidden]

---

**Enviro, OCD, EMNRD** <OCD.Enviro@state.nm.us> Mon, Mar 14, 2022 at 8:36 AM
To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>, "Enviro, OCD, EMNRD" <OCD.Enviro@state.nm.us>, "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>
Cc: "Bratcher, Mike, EMNRD" <mike.bratcher@state.nm.us>, "dale.woodall@dvn.com" <dale.woodall@dvn.com>, "bschafer@vertex.ca" <bschafer@vertex.ca>

Request approved. Please include this communication in associated report. Thank you.

[Quoted text hidden]

# ATTACHMENT 7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

August 06, 2021

Wesley Mathews

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

RE: Todd 22I Fed 9 OrderNo.: 2107F48

Dear Wesley Mathews:

Hall Environmental Analysis Laboratory received 12 sample(s) on 7/30/2021 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Project:** Todd 22I Fed 9
**Lab ID:** 2107F48-001 **Matrix:** SOIL

**Client Sample ID:** BH21-01 0.5'
**Collection Date:** 7/28/2021 8:00:00 AM
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 2800 | 85 | | mg/Kg | 10 | 8/3/2021 9:20:31 AM |
| Motor Oil Range Organics (MRO) | 2200 | 420 | | mg/Kg | 10 | 8/3/2021 9:20:31 AM |
| Surr: DNOP | 0 | 70-130 | S | %Rec | 10 | 8/3/2021 9:20:31 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | 230 | 60 | | mg/Kg | 20 | 8/3/2021 12:38:39 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.12 | D | mg/Kg | 5 | 8/1/2021 10:29:28 AM |
| Toluene | ND | 0.23 | D | mg/Kg | 5 | 8/1/2021 10:29:28 AM |
| Ethylbenzene | ND | 0.23 | D | mg/Kg | 5 | 8/1/2021 10:29:28 AM |
| Xylenes, Total | ND | 0.47 | D | mg/Kg | 5 | 8/1/2021 10:29:28 AM |
| Surr: 1,2-Dichloroethane-d4 | 101 | 70-130 | D | %Rec | 5 | 8/1/2021 10:29:28 AM |
| Surr: 4-Bromofluorobenzene | 96.6 | 70-130 | D | %Rec | 5 | 8/1/2021 10:29:28 AM |
| Surr: Dibromofluoromethane | 102 | 70-130 | D | %Rec | 5 | 8/1/2021 10:29:28 AM |
| Surr: Toluene-d8 | 102 | 70-130 | D | %Rec | 5 | 8/1/2021 10:29:28 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 23 | D | mg/Kg | 5 | 8/1/2021 10:29:28 AM |
| Surr: BFB | 97.1 | 70-130 | D | %Rec | 5 | 8/1/2021 10:29:28 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Project:** Todd 22I Fed 9
**Lab ID:** 2107F48-002 **Matrix:** SOIL

**Client Sample ID:** BH21-01 4'
**Collection Date:** 7/28/2021 8:10:00 AM
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 5400 | 91 | | mg/Kg | 10 | 8/3/2021 9:44:15 AM |
| Motor Oil Range Organics (MRO) | 2600 | 450 | | mg/Kg | 10 | 8/3/2021 9:44:15 AM |
| Surr: DNOP | 0 | 70-130 | S | %Rec | 10 | 8/3/2021 9:44:15 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | 730 | 59 | | mg/Kg | 20 | 8/3/2021 1:15:53 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 8/2/2021 4:00:53 PM |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 8/2/2021 4:00:53 PM |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 8/2/2021 4:00:53 PM |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 8/2/2021 4:00:53 PM |
| Surr: 1,2-Dichloroethane-d4 | 99.7 | 70-130 | | %Rec | 1 | 8/2/2021 4:00:53 PM |
| Surr: 4-Bromofluorobenzene | 111 | 70-130 | | %Rec | 1 | 8/2/2021 4:00:53 PM |
| Surr: Dibromofluoromethane | 103 | 70-130 | | %Rec | 1 | 8/2/2021 4:00:53 PM |
| Surr: Toluene-d8 | 104 | 70-130 | | %Rec | 1 | 8/2/2021 4:00:53 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | 69 | 4.7 | | mg/Kg | 1 | 8/2/2021 4:00:53 PM |
| Surr: BFB | 101 | 70-130 | | %Rec | 1 | 8/2/2021 4:00:53 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Client Sample ID:** BH21-01 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 7/28/2021 8:20:00 AM
**Lab ID:** 2107F48-003 **Matrix:** SOIL
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.4 | | mg/Kg | 1 | 8/3/2021 10:07:53 AM |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 8/3/2021 10:07:53 AM |
| Surr: DNOP | 107 | 70-130 | | %Rec | 1 | 8/3/2021 10:07:53 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 59 | | mg/Kg | 20 | 8/3/2021 1:28:18 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 8/1/2021 11:26:35 AM |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 8/1/2021 11:26:35 AM |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 8/1/2021 11:26:35 AM |
| Xylenes, Total | ND | 0.094 | | mg/Kg | 1 | 8/1/2021 11:26:35 AM |
| Surr: 1,2-Dichloroethane-d4 | 96.7 | 70-130 | | %Rec | 1 | 8/1/2021 11:26:35 AM |
| Surr: 4-Bromofluorobenzene | 96.1 | 70-130 | | %Rec | 1 | 8/1/2021 11:26:35 AM |
| Surr: Dibromofluoromethane | 96.6 | 70-130 | | %Rec | 1 | 8/1/2021 11:26:35 AM |
| Surr: Toluene-d8 | 102 | 70-130 | | %Rec | 1 | 8/1/2021 11:26:35 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 8/1/2021 11:26:35 AM |
| Surr: BFB | 95.9 | 70-130 | | %Rec | 1 | 8/1/2021 11:26:35 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Project:** Todd 22I Fed 9
**Lab ID:** 2107F48-004 **Matrix:** SOIL

**Client Sample ID:** BH21-07 0.5'
**Collection Date:** 7/28/2021 8:30:00 AM
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 75 | 9.5 | | mg/Kg | 1 | 8/3/2021 10:31:36 AM |
| Motor Oil Range Organics (MRO) | 110 | 48 | | mg/Kg | 1 | 8/3/2021 10:31:36 AM |
| Surr: DNOP | 84.1 | 70-130 | | %Rec | 1 | 8/3/2021 10:31:36 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 1:40:42 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 8/1/2021 11:55:14 AM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 8/1/2021 11:55:14 AM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 8/1/2021 11:55:14 AM |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 8/1/2021 11:55:14 AM |
| Surr: 1,2-Dichloroethane-d4 | 99.8 | 70-130 | | %Rec | 1 | 8/1/2021 11:55:14 AM |
| Surr: 4-Bromofluorobenzene | 99.7 | 70-130 | | %Rec | 1 | 8/1/2021 11:55:14 AM |
| Surr: Dibromofluoromethane | 99.5 | 70-130 | | %Rec | 1 | 8/1/2021 11:55:14 AM |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 8/1/2021 11:55:14 AM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 8/1/2021 11:55:14 AM |
| Surr: BFB | 96.2 | 70-130 | | %Rec | 1 | 8/1/2021 11:55:14 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Project:** Todd 22I Fed 9
**Lab ID:** 2107F48-005 **Matrix:** SOIL

**Client Sample ID:** BH21-07 2'
**Collection Date:** 7/28/2021 8:40:00 AM
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 8/3/2021 10:55:17 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 8/3/2021 10:55:17 AM |
| Surr: DNOP | 84.6 | 70-130 | | %Rec | 1 | 8/3/2021 10:55:17 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 1:53:07 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 8/1/2021 2:18:15 PM |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 8/1/2021 2:18:15 PM |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 8/1/2021 2:18:15 PM |
| Xylenes, Total | ND | 0.092 | | mg/Kg | 1 | 8/1/2021 2:18:15 PM |
| Surr: 1,2-Dichloroethane-d4 | 100 | 70-130 | | %Rec | 1 | 8/1/2021 2:18:15 PM |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | %Rec | 1 | 8/1/2021 2:18:15 PM |
| Surr: Dibromofluoromethane | 99.6 | 70-130 | | %Rec | 1 | 8/1/2021 2:18:15 PM |
| Surr: Toluene-d8 | 101 | 70-130 | | %Rec | 1 | 8/1/2021 2:18:15 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 8/1/2021 2:18:15 PM |
| Surr: BFB | 96.2 | 70-130 | | %Rec | 1 | 8/1/2021 2:18:15 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Client Sample ID:** BH21-07 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 7/28/2021 8:50:00 AM
**Lab ID:** 2107F48-006 **Matrix:** SOIL
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 11 | 9.8 | | mg/Kg | 1 | 8/3/2021 2:28:42 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 8/3/2021 2:28:42 PM |
| Surr: DNOP | 93.5 | 70-130 | | %Rec | 1 | 8/3/2021 2:28:42 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | 120 | 60 | | mg/Kg | 20 | 8/3/2021 2:05:31 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 8/1/2021 2:46:51 PM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 8/1/2021 2:46:51 PM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 8/1/2021 2:46:51 PM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 8/1/2021 2:46:51 PM |
| Surr: 1,2-Dichloroethane-d4 | 99.5 | 70-130 | | %Rec | 1 | 8/1/2021 2:46:51 PM |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | %Rec | 1 | 8/1/2021 2:46:51 PM |
| Surr: Dibromofluoromethane | 97.1 | 70-130 | | %Rec | 1 | 8/1/2021 2:46:51 PM |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 8/1/2021 2:46:51 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 8/1/2021 2:46:51 PM |
| Surr: BFB | 97.3 | 70-130 | | %Rec | 1 | 8/1/2021 2:46:51 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Project:** Todd 22I Fed 9
**Lab ID:** 2107F48-007 **Matrix:** SOIL

**Client Sample ID:** BH21-02 0.5'
**Collection Date:** 7/28/2021 9:00:00 AM
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 13 | 8.8 | | mg/Kg | 1 | 8/3/2021 2:52:25 PM |
| Motor Oil Range Organics (MRO) | ND | 44 | | mg/Kg | 1 | 8/3/2021 2:52:25 PM |
| Surr: DNOP | 83.4 | 70-130 | | %Rec | 1 | 8/3/2021 2:52:25 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 2:17:56 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 8/1/2021 3:15:28 PM |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 8/1/2021 3:15:28 PM |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 8/1/2021 3:15:28 PM |
| Xylenes, Total | ND | 0.092 | | mg/Kg | 1 | 8/1/2021 3:15:28 PM |
| Surr: 1,2-Dichloroethane-d4 | 96.7 | 70-130 | | %Rec | 1 | 8/1/2021 3:15:28 PM |
| Surr: 4-Bromofluorobenzene | 99.3 | 70-130 | | %Rec | 1 | 8/1/2021 3:15:28 PM |
| Surr: Dibromofluoromethane | 99.3 | 70-130 | | %Rec | 1 | 8/1/2021 3:15:28 PM |
| Surr: Toluene-d8 | 103 | 70-130 | | %Rec | 1 | 8/1/2021 3:15:28 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 8/1/2021 3:15:28 PM |
| Surr: BFB | 100 | 70-130 | | %Rec | 1 | 8/1/2021 3:15:28 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Client Sample ID:** BH21-04 0.5'
**Project:** Todd 22I Fed 9
**Collection Date:** 7/28/2021 9:10:00 AM
**Lab ID:** 2107F48-008 **Matrix:** SOIL **Received Date:** 7/30/2021 8:00:00 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 | 8/3/2021 7:35:26 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | | mg/Kg | 1 | 8/3/2021 7:35:26 PM |
| Surr: DNOP | 106 | 70-130 | | %Rec | 1 | 8/3/2021 7:35:26 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 2:30:21 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 8/1/2021 3:44:07 PM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 8/1/2021 3:44:07 PM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 8/1/2021 3:44:07 PM |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 8/1/2021 3:44:07 PM |
| Surr: 1,2-Dichloroethane-d4 | 101 | 70-130 | | %Rec | 1 | 8/1/2021 3:44:07 PM |
| Surr: 4-Bromofluorobenzene | 95.7 | 70-130 | | %Rec | 1 | 8/1/2021 3:44:07 PM |
| Surr: Dibromofluoromethane | 100 | 70-130 | | %Rec | 1 | 8/1/2021 3:44:07 PM |
| Surr: Toluene-d8 | 100 | 70-130 | | %Rec | 1 | 8/1/2021 3:44:07 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 8/1/2021 3:44:07 PM |
| Surr: BFB | 95.5 | 70-130 | | %Rec | 1 | 8/1/2021 3:44:07 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Client Sample ID:** BH21-06 0.5'
**Project:** Todd 22I Fed 9
**Collection Date:** 7/28/2021 9:20:00 AM
**Lab ID:** 2107F48-009 **Matrix:** SOIL **Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.4 | | mg/Kg | 1 | 8/3/2021 7:59:02 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 8/3/2021 7:59:02 PM |
| Surr: DNOP | 97.7 | 70-130 | | %Rec | 1 | 8/3/2021 7:59:02 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 6:13:45 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 8/1/2021 4:12:52 PM |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 8/1/2021 4:12:52 PM |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 8/1/2021 4:12:52 PM |
| Xylenes, Total | ND | 0.091 | | mg/Kg | 1 | 8/1/2021 4:12:52 PM |
| Surr: 1,2-Dichloroethane-d4 | 95.0 | 70-130 | | %Rec | 1 | 8/1/2021 4:12:52 PM |
| Surr: 4-Bromofluorobenzene | 99.5 | 70-130 | | %Rec | 1 | 8/1/2021 4:12:52 PM |
| Surr: Dibromofluoromethane | 95.7 | 70-130 | | %Rec | 1 | 8/1/2021 4:12:52 PM |
| Surr: Toluene-d8 | 102 | 70-130 | | %Rec | 1 | 8/1/2021 4:12:52 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 8/1/2021 4:12:52 PM |
| Surr: BFB | 95.5 | 70-130 | | %Rec | 1 | 8/1/2021 4:12:52 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Client Sample ID:** BH21-08 0.5'
**Project:** Todd 22I Fed 9
**Collection Date:** 7/28/2021 9:30:00 AM
**Lab ID:** 2107F48-010 **Matrix:** SOIL
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 15 | 9.5 | | mg/Kg | 1 | 8/3/2021 8:22:49 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 8/3/2021 8:22:49 PM |
| Surr: DNOP | 87.0 | 70-130 | | %Rec | 1 | 8/3/2021 8:22:49 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 6:51:00 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 8/1/2021 4:41:34 PM |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 8/1/2021 4:41:34 PM |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 8/1/2021 4:41:34 PM |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 8/1/2021 4:41:34 PM |
| Surr: 1,2-Dichloroethane-d4 | 98.4 | 70-130 | | %Rec | 1 | 8/1/2021 4:41:34 PM |
| Surr: 4-Bromofluorobenzene | 97.8 | 70-130 | | %Rec | 1 | 8/1/2021 4:41:34 PM |
| Surr: Dibromofluoromethane | 97.5 | 70-130 | | %Rec | 1 | 8/1/2021 4:41:34 PM |
| Surr: Toluene-d8 | 99.8 | 70-130 | | %Rec | 1 | 8/1/2021 4:41:34 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 8/1/2021 4:41:34 PM |
| Surr: BFB | 94.1 | 70-130 | | %Rec | 1 | 8/1/2021 4:41:34 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Project:** Todd 22I Fed 9
**Lab ID:** 2107F48-011 **Matrix:** SOIL

**Client Sample ID:** BH21-11 0.5'
**Collection Date:** 7/28/2021 9:40:00 AM
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.8 | | mg/Kg | 1 | 8/3/2021 8:46:32 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 8/3/2021 8:46:32 PM |
| Surr: DNOP | 92.8 | 70-130 | | %Rec | 1 | 8/3/2021 8:46:32 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 60 | | mg/Kg | 20 | 8/3/2021 7:28:15 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 8/1/2021 5:10:20 PM |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 8/1/2021 5:10:20 PM |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 8/1/2021 5:10:20 PM |
| Xylenes, Total | ND | 0.094 | | mg/Kg | 1 | 8/1/2021 5:10:20 PM |
| Surr: 1,2-Dichloroethane-d4 | 96.3 | 70-130 | | %Rec | 1 | 8/1/2021 5:10:20 PM |
| Surr: 4-Bromofluorobenzene | 97.2 | 70-130 | | %Rec | 1 | 8/1/2021 5:10:20 PM |
| Surr: Dibromofluoromethane | 98.3 | 70-130 | | %Rec | 1 | 8/1/2021 5:10:20 PM |
| Surr: Toluene-d8 | 104 | 70-130 | | %Rec | 1 | 8/1/2021 5:10:20 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 8/1/2021 5:10:20 PM |
| Surr: BFB | 98.5 | 70-130 | | %Rec | 1 | 8/1/2021 5:10:20 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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 |

**Analytical Report**
Lab Order **2107F48**
Date Reported: **8/6/2021**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Devon Energy
**Client Sample ID:** BH21-12 0.5'
**Project:** Todd 22I Fed 9
**Collection Date:** 7/28/2021 9:50:00 AM
**Lab ID:** 2107F48-012 **Matrix:** SOIL
**Received Date:** 7/30/2021 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 8/4/2021 1:31:41 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 8/4/2021 1:31:41 AM |
| Surr: DNOP | 89.8 | 70-130 | | %Rec | 1 | 8/4/2021 1:31:41 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **VP** |
| Chloride | ND | 61 | | mg/Kg | 20 | 8/3/2021 7:40:39 PM |
| **EPA METHOD 8260B: VOLATILES SHORT LIST** | | | | | | Analyst: **JMR** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 8/1/2021 5:39:03 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 8/1/2021 5:39:03 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 8/1/2021 5:39:03 PM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 8/1/2021 5:39:03 PM |
| Surr: 1,2-Dichloroethane-d4 | 98.3 | 70-130 | | %Rec | 1 | 8/1/2021 5:39:03 PM |
| Surr: 4-Bromofluorobenzene | 95.5 | 70-130 | | %Rec | 1 | 8/1/2021 5:39:03 PM |
| Surr: Dibromofluoromethane | 97.2 | 70-130 | | %Rec | 1 | 8/1/2021 5:39:03 PM |
| Surr: Toluene-d8 | 101 | 70-130 | | %Rec | 1 | 8/1/2021 5:39:03 PM |
| **EPA METHOD 8015D MOD: GASOLINE RANGE** | | | | | | Analyst: **JMR** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 8/1/2021 5:39:03 PM |
| Surr: BFB | 96.2 | 70-130 | | %Rec | 1 | 8/1/2021 5:39:03 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of 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#: **2107F48**

***06-Aug-21***

**Client:** Devon Energy

**Project:** Todd 22I Fed 9

Sample ID: **MB-61739** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **61739** RunNo: **80283**

Prep Date: **8/3/2021** Analysis Date: **8/3/2021** SeqNo: **2828261** Units: **mg/Kg**

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

Sample ID: **LCS-61739** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **61739** RunNo: **80283**

Prep Date: **8/3/2021** Analysis Date: **8/3/2021** SeqNo: **2828263** 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-61743** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **61743** RunNo: **80283**

Prep Date: **8/3/2021** Analysis Date: **8/3/2021** SeqNo: **2828305** Units: **mg/Kg**

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

Sample ID: **LCS-61743** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **61743** RunNo: **80283**

Prep Date: **8/3/2021** Analysis Date: **8/3/2021** SeqNo: **2828306** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 15 | 1.5 | 15.00 | 0 | 97.2 | 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 Quanitative 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#: **2107F48**
***06-Aug-21***

**Client:** Devon Energy
**Project:** Todd 22I Fed 9

| Sample ID: **MB-61687** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **61687** | RunNo: **80245** |
| Prep Date: **7/31/2021** | Analysis Date: **8/2/2021** | SeqNo: **2827287** 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 | | 98.0 | 70 | 130 | | | |

| Sample ID: **LCS-61687** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **61687** | RunNo: **80245** |
| Prep Date: **7/31/2021** | Analysis Date: **8/2/2021** | SeqNo: **2827288** 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 | 93.9 | 68.9 | 141 | | | |
| Surr: DNOP | 4.6 | | 5.000 | | 92.3 | 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 Quanitative 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#: **2107F48**
***06-Aug-21***

**Client:** Devon Energy
**Project:** Todd 22I Fed 9

Sample ID: **lcs-61676** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **61676** RunNo: **80239**
Prep Date: **7/30/2021** Analysis Date: **8/1/2021** SeqNo: **2826297** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1.0 | 0.025 | 1.000 | 0 | 100 | 80 | 120 | | | |
| Toluene | 0.99 | 0.050 | 1.000 | 0 | 98.5 | 80 | 120 | | | |
| Ethylbenzene | 0.99 | 0.050 | 1.000 | 0 | 99.3 | 80 | 120 | | | |
| Xylenes, Total | 3.0 | 0.10 | 3.000 | 0 | 98.7 | 80 | 120 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.51 | | 0.5000 | | 102 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.49 | | 0.5000 | | 98.0 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.49 | | 0.5000 | | 98.0 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.5000 | | 100 | 70 | 130 | | | |

Sample ID: **mb-61676** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **61676** RunNo: **80239**
Prep Date: **7/30/2021** Analysis Date: **8/1/2021** SeqNo: **2826298** 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: 1,2-Dichloroethane-d4 | 0.48 | | 0.5000 | | 95.1 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.50 | | 0.5000 | | 101 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.48 | | 0.5000 | | 96.5 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.51 | | 0.5000 | | 101 | 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 Quanitative 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#: **2107F48**

***06-Aug-21***

**Client:** Devon Energy

**Project:** Todd 22I Fed 9

| Sample ID: **lcs-61676** | SampType: **LCS** | TestCode: **EPA Method 8015D Mod: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **61676** | RunNo: **80239** |
| Prep Date: **7/30/2021** | Analysis Date: **8/1/2021** | SeqNo: **2826329** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 26 | 5.0 | 25.00 | 0 | 105 | 70 | 130 | | | |
| Surr: BFB | 490 | | 500.0 | | 97.3 | 70 | 130 | | | |

| Sample ID: **mb-61676** | SampType: **MBLK** | TestCode: **EPA Method 8015D Mod: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **61676** | RunNo: **80239** |
| Prep Date: **7/30/2021** | Analysis Date: **8/1/2021** | SeqNo: **2826331** 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 | 490 | | 500.0 | | 97.5 | 70 | 130 | | | |

| Sample ID: **mb** | SampType: **MBLK** | TestCode: **EPA Method 8015D Mod: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **R80239** | RunNo: **80239** |
| Prep Date: | Analysis Date: **7/31/2021** | SeqNo: **2830117** Units: **%Rec** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: BFB | 490 | | 500.0 | | 98.9 | 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 Quanitative 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

*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: **2107F48** RcptNo: 1

Received By: **Sean Livingston** **7/30/2021 8:00:00 AM** Sean Livingston

Completed By: **Sean Livingston** **7/30/2021 8:37:48 AM** Sean Livingston

Reviewed By: JR 7/30/21

## 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° 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 ☐ | # of preserved bottles checked for pH: (<2 or >12 unless noted) |
| 12. Are matrices correctly identified on Chain of Custody? | Yes ☑ | No ☐ | Adjusted? |
| 13. Is it clear what analyses were requested? | Yes ☑ | No ☐ | |
| 14. Were all holding times able to be met? (If no, notify customer for authorization.) | Yes ☑ | No ☐ | Checked by: TME 7.30.21 |

## 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 | 1.5 | Good | | | | |
| 2 | 4.3 | Good | | | | |

# Chain-of-Custody Record

Client: Devon

Mailing Address: On File

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5- Day
☑ Standard ☐ Rush

Project Name: Todd 22 I Fed 9

Project #: 21E-02816-14

Project Manager: Brandon Schafer

Sampler: Chance Dixon

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 1.5±0=1.5 (°C)
4.3±0=4.3

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

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2107F48 |
|---|---|---|---|---|---|---|
| 7/28 | 8:00 | Soil | BH21-01 0.5' | 4 OZ | ICE | 001 |
| | 8:10 | | BH21-01 4' | | | 002 |
| | 8:20 | | BH21-01 6' | | | 003 |
| | 8:30 | | BH21-07 0.5' | | | 004 |
| | 8:40 | | BH21-07 2' | | | 005 |
| | 8:50 | | BH21-07 6' | | | 006 |
| | 9:00 | | BH21-02 0.5' | | | 007 |
| | 9:10 | | BH21-04 0.5' | | | 008 |
| | 9:20 | | BH21-06 0.5' | | | 009 |
| | 9:30 | | BH21-08 0.5' | | | 010 |
| | 9:40 | | BH21-11 0.5' | | | 011 |
| | 9:50 | | BH21-12 0.5' | | | 012 |

Analysis Request

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

| Date | Time | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| | | | | | 7/29/21 | 1200 |
| 7/29/21 | 1900 | | SGL courier | | 7/30/21 | 8:00 |

Remarks: CC: Chance Dixon, Brandon Schafer John Hurt
Direct Bill Devon Energy

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

March 04, 2022

Brandon Schafer

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

RE: Todd 22I Fed 9 OrderNo.: 2202B36

Dear Brandon Schafer:

Hall Environmental Analysis Laboratory received 7 sample(s) on 2/24/2022 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-01 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:15:00 PM
**Lab ID:** 2202B36-001 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.5 | | mg/Kg | 1 | 2/28/2022 11:58:03 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 2/28/2022 11:58:03 PM |
| Surr: DNOP | 89.6 | 51.1-141 | | %Rec | 1 | 2/28/2022 11:58:03 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 2/26/2022 7:21:21 AM |
| Surr: BFB | 104 | 70-130 | | %Rec | 1 | 2/26/2022 7:21:21 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 7:21:21 AM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 2/26/2022 7:21:21 AM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 2/26/2022 7:21:21 AM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 2/26/2022 7:21:21 AM |
| Surr: 4-Bromofluorobenzene | 98.8 | 70-130 | | %Rec | 1 | 2/26/2022 7:21:21 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | 250 | 60 | | mg/Kg | 20 | 3/3/2022 1:00:57 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-02 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:15:00 PM
**Lab ID:** 2202B36-002 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 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 | 3/1/2022 12:08:40 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/1/2022 12:08:40 AM |
| Surr: DNOP | 91.3 | 51.1-141 | | %Rec | 1 | 3/1/2022 12:08:40 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 2/26/2022 7:44:35 AM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 2/26/2022 7:44:35 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 7:44:35 AM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 7:44:35 AM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 7:44:35 AM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 2/26/2022 7:44:35 AM |
| Surr: 4-Bromofluorobenzene | 101 | 70-130 | | %Rec | 1 | 2/26/2022 7:44:35 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/3/2022 1:38:10 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-03 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:15:00 PM
**Lab ID:** 2202B36-003 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 3/1/2022 12:19:17 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/1/2022 12:19:17 AM |
| Surr: DNOP | 87.6 | 51.1-141 | | %Rec | 1 | 3/1/2022 12:19:17 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 2/26/2022 8:07:49 AM |
| Surr: BFB | 103 | 70-130 | | %Rec | 1 | 2/26/2022 8:07:49 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 8:07:49 AM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 8:07:49 AM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 8:07:49 AM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 2/26/2022 8:07:49 AM |
| Surr: 4-Bromofluorobenzene | 97.4 | 70-130 | | %Rec | 1 | 2/26/2022 8:07:49 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/3/2022 1:50:34 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-01 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:50:00 PM
**Lab ID:** 2202B36-004 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 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 | 3/1/2022 12:29:56 AM |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 3/1/2022 12:29:56 AM |
| Surr: DNOP | 91.5 | 51.1-141 | | %Rec | 1 | 3/1/2022 12:29:56 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 2/26/2022 8:31:08 AM |
| Surr: BFB | 102 | 70-130 | | %Rec | 1 | 2/26/2022 8:31:08 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 8:31:08 AM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 8:31:08 AM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 8:31:08 AM |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 2/26/2022 8:31:08 AM |
| Surr: 4-Bromofluorobenzene | 97.5 | 70-130 | | %Rec | 1 | 2/26/2022 8:31:08 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | 360 | 60 | | mg/Kg | 20 | 3/3/2022 2:02:59 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-02 4'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:50:00 PM
**Lab ID:** 2202B36-005 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 3/1/2022 12:40:34 AM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/1/2022 12:40:34 AM |
| Surr: DNOP | 98.3 | 51.1-141 | | %Rec | 1 | 3/1/2022 12:40:34 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 2/26/2022 8:54:20 AM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 2/26/2022 8:54:20 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 8:54:20 AM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 8:54:20 AM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 2/26/2022 8:54:20 AM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 2/26/2022 8:54:20 AM |
| Surr: 4-Bromofluorobenzene | 99.9 | 70-130 | | %Rec | 1 | 2/26/2022 8:54:20 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/3/2022 2:15:24 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-03 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:50:00 PM
**Lab ID:** 2202B36-006 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 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 | 3/1/2022 12:51:11 AM |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 3/1/2022 12:51:11 AM |
| Surr: DNOP | 95.1 | 51.1-141 | | %Rec | 1 | 3/1/2022 12:51:11 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 2/26/2022 10:27:22 AM |
| Surr: BFB | 104 | 70-130 | | %Rec | 1 | 2/26/2022 10:27:22 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 10:27:22 AM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 2/26/2022 10:27:22 AM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 2/26/2022 10:27:22 AM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 2/26/2022 10:27:22 AM |
| Surr: 4-Bromofluorobenzene | 98.7 | 70-130 | | %Rec | 1 | 2/26/2022 10:27:22 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/3/2022 2:52:37 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2202B36**
Date Reported: **3/4/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-04 6'
**Project:** Todd 22I Fed 9
**Collection Date:** 2/22/2022 1:50:00 PM
**Lab ID:** 2202B36-007 **Matrix:** SOIL
**Received Date:** 2/24/2022 8:00:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.4 | | mg/Kg | 1 | 3/1/2022 1:01:46 AM |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 3/1/2022 1:01:46 AM |
| Surr: DNOP | 96.9 | 51.1-141 | | %Rec | 1 | 3/1/2022 1:01:46 AM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **RAA** |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 2/26/2022 10:50:38 AM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 2/26/2022 10:50:38 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **RAA** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 2/26/2022 10:50:38 AM |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 2/26/2022 10:50:38 AM |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 2/26/2022 10:50:38 AM |
| Xylenes, Total | ND | 0.095 | | mg/Kg | 1 | 2/26/2022 10:50:38 AM |
| Surr: 4-Bromofluorobenzene | 100 | 70-130 | | %Rec | 1 | 2/26/2022 10:50:38 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **JMT** |
| Chloride | 290 | 60 | | mg/Kg | 20 | 3/3/2022 3:05:02 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2202B36**

***04-Mar-22***

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

**Project:** Todd 22I Fed 9

| Sample ID: **MB-65909** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **65909** | RunNo: **86196** |
| Prep Date: **3/2/2022** | Analysis Date: **3/2/2022** | SeqNo: **3038531** Units: **mg/Kg** |

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

| Sample ID: **LCS-65909** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **65909** | RunNo: **86196** |
| Prep Date: **3/2/2022** | Analysis Date: **3/2/2022** | SeqNo: **3038532** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 14 | 1.5 | 15.00 | 0 | 92.8 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2202B36**

***04-Mar-22***

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

**Project:** Todd 22I Fed 9

| Sample ID: **MB-65801** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **65801** | RunNo: **86130** |
| Prep Date: **2/25/2022** | Analysis Date: **2/28/2022** | SeqNo: **3036104** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 10 | | 10.00 | | 103 | 51.1 | 141 | | | |

| Sample ID: **LCS-65801** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **65801** | RunNo: **86130** |
| Prep Date: **2/25/2022** | Analysis Date: **2/28/2022** | SeqNo: **3036105** 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 | 99.9 | 68.9 | 135 | | | |
| Surr: DNOP | 5.2 | | 5.000 | | 103 | 51.1 | 141 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2202B36**

***04-Mar-22***

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

**Project:** Todd 22I Fed 9

Sample ID: **lcs-65787** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **LCSS** Batch ID: **65787** RunNo: **86121**

Prep Date: **2/24/2022** Analysis Date: **2/26/2022** SeqNo: **3034390** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 24 | 5.0 | 25.00 | 0 | 97.8 | 78.6 | 131 | | | |
| Surr: BFB | 1200 | | 1000 | | 119 | 70 | 130 | | | |

Sample ID: **mb-65787** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **PBS** Batch ID: **65787** RunNo: **86121**

Prep Date: **2/24/2022** Analysis Date: **2/26/2022** SeqNo: **3034392** 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 | 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 Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2202B36**

***04-Mar-22***

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

**Project:** Todd 22I Fed 9

Sample ID: **LCS-65787** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **65787** RunNo: **86121**

Prep Date: **2/24/2022** Analysis Date: **2/26/2022** SeqNo: **3034456** 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 | 87.6 | 80 | 120 | | | |
| Toluene | 0.92 | 0.050 | 1.000 | 0 | 92.2 | 80 | 120 | | | |
| Ethylbenzene | 0.93 | 0.050 | 1.000 | 0 | 92.9 | 80 | 120 | | | |
| Xylenes, Total | 2.8 | 0.10 | 3.000 | 0 | 93.1 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 1.0 | | 1.000 | | 101 | 70 | 130 | | | |

Sample ID: **mb-65787** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **65787** RunNo: **86121**

Prep Date: **2/24/2022** Analysis Date: **2/26/2022** SeqNo: **3034458** 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 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2202B36

RcptNo: 1

Received By: Joseph Alderette 2/24/2022 8:00:00 AM

Completed By: Sean Livingston 2/24/2022 9:06:06 AM

Reviewed By: JR 2/24/22

## 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° 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: MM 2/24/22

## 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 °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.4 | Good | | | | |

# Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☒ Standard ☒ Rush 5 Day

Project Name:
Todd 22 I Fed 9

Project #:
21E-02816-14

Project Manager: Brandon Schafer
BSchafer@Vertex.ca

Sampler: JC
On Ice: ☐ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 1.5 - 0.1 = 1.4 (°C)


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


**Analysis Request**

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2202836 | BTEX / MTBE / TMB's (8021) | TPH:8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-22-22 | 13:15 | Soil | BES22-01 6' | 1 Jar | Ice | 001 | X | X | | | | | X | | | |
| | 13:15 | | BES22-02 6' | | | 002 | | | | | | | | | | |
| | 13:15 | | BES22-03 6' | | | 003 | | | | | | | | | | |
| | 13:50 | | WES22-01 6' | | | 004 | | | | | | | | | | |
| | 13:50 | | WES22-02 4' | | | 005 | | | | | | | | | | |
| | 13:50 | | WES22-03 6' | | | 006 | | | | | | | | | | |
| | 13:50 | | WES22-04 6' | | | 007 | | | | | | | | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 2/23/22 | 1100 | | | | 2/23/22 | 1100 |
| 2/23/22 | 1900 | | | courier | 2-24-22 | 8:00 |

Remarks:
Direct bill Devon Energy

CC Brandon Schafer

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

March 21, 2022

Brandon Schafer

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

RE: Todd 22 I Federal 9 OrderNo.: 2203707

Dear Brandon Schafer:

Hall Environmental Analysis Laboratory received 8 sample(s) on 3/12/2022 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-05 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 1:00:00 PM
**Lab ID:** 2203707-001 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 3/15/2022 2:31:30 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/15/2022 2:31:30 PM |
| Surr: DNOP | 95.5 | 51.1-141 | | %Rec | 1 | 3/15/2022 2:31:30 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/14/2022 8:30:36 PM |
| Surr: BFB | 104 | 70-130 | | %Rec | 1 | 3/14/2022 8:30:36 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/14/2022 8:30:36 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 8:30:36 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 8:30:36 PM |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 3/14/2022 8:30:36 PM |
| Surr: 4-Bromofluorobenzene | 96.7 | 70-130 | | %Rec | 1 | 3/14/2022 8:30:36 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 59 | | mg/Kg | 20 | 3/17/2022 3:12:49 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-06 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 1:10:00 PM
**Lab ID:** 2203707-002 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 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 | 3/15/2022 2:42:25 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | | mg/Kg | 1 | 3/15/2022 2:42:25 PM |
| Surr: DNOP | 91.0 | 51.1-141 | | %Rec | 1 | 3/15/2022 2:42:25 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 5.0 | | mg/Kg | 1 | 3/14/2022 10:04:27 PM |
| Surr: BFB | 101 | 70-130 | | %Rec | 1 | 3/14/2022 10:04:27 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/14/2022 10:04:27 PM |
| Toluene | ND | 0.050 | | mg/Kg | 1 | 3/14/2022 10:04:27 PM |
| Ethylbenzene | ND | 0.050 | | mg/Kg | 1 | 3/14/2022 10:04:27 PM |
| Xylenes, Total | ND | 0.099 | | mg/Kg | 1 | 3/14/2022 10:04:27 PM |
| Surr: 4-Bromofluorobenzene | 94.3 | 70-130 | | %Rec | 1 | 3/14/2022 10:04:27 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/17/2022 3:50:02 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-07 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 1:20:00 PM
**Lab ID:** 2203707-003 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 9.6 | | mg/Kg | 1 | 3/15/2022 2:53:18 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/15/2022 2:53:18 PM |
| Surr: DNOP | 92.1 | 51.1-141 | | %Rec | 1 | 3/15/2022 2:53:18 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/14/2022 10:27:54 PM |
| Surr: BFB | 104 | 70-130 | | %Rec | 1 | 3/14/2022 10:27:54 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/14/2022 10:27:54 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 10:27:54 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 10:27:54 PM |
| Xylenes, Total | ND | 0.099 | | mg/Kg | 1 | 3/14/2022 10:27:54 PM |
| Surr: 4-Bromofluorobenzene | 97.4 | 70-130 | | %Rec | 1 | 3/14/2022 10:27:54 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | 260 | 60 | | mg/Kg | 20 | 3/17/2022 4:27:15 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-08 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 1:30:00 PM
**Lab ID:** 2203707-004 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 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 | 3/15/2022 3:04:10 PM |
| Motor Oil Range Organics (MRO) | ND | 45 | | mg/Kg | 1 | 3/15/2022 3:04:10 PM |
| Surr: DNOP | 100 | 51.1-141 | | %Rec | 1 | 3/15/2022 3:04:10 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/14/2022 10:51:10 PM |
| Surr: BFB | 106 | 70-130 | | %Rec | 1 | 3/14/2022 10:51:10 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/14/2022 10:51:10 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 10:51:10 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 10:51:10 PM |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 3/14/2022 10:51:10 PM |
| Surr: 4-Bromofluorobenzene | 96.6 | 70-130 | | %Rec | 1 | 3/14/2022 10:51:10 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | 100 | 60 | | mg/Kg | 20 | 3/17/2022 4:39:39 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-04 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 2:00:00 PM
**Lab ID:** 2203707-005 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 8.2 | | mg/Kg | 1 | 3/15/2022 3:15:02 PM |
| Motor Oil Range Organics (MRO) | ND | 41 | | mg/Kg | 1 | 3/15/2022 3:15:02 PM |
| Surr: DNOP | 101 | 51.1-141 | | %Rec | 1 | 3/15/2022 3:15:02 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 3/14/2022 11:14:38 PM |
| Surr: BFB | 108 | 70-130 | | %Rec | 1 | 3/14/2022 11:14:38 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/14/2022 11:14:38 PM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 3/14/2022 11:14:38 PM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 3/14/2022 11:14:38 PM |
| Xylenes, Total | ND | 0.095 | | mg/Kg | 1 | 3/14/2022 11:14:38 PM |
| Surr: 4-Bromofluorobenzene | 99.4 | 70-130 | | %Rec | 1 | 3/14/2022 11:14:38 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/17/2022 4:52:04 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-05 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 2:10:00 PM
**Lab ID:** 2203707-006 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 8.8 | | mg/Kg | 1 | 3/15/2022 3:25:54 PM |
| Motor Oil Range Organics (MRO) | ND | 44 | | mg/Kg | 1 | 3/15/2022 3:25:54 PM |
| Surr: DNOP | 99.9 | 51.1-141 | | %Rec | 1 | 3/15/2022 3:25:54 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/14/2022 11:38:05 PM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 3/14/2022 11:38:05 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/14/2022 11:38:05 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 11:38:05 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/14/2022 11:38:05 PM |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 3/14/2022 11:38:05 PM |
| Surr: 4-Bromofluorobenzene | 98.9 | 70-130 | | %Rec | 1 | 3/14/2022 11:38:05 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | 88 | 61 | | mg/Kg | 20 | 3/17/2022 5:04:29 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-06 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 2:20:00 PM
**Lab ID:** 2203707-007 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 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 | 3/15/2022 3:36:45 PM |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 3/15/2022 3:36:45 PM |
| Surr: DNOP | 95.8 | 51.1-141 | | %Rec | 1 | 3/15/2022 3:36:45 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/15/2022 12:01:33 AM |
| Surr: BFB | 107 | 70-130 | | %Rec | 1 | 3/15/2022 12:01:33 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/15/2022 12:01:33 AM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/15/2022 12:01:33 AM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/15/2022 12:01:33 AM |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 3/15/2022 12:01:33 AM |
| Surr: 4-Bromofluorobenzene | 100 | 70-130 | | %Rec | 1 | 3/15/2022 12:01:33 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/17/2022 5:16:53 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2203707**
Date Reported: **3/21/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-07 6.0'
**Project:** Todd 22 I Federal 9
**Collection Date:** 3/10/2022 2:30:00 PM
**Lab ID:** 2203707-008 **Matrix:** SOIL
**Received Date:** 3/12/2022 8:34:00 AM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | ND | 8.4 | | mg/Kg | 1 | 3/15/2022 3:47:33 PM |
| Motor Oil Range Organics (MRO) | ND | 42 | | mg/Kg | 1 | 3/15/2022 3:47:33 PM |
| Surr: DNOP | 101 | 51.1-141 | | %Rec | 1 | 3/15/2022 3:47:33 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/15/2022 12:24:56 AM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 3/15/2022 12:24:56 AM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/15/2022 12:24:56 AM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/15/2022 12:24:56 AM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/15/2022 12:24:56 AM |
| Xylenes, Total | ND | 0.099 | | mg/Kg | 1 | 3/15/2022 12:24:56 AM |
| Surr: 4-Bromofluorobenzene | 97.0 | 70-130 | | %Rec | 1 | 3/15/2022 12:24:56 AM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/17/2022 5:29:17 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2203707**

***21-Mar-22***

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

**Project:** Todd 22 I Federal 9

| Sample ID: **MB-66233** | SampType: **mblk** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **66233** | RunNo: **86570** | | | | | | | |
| Prep Date: **3/17/2022** | Analysis Date: **3/17/2022** | SeqNo: **3055535** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | ND | 1.5 | | | | | | | | |

| Sample ID: **LCS-66233** | SampType: **lcs** | TestCode: **EPA Method 300.0: Anions** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **66233** | RunNo: **86570** | | | | | | | |
| Prep Date: **3/17/2022** | Analysis Date: **3/17/2022** | SeqNo: **3055536** | Units: **mg/Kg** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | 14 | 1.5 | 15.00 | 0 | 90.5 | 90 | 110 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203707**

***21-Mar-22***

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

**Project:** Todd 22 I Federal 9

Sample ID: **2203678-003AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BatchQC** Batch ID: **66161** RunNo: **86464**
Prep Date: **3/14/2022** Analysis Date: **3/15/2022** SeqNo: **3051904** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 46 | 9.8 | 49.21 | 0 | 93.1 | 36.1 | 154 | | | |
| Surr: DNOP | 4.5 | | 4.921 | | 91.9 | 51.1 | 141 | | | |

Sample ID: **2203678-003AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BatchQC** Batch ID: **66161** RunNo: **86464**
Prep Date: **3/14/2022** Analysis Date: **3/15/2022** SeqNo: **3051905** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 55 | 9.6 | 47.98 | 0 | 114 | 36.1 | 154 | 17.7 | 33.9 | |
| Surr: DNOP | 4.3 | | 4.798 | | 90.2 | 51.1 | 141 | 0 | 0 | |

Sample ID: **LCS-66161** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **66161** RunNo: **86464**
Prep Date: **3/14/2022** Analysis Date: **3/15/2022** SeqNo: **3051926** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 45 | 10 | 50.00 | 0 | 89.9 | 68.9 | 135 | | | |
| Surr: DNOP | 4.1 | | 5.000 | | 81.3 | 51.1 | 141 | | | |

Sample ID: **MB-66161** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **66161** RunNo: **86464**
Prep Date: **3/14/2022** Analysis Date: **3/15/2022** SeqNo: **3051927** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 8.9 | | 10.00 | | 89.0 | 51.1 | 141 | | | |

Sample ID: **2203822-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BatchQC** Batch ID: **66204** RunNo: **86505**
Prep Date: **3/16/2022** Analysis Date: **3/16/2022** SeqNo: **3052638** Units: **%Rec**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: DNOP | 4.4 | | 4.812 | | 91.7 | 51.1 | 141 | | | |

Sample ID: **2203822-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BatchQC** Batch ID: **66204** RunNo: **86505**
Prep Date: **3/16/2022** Analysis Date: **3/16/2022** SeqNo: **3052639** Units: **%Rec**

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203707**

***21-Mar-22***

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

**Project:** Todd 22 I Federal 9

| Sample ID: **2203822-001AMSD** | SampType: **MSD** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **BatchQC** | Batch ID: **66204** | RunNo: **86505** | | | | | | | |
| Prep Date: **3/16/2022** | Analysis Date: **3/16/2022** | SeqNo: **3052639** | Units: **%Rec** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 4.6 | | 4.916 | | 92.7 | 51.1 | 141 | 0 | 0 | |

| Sample ID: **LCS-66204** | SampType: **LCS** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **LCSS** | Batch ID: **66204** | RunNo: **86505** | | | | | | | |
| Prep Date: **3/16/2022** | Analysis Date: **3/16/2022** | SeqNo: **3052645** | Units: **%Rec** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 4.6 | | 5.000 | | 92.3 | 51.1 | 141 | | | |

| Sample ID: **MB-66204** | SampType: **MBLK** | TestCode: **EPA Method 8015M/D: Diesel Range Organics** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Client ID: **PBS** | Batch ID: **66204** | RunNo: **86505** | | | | | | | |
| Prep Date: **3/16/2022** | Analysis Date: **3/16/2022** | SeqNo: **3052646** | Units: **%Rec** | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: DNOP | 9.2 | | 10.00 | | 92.2 | 51.1 | 141 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203707**

***21-Mar-22***

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

**Project:** Todd 22 I Federal 9

Sample ID: **mb-66140** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **PBS** Batch ID: **66140** RunNo: **86458**

Prep Date: **3/13/2022** Analysis Date: **3/14/2022** SeqNo: **3050309** 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 | | 106 | 70 | 130 | | | |

Sample ID: **lcs-66140** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **LCSS** Batch ID: **66140** RunNo: **86458**

Prep Date: **3/13/2022** Analysis Date: **3/14/2022** SeqNo: **3050310** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 25 | 5.0 | 25.00 | 0 | 102 | 78.6 | 131 | | | |
| Surr: BFB | 2100 | | 1000 | | 215 | 70 | 130 | | | S |

Sample ID: **2203705-001ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **BatchQC** Batch ID: **66140** RunNo: **86458**

Prep Date: **3/13/2022** Analysis Date: **3/14/2022** SeqNo: **3050312** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 29 | 25 | 24.93 | 0 | 116 | 70 | 130 | | | |
| Surr: BFB | 6300 | | 4985 | | 127 | 70 | 130 | | | |

Sample ID: **2203705-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**

Client ID: **BatchQC** Batch ID: **66140** RunNo: **86458**

Prep Date: **3/13/2022** Analysis Date: **3/14/2022** SeqNo: **3050313** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 30 | 25 | 24.98 | 0 | 119 | 70 | 130 | 2.75 | 20 | |
| Surr: BFB | 6200 | | 4995 | | 125 | 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 Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203707**

***21-Mar-22***

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

**Project:** Todd 22 I Federal 9

| Sample ID: **mb-66140** | SampType: **MBLK** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **66140** | RunNo: **86458** |
| Prep Date: **3/13/2022** | Analysis Date: **3/14/2022** | SeqNo: **3050380** 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 | | 96.9 | 70 | 130 | | | |

| Sample ID: **LCS-66140** | SampType: **LCS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **66140** | RunNo: **86458** |
| Prep Date: **3/13/2022** | Analysis Date: **3/14/2022** | SeqNo: **3050381** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.90 | 0.025 | 1.000 | 0 | 89.6 | 80 | 120 | | | |
| Toluene | 0.94 | 0.050 | 1.000 | 0 | 93.8 | 80 | 120 | | | |
| Ethylbenzene | 0.95 | 0.050 | 1.000 | 0 | 95.2 | 80 | 120 | | | |
| Xylenes, Total | 2.8 | 0.10 | 3.000 | 0 | 94.5 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 0.98 | | 1.000 | | 97.6 | 70 | 130 | | | |

| Sample ID: **2203705-002ams** | SampType: **MS** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **66140** | RunNo: **86458** |
| Prep Date: **3/13/2022** | Analysis Date: **3/14/2022** | SeqNo: **3050384** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1.0 | 0.12 | 0.9794 | 0 | 103 | 68.8 | 120 | | | |
| Toluene | 1.1 | 0.24 | 0.9794 | 0 | 111 | 73.6 | 124 | | | |
| Ethylbenzene | 1.1 | 0.24 | 0.9794 | 0 | 111 | 72.7 | 129 | | | |
| Xylenes, Total | 3.3 | 0.49 | 2.938 | 0 | 112 | 75.7 | 126 | | | |
| Surr: 4-Bromofluorobenzene | 4.6 | | 4.897 | | 94.0 | 70 | 130 | | | |

| Sample ID: **2203705-002amsd** | SampType: **MSD** | TestCode: **EPA Method 8021B: Volatiles** |
|---|---|---|
| Client ID: **BatchQC** | Batch ID: **66140** | RunNo: **86458** |
| Prep Date: **3/13/2022** | Analysis Date: **3/14/2022** | SeqNo: **3050385** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 1.0 | 0.12 | 0.9852 | 0 | 103 | 68.8 | 120 | 0.880 | 20 | |
| Toluene | 1.1 | 0.25 | 0.9852 | 0 | 111 | 73.6 | 124 | 0.905 | 20 | |
| Ethylbenzene | 1.1 | 0.25 | 0.9852 | 0 | 110 | 72.7 | 129 | 0.272 | 20 | |
| Xylenes, Total | 3.2 | 0.49 | 2.956 | 0 | 109 | 75.7 | 126 | 1.76 | 20 | |
| Surr: 4-Bromofluorobenzene | 4.7 | | 4.926 | | 95.5 | 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 Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2203707

RcptNo: 1

Received By: Cheyenne Cason 3/12/2022 8:34:00 AM

Completed By: Cheyenne Cason 3/12/2022 9:07:17 AM

Reviewed By: 3/12/22

## 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° 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: CM 3/12/22

## 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 °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 1.1 | Good | Not Present | | | |

# Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 5 DAY
☐ Standard ☐ Rush

Project Name: Todd 22 I Federal 9

Project #: 21E-02816-14

Project Manager: Brandon Schafer

Sampler: AH

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.3 - 0.2 = 1.1 (°C)


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


| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2203707 |
|---|---|---|---|---|---|---|
| 3-10-22 | 1300 | Soil | WES22-05 6.0' | 6 glass jar | ICE | 001 |
| | 1310 | | WES22-06 6.0' | | | 002 |
| | 1320 | | WES22-07 6.0' | | | 003 |
| | 1330 | | WES22-08 6.0' | | | 004 |
| | 1400 | | BES22-04 6.0' | | | 005 |
| | 1410 | | BES22-05 6.0' | | | 006 |
| | 1420 | | BES22-06 6.0' | | | 007 |
| | 1430 | | BES22-07 6.0' | | | 008 |

Analysis Request

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

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| 3-11-22 | 1100 | Austin Harris | | | | |
| 3/11/22 | 1900 | | CMC | Courier | 3/12/22 | 0834 |

Remarks: cc: Brandon Schafer

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

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

March 30, 2022

Brandon Schafer

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

RE: Todd 22 I Fed 9 OrderNo.: 2203743

Dear Brandon Schafer:

Hall Environmental Analysis Laboratory received 7 sample(s) on 3/15/2022 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,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-06 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 3:00:00 PM
**Lab ID:** 2203743-001 **Matrix:** SOIL
**Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 28 | 9.5 | | mg/Kg | 1 | 3/17/2022 7:07:12 PM |
| Motor Oil Range Organics (MRO) | ND | 48 | | mg/Kg | 1 | 3/17/2022 7:07:12 PM |
| Surr: DNOP | 94.5 | 51.1-141 | | %Rec | 1 | 3/17/2022 7:07:12 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 3/16/2022 1:16:30 PM |
| Surr: BFB | 106 | 70-130 | | %Rec | 1 | 3/16/2022 1:16:30 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.025 | | mg/Kg | 1 | 3/16/2022 1:16:30 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 3/16/2022 1:16:30 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 3/16/2022 1:16:30 PM |
| Xylenes, Total | ND | 0.098 | | mg/Kg | 1 | 3/16/2022 1:16:30 PM |
| Surr: 4-Bromofluorobenzene | 96.1 | 70-130 | | %Rec | 1 | 3/16/2022 1:16:30 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | 61 | 60 | | mg/Kg | 20 | 3/17/2022 11:53:51 PM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-07 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 3:10:00 PM
**Lab ID:** 2203743-002 **Matrix:** SOIL
**Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 24 | 9.7 | | mg/Kg | 1 | 3/17/2022 7:17:42 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 3/17/2022 7:17:42 PM |
| Surr: DNOP | 96.6 | 51.1-141 | | %Rec | 1 | 3/17/2022 7:17:42 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 3/16/2022 2:27:03 PM |
| Surr: BFB | 108 | 70-130 | | %Rec | 1 | 3/16/2022 2:27:03 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/16/2022 2:27:03 PM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 3/16/2022 2:27:03 PM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 3/16/2022 2:27:03 PM |
| Xylenes, Total | ND | 0.097 | | mg/Kg | 1 | 3/16/2022 2:27:03 PM |
| Surr: 4-Bromofluorobenzene | 94.9 | 70-130 | | %Rec | 1 | 3/16/2022 2:27:03 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | 60 | 60 | | mg/Kg | 20 | 3/18/2022 12:06:15 AM |

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** WES22-08 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 3:20:00 PM
**Lab ID:** 2203743-003 **Matrix:** SOIL
**Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 30 | 9.8 | | mg/Kg | 1 | 3/17/2022 7:28:14 PM |
| Motor Oil Range Organics (MRO) | ND | 49 | | mg/Kg | 1 | 3/17/2022 7:28:14 PM |
| Surr: DNOP | 106 | 51.1-141 | | %Rec | 1 | 3/17/2022 7:28:14 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.7 | | mg/Kg | 1 | 3/16/2022 4:00:32 PM |
| Surr: BFB | 103 | 70-130 | | %Rec | 1 | 3/16/2022 4:00:32 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/16/2022 4:00:32 PM |
| Toluene | ND | 0.047 | | mg/Kg | 1 | 3/16/2022 4:00:32 PM |
| Ethylbenzene | ND | 0.047 | | mg/Kg | 1 | 3/16/2022 4:00:32 PM |
| Xylenes, Total | ND | 0.094 | | mg/Kg | 1 | 3/16/2022 4:00:32 PM |
| Surr: 4-Bromofluorobenzene | 93.6 | 70-130 | | %Rec | 1 | 3/16/2022 4:00:32 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/20/2022 1:52:38 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-04 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 3:30:00 PM
**Lab ID:** 2203743-004 **Matrix:** SOIL
**Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 31 | 9.2 | | mg/Kg | 1 | 3/17/2022 7:38:45 PM |
| Motor Oil Range Organics (MRO) | ND | 46 | | mg/Kg | 1 | 3/17/2022 7:38:45 PM |
| Surr: DNOP | 108 | 51.1-141 | | %Rec | 1 | 3/17/2022 7:38:45 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 3/16/2022 4:23:54 PM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 3/16/2022 4:23:54 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 3/16/2022 4:23:54 PM |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 3/16/2022 4:23:54 PM |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 3/16/2022 4:23:54 PM |
| Xylenes, Total | ND | 0.092 | | mg/Kg | 1 | 3/16/2022 4:23:54 PM |
| Surr: 4-Bromofluorobenzene | 96.8 | 70-130 | | %Rec | 1 | 3/16/2022 4:23:54 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | 61 | 59 | | mg/Kg | 20 | 3/20/2022 2:05:03 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-05 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 3:40:00 PM
**Lab ID:** 2203743-005 **Matrix:** SOIL
**Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 30 | 9.4 | | mg/Kg | 1 | 3/17/2022 7:49:15 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 3/17/2022 7:49:15 PM |
| Surr: DNOP | 102 | 51.1-141 | | %Rec | 1 | 3/17/2022 7:49:15 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 3/16/2022 4:47:13 PM |
| Surr: BFB | 105 | 70-130 | | %Rec | 1 | 3/16/2022 4:47:13 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 3/16/2022 4:47:13 PM |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 3/16/2022 4:47:13 PM |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 3/16/2022 4:47:13 PM |
| Xylenes, Total | ND | 0.093 | | mg/Kg | 1 | 3/16/2022 4:47:13 PM |
| Surr: 4-Bromofluorobenzene | 96.2 | 70-130 | | %Rec | 1 | 3/16/2022 4:47:13 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/20/2022 3:07:07 PM |

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

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds Maximum Contaminant Level. | B | Analyte detected in the associated Method Blank |
| D | Sample Diluted Due to Matrix | E | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-06 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 3:50:00 PM
**Lab ID:** 2203743-006 **Matrix:** SOIL
**Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 26 | 9.4 | | mg/Kg | 1 | 3/17/2022 7:59:44 PM |
| Motor Oil Range Organics (MRO) | ND | 47 | | mg/Kg | 1 | 3/17/2022 7:59:44 PM |
| Surr: DNOP | 93.0 | 51.1-141 | | %Rec | 1 | 3/17/2022 7:59:44 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.8 | | mg/Kg | 1 | 3/16/2022 5:10:31 PM |
| Surr: BFB | 103 | 70-130 | | %Rec | 1 | 3/16/2022 5:10:31 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.024 | | mg/Kg | 1 | 3/16/2022 5:10:31 PM |
| Toluene | ND | 0.048 | | mg/Kg | 1 | 3/16/2022 5:10:31 PM |
| Ethylbenzene | ND | 0.048 | | mg/Kg | 1 | 3/16/2022 5:10:31 PM |
| Xylenes, Total | ND | 0.096 | | mg/Kg | 1 | 3/16/2022 5:10:31 PM |
| Surr: 4-Bromofluorobenzene | 94.3 | 70-130 | | %Rec | 1 | 3/16/2022 5:10:31 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/20/2022 3:19:31 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

**Analytical Report**
Lab Order **2203743**
Date Reported: **3/30/2022**

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Vertex Resources Services, Inc.
**Client Sample ID:** BES22-07 6.0'
**Project:** Todd 22 I Fed 9
**Collection Date:** 3/11/2022 4:00:00 PM
**Lab ID:** 2203743-007 **Matrix:** SOIL **Received Date:** 3/15/2022 7:30:00 AM

| Analyses | Result | PQL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** | | | | | | Analyst: **SB** |
| Diesel Range Organics (DRO) | 27 | 9.9 | | mg/Kg | 1 | 3/17/2022 8:10:12 PM |
| Motor Oil Range Organics (MRO) | ND | 50 | | mg/Kg | 1 | 3/17/2022 8:10:12 PM |
| Surr: DNOP | 93.7 | 51.1-141 | | %Rec | 1 | 3/17/2022 8:10:12 PM |
| **EPA METHOD 8015D: GASOLINE RANGE** | | | | | | Analyst: **NSB** |
| Gasoline Range Organics (GRO) | ND | 4.6 | | mg/Kg | 1 | 3/16/2022 5:33:51 PM |
| Surr: BFB | 104 | 70-130 | | %Rec | 1 | 3/16/2022 5:33:51 PM |
| **EPA METHOD 8021B: VOLATILES** | | | | | | Analyst: **NSB** |
| Benzene | ND | 0.023 | | mg/Kg | 1 | 3/16/2022 5:33:51 PM |
| Toluene | ND | 0.046 | | mg/Kg | 1 | 3/16/2022 5:33:51 PM |
| Ethylbenzene | ND | 0.046 | | mg/Kg | 1 | 3/16/2022 5:33:51 PM |
| Xylenes, Total | ND | 0.091 | | mg/Kg | 1 | 3/16/2022 5:33:51 PM |
| Surr: 4-Bromofluorobenzene | 96.1 | 70-130 | | %Rec | 1 | 3/16/2022 5:33:51 PM |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: **LRN** |
| Chloride | ND | 60 | | mg/Kg | 20 | 3/20/2022 3:31:55 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 | Estimated value |
| H | Holding times for preparation or analysis exceeded | J | Analyte detected below quantitation limits |
| ND | Not Detected at the Reporting Limit | P | Sample pH Not In Range |
| PQL | Practical Quanitative Limit | RL | Reporting Limit |
| S | % Recovery outside of range due to dilution or matrix interference | | |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2203743**

***30-Mar-22***

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

**Project:** Todd 22 I Fed 9

Sample ID: **MB-66250** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **66250** RunNo: **86570**

Prep Date: **3/17/2022** Analysis Date: **3/17/2022** SeqNo: **3055565** Units: **mg/Kg**

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

Sample ID: **LCS-66250** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **66250** RunNo: **86570**

Prep Date: **3/17/2022** Analysis Date: **3/17/2022** SeqNo: **3055566** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 14 | 1.5 | 15.00 | 0 | 91.5 | 90 | 110 | | | |

Sample ID: **MB-66279** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **66279** RunNo: **86610**

Prep Date: **3/20/2022** Analysis Date: **3/20/2022** SeqNo: **3057325** Units: **mg/Kg**

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

Sample ID: **LCS-66279** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **66279** RunNo: **86610**

Prep Date: **3/20/2022** Analysis Date: **3/20/2022** SeqNo: **3057326** Units: **mg/Kg**

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

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203743**

***30-Mar-22***

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

**Project:** Todd 22 I Fed 9

Sample ID: **LCS-66203** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **LCSS** Batch ID: **66203** RunNo: **86542**

Prep Date: **3/16/2022** Analysis Date: **3/17/2022** SeqNo: **3055280** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | 46 | 10 | 50.00 | 0 | 92.3 | 68.9 | 135 | | | |
| Surr: DNOP | 3.7 | | 5.000 | | 73.9 | 51.1 | 141 | | | |

Sample ID: **MB-66203** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**

Client ID: **PBS** Batch ID: **66203** RunNo: **86542**

Prep Date: **3/16/2022** Analysis Date: **3/17/2022** SeqNo: **3055284** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | 8.4 | | 10.00 | | 84.1 | 51.1 | 141 | | | |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds Maximum Contaminant Level. |
| D | Sample Diluted Due to Matrix |
| H | Holding times for preparation or analysis exceeded |
| ND | Not Detected at the Reporting Limit |
| PQL | Practical Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203743**
***30-Mar-22***

**Client:** Vertex Resources Services, Inc.
**Project:** Todd 22 I Fed 9

| Sample ID: **mb-66178** | SampType: **MBLK** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **PBS** | Batch ID: **66178** | RunNo: **86522** |
| Prep Date: **3/15/2022** | Analysis Date: **3/16/2022** | SeqNo: **3053232** 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 | | 104 | 70 | 130 | | | |

| Sample ID: **lcs-66178** | SampType: **LCS** | TestCode: **EPA Method 8015D: Gasoline Range** |
|---|---|---|
| Client ID: **LCSS** | Batch ID: **66178** | RunNo: **86522** |
| Prep Date: **3/15/2022** | Analysis Date: **3/16/2022** | SeqNo: **3053234** Units: **mg/Kg** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics (GRO) | 26 | 5.0 | 25.00 | 0 | 105 | 78.6 | 131 | | | |
| Surr: BFB | 2200 | | 1000 | | 221 | 70 | 130 | | | 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 Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | 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#: **2203743**

***30-Mar-22***

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

**Project:** Todd 22 I Fed 9

Sample ID: **mb-66178** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **PBS** Batch ID: **66178** RunNo: **86522**

Prep Date: **3/15/2022** Analysis Date: **3/16/2022** SeqNo: **3053274** 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 | | 95.1 | 70 | 130 | | | |

Sample ID: **LCS-66178** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **LCSS** Batch ID: **66178** RunNo: **86522**

Prep Date: **3/15/2022** Analysis Date: **3/16/2022** SeqNo: **3053275** 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 | 93.7 | 80 | 120 | | | |
| Toluene | 0.98 | 0.050 | 1.000 | 0 | 98.5 | 80 | 120 | | | |
| Ethylbenzene | 1.0 | 0.050 | 1.000 | 0 | 99.5 | 80 | 120 | | | |
| Xylenes, Total | 3.0 | 0.10 | 3.000 | 0 | 100 | 80 | 120 | | | |
| Surr: 4-Bromofluorobenzene | 1.0 | | 1.000 | | 101 | 70 | 130 | | | |

Sample ID: **2203743-001ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **WES22-06 6.0'** Batch ID: **66178** RunNo: **86522**

Prep Date: **3/15/2022** Analysis Date: **3/16/2022** SeqNo: **3053278** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.92 | 0.025 | 0.9814 | 0 | 94.0 | 68.8 | 120 | | | |
| Toluene | 1.0 | 0.049 | 0.9814 | 0 | 101 | 73.6 | 124 | | | |
| Ethylbenzene | 1.0 | 0.049 | 0.9814 | 0 | 103 | 72.7 | 129 | | | |
| Xylenes, Total | 3.1 | 0.098 | 2.944 | 0 | 104 | 75.7 | 126 | | | |
| Surr: 4-Bromofluorobenzene | 1.0 | | 0.9814 | | 102 | 70 | 130 | | | |

Sample ID: **2203743-001amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**

Client ID: **WES22-06 6.0'** Batch ID: **66178** RunNo: **86522**

Prep Date: **3/15/2022** Analysis Date: **3/16/2022** SeqNo: **3053279** Units: **mg/Kg**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.94 | 0.025 | 0.9833 | 0 | 95.3 | 68.8 | 120 | 1.52 | 20 | |
| Toluene | 1.0 | 0.049 | 0.9833 | 0 | 102 | 73.6 | 124 | 0.364 | 20 | |
| Ethylbenzene | 1.0 | 0.049 | 0.9833 | 0 | 105 | 72.7 | 129 | 1.80 | 20 | |
| Xylenes, Total | 3.1 | 0.098 | 2.950 | 0 | 104 | 75.7 | 126 | 0.914 | 20 | |
| Surr: 4-Bromofluorobenzene | 0.96 | | 0.9833 | | 97.9 | 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 Quanitative Limit |
| S | % Recovery outside of range due to dilution or matrix interference |
| B | Analyte detected in the associated Method Blank |
| E | Estimated value |
| J | Analyte detected below quantitation limits |
| P | Sample pH Not In Range |
| RL | Reporting Limit |

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

# Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2203743

RcptNo: 1

Received By: Tracy Casarrubias 3/15/2022 7:30:00 AM

Completed By: Sean Livingston 3/15/2022 8:19:19 AM

Reviewed By: 3-15-22

## 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° 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: 3/15/22

## 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 °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---|---|---|---|---|---|---|
| 1 | 0.1 | Good | | | | |

# Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 5 DAY

Project Name: Todd 22 I Fed 9

Project #: 21E-02816-14

Project Manager: Brandon Schafer

Sampler: AH

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 0.1 - 0 = 0.1 (°C)

**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

**Analysis Request**

| Date | Time | Matrix | Sample Name | Container Type and # | Preservative Type | HEAL No. 2203743 | BTEX / MTBE / TMB's (8021) | TPH: 8015D(GRO / DRO / MRO) | 8081 Pesticides/8082 PCB's | EDB (Method 504.1) | PAHs by 8310 or 8270SIMS | RCRA 8 Metals | Cl, F, Br, $NO_3$, $NO_2$, $PO_4$, $SO_4$ | 8260 (VOA) | 8270 (Semi-VOA) | Total Coliform (Present/Absent) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-11-22 | 1500 | Soil | ~~SS28~~ WES22-06 6.0' | 6 glass jar | ICE | 001 | | | | | | | | | | |
| | 1510 | | WES22-07 6.0' | | | 002 | | | | | | | | | | |
| | 1520 | | WES22-08 6.0' | | | 003 | | | | | | | | | | |
| | 1530 | | BES22-04 6.0' | | | 004 | | | | | | | | | | |
| | 1540 | | BES22-05 6.0' | | | 005 | | | | | | | | | | |
| | 1550 | | BES22-06 6.0' | | | 006 | | | | | | | | | | |
| | 1600 | | BES22-07 6.0' | | | 007 | | | | | | | | | | |

| Date: | Time: | Relinquished by: | Received by: | Via: | Date | Time |
|---|---|---|---|---|---|---|
| | | | | | 3/14/22 | 1200 |
| Date: 3/14/22 | Time: 1900 | Relinquished by: | Received by: | Via: courier | Date 3/15/22 | Time 7:30 |

Remarks:

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

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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

QUESTIONS

Action 437072

## QUESTIONS

| | |
|---|---|
| Operator:<br>HARVARD PETROLEUM COMPANY, LLC<br>P.O. Box 936<br>Roswell, NM 88202 | OGRID:<br>10155 |
| | Action Number:<br>437072 |
| | Action Type:<br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

| **Prerequisites** | |
|---|---|
| Incident ID (n#) | **nAB1729753198** |
| Incident Name | **NAB1729753198 TODD 22 I FEDERAL #009 @ 30-015-32730** |
| Incident Type | **Produced Water Release** |
| Incident Status | **Remediation Closure Report Received** |
| Incident Well | **[30-015-32730] TODD 22 I FEDERAL #009** |

| **Location of Release Source** | |
|---|---|
| *Please answer all the questions in this group.* | |
| Site Name | TODD 22 I FEDERAL #009 |
| Date Release Discovered | 10/09/2017 |
| Surface Owner | Federal |

| **Incident Details** | |
|---|---|
| *Please answer all the questions in this group.* | |
| Incident Type | Produced Water Release |
| Did this release result in a fire or is the result of a fire | No |
| Did this release result in any injuries | No |
| Has this release reached or does it have a reasonable probability of reaching a watercourse | No |
| Has this release endangered or does it have a reasonable probability of endangering public health | No |
| Has this release substantially damaged or will it substantially damage property or the environment | No |
| Is this release of a volume that is or may with reasonable probability be detrimental to fresh water | No |

| **Nature and Volume of Release** | |
|---|---|
| *Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.* | |
| Crude Oil Released (bbls) Details | Cause: Equipment Failure \| Flow Line - Production \| Crude Oil \| Released: 2 BBL \| Recovered: 2 BBL \| Lost: 0 BBL. |
| Produced Water Released (bbls) Details | Cause: Equipment Failure \| Flow Line - Production \| Produced Water \| Released: 2 BBL \| Recovered: 1 BBL \| Lost: 1 BBL. |
| Is the concentration of chloride in the produced water >10,000 mg/l | Yes |
| Condensate Released (bbls) Details | *Not answered.* |
| Natural Gas Vented (Mcf) Details | *Not answered.* |
| Natural Gas Flared (Mcf) Details | *Not answered.* |
| Other Released Details | *Not answered.* |
| Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts) | *Not answered.* |

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

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



## QUESTIONS (continued)

| | |
|---|---|
| Operator:<br>HARVARD PETROLEUM COMPANY, LLC<br>P.O. Box 936<br>Roswell, NM 88202 | OGRID:<br>10155 |
| | Action Number:<br>437072 |
| | Action Type:<br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

| **Nature and Volume of Release (continued)** | |
|---|---|
| Is this a gas only submission (i.e. only significant Mcf values reported) | **More info needed to determine if this will be treated as a "gas only" report.** |
| Was this a major release as defined by Subsection A of 19.15.29.7 NMAC | *Unavailable.* |
| Reasons why this would be considered a submission for a notification of a major release | *Unavailable.* |
| *With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.* | |

| **Initial Response** | |
|---|---|
| *The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.* | |
| The source of the release has been stopped | True |
| The impacted area has been secured to protect human health and the environment | True |
| Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices | True |
| All free liquids and recoverable materials have been removed and managed appropriately | True |
| If all the actions described above have not been undertaken, explain why | *Not answered.* |
| *Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.* | |

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

| | |
|---|---|
| I hereby agree and sign off to the above statement | Name: Roni Kidd<br>Title: Business Manager<br>Email: rkidd@buckhornproduction.com<br>Date: 03/07/2025 |

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

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https://www.emnrd.nm.gov/ocd/contact-us

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



## QUESTIONS (continued)

| | |
|---|---|
| Operator:<br>HARVARD PETROLEUM COMPANY, LLC<br>P.O. Box 936<br>Roswell, NM 88202 | OGRID:<br>10155 |
| | Action Number:<br>437072 |
| | Action Type:<br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

| **Site Characterization** | |
|---|---|
| *Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.* | |
| What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs) | Between 26 and 50 (ft.) |
| What method was used to determine the depth to ground water | NM OSE iWaters Database Search |
| Did this release impact groundwater or surface water | No |
| **What is the minimum distance, between the closest lateral extents of the release and the following surface areas:** | |
| A continuously flowing watercourse or any other significant watercourse | Between 1 and 5 (mi.) |
| Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark) | Between 1 and 5 (mi.) |
| An occupied permanent residence, school, hospital, institution, or church | Between 1 and 5 (mi.) |
| A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes | Between 1 and 5 (mi.) |
| Any other fresh water well or spring | Between 1 and 5 (mi.) |
| Incorporated municipal boundaries or a defined municipal fresh water well field | Greater than 5 (mi.) |
| A wetland | Between 1 and 5 (mi.) |
| A subsurface mine | Greater than 5 (mi.) |
| An (non-karst) unstable area | Between 1 and 5 (mi.) |
| Categorize the risk of this well / site being in a karst geology | Low |
| A 100-year floodplain | Between 1 and 5 (mi.) |
| Did the release impact areas not on an exploration, development, production, or storage site | Yes |

| **Remediation Plan** | |
|---|---|
| *Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.* | |
| Requesting a remediation plan approval with this submission | Yes |
| *Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.* | |
| Have the lateral and vertical extents of contamination been fully delineated | Yes |
| Was this release entirely contained within a lined containment area | No |
| **Soil Contamination Sampling:** (Provide the highest observable value for each, in milligrams per kilograms.) | |
| Chloride (EPA 300.0 or SM4500 Cl B) | 730 |
| TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M) | 8069 |
| GRO+DRO (EPA SW-846 Method 8015M) | 5469 |
| BTEX (EPA SW-846 Method 8021B or 8260B) | 0 |
| Benzene (EPA SW-846 Method 8021B or 8260B) | 0 |
| | |
| *Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.* | |
| On what estimated date will the remediation commence | 02/21/2022 |
| On what date will (or did) the final sampling or liner inspection occur | 03/11/2022 |
| On what date will (or was) the remediation complete(d) | 03/11/2022 |
| What is the estimated surface area (in square feet) that will be reclaimed | 1401 |
| What is the estimated volume (in cubic yards) that will be reclaimed | 312 |
| What is the estimated surface area (in square feet) that will be remediated | 1401 |
| What is the estimated volume (in cubic yards) that will be remediated | 312 |
| *These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.* | |
| *The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.* | |

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



## QUESTIONS (continued)

| | |
|---|---|
| Operator:<br>HARVARD PETROLEUM COMPANY, LLC<br>P.O. Box 936<br>Roswell, NM 88202 | OGRID:<br>10155 |
| | Action Number:<br>437072 |
| | Action Type:<br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

| | |
|---|---|
| **Remediation Plan (continued)** | |
| *Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.* | |
| **This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:** | |
| *(Select all answers below that apply.)* | |
| (Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.) | Yes |
| Which OCD approved facility will be used for **off-site** disposal | HALFWAY DISPOSAL AND LANDFILL [fEEM0112334510] |
| **OR** which OCD approved well (API) will be used for **off-site** disposal | *Not answered.* |
| **OR** is the **off-site** disposal site, to be used, out-of-state | *Not answered.* |
| **OR** is the **off-site** disposal site, to be used, an NMED facility | *Not answered.* |
| (Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms) | *Not answered.* |
| (In Situ) Soil Vapor Extraction | *Not answered.* |
| (In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.) | *Not answered.* |
| (In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.) | *Not answered.* |
| (In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.) | *Not answered.* |
| Ground Water Abatement pursuant to 19.15.30 NMAC | *Not answered.* |
| OTHER (Non-listed remedial process) | *Not answered.* |
| *Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.* | |
| | |
| I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. | |
| I hereby agree and sign off to the above statement | Name: Roni Kidd<br>Title: Business Manager<br>Email: rkidd@buckhornproduction.com<br>Date: 03/07/2025 |
| *The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.* | |

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## QUESTIONS (continued)

| | |
|---|---|
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| | Action Number:<br>437072 |
| | Action Type:<br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

| **Deferral Requests Only**<br>*Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.* | |
|---|---|
| Requesting a deferral of the remediation closure due date with the approval of this submission | No |

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## QUESTIONS (continued)

| | |
|---|---|
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| | Action Number:<br>437072 |
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**QUESTIONS**

| **Sampling Event Information** | |
|---|---|
| Last sampling notification (C-141N) recorded | **437049** |
| Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC | **03/11/2022** |
| What was the (estimated) number of samples that were to be gathered | **7** |
| What was the sampling surface area in square feet | **1400** |

| **Remediation Closure Request** | |
|---|---|
| *Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.* | |
| Requesting a remediation closure approval with this submission | Yes |
| Have the lateral and vertical extents of contamination been fully delineated | **Yes** |
| Was this release entirely contained within a lined containment area | **No** |
| All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion | Yes |
| What was the total surface area (in square feet) remediated | 1401 |
| What was the total volume (cubic yards) remediated | 312 |
| All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene | Yes |
| What was the total surface area (in square feet) reclaimed | 1401 |
| What was the total volume (in cubic yards) reclaimed | 312 |
| Summarize any additional remediation activities not included by answers (above) | As detailed in the attached report. |

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

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

| | |
|---|---|
| I hereby agree and sign off to the above statement | Name: Roni Kidd<br>Title: Business Manager<br>Email: rkidd@buckhornproduction.com<br>Date: 03/07/2025 |

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## QUESTIONS (continued)

| | |
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**QUESTIONS**

| **Reclamation Report** | |
|---|---|
| *Only answer the questions in this group if all reclamation steps have been completed.* | |
| Requesting a reclamation approval with this submission | No |

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## CONDITIONS

| | |
|---|---|
| Operator:<br>HARVARD PETROLEUM COMPANY, LLC<br>P.O. Box 936<br>Roswell, NM 88202 | OGRID:<br>10155 |
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**CONDITIONS**

| Created By | Condition | Condition Date |
|---|---|---|
| amaxwell | Remediation closure approved. | 3/10/2025 |
| amaxwell | The reclamation report will need to include: Executive Summary of the reclamation activities; Scaled Site Map including sampling locations; Analytical results including, but not limited to, results showing that any remaining impacts meet the reclamation standards and results to prove the backfill is non-waste containing; At least one (1) representative 5-point composite sample will need to be collected from the backfill material that will be used for the reclamation of the top four feet of the excavation. The OCD reserves the right to request additional sampling if needed; pictures of the backfilled areas showing that the area is back, as nearly as practical, to the original condition or the final land use and maintain those areas to control dust and minimize erosion to the extent practical; pictures of the top layer, which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater; and a revegetation plan. | 3/10/2025 |