August 24, 2020 Vertex Project #: 20E-00141-030

Spill Closure Report: Thistle 33 Central Tank Battery (CTB) 1
Unit P, Section 33, Township 23 South, Range 33 East
County: Lea
Incident Tracking Number: NRM2004459546

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

New Mexico Oil Conservation Division – District 1 – Hobbs
1625 North French Drive
Hobbs, New Mexico 88240

Devon Energy Production Company (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation for an oil release that occurred on February 10, 2020, at Thistle 33 Central Tank Battery (CTB) 1 (hereafter referred to as "Thistle 33"). Devon provided immediate notification of the release to New Mexico Oil Conservation Division (NM OCD) District 1 and the New Mexico State Land Office (SLO), who owns the property, on February 11, 2020, followed by the submission of the initial C-141 Release Notification on February 12, 2020 (Attachment 1). The NM OCD tracking number assigned to this incident is NRM2004459546.

This letter provides a description of the spill assessment and remediation activities, and demonstrates that closure criteria established in 19.15.29.12 *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 the final report to obtain approval from NM OCD and the SLO for closure of this release.

Incident Description

On February 10, 2020, a release occurred at Devon's Thistle 33 site when a water dump controller malfunctioned. This incident resulted in the release of approximately 47.7 barrels (bbls) of oil into the production equipment lined secondary containment and onto the wellpad. Upon discovery of the release, the water dump controller was repaired and a hydrovac was dispatched to site to recover free fluid. Approximately 35 bbls of oil were recovered and removed from site for disposal at an approved location. No oil was released off-lease or into undisturbed areas or waterways.

Site Characterization

The release at Thistle 33 occurred on state-owned land, N 32.256947, W 103.572749, approximately 30 miles east of Loving, New Mexico. The legal description for the site is Unit P, Section 33, Township 23 South, Range 33 East, Lea County, New Mexico. This location is within the Permian Basin in southeast New Mexico and has historically been used for oil and gas exploration and production, and rangeland. An aerial photograph and site schematic are included in Attachment 2 (Figure 1).

Thistle 33 is typical of oil and gas exploration and production sites in the western portion of the Permian Basin, and is currently used for oil and gas production, and storage. The following sections specifically describe the area surrounding the constructed wellpad.

The surrounding landscape is associated with plains and sandy eolian deposits at elevations of 3,000 to 3,900 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 10 and 12 inches. The plant community has historically had the aspect of a grassland/shrub mix, dominated by dropseed grass species, bluestems and black grama, with mesquite, scattered shinnery oak and sand sage common throughout. Bare ground and litter make up between 20 to 25 percent of the ground cover (United States Department of Agriculture, Natural Resources Conservation Service, 2020). Limited to no vegetation is allowed to grow on the compacted wellpad.

The Geological Map of New Mexico indicates the surface geology at Thistle 33 is comprised primarily of Qep – interlaid eolian sands and piedmont-slope deposits from the Holocene to middle Pleistocene ages (New Mexico Bureau of Geology and Mineral Resources, 2020). The National Resources Conservation Service Web Soil Survey characterizes the soil at the site to be on the cusp of Pyote and maljamar fine sands, and Berino-Cacique loamy fine sands, which are predominately found on plains and are comprised of fine sand over deep layers of sandy clay loam and loamy sand. This type of soil tends to be well-drained with low runoff and moderate available moisture in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2020). There is low potential for karst geology to be present near Thistle 33 (United States Department of the Interior, Bureau of Land Management, 2020).

There is no surface water located at Thistle 33. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 0.85 miles south of the site (United States Fish and Wildlife Service, 2020). At Thistle 33, there are no continuously flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

The nearest recent well to Thistle 33 is a New Mexico Office of the State Engineer well from 2017 located approximately 0.85 miles north of the release. Data for that well show a depth to groundwater of 400 feet below ground surface (bgs; New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2020). A United States Geologic Survey well, located approximately 1.5 miles south of Thistle 33, shows a depth to groundwater of 22 feet bgs (United States Department of the Interior, United States Geologic Survey, 2020). Documentation pertaining to site characterization and depth to groundwater determination is included in Attachment 3.

Closure Criteria Determination

Using site characterization information, a closure criteria determination worksheet (Attachment 3) was completed to determine if the release is subject to any of the special case scenarios outlined 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 Thistle 33 is not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC. As the nearest groundwater well is farther than a ½-mile from the release site, the depth to groundwater at Thistle 33 cannot be accurately determined; the closure criteria for the site are determined to be associated with the following constituent concentration limits.

Table 1. Closure Criteria for Soils Impacted by a Release		
Depth to Groundwater	**Constituent**	**Limit**
<50 feet	Chloride	600 mg/kg
	TPH[1] (GRO + DRO + MRO)	100 mg/kg
	BTEX[2]	50 mg/kg
	Benzene	10 mg/kg

[1]Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)
[2]Benzene, toluene, ethylbenzene and xylenes (BTEX)

Remedial Actions

An initial spill inspection, completed by Vertex on February 24, 2020, identified and mapped the boundaries of the release using field screening methods, including a photoionization detector (PID) to determine the presence of volatile organics, the Petroflag system to estimate the level of hydrocarbons and an electroconductivity (EC) meter to approximate chloride levels in the soil. Daily Field Reports (DFRs) and field screening data associated with the site visit are included in Attachment 4. The release was delineated as presented on Figure 1 (Attachment 2) using initial field screening and soil sampling laboratory data as presented in Table 2 (Attachment 5). The impacted area was determined to be approximately 115 feet long and 82 feet wide; the total affected area was determined to be 3,124 square feet.

On April 13, 2020, Vertex provided 48-hour notification of confirmatory sampling to NM OCD and the SLO (Attachment 6), as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC. Excavation of impacted soils began on April 14, 2020, with a Vertex representative on-site to conduct field screening to guide the excavation and determine the final horizontal and vertical extents of the excavation area as presented on Figure 2 (Attachment 2). On April 15, 2020, as remediation activities were concluding, Vertex collected a total of 24 five-point composite samples from the base and side walls of the excavation, at depths ranging between ground surface and approximately 0.5 feet bgs. Each composite sample was representative of no more than 200 square feet per the alternate sampling method outlined in Subparagraph (c) of Paragraph (1) of Subsection D 19.15.29.12 NMAC, which does not require prior NM OCD approval. The confirmatory samples were placed into laboratory-provided containers, preserved on ice and submitted to a National Environmental Laboratory Accreditation Program-approved laboratory for chemical analysis.

Laboratory analyses included Method 300.0 for chlorides, Method 8021B for volatile organics, including BTEX, and EPA Method 8015 for TPH, including MRO, DRO and GRO. Confirmatory sampling analytical data are summarized in Table 3 (Attachment 5). Laboratory data reports and chain of custody forms are included in Attachment 7.

A GeoExplorer 7000 Series Trimble GPS unit, or equivalent, was used to map the approximate center of each of the five-point composite samples. The confirmatory sampling locations are presented on Figure 2 (Attachment 2). Relevant equipment and prominent features/reference points at the site are mapped as well.

Of the 24 confirmatory samples, one sample (BS21) failed to meet NM OCD closure criteria as outlined in Table 1. Vertex returned to site to scrape the affected area and re-collect the confirmatory sample, which was within closure criteria. The final laboratory results for this sample point are presented in Table 3 (Attachment 5).

Closure Request

Vertex recommends no additional remediation action to address the release at Thistle 33. Laboratory analyses of the confirmatory samples showed constituent of concern concentration levels below NM OCD closure criteria for areas where depth to groundwater is less than 50 feet. 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 water ponding and erosion.

Vertex requests that this incident (NRM2004459546) 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 NM OCD requirements to obtain closure on the February 10, 2020, release at Thistle 33.

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 505.506.0040 or ngordon@vertex.ca.

Sincerely,

Natalie Gordon
PROJECT MANAGER

Attachments

Attachment 1. NM OCD C-141 Initial Notification
Attachment 2. Figures
Attachment 3. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
Attachment 4. Daily Field Report(s) with Photographs
Attachment 5. Characterization and Confirmatory Sampling Laboratory Results
Attachment 6. Required 48-hr Notification of Confirmatory Sampling to Regulatory Agencies
Attachment 7. Laboratory Data Reports/Chain of Custody Forms

References

New Mexico Bureau of Geology and Mineral Resources. (2020). *Interactive Geologic Map.* Retrieved from http://geoinfo.nmt.edu.

New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System. (2020). *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. (2020). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

United States Department of the Interior, Bureau of Land Management. (2020). *New Mexico Cave/Karsts*. Retrieved from https://www.blm.gov/programs/recreation/recreation-programs/caves/new-mexico.

United States Department of the Interior, United States Geological Survey. (2020). *National Water Information System.* Retrieved from https://maps.waterdata.usgs.gov/mapper/index.html?state=nm

United States Fish and Wildlife Service. (2020). *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 (Devon). This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division, without the express written consent of Vertex Resource Services Inc. (Vertex) and Devon. Any use of this report by a third party, 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
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	NRM2004459546
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Devon Energy Production Company	OGRID 6137
Contact Name Amanda T. Davis	Contact Telephone 575-748-0176
Contact email amanda.davis@dvn.com	Incident # *(assigned by OCD)*
Contact mailing address 6488 Seven Rivers HWY	

Location of Release Source

Latitude 32.256947 Longitude -103.572749

(NAD 83 in decimal degrees to 5 decimal places)

Site Name Thistle 33 CTB 1	Site Type Central Tank Battery
Date Release Discovered 2/10/2020	API# *(if applicable)* N/A

Unit Letter	Section	Township	Range	County
P	33	23S	33E	Lea

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls) 47.7	Volume Recovered (bbls) 35
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: The water dump controller malfunctioned causing fluid to release from the vessel onto the pad, and from the tanks into the lined secondary containment.

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Oil Conservation Division

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Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? This release was over 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
An email was sent by Tom Bynum w/Devon on 2/11/20 to blm_nm_cfo_spill@blm.gov; 'Jim.griswold@state.nm.us' <Jim.griswold@state.nm.us>; Lea Co Spills (emnrd-ocd-district1spills@state.nm.us) <emnrd-ocd-district1spills@state.nm.us>.

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.
- ■ The impacted area has been secured to protect human health and the environment.
- ☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
- ■ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:
This release was both inside, and outside of secondary containment.

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: Kendra DeHoyos Title: EHS Associate

Signature: Kendra DeHoyos Date: 2/12/2020

email: kendra.dehoyos@dvn.com Telephone: 575-748-3371

OCD Only

Received by: Ramona Marcus Date: 02/13/2020

Soil Volume (Bbls) Calculator

Inputs in blue, Outputs in red

Contaminated Soil measurement		
Length(Ft)	Width(Ft)	Depth(Ft)
70	24.000	0.042
Cubic Feet of Soil Impacted		70.560
Barrels of Soil Impacted		12.58
Soil Type		Clay/Sand
Barrels of Oil Assuming 100% Saturation		1.89
Saturation	Fluid present with shovel/backhoe	
Estimated Barrels of Oil Released		1.89

Free Standing Fluid Only		
Length(Ft)	Width(Ft)	Depth(Ft)
30	30.000	0.042
Standing fluid		6.723
Total fluids spilled		**8.610**

Measurements Of Standing Fluid	
Length(Ft)	121
Width(Ft)	56
Depth(in.)	0.5
Total Capacity without tank displacements (bbls)	50.29
No. of 500 bbl Tanks In Standing Fluid	8
No. of Other Tanks In Standing Fluid	
OD Of Other Tanks In Standing Fluid(feet)	
Total Volume of standing fluid accounting for tank displacement.	39.09

NRM2004459546

State of New Mexico
Oil Conservation Division

Incident ID	NRM2004459546
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<50 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

State of New Mexico
Oil Conservation Division

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

Printed Name: Tom Bynum Title: EHS Consultant

Signature: Tom Bynum Date: 8/27/2020

email: tom.bynum@dvn.com Telephone: 575-748-3371

OCD Only

Received by: Cristina Eads Date: 09/02/2020

State of New Mexico
Oil Conservation Division

Incident ID	NRM2004459546
District RP	
Facility ID	
Application ID	

Closure

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

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

[X] A scaled site and sampling diagram as described in 19.15.29.11 NMAC

[X] Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

[X] Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

[X] Description of remediation activities

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

Printed Name: Tom Bynum Title: EHS Consultant

Signature: Tom Bynum Date: 8/27/2020

email: tom.bynum@dvn.com Telephone: 575-748-3371

OCD Only

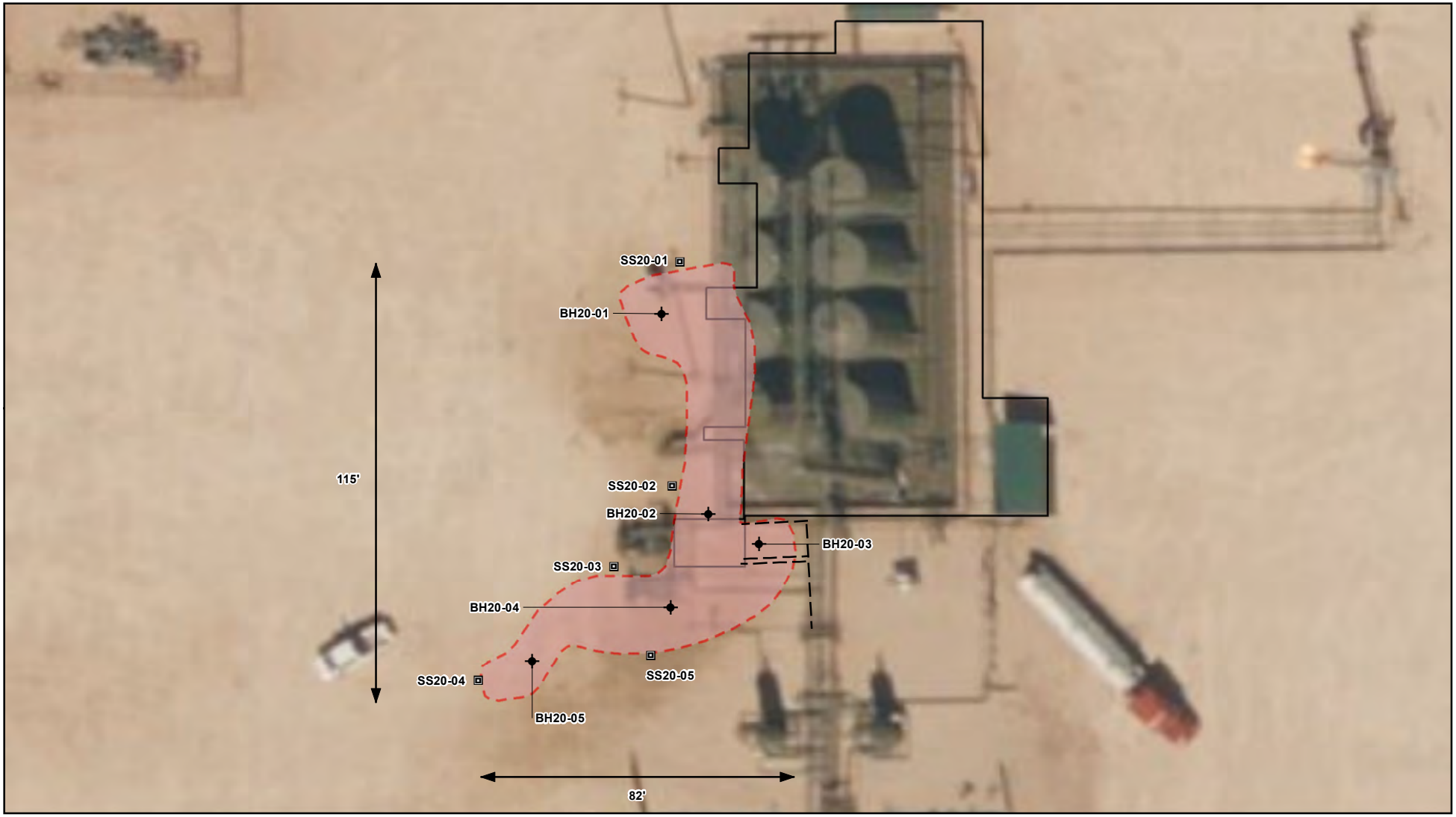
Received by: Cristina Eads Date: 09/02/2020

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

Closure Approved by: Cristina Eads Date: 11/02/2020

Printed Name: Cristina Eads Title: Environmental Specialist

ATTACHMENT 2



Borehole
Surface Sample
Aboveground Pipeline
Infrastructure (Existing)
Approximate Spill Extent (~ 3,124 sq.ft.)

VERTEX

0 5 10 20 ft

Map Center:
Lat/Long: 32.256875, -103.572762

NAD 1983 UTM Zone 13N
Date: Aug 26/20

N

Site Schematic and Initial Characterization Sampling Locations
Thistle 33 CTB 1

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 image from ESRI, 2018.

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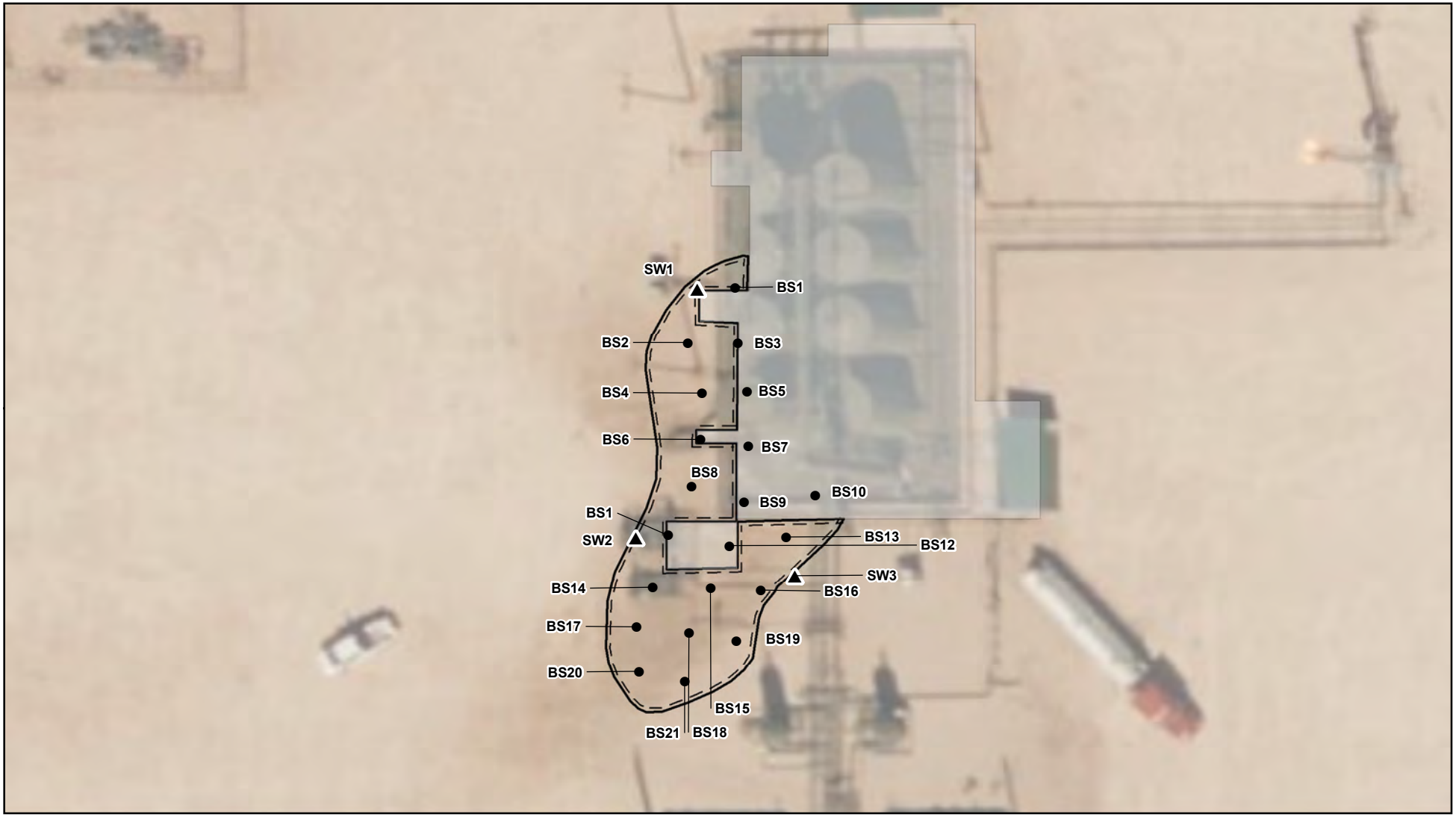
Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\20E-00141\030 - Thistle 33 CTB 1\Thistle 33 CTB Initial Characterization (Fig 1) (20E-00141).mxd



● Base Sample

▲ Wall Sample

Infrastructure (Existing)

Excavation Area (~ 3,035 sq.ft.)

VERTEX

0 10 20 40 ft

Map Center:
Lat/Long: 32.256877, -103.572755

NAD 1983 UTM Zone 13N
Date: Aug 26/20

N

Confirmatory Sampling Locations
Thistle 33 CTB 1

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 image from ESRI, 2018.

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ATTACHMENT 3

Closure Criteria Determination Worksheet			
Site Name: Thistle 33 CTB 1			
Spill Coordinates:		X: 32.256947	-103.572749
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	22	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	4,700	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	6,933	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	55,856	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**	55,856	feet
	ii) Within 1000 feet of any fresh water well or spring	55,856	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	5,280	feet
8	Within the area overlying a subsurface mine	no	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain		year
NMAC 19.15.29.12 E (Table 1) Closure Criteria		<50'	<50' 51-100' >100'

New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Twn	Rng	(NAD83 UTM in meters) X	Y
	C 02279	3	4	3	28	23S	33E	633691	3571173*

Driller License: **Driller Company:**

Driller Name: CORKY DRILLING

Drill Start Date:		**Drill Finish Date:**	12/31/1981	**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	40 GPM
Casing Size:	8.63	**Depth Well:**	650 feet	**Depth Water:**	400 feet

Meter Number:	518	**Meter Make:**	MASTER METER
Meter Serial Number:	1539461	**Meter Multiplier:**	10.0000
Number of Dials:	6	**Meter Type:**	Diversion
Unit of Measure:	Gallons	**Return Flow Percent:**	
Usage Multiplier:		**Reading Frequency:**	Quarterly

Meter Readings (in Acre-Feet)

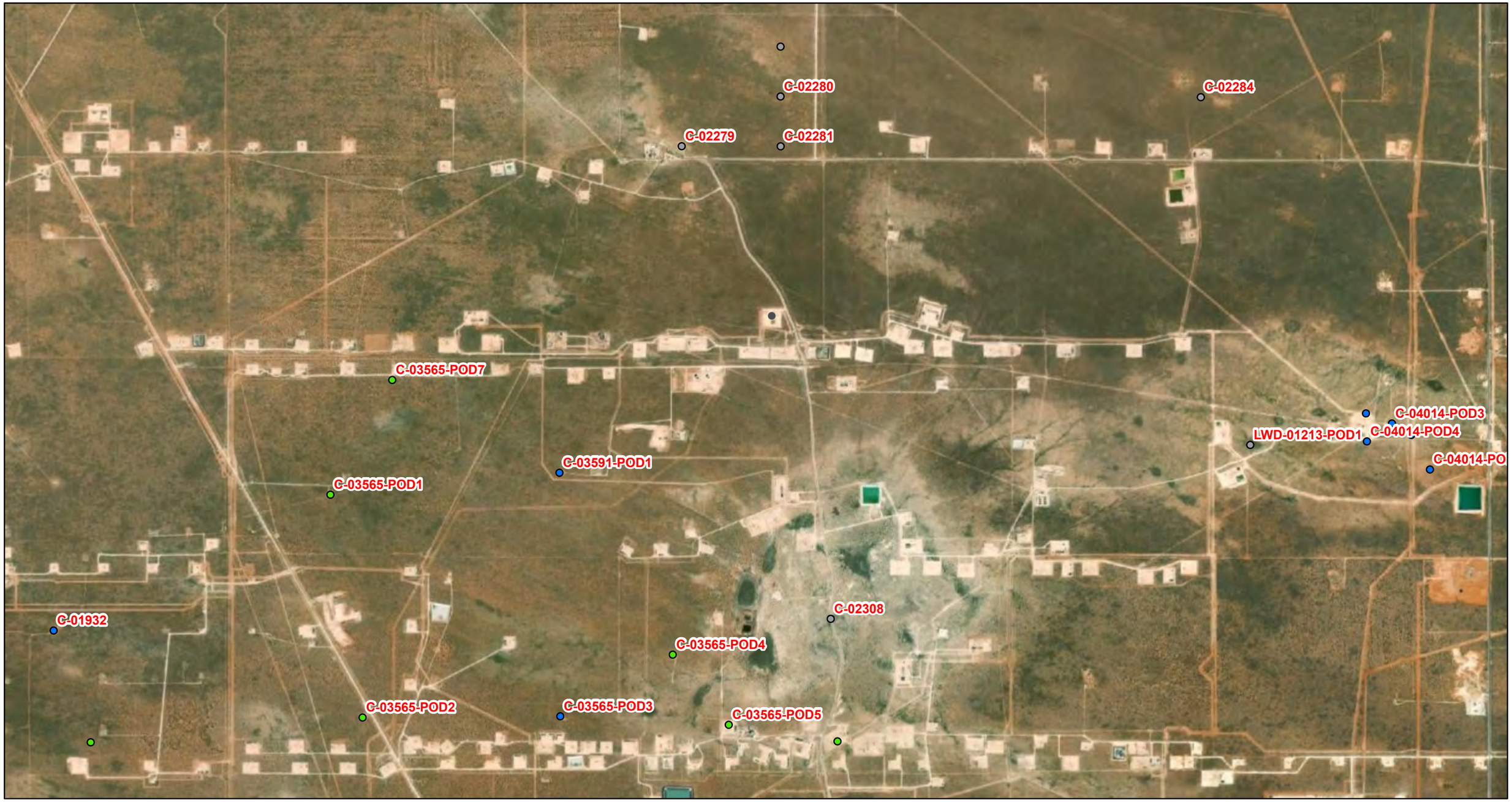
Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount
02/27/1999	1999	232029	A	ms		0
04/15/1999	1999	236663	A	ms		0.142
07/18/1999	1999	241885	A	ms		0.160
11/28/1999	1999	257551	A	ms		0.481
04/06/2000	2000	272184	A	mb		0.449
08/16/2000	2000	289555	A	mb		0.533
09/15/2000	2000	294385	A	RPT		0.148
01/19/2001	2000	303495	A	RPT		0.280
04/27/2001	2001	308151	A	RPT		0.143
07/16/2001	2001	314676	A	ms		0.200
01/12/2002	2002	323847	A	tg		0.281
04/13/2002	2002	326625	A	RPT		0.085
07/12/2002	2002	331191	A	rm		0.140
01/01/2003	2002	336825	A	RPT		0.173
04/23/2003	2003	339193	A	RPT		0.073
07/11/2003	2003	344715	A	RPT		0.169
10/01/2003	2003	348891	A	ab		0.128
01/08/2004	2003	351326	A	ab		0.075
04/07/2004	2004	353564	A	RPT		0.069
07/15/2004	2004	358043	A	RPT		0.137
10/12/2004	2004	360921	A	RPT		0.088
01/26/2005	2004	363018	A	RPT		0.064
04/15/2005	2005	365922	A	RPT		0.089
08/03/2005	2005	370392	A	RPT		0.137
10/31/2005	2005	372982	A	RPT		0.079
01/31/2006	2005	378437	A	RPT		0.167
04/20/2006	2006	385094	A	RPT		0.204

07/19/2006	2006	393921	A	tw		0.271
11/27/2006	2006	398063	A	RPT		0.127
04/16/2007	2007	402365	A	RPT		0.132
07/13/2007	2007	407275	A	RPT		0.151
11/03/2007	2007	413487	A	RPT		0.191
04/15/2008	2008	420426	A	RPT		0.213
07/11/2008	2008	431523	A	RPT		0.341
01/08/2009	2009	244494	R	RPT	Meter Rollover	24.949
05/07/2009	2009	453556	A	RPT		6.416
07/06/2009	2009	466279	A	RPT		0.390
11/12/2009	2009	496638	A	RPT		0.932
05/13/2010	2010	537086	A	RPT		1.241
08/23/2010	2010	555405	A	RPT		0.562
11/09/2010	2010	564293	A	RPT		0.273
02/13/2011	2011	579930	A	RPT		0.480
07/12/2011	2011	613881	A	RPT		1.042
01/10/2012	2012	651709	A	RPT		1.161
04/15/2012	2012	656205	A	RPT		0.138
03/20/2013	2012	725304	A	RPT		2.121
07/18/2013	2013	753824	A	RPT		0.875
07/22/2019	2019	880960	A	RPT		3.902

**YTD Meter Amounts:	Year	Amount
	1999	0.783
	2000	1.410
	2001	0.343
	2002	0.679
	2003	0.445
	2004	0.358
	2005	0.472
	2006	0.602
	2007	0.474
	2008	0.554
	2009	32.687
	2010	2.076
	2011	1.522
	2012	3.420
	2013	0.875
	2019	3.902

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

Thistle 33 CTB 1



8/6/2020, 6:26:07 PM

OSE District Boundary

GIS WATERS PODs

- Active
- Pending

Conveyances

- Acequia
- Acequia Tunnel
- Canal
- Channel
- Closed Drain
- Community Ditch
- Connector
- Culvert
- Ditch
- Diversion Weir
- Drain
- Feeder
- Interior Drain
- Lateral
- Pipe
- Wasteway
- Other
- Unknown

1:36,112

0 0.38 0.75 1.5 mi

0 0.5 1 2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user

New Mexico Office of the State Engineer

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 Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	C 02281	3	4	4	28	23S	33E	634495	3571183*

Driller License: **Driller Company:**

Driller Name: YANK BRININSTOOL

Drill Start Date:		**Drill Finish Date:**	12/31/1944	**Plug Date:**	
Log File Date:		**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	7 GPM
Casing Size:	6.50	**Depth Well:**	545 feet	**Depth Water:**	400 feet

Meter Number:	520	**Meter Make:**	MASTER METER
Meter Serial Number:	1540157	**Meter Multiplier:**	10.0000
Number of Dials:	6	**Meter Type:**	Diversion
Unit of Measure:	Gallons	**Return Flow Percent:**	
Usage Multiplier:		**Reading Frequency:**	

Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr	Comment	Mtr Amount	Online
02/27/1999	1999	9	A	ms		0	
04/15/1999	1999	9	A	ms		0	
07/18/1999	1999	9	A	ms		0	
11/28/1999	1999	9	A	ms		0	
04/06/2000	2000	85	A	mb		0.002	
08/16/2000	2000	85	A	mb		0	
09/15/2000	2000	85	A	RPT		0	
01/19/2001	2000	85	A	RPT		0	
04/27/2001	2001	85	A	RPT		0	
07/16/2001	2001	85	A	ms		0	

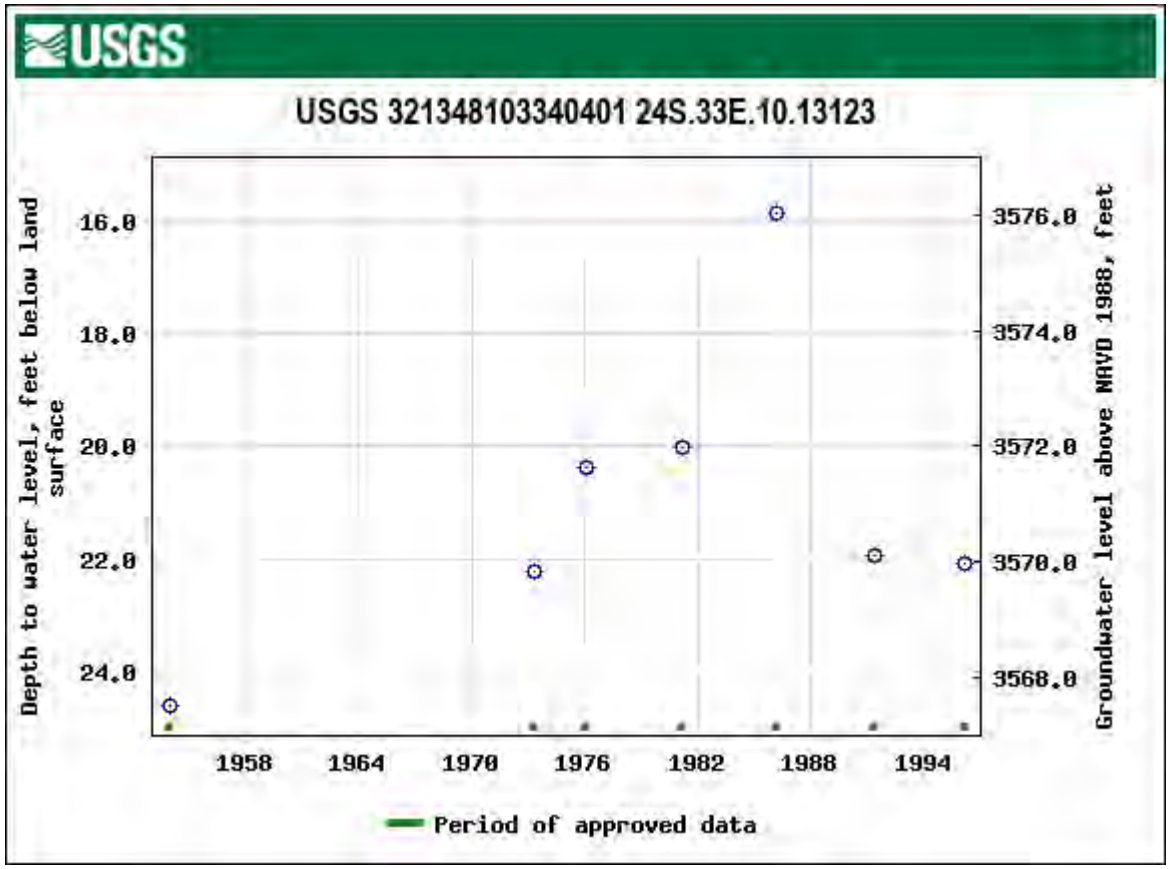
01/12/2002	2002	85	A	tg	0
04/13/2002	2002	85	A	RPT	0
07/12/2002	2002	85	A	rm	0
01/01/2003	2002	85	A	ms	0
04/23/2003	2003	85	A	ms	0
07/11/2003	2003	85	A	ms	0
10/01/2003	2003	107	A	ab	0.001
01/08/2004	2003	107	A	ab	0
04/07/2004	2004	10679	A	RPT	0.324
07/15/2004	2004	12618	A	RPT	0.060
10/12/2004	2004	14978	A	RPT	0.072
01/26/2005	2004	15771	A	RPT	0.024
04/15/2005	2005	15771	A	RPT	0
08/03/2005	2005	15771	A	RPT	0
10/31/2005	2005	15771	A	RPT	0
01/31/2006	2005	15771	A	RPT	0
04/20/2006	2006	15771	A	RPT	0
07/19/2006	2006	15771	A	tw	0
11/27/2006	2006	15771	A	RPT	0
04/16/2007	2006	15771	A	tw	0
07/13/2007	2007	15771	A	tw	0
11/03/2007	2007	15771	A	tw	0
04/15/2008	2008	15771	A	tw	0
07/11/2008	2008	15771	A	RPT	0
01/12/2009	2009	15771	A	RPT	0
05/07/2009	2009	15771	A	RPT	0
07/06/2009	2009	15771	A	RPT	0
11/12/2009	2009	15771	A	tw	0
05/13/2010	2010	15771	A	RPT	0
08/23/2010	2010	15771	A	RPT	0
11/09/2010	2010	15771	A	RPT	0
02/13/2011	2011	15771	A	RPT	0
07/12/2011	2011	15771	A	RPT	0
01/10/2012	2012	15771	A	RPT	0
04/15/2012	2012	15771	A	RPT	0

03/20/2013	2012	15771	A	RPT	0
07/18/2013	2013	15771	A	RPT	0

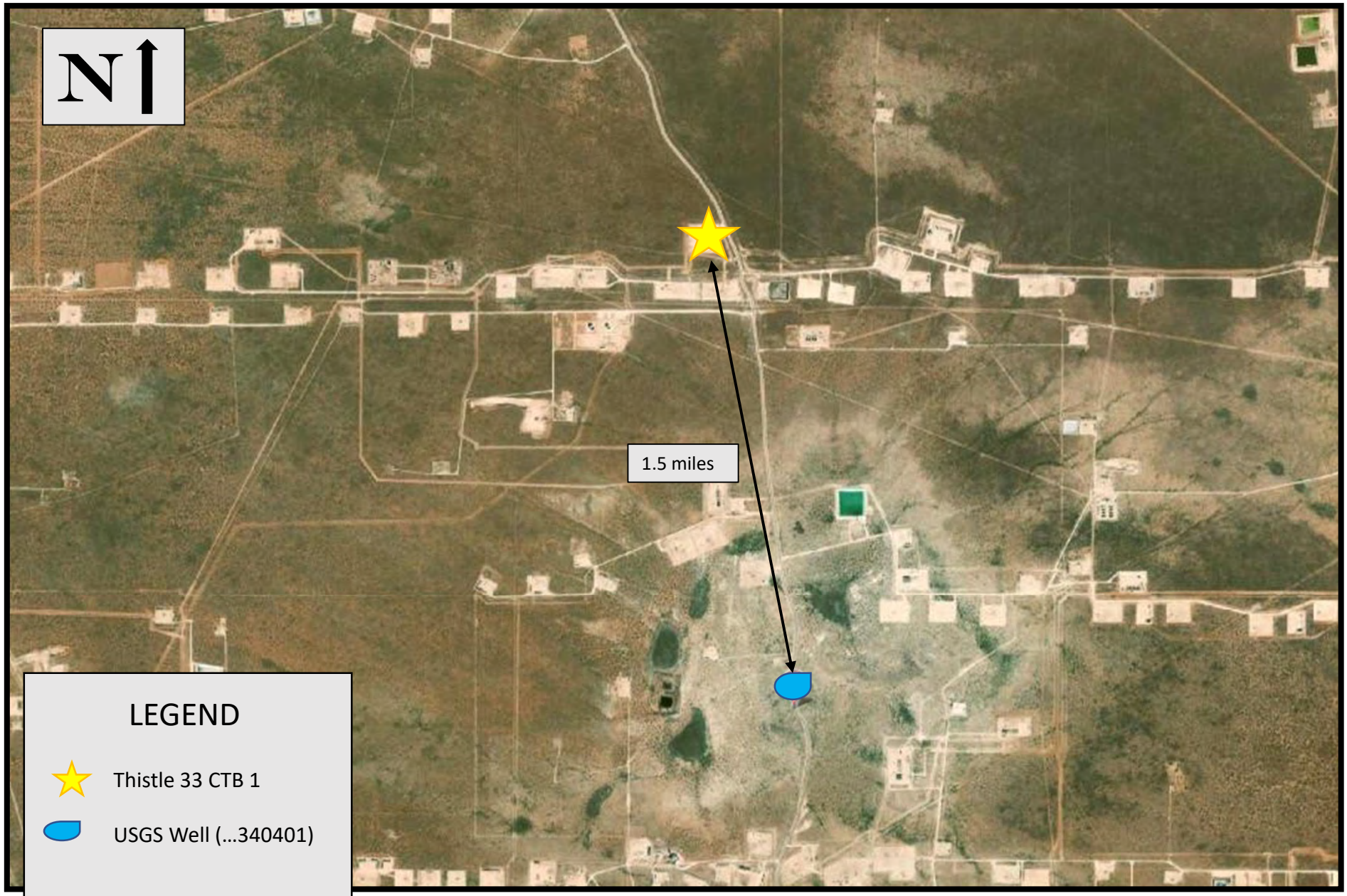
**YTD Meter Amounts:	Year	Amount
	1999	0
	2000	0.002
	2001	0
	2002	0
	2003	0.001
	2004	0.480
	2005	0
	2006	0
	2007	0
	2008	0
	2009	0
	2010	0
	2011	0
	2012	0
	2013	0

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

8/6/20 6:06 PM POINT OF DIVERSION SUMMARY


USGS
USGS 321348103340401 24S.33E.10.13123
Depth to water level, feet below land surface
16.0
18.0
20.0
22.0
24.0
3576.0
3574.0
3572.0
3570.0
3568.0
Groundwater level above NAVD 1988, feet
1958
1964
1970
1976
1982
1988
1994
Period of approved data

Thistle 33 CTB 1 – Nearest USGS Water Well



U.S. Fish and Wildlife Service

National Wetlands Inventory

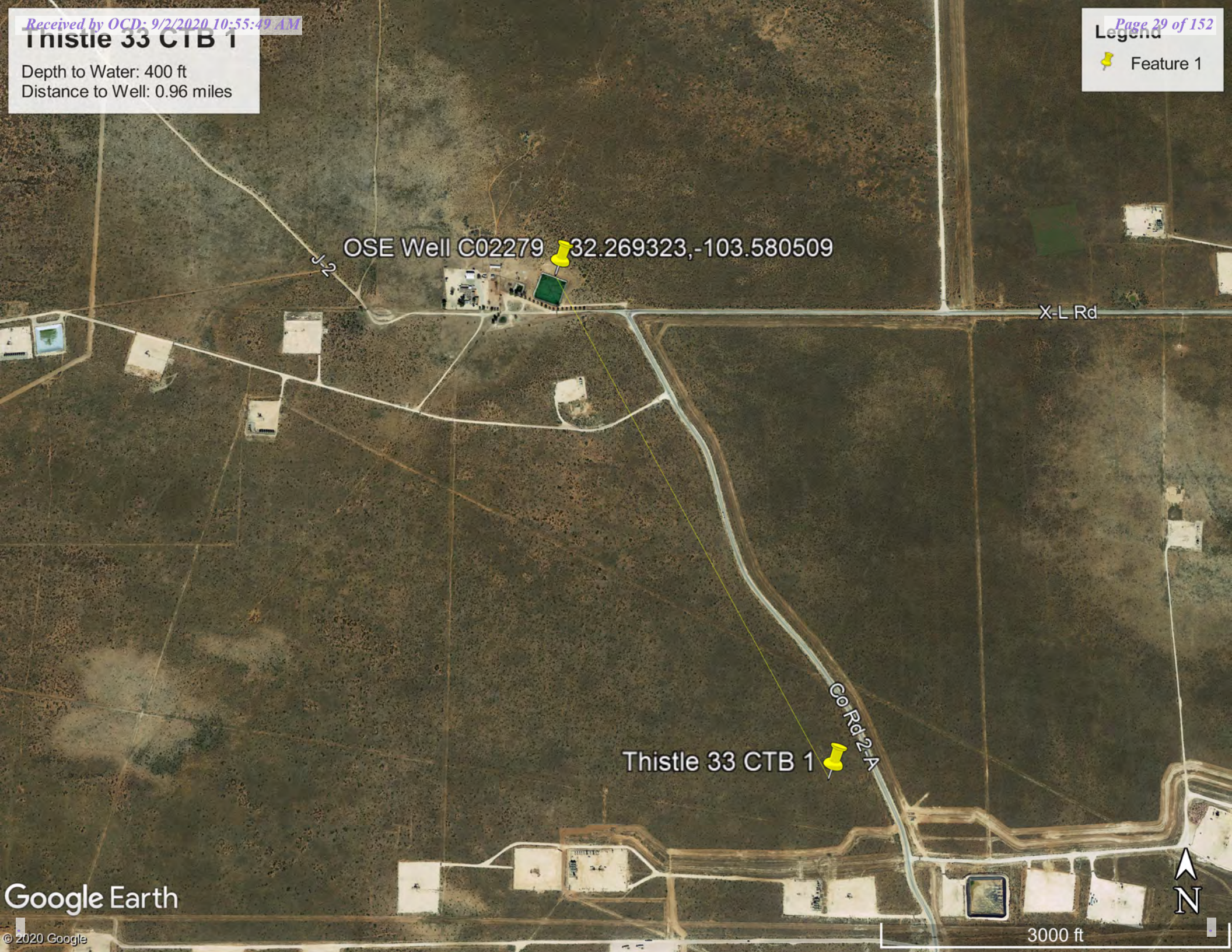
Thistle 33 CTB 1-Intermittent Stream 0.85 r

August 7, 2020

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.


Thistle 33 CTB 1
Depth to Water: 400 ft
Distance to Well: 0.96 miles
Legend
Feature 1
OSE Well C02279 32.269323,-103.580509
J-2
X-L Rd
Co Rd 2-A
Thistle 33 CTB 1
Google Earth
© 2020 Google
3000 ft
N

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 321348103340401 24S.33E.10.13123

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°14'04.9", Longitude 103°34'02.4" NAD83
Lea County, New Mexico , Hydrologic Unit 13070007
Well depth: 36 feet
Land surface altitude: 3,592 feet above NAVD88.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1953-11-27	2015-12-18	8
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center

Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

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Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility Plug-Ins FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=321348103340401

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-02-24 08:15:48 EST
0.44 0.4 caww02

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information ▼ Geographic Area: United States ▼ GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

USGS 321609103321701 23S.33E.26.421342

Available data for this site SUMMARY OF ALL AVAILABLE DATA ▼ GO

Well Site

DESCRIPTION:

Latitude 32°16'09", Longitude 103°32'17" NAD27
Lea County, New Mexico , Hydrologic Unit 13070007
Well depth: 173 feet
Land surface altitude: 3,648 feet above NAVD88.
Well completed in "Chinle Formation" (231CHNL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1972-09-21	1976-12-16	2
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center

Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

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Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility Plug-Ins FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=321609103321701

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-02-24 08:18:16 EST
0.41 0.4 caww02

U.S. Fish and Wildlife Service
National Wetlands Inventory

Thistle 33 CTB 1

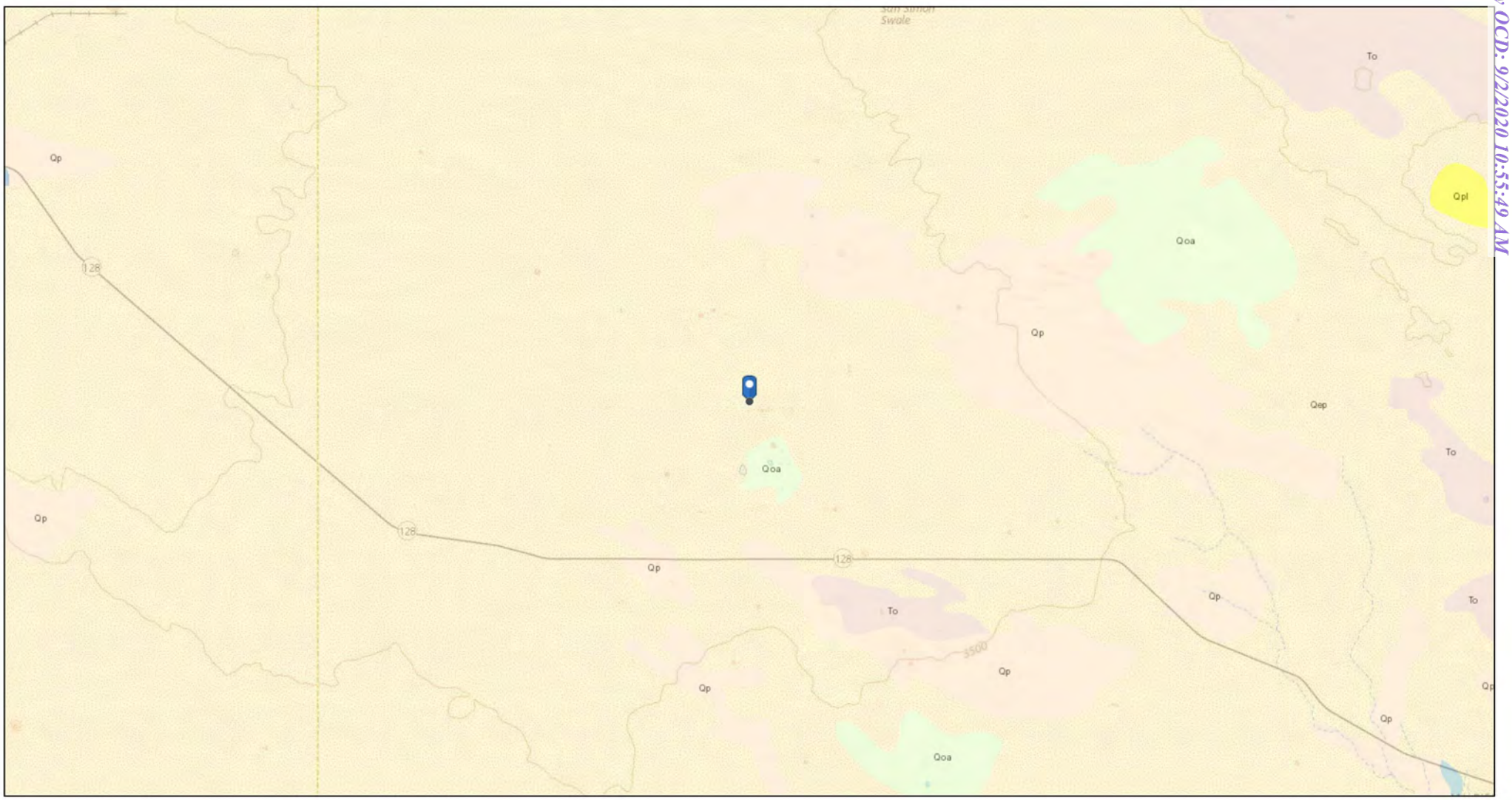
February 25, 2020

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.

Thistle 33 CTB 1 Geology Qep



5/20/2020, 4:06:36 PM

1:144,448

0 1.5 3 6 mi

0 2.5 5 10 km

Faults

- Fault, Exposed
- Fault, Intermittent
- Fault, Concealed
- Shere Zone

Dikes

- <all other values>
- Dike
- Dike intruding fault
- Volcanic Vents

STATEMAP (1993 to Present) [Publications]

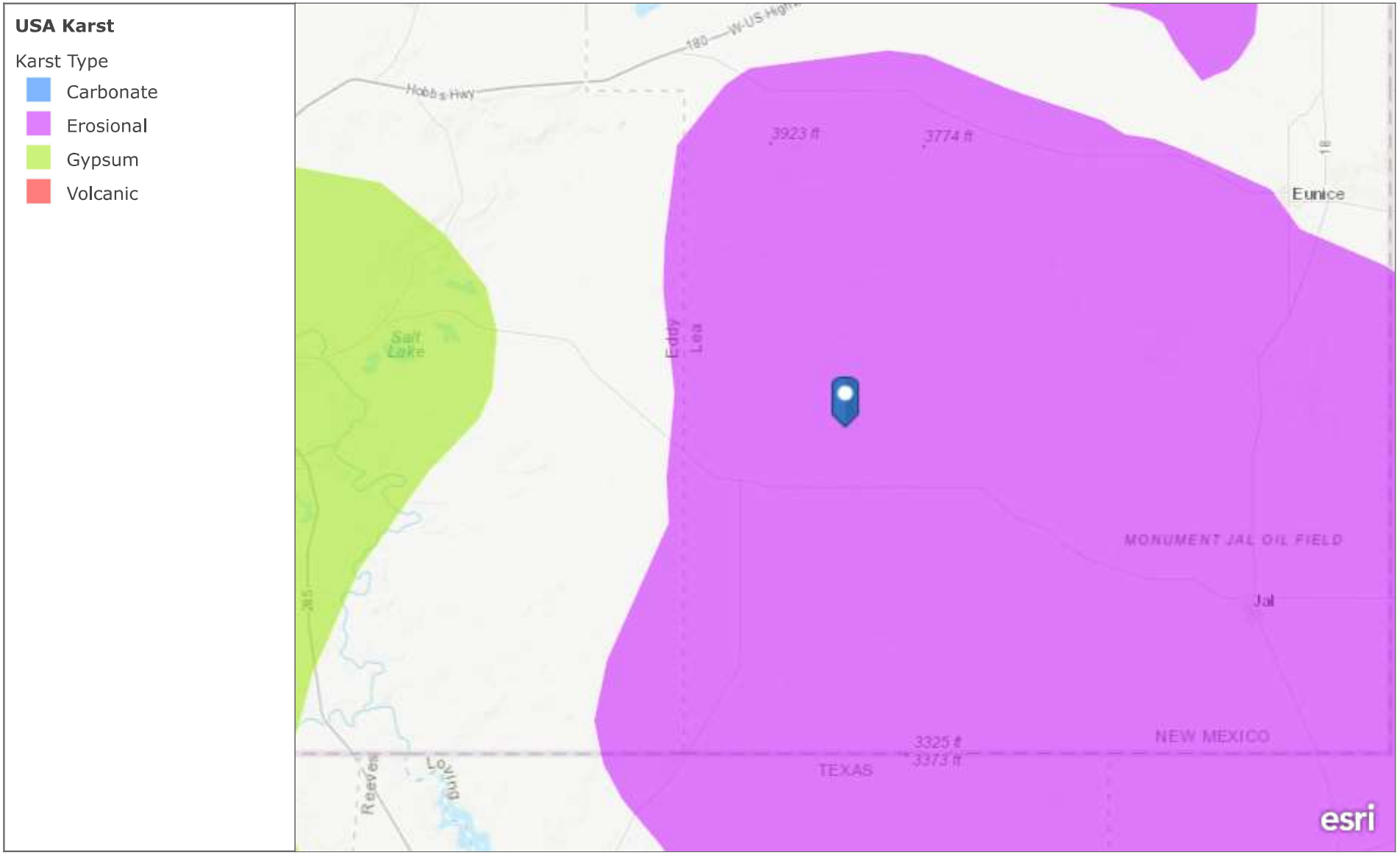
- Mapping in Complete
- Mapping in Progress

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

Web AppBuilder for ArcGIS

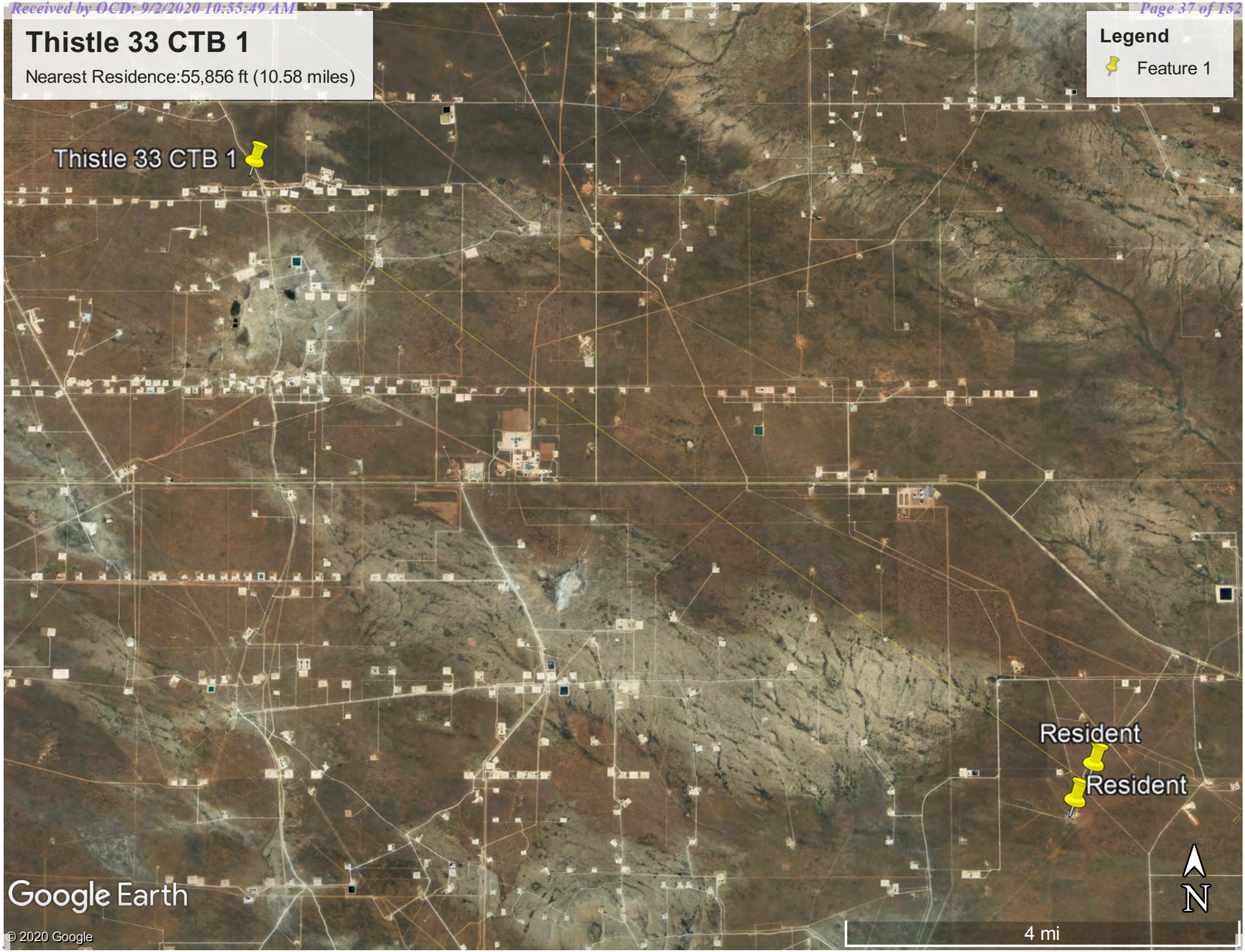
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line

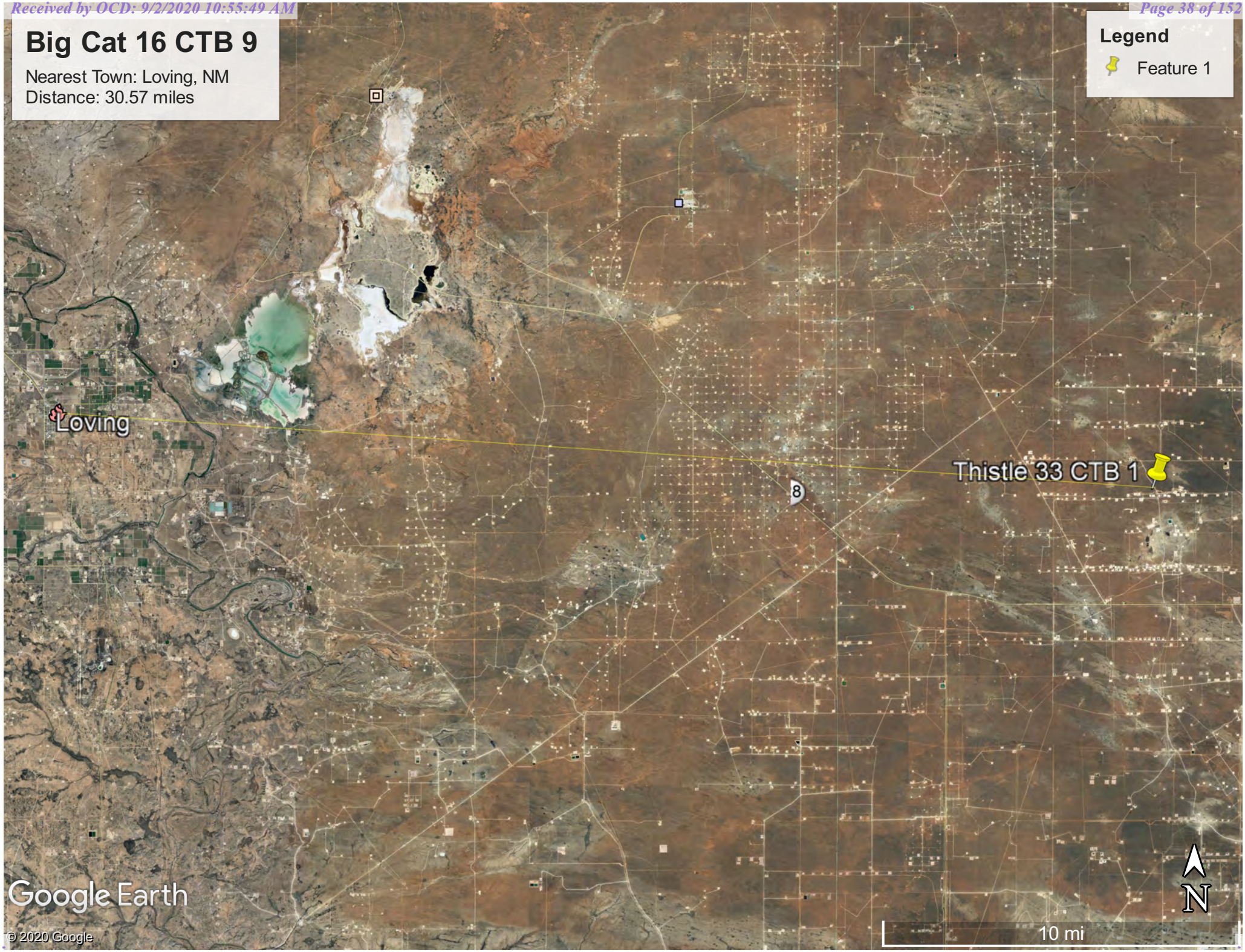
USA Karst



A map showing karst areas in the United States based on the U.S. Geological Survey Open-File Report 2004-1352

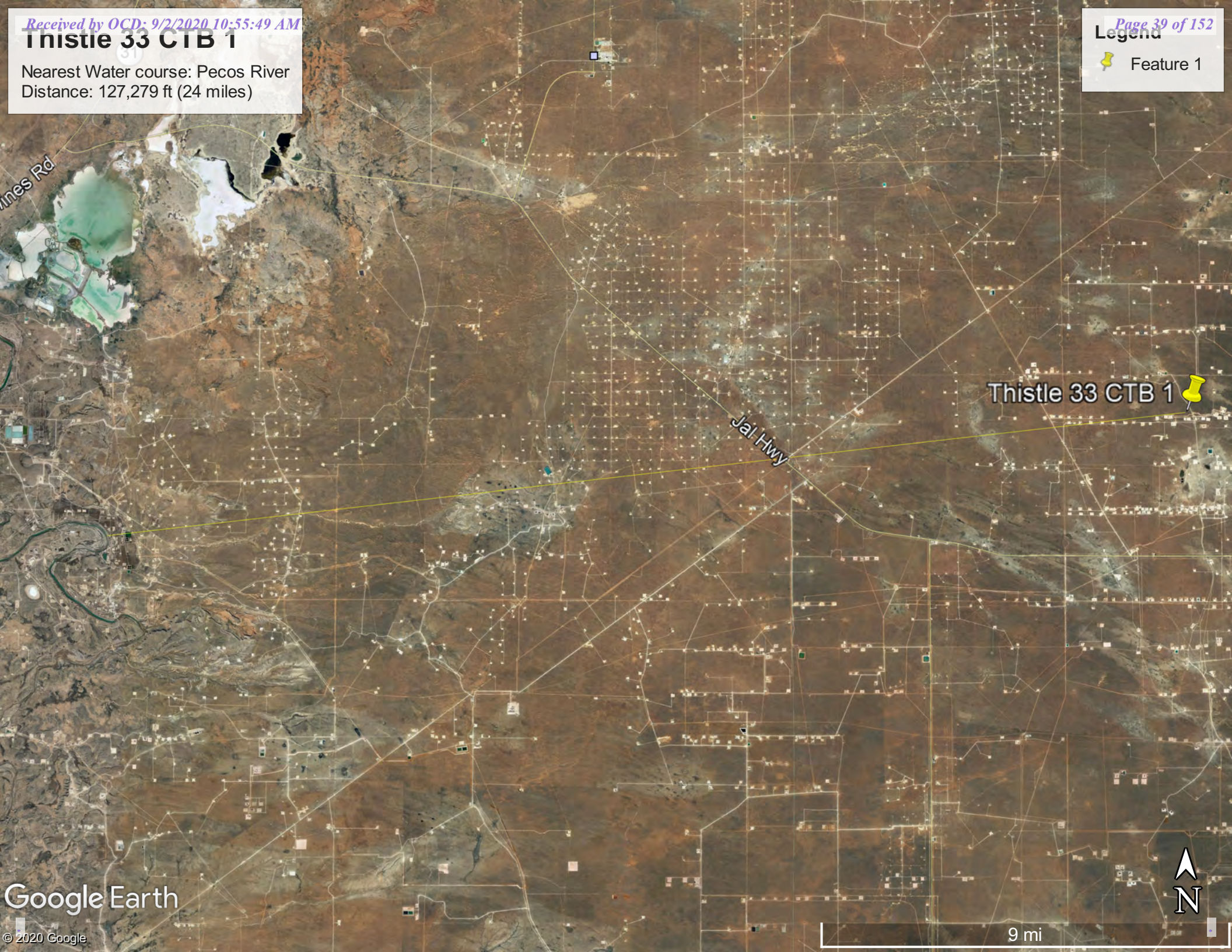
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS | U.S. Geological Survey Open-File Report 2004-1352, Caves and Karst in the U.S. National Park Service, AGI Karst Map of the US.


Thistle 33 CTB 1
Nearest Residence:55,856 ft (10.58 miles)
Legend
Feature 1
Thistle 33 CTB 1
Resident
Resident
Google Earth
© 2020 Google
N
4 mi


Big Cat 16 CTB 9
Nearest Town: Loving, NM
Distance: 30.57 miles
Legend
Feature 1
Loving
Thistle 33 CTB 1
8
Google Earth
© 2020 Google
N
10 mi

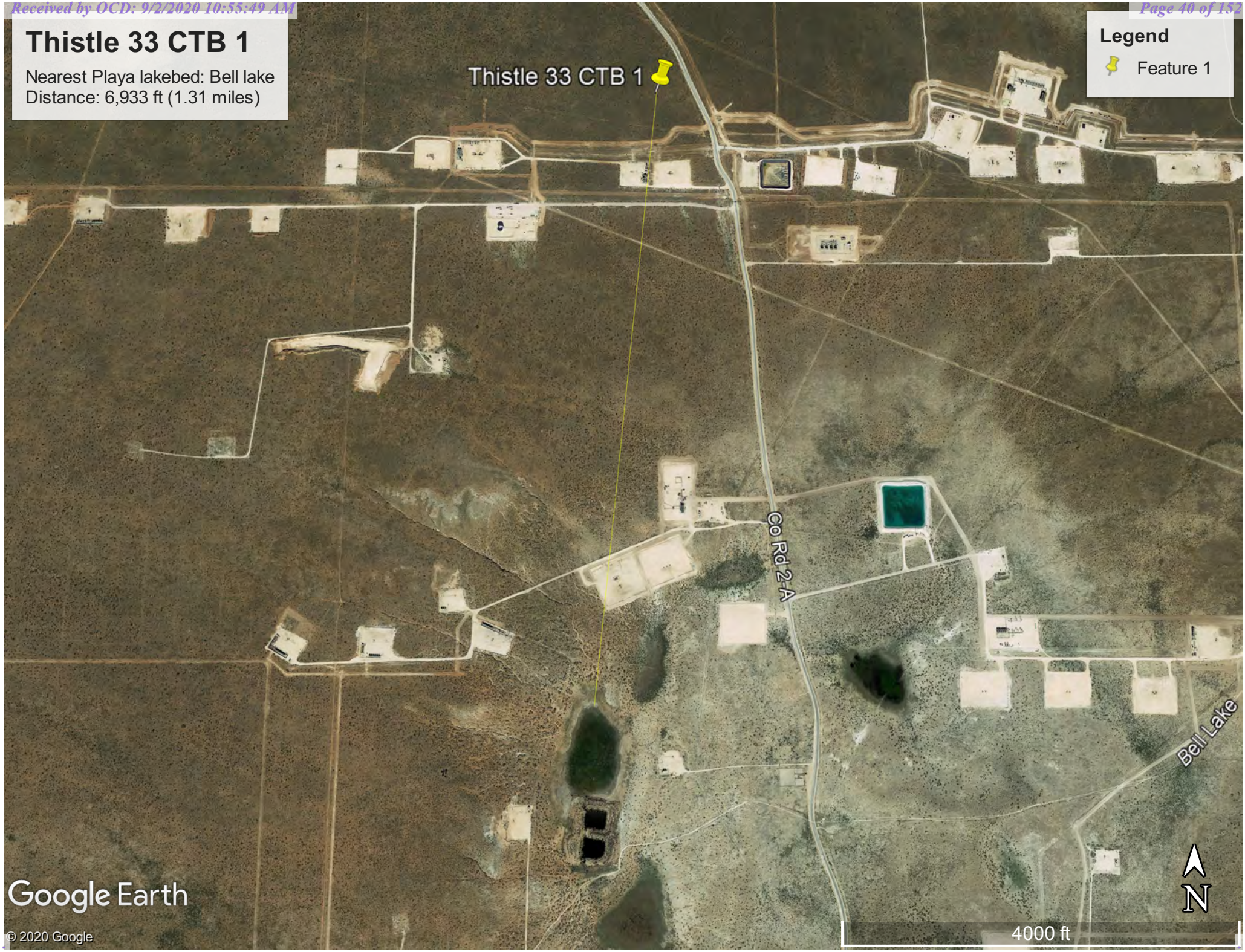
Thistle 33 CTB 1

Nearest Water course: Pecos River
Distance: 127,279 ft (24 miles)



Thistle 33 CTB 1

Nearest Playa lakebed: Bell lake
Distance: 6,933 ft (1.31 miles)



Soil Map—Lea County, New Mexico

Map Scale: 1:1,360 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 17, 2017

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
BE	Berino-Cacique loamy fine sands association	0.9	10.7%
PU	Pyote and maljamar fine sands	7.5	89.3%
Totals for Area of Interest		**8.4**	**100.0%**

Lea County, New Mexico

BE—Berino-Cacique loamy fine sands association

Map Unit Setting

National map unit symbol: dmpd
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 50 percent
Cacique and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

Setting

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

Typical profile

A - 0 to 6 inches: loamy fine sand
Btk - 6 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural 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 in profile: 40 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

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

Description of Cacique

Setting

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

Typical profile

A - 0 to 12 inches: loamy fine sand
Bt - 12 to 28 inches: sandy clay loam
Bkm - 28 to 38 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: Sandy (R042XC004NM)
Hydric soil rating: No

Minor Components

Maljamar

Percent of map unit: 6 percent
Ecological site: Limy Upland 16-21" PZ (R077CY028TX)
Hydric soil rating: No

Palomas

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

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

Lea County, New Mexico

PU—Pyote and maljamar fine sands

Map Unit Setting

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

Map Unit Composition

Maljamar and similar soils: 45 percent
Pyote and similar soils: 45 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maljamar

Setting

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

Typical profile

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

Properties and qualities

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

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

Description of Pyote

Setting

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

Typical profile

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

Properties and qualities

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

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: Loamy Sand (R042XC003NM)
Hydric soil rating: No

Minor Components

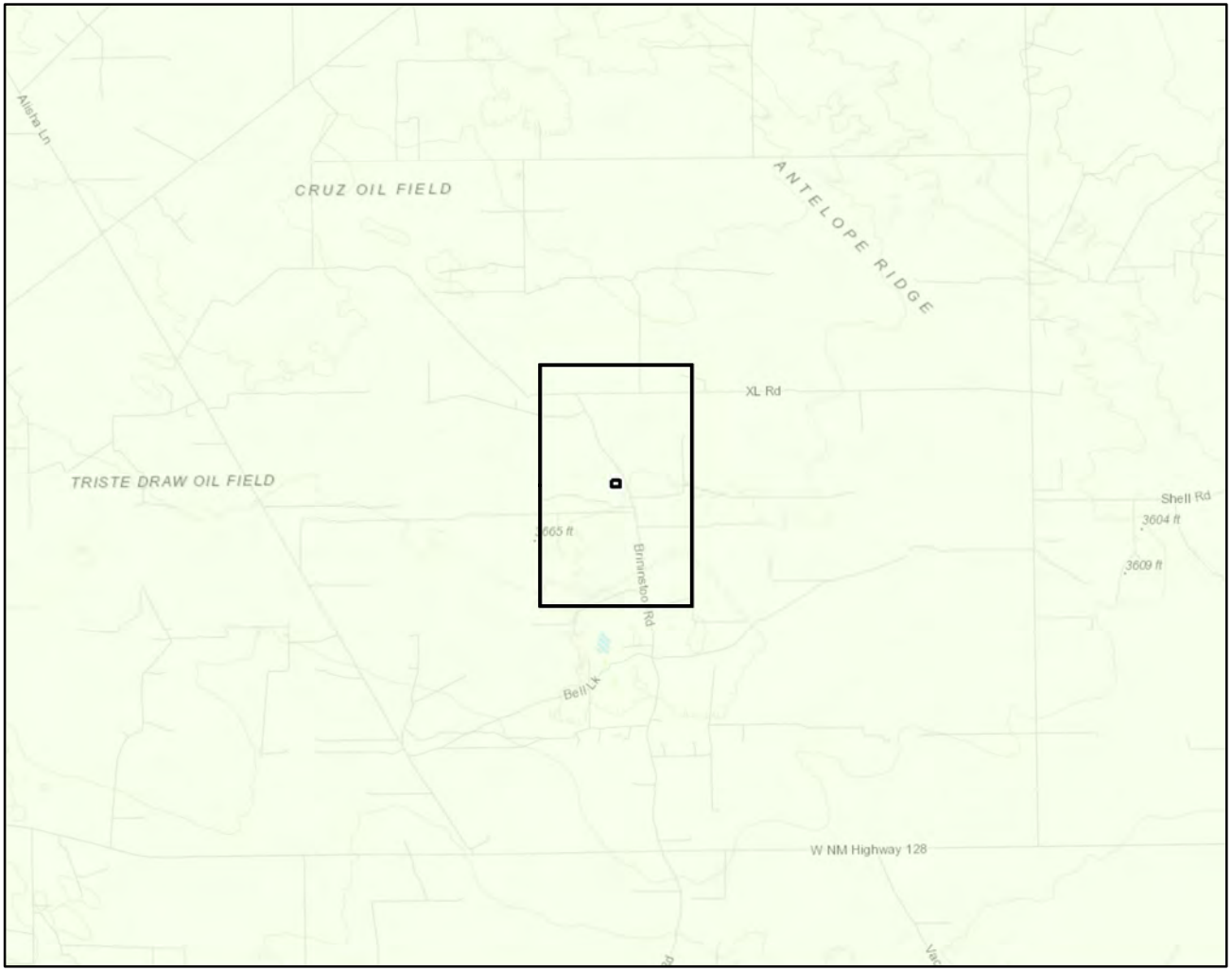
Kermit

Percent of map unit: 10 percent
Ecological site: Sandhills (R042XC022NM)

Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019



Karst Potential

- Critical
- High
- Medium
- Low

Approximate Lease Boundary

Overview Map

0 0.25 0.5 1 1.5 mi

Detail Map

0 750 1,500 ft.

VERTEX

Map Center:
Lat/Long: 32.256769, -103.572733

NAD 1983 UTM Zone 13N
Date: Feb 28/20

N

Karst Potential
Thistle 33 CTB 1

FIGURE:
X

Logo Goes Here

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 20XX; Overview Map: ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\20E-001411030 - Thistle 33 CTB 1\Thistle 33 CTB 1 Karst Potential (Fig x) (20E-00141).mxd

ATTACHMENT 4

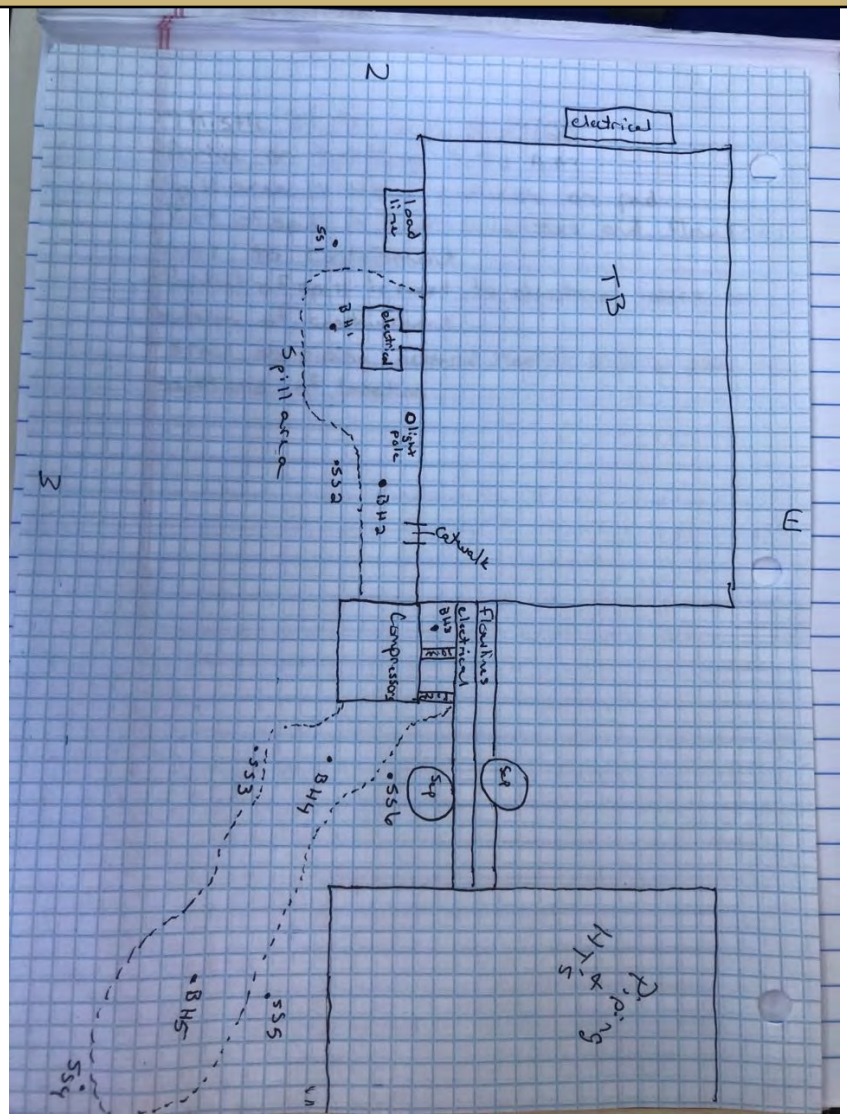
Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	2/24/2020
Site Location Name:	Thistle 33 CTB 1	Report Run Date:	3/11/2020 10:59 PM
Project Owner:	Wes Mathews	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	02/10/2020 - 47.7bbl oil release
Client Contact Phone #:	(575) 748-0176		

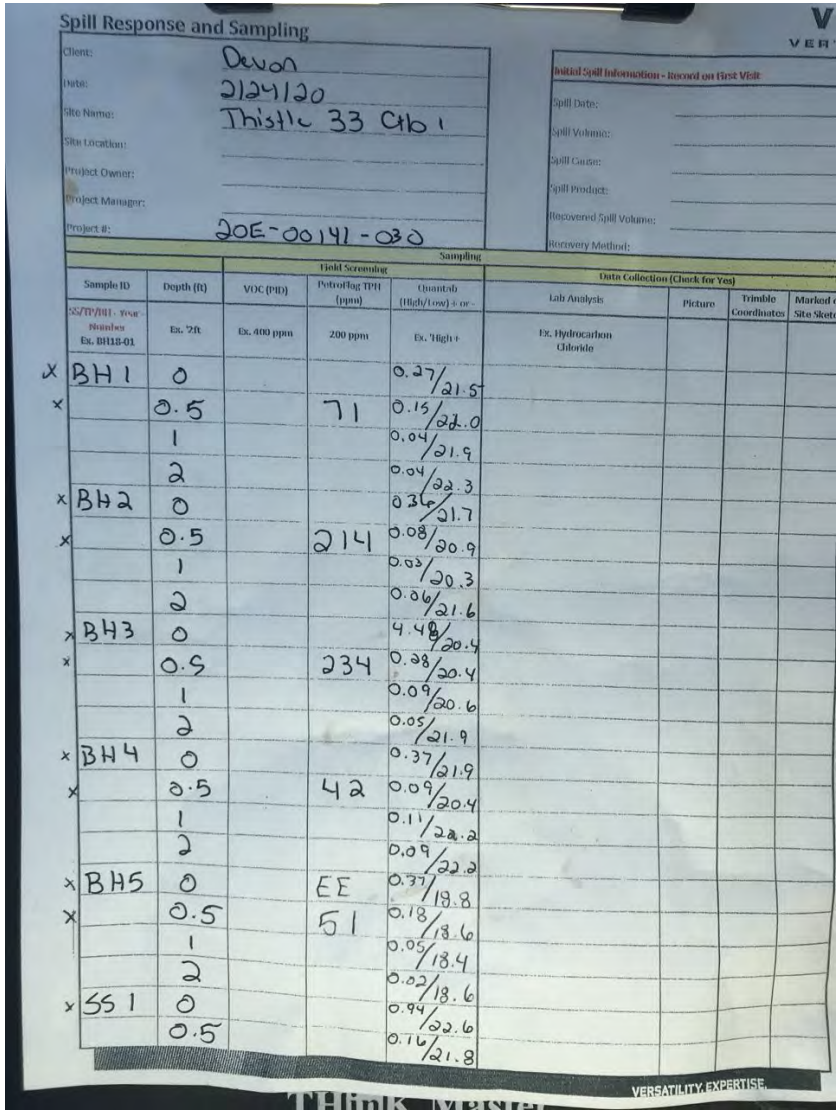
Summary of Times	
Left Office	2/24/2020 6:45 AM
Arrived at Site	2/24/2020 7:52 AM
Departed Site	2/24/2020 2:56 PM
Returned to Office	

Daily Site Visit Report

Site Sketch



Daily Site Visit Report



Spill Response and Sampling

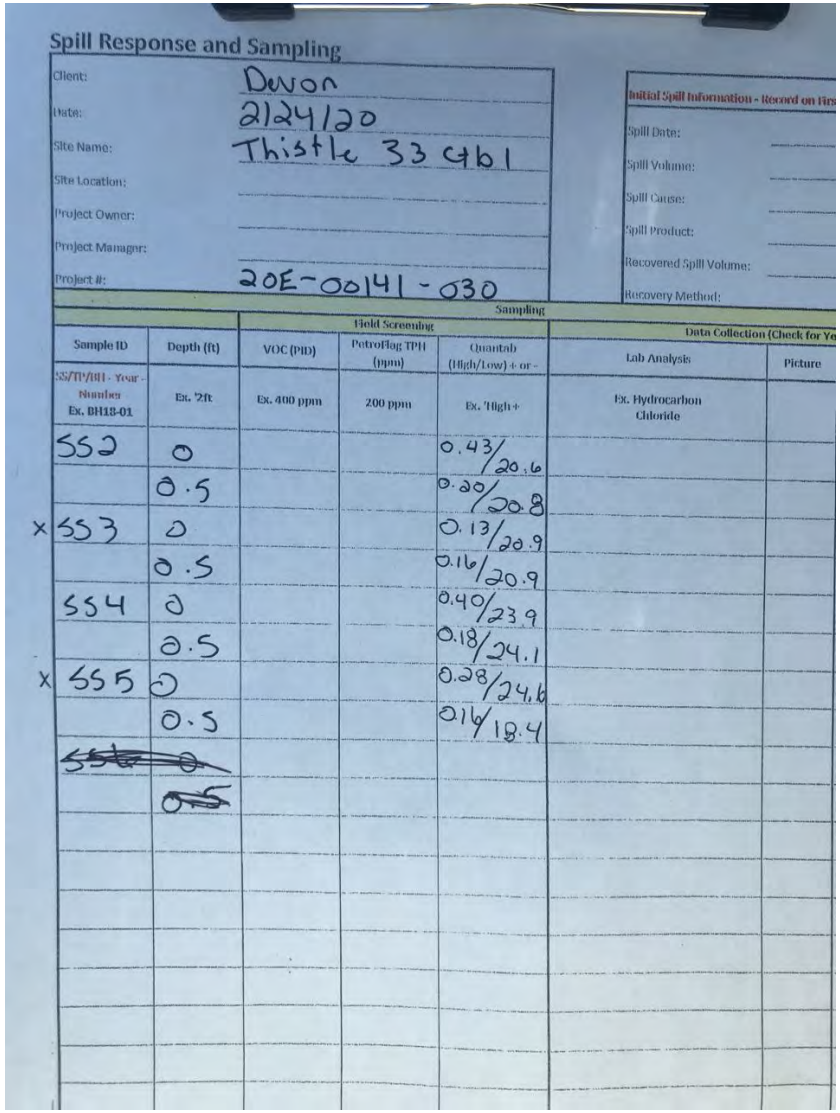
Client: Devon
Date: 2/24/20
Site Name: Thistle 33 Cto 1
Site Location:
Project Owner:
Project Manager:
Project #: 20E-00141-030

Initial Spill Information - Record on First Visit
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

	Sample ID	Depth (ft)	Field Screening: VOC (PID)	Field Screening: PetroFlag TPH (ppm)	Field Screening: Quantab (High/Low) + or -	Data Collection: Lab Analysis	Data Collection: Picture	Data Collection: Trimble Coordinates	Data Collection: Marked Site Sketch
	SS/TP/BH - Year - Number Ex. BH18-01	Ex. 2ft	Ex. 400 ppm	200 ppm	Ex. High +	Ex. Hydrocarbon Chloride			
X	BH 1	0			0.27/21.5				
X		0.5		71	0.15/22.0				
		1			0.04/21.9				
		2			0.04/22.3				
X	BH 2	0			0.36/21.7				
X		0.5		214	0.08/20.9				
		1			0.03/20.3				
		2			0.06/21.6				
X	BH 3	0			4.48/20.4				
X		0.5		234	0.28/20.4				
		1			0.09/20.6				
		2			0.05/21.9				
X	BH 4	0			0.37/21.9				
X		0.5		42	0.09/20.4				
		1			0.11/20.2				
		2			0.09/22.2				
X	BH 5	0		EE	0.37/19.8				
X		0.5		51	0.18/18.6				
		1			0.05/18.4				
		2			0.02/18.6				
X	SS 1	0			0.44/22.6				
		0.5			0.16/21.8				

VERSATILITY. EXPERTISE.

Daily Site Visit Report



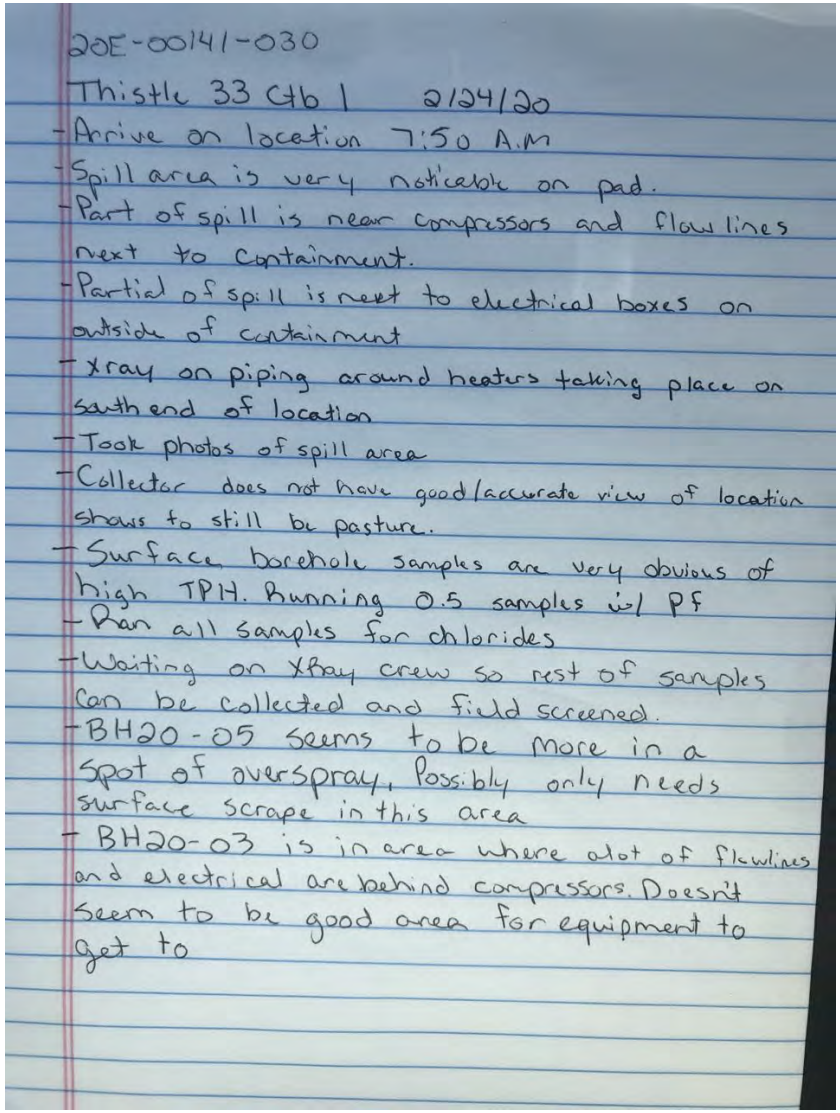
Spill Response and Sampling

Client: Devon
Date: 2/24/20
Site Name: Thistle 33 Cb1
Site Location:
Project Owner:
Project Manager:
Project #: 20E-00141-030

Initial Spill Information - Record on Firs
Spill Date:
Spill Volume:
Spill Cause:
Spill Product:
Recovered Spill Volume:
Recovery Method:

	Sampling						
		Field Screening			Data Collection (Check for Yo	
	Sample ID	Depth (ft)	VOC (PID)	PetroFlag TPH (ppm)	Quantab (High/Low) + or -	Lab Analysis	Picture
	SS/TP/BH - Year - Number Ex. BH18-01	Ex. 2ft	Ex. 400 ppm	200 ppm	Ex. High+	Ex. Hydrocarbon Chloride	
	SS2	0			0.43/20.6		
		0.5			0.20/20.8		
X	SS3	0			0.13/20.9		
		0.5			0.16/20.9		
	SS4	0			0.40/23.9		
		0.5			0.18/24.1		
X	SS5	0			0.28/24.6		
		0.5			0.14/18.4		
	~~SS6~~	~~0~~					
		~~0.5~~					

Daily Site Visit Report



20E-00141-030

Thistle 33 Ctb 1 2/24/20

- Arrive on location 7:50 A.M
- Spill area is very noticable on pad.
- Part of spill is near compressors and flowlines next to containment.
- Partial of spill is next to electrical boxes on outside of containment
- Xray on piping around heaters taking place on south end of location
- Took photos of spill area
- Collector does not have good/accurate view of location shows to still be pasture.
- Surface borehole samples are very obvious of high TPH. Running 0.5 samples in PF
- Ran all samples for chlorides
- Waiting on Xray crew so rest of samples can be collected and field screened.
- BH20-05 seems to be more in a spot of overspray, Possibly only needs surface scrape in this area
- BH20-03 is in area where alot of flowlines and electrical are behind compressors. Doesn't seem to be good area for equipment to get to

Daily Site Visit Report

Daily Site Visit Report

Summary of Daily Operations

7:53 Safety paperwork. Characterize spill with delineation. Map spill and sample points. Collect samples and field screen

Next Steps & Recommendations

1 Send initial samples to lab

2 Discuss remediation plan

3 Schedule confirmation sampling and excavation

Daily Site Visit Report

Site Photos

Viewing Direction: South

Spill area on west side of tank battery and equipment

Viewing Direction: East

Spill area in front of containment

Viewing Direction: South

Spill area on west side of equipment

Viewing Direction: North

Spill area behind compressors on south side of containment

Daily Site Visit Report

Viewing Direction: West

Spill area on west side of equipment

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature:

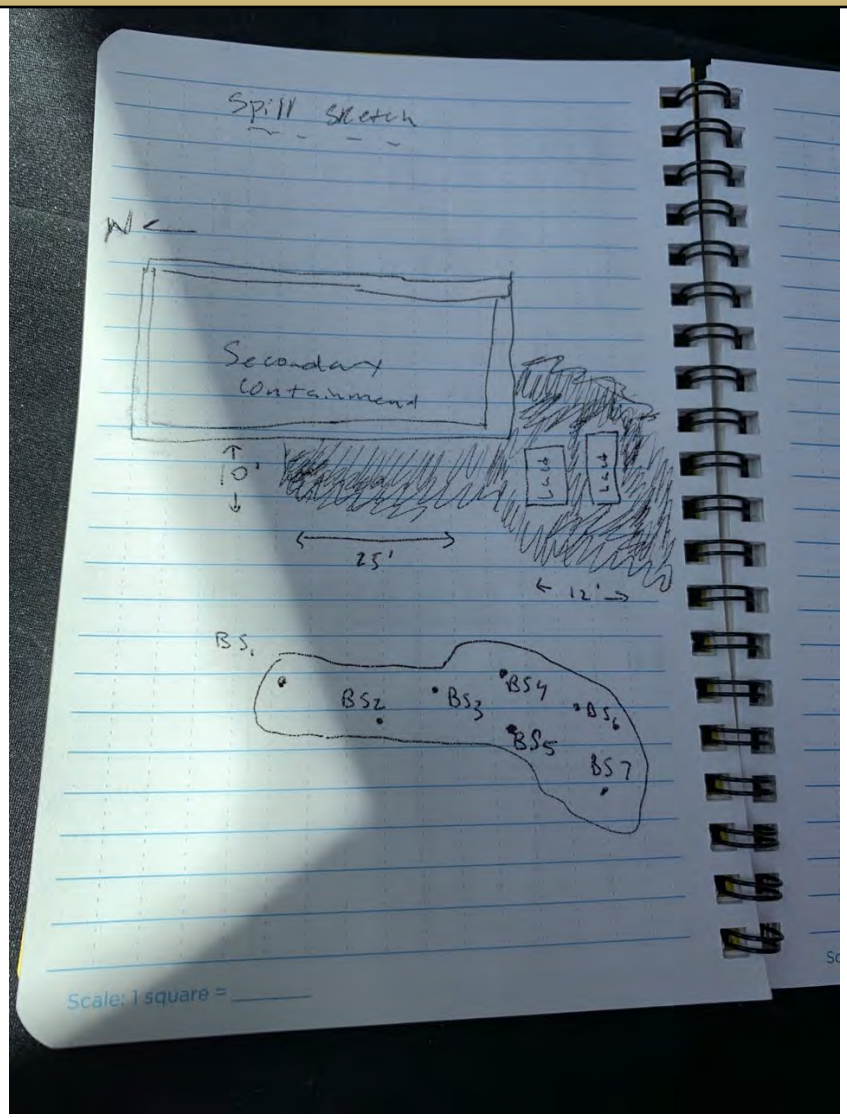
Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	4/14/2020
Site Location Name:	Thistle 33 CTB 1	Report Run Date:	5/22/2020 12:01 AM
Project Owner:	Wes Mathews	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	02/10/2020 - 47.7bbl oil release
Client Contact Phone #:	(575) 748-0176		

Summary of Times	
Left Office	4/14/2020 9:33 AM
Arrived at Site	4/14/2020 9:30 AM
Departed Site	4/14/2020 4:05 PM
Returned to Office	4/14/2020 5:06 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report

Daily Site Visit Report

Summary of Daily Operations

10:20 Remediating spill adjacent to west side of secondary containment. Wild West Service will be conducting exavation. Vertex will be collecting field screen samples to guide remediation activity.

Excavation was completed to a total depth of 8 inches. Confirmation samples collected every 200 square feet of excavation.

Next Steps & Recommendations

1 Submit confirmation samples for lab analysis. Remediate additional areas if necessary.

Sampling

ES-Base20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	410 ppm	805 ppm	Low (30-600 ppm)		Chloride (EPA 300.0)	✓	,	Yes
0.5 ft.	50 ppm	60 ppm	Low (30-600 ppm)			✓	,	Yes

Daily Site Visit Report

Site Photos

Viewing Direction: East

West of containment

Viewing Direction: East

Remediation in progress

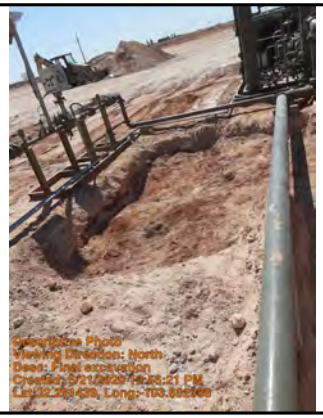
Viewing Direction: East

Remediate Area

Viewing Direction: South

Remediate Area

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: West
	
Remediated Area	Final excavation
Viewing Direction: North	**Viewing Direction**: West
	
Final excavation area	Final excavation area

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: North
	
Excavation	Impacted Area prior to remediation
Viewing Direction: East	**Viewing Direction**: South
	
Impacted Area prior to remediation	Impacted Area prior to remediation

Daily Site Visit Report

Viewing Direction: North

Impacted Area prior to remediation

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Kevin Smith

Signature: 
Signature

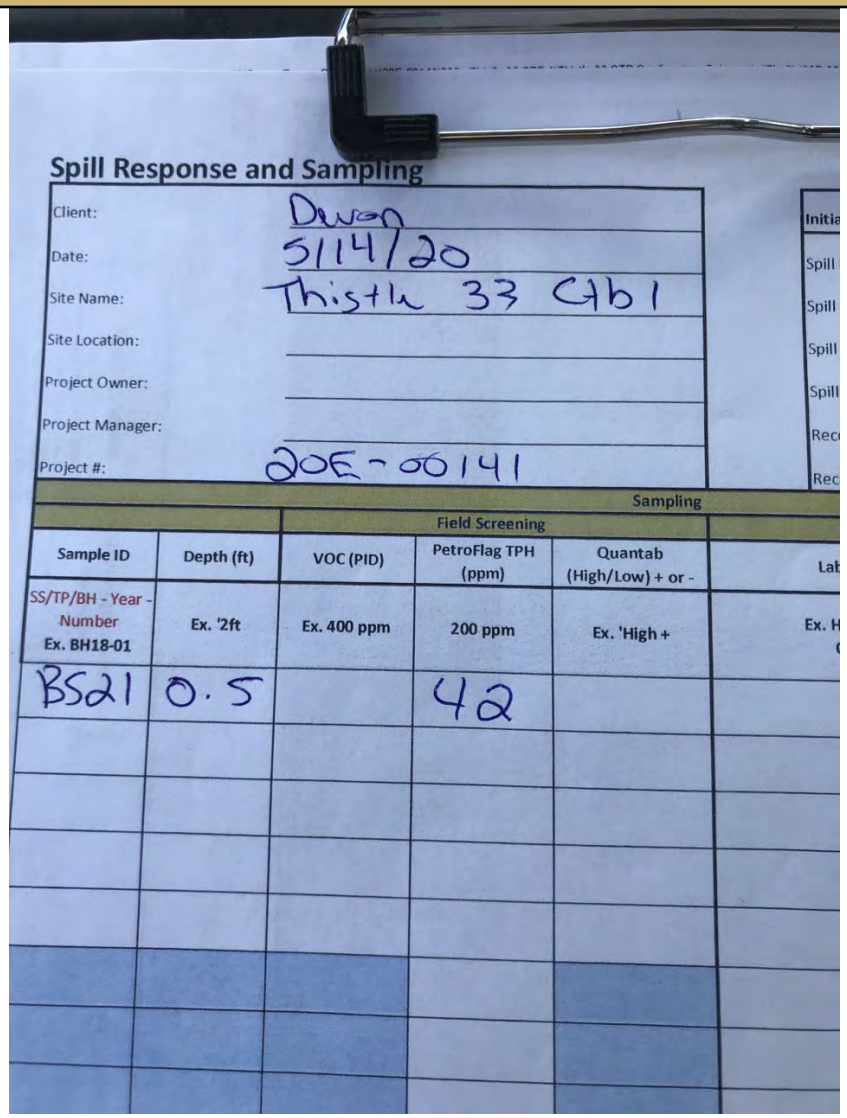
Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	5/14/2020
Site Location Name:	Thistle 33 CTB 1	Report Run Date:	5/15/2020 3:49 AM
Project Owner:	Wes Mathews	File (Project) #:	20E-00141
Project Manager:	Natalie Gordon	API #:	
Client Contact Name:	Amanda Davis	Reference	02/10/2020 - 47.7bbl oil release
Client Contact Phone #:	(575) 748-0176		

Summary of Times	
Left Office	5/14/2020 9:30 AM
Arrived at Site	5/14/2020 10:46 AM
Departed Site	5/14/2020 4:50 PM
Returned to Office	5/14/2020 5:42 PM

Daily Site Visit Report

Site Sketch



Spill Response and Sampling

Client:	Dwon
Date:	5/14/20
Site Name:	Thistle 33 Cb1
Site Location:	
Project Owner:	
Project Manager:	
Project #:	20E-00141

Sampling					
		Field Screening			
Sample ID	Depth (ft)	VOC (PID)	PetroFlag TPH (ppm)	Quantab (High/Low) + or -	Lab
SS/TP/BH - Year - Number Ex. BH18-01	Ex. '2ft	Ex. 400 ppm	200 ppm	Ex. 'High +	Ex. H
BS21	0.5		42		

Daily Site Visit Report

Summary of Daily Operations

10:47 Oversee backfill and recollect one failed sample

13:32 Recollected bs21 and ran with petroflag. Came back under 100 packed sample and filled out coc

16:24 Help crew move dirt in between equipment where backhoe cannot get to.

Next Steps & Recommendations

1 Send sample to lab

2 Start closure report

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: North
	
Excavation area where backfill is taking place	Excavated area
Viewing Direction: Northeast	**Viewing Direction**: North
	
Excavated area	Backfilled area where excavation occurred

Daily Site Visit Report

Viewing Direction: East

Excavated area

Viewing Direction: South

Backfilled area

Viewing Direction: West

Backfilled area

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature: 

ATTACHMENT 5

Client Name: Devon Energy Production Company
Site Name: Thistle 33 Central Tank Battery (CTB) 1
NM OCD Tracking #: NRM2004459546
Project #: 20E-00141-030
Lab Report: 2002A82

Table 2. Release Characterization Sampling - Depth to Groundwater < 50 feet

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (Petro Flag)	Inorganics (Quantab - High/Low)	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH 20-01	0	February 24, 2020	-	-	269	<0.024	<0.216	<4.8	4,400	1,900	**4,400**	**6,300**	160
BH 20-01	0.5	February 24, 2020	-	71	75	<0.024	<0.216	<4.8	<9.9	<49	<14.7	<63.7	<60
BH 20-02	0	February 24, 2020	-	-	391	2.000	**223**	1,500	12,000	4,200	**13,500**	**17,700**	340
BH 20-02	0.5	February 24, 2020	-	214	22	<0.023	<0.207	<4.6	210	110	210	**320**	<60
BH 20-03	0	February 24, 2020	-	-	6,393	0.990	**91.99**	800	9,800	3,500	**10,600**	**14,100**	**5,900**
BH 20-03	0.5	February 24, 2020	-	234	332	<0.024	<0.212	<4.7	330	150	330	**480**	100
BH 20-04	0	February 24, 2020	-	-	397	<0.024	**63.6**	730	8,300	2,800	**9,030**	**11,830**	340
BH 20-04	0.5	February 24, 2020	-	-	57	<0.024	<0.220	<4.9	7,400	2,500	**7,400**	**9,900**	<60
BH 20-05	0	February 24, 2020	-	>1,500	531	<0.023	<0.208	<4.6	1,900	1,100	**1,900**	**3,000**	260
BH 20-05	0.5	February 24, 2020	-	51	265	<0.024	<0.215	<4.8	<8.1	40	<12.9	<52.9	83
SS 20-01	0	February 24, 2020	-	-	1,189	<0.025	<0.224	<5.0	20	53	20	73	**1,100**
SS 20-03	0	February 24, 2020	-	-	93	<0.023	<0.207	<4.6	84	71	84	**155**	<60
SS 20-05	0	February 24, 2020	-	-	150	<0.024	<0.216	<4.8	180	130	180	**310**	160

"-" Not analyzed/assessed

Bold and shaded indicates exceedance outside of NM OCD closure criteria

Client Name: Devon Energy Production Company
Site Name: Thistle 33 Central Tank Batter (CTB) 1
NM OCD Tracking Number: NRM2004459546
Project #: 20E-00141-030
Lab Reports: 2004755 and 2005737

Table 3. Confirmatory Sampling Laboratory Results - Depth to Groundwater < 50 feet

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BS1	0.5	April 15, 2020	<0.024	<0.212	<4.7	<9.7	<48	<14.4	<62.4	310
BS2	0.5	April 15, 2020	<0.024	<0.213	<4.7	<9.3	<46	<14	<60	130
BS3	0.5	April 15, 2020	<0.023	<0.207	<4.6	85	<47	85	85	470
BS4	0.5	April 15, 2020	<0.024	<0.216	<4.8	<9.7	<49	<14.5	<63.5	83
BS5	0.5	April 15, 2020	<0.024	<0.216	<4.8	<9.2	<46	<14.0	<60.0	100
BS6	0.5	April 15, 2020	<0.025	<0.225	<5.0	<9.0	<45	<14.0	<59.0	220
BS7	0.5	April 15, 2020	<0.025	<0.224	<5.0	<9.3	<46	<14.3	<60.3	160
BS8	0.5	April 15, 2020	<0.025	<0.224	<5.0	<9.7	<48	<14.7	<62.7	110
BS9	0.5	April 15, 2020	<0.025	<0.224	<5.0	<9.9	<49	<14.9	<63.9	89
BS10	0.5	April 15, 2020	<0.025	<0.225	<5.0	<9.4	<47	<14.4	<61.4	150
BS11	0.5	April 15, 2020	<0.025	<0.224	<5.0	13	<49	13	13	190
BS12	0.5	April 15, 2020	<0.025	<0.225	<5.0	15	<47	15	15	250
BS13	0.5	April 15, 2020	<0.025	<0.224	<5.0	<9.2	<46	<14.2	<60.2	170
BS14	0.5	April 15, 2020	<0.025	<0.222	<4.9	11	<46	11	11	130
BS15	0.5	April 15, 2020	<0.025	<0.222	<4.9	<9.2	<46	<14.1	<60.1	140
BS16	0.5	April 15, 2020	<0.025	<0.224	<5.0	<9.3	<47	<14.3	<61.3	66
BS17	0.5	April 15, 2020	<0.025	<0.221	<4.9	31	<46	31	31	210
BS18	0.5	April 15, 2020	<0.025	<0.222	<4.9	<9.8	<49	<14.7	<63.7	160
BS19	0.5	April 15, 2020	<0.025	<0.224	<5.0	<9.3	<47	<14.3	<61.3	170
BS20	0.5	April 15, 2020	<0.025	<0.222	<4.9	<9.4	<47	<14.3	<61.3	<60
BS21	0.5	April 15, 2020	<0.024	<0.220	<4.9	98	49	98	**147**	190
BS21	0.9	May 14, 2020	<0.025	<0.225	<5.0	<10.0	<50	<15.0	**<65.0**	<60
SW1	0.5	April 15, 2020	<0.025	<0.224	<5.0	79	<50	79	79	100
SW2	0.5	April 15, 2020	<0.025	<0.221	<4.9	20	<50	20	20	67
SW3	0.5	April 15, 2020	<0.025	<0.224	<5.0	81	<48	81	81	76

"-" - Not assessed/analyzed

Bold and gray shaded indicates exceedance outside of NM OCD closure criteria

Bold and green shaded indicates a re-sample of areas previously exceeding closure

ATTACHMENT 6

Natalie Gordon

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Monday, April 13, 2020 4:11 PM
To: Natalie Gordon
Subject: Fwd: DOR: Feb 10, 2020 - Thistle 33 CTB 1 - 48-hr Notification of Confirmatory Sampling (Devon Energy)

---------- Forwarded message ---------
From: **Dhugal Hanton** <vertexresourcegroupusa@gmail.com>
Date: Mon, Apr 13, 2020 at 4:10 PM
Subject: DOR: Feb 10, 2020 - Thistle 33 CTB 1 - 48-hr Notification of Confirmatory Sampling (Devon Energy)
To: Bratcher, Mike, EMNRD <Mike.Bratcher@state.nm.us>, Venegas, Victoria, EMNRD <Victoria.Venegas@state.nm.us>, Hamlet, Robert, EMNRD <Robert.Hamlet@state.nm.us>, EMNRD-OCD-District1spills <emnrd-ocd-district1spills@state.nm.us>, <rmann@slo.state.nm.us>
Cc: <tom.bynum@dvn.com>, <wesley.mathews@dvn.com>, <amanda.davis@dvn.com>, <Lupe.Carrasco@dvn.com>

All,

Please accept this email as 48-hr notification that Vertex Resource Group has scheduled confirmatory sampling to be conducted at Devon Energy's Thistle 33 CTB 1 for the release that occurred on February 10, 2020, incident tracking #: TBD.

On Wednesday, April 15, 2020, Kevin Smith of Vertex will be onsite to oversee completion of remediation field activities and conduct confirmatory sampling. Final confirmatory sampling is not expected to begin until approximately 2:00 p.m. in the afternoon and may extend into Thursday, April 16, 2020.

If you need directions to the site, Kevin can be reached at 575-988-1000. If you have any questions or concerns regarding this notification, please give me a call at 505-506-0040.

Thank you,
Natalie

Natalie Gordon
Project Manager

Vertex Resource Group Ltd.
213 S. Mesa Street
Carlsbad, NM 88220

P 575.725.5001 ext 709
C 505.506.0040
F

www.vertex.ca

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: www.hallenvironmental.com

March 04, 2020

Natalie Gordon

Devon Energy
6488 Seven Rivers Highway
Artesia, NM 88210
TEL: (575) 748-0176
FAX

RE: Thistle 33 C and B 1 OrderNo.: 2002A82

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 13 sample(s) on 2/25/2020 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 **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH20-01 0'
Project: Thistle 33 C and B 1
Collection Date: 2/24/2020 12:10:00 PM
Lab ID: 2002A82-001 **Matrix:** SOIL **Received Date:** 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	4400	94		mg/Kg	10	2/28/2020 5:57:44 PM
Motor Oil Range Organics (MRO)	1900	470		mg/Kg	10	2/28/2020 5:57:44 PM
Surr: DNOP	0	55.1-146	S	%Rec	10	2/28/2020 5:57:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/29/2020 12:23:57 AM
Surr: BFB	86.9	66.6-105		%Rec	1	2/29/2020 12:23:57 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 12:23:57 AM
Toluene	ND	0.048		mg/Kg	1	2/29/2020 12:23:57 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/29/2020 12:23:57 AM
Xylenes, Total	ND	0.096		mg/Kg	1	2/29/2020 12:23:57 AM
Surr: 4-Bromofluorobenzene	87.2	80-120		%Rec	1	2/29/2020 12:23:57 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	160	60		mg/Kg	20	3/1/2020 8:36:41 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-002 **Matrix:** SOIL

Client Sample ID: BH20-01 0.5'
Collection Date: 2/24/2020 12:15:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	2/28/2020 6:19:58 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/28/2020 6:19:58 PM
Surr: DNOP	71.4	55.1-146		%Rec	1	2/28/2020 6:19:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/29/2020 1:34:04 AM
Surr: BFB	78.4	66.6-105		%Rec	1	2/29/2020 1:34:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 1:34:04 AM
Toluene	ND	0.048		mg/Kg	1	2/29/2020 1:34:04 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/29/2020 1:34:04 AM
Xylenes, Total	ND	0.096		mg/Kg	1	2/29/2020 1:34:04 AM
Surr: 4-Bromofluorobenzene	89.1	80-120		%Rec	1	2/29/2020 1:34:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	3/1/2020 8:49:02 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-003 **Matrix:** SOIL

Client Sample ID: BH20-02 0'
Collection Date: 2/24/2020 12:25:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	12000	480		mg/Kg	50	3/2/2020 5:24:30 PM
Motor Oil Range Organics (MRO)	4200	2400		mg/Kg	50	3/2/2020 5:24:30 PM
Surr: DNOP	0	55.1-146	S	%Rec	50	3/2/2020 5:24:30 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	1500	240		mg/Kg	50	2/29/2020 2:44:12 AM
Surr: BFB	188	66.6-105	S	%Rec	50	2/29/2020 2:44:12 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	2.0	1.2		mg/Kg	50	2/29/2020 2:44:12 AM
Toluene	51	2.4		mg/Kg	50	2/29/2020 2:44:12 AM
Ethylbenzene	30	2.4		mg/Kg	50	2/29/2020 2:44:12 AM
Xylenes, Total	140	4.8		mg/Kg	50	2/29/2020 2:44:12 AM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	50	2/29/2020 2:44:12 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	340	60		mg/Kg	20	3/1/2020 9:01:23 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-004 **Matrix:** SOIL

Client Sample ID: BH20-02 0.5'
Collection Date: 2/24/2020 12:30:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	210	9.3		mg/Kg	1	3/2/2020 5:48:25 PM
Motor Oil Range Organics (MRO)	110	47		mg/Kg	1	3/2/2020 5:48:25 PM
Surr: DNOP	123	55.1-146		%Rec	1	3/2/2020 5:48:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	2/29/2020 3:07:30 AM
Surr: BFB	83.4	66.6-105		%Rec	1	2/29/2020 3:07:30 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	2/29/2020 3:07:30 AM
Toluene	ND	0.046		mg/Kg	1	2/29/2020 3:07:30 AM
Ethylbenzene	ND	0.046		mg/Kg	1	2/29/2020 3:07:30 AM
Xylenes, Total	ND	0.092		mg/Kg	1	2/29/2020 3:07:30 AM
Surr: 4-Bromofluorobenzene	89.2	80-120		%Rec	1	2/29/2020 3:07:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	ND	60		mg/Kg	20	3/1/2020 9:13:43 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-005 **Matrix:** SOIL

Client Sample ID: BH20-03 0'
Collection Date: 2/24/2020 12:40:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	9800	100		mg/Kg	10	2/28/2020 7:25:52 PM
Motor Oil Range Organics (MRO)	3500	500		mg/Kg	10	2/28/2020 7:25:52 PM
Surr: DNOP	0	55.1-146	S	%Rec	10	2/28/2020 7:25:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	800	250		mg/Kg	50	2/29/2020 3:30:49 AM
Surr: BFB	144	66.6-105	S	%Rec	50	2/29/2020 3:30:49 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	0.99	0.99		mg/Kg	50	2/29/2020 3:30:49 AM
Toluene	16	2.5		mg/Kg	50	2/29/2020 3:30:49 AM
Ethylbenzene	13	2.5		mg/Kg	50	2/29/2020 3:30:49 AM
Xylenes, Total	62	5.0		mg/Kg	50	2/29/2020 3:30:49 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	50	2/29/2020 3:30:49 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	5900	300		mg/Kg	100	3/2/2020 6:30:45 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-006 **Matrix:** SOIL

Client Sample ID: BH20-03 0.5'
Collection Date: 2/24/2020 12:45:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	330	7.9		mg/Kg	1	3/2/2020 6:12:22 PM
Motor Oil Range Organics (MRO)	150	40		mg/Kg	1	3/2/2020 6:12:22 PM
Surr: DNOP	124	55.1-146		%Rec	1	3/2/2020 6:12:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/29/2020 3:54:04 AM
Surr: BFB	88.2	66.6-105		%Rec	1	2/29/2020 3:54:04 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 3:54:04 AM
Toluene	ND	0.047		mg/Kg	1	2/29/2020 3:54:04 AM
Ethylbenzene	ND	0.047		mg/Kg	1	2/29/2020 3:54:04 AM
Xylenes, Total	ND	0.094		mg/Kg	1	2/29/2020 3:54:04 AM
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	2/29/2020 3:54:04 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	100	60		mg/Kg	20	3/1/2020 9:38:25 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH20-04 0'
Project: Thistle 33 C and B 1
Collection Date: 2/24/2020 12:55:00 PM
Lab ID: 2002A82-007 **Matrix:** SOIL
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	8300	94		mg/Kg	10	2/28/2020 8:09:36 PM
Motor Oil Range Organics (MRO)	2800	470		mg/Kg	10	2/28/2020 8:09:36 PM
Surr: DNOP	0	55.1-146	S	%Rec	10	2/28/2020 8:09:36 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	730	97		mg/Kg	20	2/29/2020 12:31:19 PM
Surr: BFB	285	66.6-105	S	%Rec	20	2/29/2020 12:31:19 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 6:13:48 AM
Toluene	3.1	0.049		mg/Kg	1	2/29/2020 6:13:48 AM
Ethylbenzene	9.5	0.97		mg/Kg	20	2/29/2020 12:31:19 PM
Xylenes, Total	51	1.9		mg/Kg	20	2/29/2020 12:31:19 PM
Surr: 4-Bromofluorobenzene	112	80-120		%Rec	20	2/29/2020 12:31:19 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	340	60		mg/Kg	20	3/1/2020 10:15:27 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH20-04 0.5
Project: Thistle 33 C and B 1
Collection Date: 2/24/2020 1:00:00 PM
Lab ID: 2002A82-008 **Matrix:** SOIL **Received Date:** 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	7400	98		mg/Kg	10	2/28/2020 8:31:32 PM
Motor Oil Range Organics (MRO)	2500	490		mg/Kg	10	2/28/2020 8:31:32 PM
Surr: DNOP	0	55.1-146	S	%Rec	10	2/28/2020 8:31:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/29/2020 6:37:06 AM
Surr: BFB	85.1	66.6-105		%Rec	1	2/29/2020 6:37:06 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 6:37:06 AM
Toluene	ND	0.049		mg/Kg	1	2/29/2020 6:37:06 AM
Ethylbenzene	ND	0.049		mg/Kg	1	2/29/2020 6:37:06 AM
Xylenes, Total	ND	0.098		mg/Kg	1	2/29/2020 6:37:06 AM
Surr: 4-Bromofluorobenzene	88.4	80-120		%Rec	1	2/29/2020 6:37:06 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	3/2/2020 12:57:23 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH20-05 0'
Project: Thistle 33 C and B 1
Collection Date: 2/24/2020 1:10:00 PM
Lab ID: 2002A82-009 **Matrix:** SOIL **Received Date:** 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	1900	89		mg/Kg	10	3/2/2020 6:36:20 PM
Motor Oil Range Organics (MRO)	1100	440		mg/Kg	10	3/2/2020 6:36:20 PM
Surr: DNOP	0	55.1-146	S	%Rec	10	3/2/2020 6:36:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	2/29/2020 7:00:20 AM
Surr: BFB	79.7	66.6-105		%Rec	1	2/29/2020 7:00:20 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	2/29/2020 7:00:20 AM
Toluene	ND	0.046		mg/Kg	1	2/29/2020 7:00:20 AM
Ethylbenzene	ND	0.046		mg/Kg	1	2/29/2020 7:00:20 AM
Xylenes, Total	ND	0.093		mg/Kg	1	2/29/2020 7:00:20 AM
Surr: 4-Bromofluorobenzene	86.4	80-120		%Rec	1	2/29/2020 7:00:20 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	260	60		mg/Kg	20	3/2/2020 1:09:44 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BH20-05 0.5'
Project: Thistle 33 C and B 1
Collection Date: 2/24/2020 1:15:00 PM
Lab ID: 2002A82-010 **Matrix:** SOIL **Received Date:** 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.1		mg/Kg	1	3/2/2020 7:00:12 PM
Motor Oil Range Organics (MRO)	ND	40		mg/Kg	1	3/2/2020 7:00:12 PM
Surr: DNOP	100	55.1-146		%Rec	1	3/2/2020 7:00:12 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/29/2020 7:23:33 AM
Surr: BFB	79.5	66.6-105		%Rec	1	2/29/2020 7:23:33 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 7:23:33 AM
Toluene	ND	0.048		mg/Kg	1	2/29/2020 7:23:33 AM
Ethylbenzene	ND	0.048		mg/Kg	1	2/29/2020 7:23:33 AM
Xylenes, Total	ND	0.095		mg/Kg	1	2/29/2020 7:23:33 AM
Surr: 4-Bromofluorobenzene	88.5	80-120		%Rec	1	2/29/2020 7:23:33 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	83	60		mg/Kg	20	3/2/2020 1:46:46 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: SS20-01 0'
Project: Thistle 33 C and B 1
Collection Date: 2/24/2020 1:25:00 PM
Lab ID: 2002A82-011 **Matrix:** SOIL **Received Date:** 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	20	10		mg/Kg	1	3/2/2020 7:23:59 PM
Motor Oil Range Organics (MRO)	53	50		mg/Kg	1	3/2/2020 7:23:59 PM
Surr: DNOP	92.4	55.1-146		%Rec	1	3/2/2020 7:23:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/29/2020 7:46:49 AM
Surr: BFB	77.7	66.6-105		%Rec	1	2/29/2020 7:46:49 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	2/29/2020 7:46:49 AM
Toluene	ND	0.050		mg/Kg	1	2/29/2020 7:46:49 AM
Ethylbenzene	ND	0.050		mg/Kg	1	2/29/2020 7:46:49 AM
Xylenes, Total	ND	0.099		mg/Kg	1	2/29/2020 7:46:49 AM
Surr: 4-Bromofluorobenzene	85.2	80-120		%Rec	1	2/29/2020 7:46:49 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	1100	60		mg/Kg	20	3/2/2020 1:59:07 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 **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-012 **Matrix:** SOIL

Client Sample ID: SS20-03 0'
Collection Date: 2/24/2020 1:35:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	84	9.6		mg/Kg	1	2/28/2020 9:58:51 PM
Motor Oil Range Organics (MRO)	71	48		mg/Kg	1	2/28/2020 9:58:51 PM
Surr: DNOP	81.6	55.1-146		%Rec	1	2/28/2020 9:58:51 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	2/29/2020 12:54:38 PM
Surr: BFB	81.2	66.6-105		%Rec	1	2/29/2020 12:54:38 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	2/29/2020 12:54:38 PM
Toluene	ND	0.046		mg/Kg	1	2/29/2020 12:54:38 PM
Ethylbenzene	ND	0.046		mg/Kg	1	2/29/2020 12:54:38 PM
Xylenes, Total	ND	0.092		mg/Kg	1	2/29/2020 12:54:38 PM
Surr: 4-Bromofluorobenzene	89.5	80-120		%Rec	1	2/29/2020 12:54:38 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	3/2/2020 2:11:28 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 **2002A82**
Date Reported: **3/4/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 C and B 1
Lab ID: 2002A82-013 **Matrix:** SOIL

Client Sample ID: SS20-05 0'
Collection Date: 2/24/2020 1:45:00 PM
Received Date: 2/25/2020 10:55:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	180	8.1		mg/Kg	1	2/28/2020 10:20:35 PM
Motor Oil Range Organics (MRO)	130	40		mg/Kg	1	2/28/2020 10:20:35 PM
Surr: DNOP	79.0	55.1-146		%Rec	1	2/28/2020 10:20:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/29/2020 1:17:55 PM
Surr: BFB	85.9	66.6-105		%Rec	1	2/29/2020 1:17:55 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	2/29/2020 1:17:55 PM
Toluene	ND	0.048		mg/Kg	1	2/29/2020 1:17:55 PM
Ethylbenzene	ND	0.048		mg/Kg	1	2/29/2020 1:17:55 PM
Xylenes, Total	ND	0.096		mg/Kg	1	2/29/2020 1:17:55 PM
Surr: 4-Bromofluorobenzene	93.3	80-120		%Rec	1	2/29/2020 1:17:55 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	160	60		mg/Kg	20	3/2/2020 2:23:50 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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#: **2002A82**
04-Mar-20

Client: Devon Energy
Project: Thistle 33 C and B 1

Sample ID: **MB-50776** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **50776** RunNo: **66941**
Prep Date: **3/1/2020** Analysis Date: **3/1/2020** SeqNo: **2302756** Units: **mg/Kg**

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

Sample ID: **LCS-50776** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **50776** RunNo: **66941**
Prep Date: **3/1/2020** Analysis Date: **3/1/2020** SeqNo: **2302757** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.9	90	110			

Sample ID: **MB-50785** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **50785** RunNo: **66949**
Prep Date: **3/2/2020** Analysis Date: **3/2/2020** SeqNo: **2303864** Units: **mg/Kg**

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

Sample ID: **LCS-50785** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **50785** RunNo: **66949**
Prep Date: **3/2/2020** Analysis Date: **3/2/2020** SeqNo: **2303865** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.3	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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#: **2002A82**
04-Mar-20

Client: Devon Energy
Project: Thistle 33 C and B 1

Sample ID: **LCS-50705** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **50705** RunNo: **66890**
Prep Date: **2/26/2020** Analysis Date: **2/28/2020** SeqNo: **2302114** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.8	70	130			
Surr: DNOP	4.2		5.000		83.9	55.1	146			

Sample ID: **MB-50705** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50705** RunNo: **66890**
Prep Date: **2/26/2020** Analysis Date: **2/28/2020** SeqNo: **2302115** 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	9.1		10.00		91.3	55.1	146			

Sample ID: **MB-50761** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **50761** RunNo: **66970**
Prep Date: **2/28/2020** Analysis Date: **3/2/2020** SeqNo: **2304439** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.0		10.00		89.9	55.1	146			

Sample ID: **LCS-50761** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **50761** RunNo: **66970**
Prep Date: **2/28/2020** Analysis Date: **3/2/2020** SeqNo: **2304440** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.4		5.000		87.4	55.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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#: **2002A82**
04-Mar-20

Client: Devon Energy
Project: Thistle 33 C and B 1

Sample ID: **mb-50692** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301181** 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	800		1000		80.1	66.6	105			

Sample ID: **lcs-50692** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301182** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	84.3	80	120			
Surr: BFB	890		1000		88.7	66.6	105			

Sample ID: **2002a82-001ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH20-01 0'** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301184** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	24.75	3.282	80.8	69.1	142			
Surr: BFB	950		990.1		95.6	66.6	105			

Sample ID: **2002a82-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH20-01 0'** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301185** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.9	24.70	3.282	93.9	69.1	142	12.9	20	
Surr: BFB	960		988.1		97.6	66.6	105	0	0	

Sample ID: **mb-50712** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **50712** RunNo: **66919**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301535** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	810		1000		81.4	66.6	105			

Sample ID: **lcs-50712** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **50712** RunNo: **66919**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301536** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	930		1000		93.1	66.6	105			

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#: **2002A82**
04-Mar-20

Client: Devon Energy
Project: Thistle 33 C and B 1

Sample ID: **mb-50757**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **50757**	RunNo: **66919**							
Prep Date: **2/28/2020**	Analysis Date: **3/1/2020**	SeqNo: **2301551**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	800		1000		80.5	66.6	105			

Sample ID: **lcs-50757**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **50757**	RunNo: **66919**							
Prep Date: **2/28/2020**	Analysis Date: **3/1/2020**	SeqNo: **2301552**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	870		1000		87.5	66.6	105			

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#: **2002A82**
04-Mar-20

Client: Devon Energy
Project: Thistle 33 C and B 1

Sample ID: **mb-50692** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301229** 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	0.89		1.000		88.8	80	120			

Sample ID: **LCS-50692** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301230** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	95.9	80	120			
Toluene	0.99	0.050	1.000	0	99.4	80	120			
Ethylbenzene	1.0	0.050	1.000	0	100	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.92		1.000		91.6	80	120			

Sample ID: **2002a82-002ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH20-01 0.5'** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301233** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.83	0.024	0.9690	0	85.8	78.5	119			
Toluene	0.87	0.048	0.9690	0.01467	88.6	75.7	123			
Ethylbenzene	0.90	0.048	0.9690	0	93.1	74.3	126			
Xylenes, Total	2.7	0.097	2.907	0.03413	92.7	72.9	130			
Surr: 4-Bromofluorobenzene	0.87		0.9690		90.2	80	120			

Sample ID: **2002a82-002amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH20-01 0.5'** Batch ID: **50692** RunNo: **66892**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301234** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.024	0.9634	0	91.1	78.5	119	5.43	20	
Toluene	0.91	0.048	0.9634	0.01467	92.5	75.7	123	3.68	20	
Ethylbenzene	0.93	0.048	0.9634	0	97.0	74.3	126	3.53	20	
Xylenes, Total	2.8	0.096	2.890	0.03413	96.5	72.9	130	3.36	20	
Surr: 4-Bromofluorobenzene	0.87		0.9634		89.8	80	120	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
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#: **2002A82**
04-Mar-20

Client: Devon Energy
Project: Thistle 33 C and B 1

Sample ID: **mb-50712** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **50712** RunNo: **66919**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301581** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.89		1.000		89.0	80	120			

Sample ID: **LCS-50712** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **50712** RunNo: **66919**
Prep Date: **2/26/2020** Analysis Date: **2/29/2020** SeqNo: **2301582** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.91		1.000		91.5	80	120			

Sample ID: **mb-50757** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **50757** RunNo: **66919**
Prep Date: **2/28/2020** Analysis Date: **3/1/2020** SeqNo: **2301596** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.87		1.000		86.7	80	120			

Sample ID: **LCS-50757** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **50757** RunNo: **66919**
Prep Date: **2/28/2020** Analysis Date: **3/1/2020** SeqNo: **2301597** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.92		1.000		92.2	80	120			

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: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **DEVON ENERGY** Work Order Number: **2002A82** RcptNo: **1**

Received By: Juan Rojas **2/25/2020 10:55:00 AM**

Completed By: **Isaiah Ortiz** **2/25/2020 4:42:59 PM** I-OX

Reviewed By: DAD 2/26/20

Chain of Custody

1. Is Chain of Custody sufficiently 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: YG 2/26/20

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	0.2	Good	Not Present			
2	4.2	Good	Not Present			

Chain-of-Custody Record

Client: Devon

Amanda Davis / Wes Mathews

Mailing Address: 6488 Seven Rivers Hwy

Artesia, NM 88210

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: Thistle 33 CTB 1

Project #: 20E-00141-030

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp (including CF): 0.3-0.1=0.2 (°C)

4.3-0.1=4.2

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. 2002A82	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)
2/24	12:10	Soil	BH20-01 0'	4oz	Ice	001	✓	✓					✓			
	12:15		BH20-01 0.5'			002	✓	✓					✓			
	12:25		BH20-02 0'			003	✓	✓					✓			
	12:30		BH20-02 0.5'			004	✓	✓					✓			
	12:40		BH20-03 0'			005	✓	✓					✓			
	12:45		BH20-03 0.5'			006	✓	✓					✓			
	12:55		BH20-04 0'			007	✓	✓					✓			
	1:00		BH20-04 0.5'			008	✓	✓					✓			
	1:10		BH20-05 0'			009	✓	✓					✓			
	1:15		BH20-05 0.5'			010	✓	✓					✓			
	1:25		SS20-01 0'			011	✓	✓					✓			
	1:35		SS20-03 0'			012	✓	✓					✓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
2/24/20	1600				2/24/20	1600
2/24/20	1900		courier		2/25/20	10155

Remarks: CC: Natalie Gordon Vertex

Direct Bill Devon

W/O #: 208372791

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

Chain-of-Custody Record

Client: Devon

Amanda Davis / Wes Mathews

Mailing Address: 6488 Seven Rivers Hwy

Artesia, NM 88210

Phone #:

email or Fax#:

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 3 Day

☐ Standard ☐ Rush

Project Name: Thistle 33 CTB1

Project #: 20E-00141-030

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 0.3-0.1=0.2 (°C)

4.3-0.1=4.2

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. 2002A82	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)
2/24	1:45	Soil	SS20-05 0'	4oz	ice	013	✓	✓					✓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date Time
2/24/20	1692				2/24/20 1640
2/24/20	1900			courier	2/25/20 1045

Remarks: CC: Natalie Gordon Vertex

Direct Bill

Devon w/o # 208337279

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

April 23, 2020

Amanda Davis

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

RE: Thistle 33 CTB 1 OrderNo.: 2004755

Dear Amanda Davis:

Hall Environmental Analysis Laboratory received 24 sample(s) on 4/16/2020 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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-001 **Matrix:** SOIL

Client Sample ID: BS1
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/19/2020 1:20:02 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2020 1:20:02 AM
Surr: DNOP	87.2	55.1-146		%Rec	1	4/19/2020 1:20:02 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	310	61		mg/Kg	20	4/20/2020 8:20:15 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	4/20/2020 2:16:18 PM
Toluene	ND	0.047		mg/Kg	1	4/20/2020 2:16:18 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/20/2020 2:16:18 PM
Xylenes, Total	ND	0.094		mg/Kg	1	4/20/2020 2:16:18 PM
Surr: 1,2-Dichloroethane-d4	93.6	70-130		%Rec	1	4/20/2020 2:16:18 PM
Surr: 4-Bromofluorobenzene	97.1	70-130		%Rec	1	4/20/2020 2:16:18 PM
Surr: Dibromofluoromethane	92.3	70-130		%Rec	1	4/20/2020 2:16:18 PM
Surr: Toluene-d8	99.9	70-130		%Rec	1	4/20/2020 2:16:18 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/20/2020 2:16:18 PM
Surr: BFB	96.8	70-130		%Rec	1	4/20/2020 2:16:18 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-002 **Matrix:** SOIL

Client Sample ID: BS2
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/19/2020 1:43:59 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/19/2020 1:43:59 AM
Surr: DNOP	103	55.1-146		%Rec	1	4/19/2020 1:43:59 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	130	60		mg/Kg	20	4/20/2020 8:32:40 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	4/20/2020 2:46:04 PM
Toluene	ND	0.047		mg/Kg	1	4/20/2020 2:46:04 PM
Ethylbenzene	ND	0.047		mg/Kg	1	4/20/2020 2:46:04 PM
Xylenes, Total	ND	0.095		mg/Kg	1	4/20/2020 2:46:04 PM
Surr: 1,2-Dichloroethane-d4	87.5	70-130		%Rec	1	4/20/2020 2:46:04 PM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	4/20/2020 2:46:04 PM
Surr: Dibromofluoromethane	90.3	70-130		%Rec	1	4/20/2020 2:46:04 PM
Surr: Toluene-d8	100	70-130		%Rec	1	4/20/2020 2:46:04 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	4/20/2020 2:46:04 PM
Surr: BFB	96.0	70-130		%Rec	1	4/20/2020 2:46:04 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-003 **Matrix:** SOIL

Client Sample ID: BS3
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	85	9.4		mg/Kg	1	4/19/2020 2:07:56 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2020 2:07:56 AM
Surr: DNOP	121	55.1-146		%Rec	1	4/19/2020 2:07:56 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	470	60		mg/Kg	20	4/20/2020 9:34:41 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	4/20/2020 3:16:00 PM
Toluene	ND	0.046		mg/Kg	1	4/20/2020 3:16:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	4/20/2020 3:16:00 PM
Xylenes, Total	ND	0.092		mg/Kg	1	4/20/2020 3:16:00 PM
Surr: 1,2-Dichloroethane-d4	92.0	70-130		%Rec	1	4/20/2020 3:16:00 PM
Surr: 4-Bromofluorobenzene	94.5	70-130		%Rec	1	4/20/2020 3:16:00 PM
Surr: Dibromofluoromethane	91.8	70-130		%Rec	1	4/20/2020 3:16:00 PM
Surr: Toluene-d8	97.3	70-130		%Rec	1	4/20/2020 3:16:00 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	4/20/2020 3:16:00 PM
Surr: BFB	95.9	70-130		%Rec	1	4/20/2020 3:16:00 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-004 **Matrix:** SOIL

Client Sample ID: BS4
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/19/2020 2:31:51 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2020 2:31:51 AM
Surr: DNOP	124	55.1-146		%Rec	1	4/19/2020 2:31:51 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	83	61		mg/Kg	20	4/20/2020 9:47:06 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	4/20/2020 3:45:32 PM
Toluene	ND	0.048		mg/Kg	1	4/20/2020 3:45:32 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/20/2020 3:45:32 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/20/2020 3:45:32 PM
Surr: 1,2-Dichloroethane-d4	93.5	70-130		%Rec	1	4/20/2020 3:45:32 PM
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	4/20/2020 3:45:32 PM
Surr: Dibromofluoromethane	94.0	70-130		%Rec	1	4/20/2020 3:45:32 PM
Surr: Toluene-d8	97.4	70-130		%Rec	1	4/20/2020 3:45:32 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/20/2020 3:45:32 PM
Surr: BFB	94.4	70-130		%Rec	1	4/20/2020 3:45:32 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-005 **Matrix:** SOIL

Client Sample ID: BS5
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	4/20/2020 1:51:56 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/20/2020 1:51:56 PM
Surr: DNOP	92.5	55.1-146		%Rec	1	4/20/2020 1:51:56 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	100	59		mg/Kg	20	4/20/2020 9:59:30 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	4/20/2020 4:15:05 PM
Toluene	ND	0.048		mg/Kg	1	4/20/2020 4:15:05 PM
Ethylbenzene	ND	0.048		mg/Kg	1	4/20/2020 4:15:05 PM
Xylenes, Total	ND	0.096		mg/Kg	1	4/20/2020 4:15:05 PM
Surr: 1,2-Dichloroethane-d4	91.3	70-130		%Rec	1	4/20/2020 4:15:05 PM
Surr: 4-Bromofluorobenzene	93.9	70-130		%Rec	1	4/20/2020 4:15:05 PM
Surr: Dibromofluoromethane	91.2	70-130		%Rec	1	4/20/2020 4:15:05 PM
Surr: Toluene-d8	98.0	70-130		%Rec	1	4/20/2020 4:15:05 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	4/20/2020 4:15:05 PM
Surr: BFB	94.8	70-130		%Rec	1	4/20/2020 4:15:05 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS6
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-006 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	4/18/2020 6:50:45 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	4/18/2020 6:50:45 PM
Surr: DNOP	100	55.1-146		%Rec	1	4/18/2020 6:50:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 11:07:30 AM
Surr: BFB	104	66.6-105		%Rec	1	4/20/2020 11:07:30 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 11:07:30 AM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 11:07:30 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 11:07:30 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/20/2020 11:07:30 AM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	4/20/2020 11:07:30 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	220	60		mg/Kg	20	4/20/2020 10:11:54 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS7
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-007 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/18/2020 8:03:56 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2020 8:03:56 PM
Surr: DNOP	114	55.1-146		%Rec	1	4/18/2020 8:03:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 12:17:50 PM
Surr: BFB	102	66.6-105		%Rec	1	4/20/2020 12:17:50 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 12:17:50 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 12:17:50 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 12:17:50 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 12:17:50 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	4/20/2020 12:17:50 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	160	59		mg/Kg	20	4/20/2020 10:24:19 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-008 **Matrix:** SOIL

Client Sample ID: BS8
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	4/18/2020 8:28:10 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/18/2020 8:28:10 PM
Surr: DNOP	119	55.1-146		%Rec	1	4/18/2020 8:28:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 1:28:12 PM
Surr: BFB	101	66.6-105		%Rec	1	4/20/2020 1:28:12 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 1:28:12 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 1:28:12 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 1:28:12 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 1:28:12 PM
Surr: 4-Bromofluorobenzene	99.9	80-120		%Rec	1	4/20/2020 1:28:12 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	110	59		mg/Kg	20	4/20/2020 10:36:43 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS9
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-009 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	4/18/2020 8:52:17 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2020 8:52:17 PM
Surr: DNOP	104	55.1-146		%Rec	1	4/18/2020 8:52:17 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 1:51:51 PM
Surr: BFB	97.5	66.6-105		%Rec	1	4/20/2020 1:51:51 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 1:51:51 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 1:51:51 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 1:51:51 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 1:51:51 PM
Surr: 4-Bromofluorobenzene	98.2	80-120		%Rec	1	4/20/2020 1:51:51 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	89	60		mg/Kg	20	4/20/2020 10:49:08 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS10
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-010 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/18/2020 9:16:22 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/18/2020 9:16:22 PM
Surr: DNOP	125	55.1-146		%Rec	1	4/18/2020 9:16:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 2:15:11 PM
Surr: BFB	99.6	66.6-105		%Rec	1	4/20/2020 2:15:11 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 2:15:11 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 2:15:11 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 2:15:11 PM
Xylenes, Total	ND	0.10		mg/Kg	1	4/20/2020 2:15:11 PM
Surr: 4-Bromofluorobenzene	97.6	80-120		%Rec	1	4/20/2020 2:15:11 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	150	60		mg/Kg	20	4/20/2020 11:01:32 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS11
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-011 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	13	9.8		mg/Kg	1	4/18/2020 9:40:24 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/18/2020 9:40:24 PM
Surr: DNOP	125	55.1-146		%Rec	1	4/18/2020 9:40:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 2:38:33 PM
Surr: BFB	101	66.6-105		%Rec	1	4/20/2020 2:38:33 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 2:38:33 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 2:38:33 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 2:38:33 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 2:38:33 PM
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	4/20/2020 2:38:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	190	60		mg/Kg	20	4/20/2020 11:13:57 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS12
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-012 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	15	9.3		mg/Kg	1	4/18/2020 10:04:22 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/18/2020 10:04:22 PM
Surr: DNOP	123	55.1-146		%Rec	1	4/18/2020 10:04:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 3:48:43 PM
Surr: BFB	101	66.6-105		%Rec	1	4/20/2020 3:48:43 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 3:48:43 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 3:48:43 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 3:48:43 PM
Xylenes, Total	ND	0.10		mg/Kg	1	4/20/2020 3:48:43 PM
Surr: 4-Bromofluorobenzene	99.1	80-120		%Rec	1	4/20/2020 3:48:43 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	250	61		mg/Kg	20	4/20/2020 11:26:22 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS13
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-013 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	4/18/2020 10:28:18 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2020 10:28:18 PM
Surr: DNOP	145	55.1-146		%Rec	1	4/18/2020 10:28:18 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 4:12:12 PM
Surr: BFB	99.8	66.6-105		%Rec	1	4/20/2020 4:12:12 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 4:12:12 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 4:12:12 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 4:12:12 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 4:12:12 PM
Surr: 4-Bromofluorobenzene	97.9	80-120		%Rec	1	4/20/2020 4:12:12 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	170	61		mg/Kg	20	4/21/2020 12:03:35 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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS14
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-014 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	11	9.2		mg/Kg	1	4/18/2020 10:52:10 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2020 10:52:10 PM
Surr: DNOP	114	55.1-146		%Rec	1	4/18/2020 10:52:10 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 4:35:33 PM
Surr: BFB	100	66.6-105		%Rec	1	4/20/2020 4:35:33 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 4:35:33 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 4:35:33 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 4:35:33 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 4:35:33 PM
Surr: 4-Bromofluorobenzene	99.2	80-120		%Rec	1	4/20/2020 4:35:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	130	60		mg/Kg	20	4/21/2020 12:15:59 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS15
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-015 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	4/18/2020 11:16:03 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/18/2020 11:16:03 PM
Surr: DNOP	143	55.1-146		%Rec	1	4/18/2020 11:16:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 4:58:56 PM
Surr: BFB	102	66.6-105		%Rec	1	4/20/2020 4:58:56 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 4:58:56 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 4:58:56 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 4:58:56 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 4:58:56 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	4/20/2020 4:58:56 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	140	60		mg/Kg	20	4/21/2020 12:28:24 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
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS16
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-016 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/18/2020 11:39:54 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/18/2020 11:39:54 PM
Surr: DNOP	130	55.1-146		%Rec	1	4/18/2020 11:39:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 5:22:18 PM
Surr: BFB	97.8	66.6-105		%Rec	1	4/20/2020 5:22:18 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 5:22:18 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 5:22:18 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 5:22:18 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 5:22:18 PM
Surr: 4-Bromofluorobenzene	97.1	80-120		%Rec	1	4/20/2020 5:22:18 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	66	60		mg/Kg	20	4/21/2020 12:40:49 AM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2004755-017 **Matrix:** SOIL

Client Sample ID: BS17
Collection Date: 4/15/2020
Received Date: 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	31	9.2		mg/Kg	1	4/19/2020 12:03:45 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/19/2020 12:03:45 AM
Surr: DNOP	115	55.1-146		%Rec	1	4/19/2020 12:03:45 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 5:45:42 PM
Surr: BFB	101	66.6-105		%Rec	1	4/20/2020 5:45:42 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 5:45:42 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 5:45:42 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 5:45:42 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/20/2020 5:45:42 PM
Surr: 4-Bromofluorobenzene	98.9	80-120		%Rec	1	4/20/2020 5:45:42 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	210	60		mg/Kg	20	4/20/2020 6:47:25 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS18
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-018 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	4/19/2020 12:51:16 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	4/19/2020 12:51:16 AM
Surr: DNOP	107	55.1-146		%Rec	1	4/19/2020 12:51:16 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 6:09:10 PM
Surr: BFB	99.3	66.6-105		%Rec	1	4/20/2020 6:09:10 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 6:09:10 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 6:09:10 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 6:09:10 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 6:09:10 PM
Surr: 4-Bromofluorobenzene	98.8	80-120		%Rec	1	4/20/2020 6:09:10 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	160	60		mg/Kg	20	4/20/2020 6:59:46 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS19
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-019 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/19/2020 1:15:02 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2020 1:15:02 AM
Surr: DNOP	130	55.1-146		%Rec	1	4/19/2020 1:15:02 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 6:32:36 PM
Surr: BFB	99.4	66.6-105		%Rec	1	4/20/2020 6:32:36 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 6:32:36 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 6:32:36 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 6:32:36 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 6:32:36 PM
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	4/20/2020 6:32:36 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	170	60		mg/Kg	20	4/20/2020 7:12:07 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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS20
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-020 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	4/19/2020 1:38:47 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	4/19/2020 1:38:47 AM
Surr: DNOP	134	55.1-146		%Rec	1	4/19/2020 1:38:47 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 6:56:08 PM
Surr: BFB	102	66.6-105		%Rec	1	4/20/2020 6:56:08 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 6:56:08 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 6:56:08 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 6:56:08 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 6:56:08 PM
Surr: 4-Bromofluorobenzene	99.0	80-120		%Rec	1	4/20/2020 6:56:08 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	4/20/2020 7:24:28 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: BS21
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-021 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	98	9.5		mg/Kg	1	4/19/2020 2:02:31 AM
Motor Oil Range Organics (MRO)	49	47		mg/Kg	1	4/19/2020 2:02:31 AM
Surr: DNOP	114	55.1-146		%Rec	1	4/19/2020 2:02:31 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 7:19:46 PM
Surr: BFB	100	66.6-105		%Rec	1	4/20/2020 7:19:46 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	4/20/2020 7:19:46 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 7:19:46 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 7:19:46 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/20/2020 7:19:46 PM
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	4/20/2020 7:19:46 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	190	60		mg/Kg	20	4/20/2020 8:01:31 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	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: SW1
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-022 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	79	9.9		mg/Kg	1	4/19/2020 2:26:13 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/19/2020 2:26:13 AM
Surr: DNOP	136	55.1-146		%Rec	1	4/19/2020 2:26:13 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 8:30:31 PM
Surr: BFB	105	66.6-105	S	%Rec	1	4/20/2020 8:30:31 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 8:30:31 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 8:30:31 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 8:30:31 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 8:30:31 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	4/20/2020 8:30:31 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	100	60		mg/Kg	20	4/20/2020 8:13:51 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy **Client Sample ID:** SW2
Project: Thistle 33 CTB 1 **Collection Date:** 4/15/2020
Lab ID: 2004755-023 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	20	9.9		mg/Kg	1	4/19/2020 2:49:53 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	4/19/2020 2:49:53 AM
Surr: DNOP	135	55.1-146		%Rec	1	4/19/2020 2:49:53 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/20/2020 8:53:53 PM
Surr: BFB	106	66.6-105	S	%Rec	1	4/20/2020 8:53:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 8:53:53 PM
Toluene	ND	0.049		mg/Kg	1	4/20/2020 8:53:53 PM
Ethylbenzene	ND	0.049		mg/Kg	1	4/20/2020 8:53:53 PM
Xylenes, Total	ND	0.098		mg/Kg	1	4/20/2020 8:53:53 PM
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	4/20/2020 8:53:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	67	60		mg/Kg	20	4/20/2020 8:26:12 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2004755**
Date Reported: **4/23/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Client Sample ID: SW3
Project: Thistle 33 CTB 1
Collection Date: 4/15/2020
Lab ID: 2004755-024 **Matrix:** SOIL **Received Date:** 4/16/2020 9:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	81	9.6		mg/Kg	1	4/19/2020 3:13:28 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/19/2020 3:13:28 AM
Surr: DNOP	128	55.1-146		%Rec	1	4/19/2020 3:13:28 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/20/2020 9:17:39 PM
Surr: BFB	107	66.6-105	S	%Rec	1	4/20/2020 9:17:39 PM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	4/20/2020 9:17:39 PM
Toluene	ND	0.050		mg/Kg	1	4/20/2020 9:17:39 PM
Ethylbenzene	ND	0.050		mg/Kg	1	4/20/2020 9:17:39 PM
Xylenes, Total	ND	0.099		mg/Kg	1	4/20/2020 9:17:39 PM
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	4/20/2020 9:17:39 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	76	59		mg/Kg	20	4/20/2020 8:38:33 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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#: **2004755**
23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **MB-51972** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **51972** RunNo: **68286**
Prep Date: **4/20/2020** Analysis Date: **4/20/2020** SeqNo: **2362383** Units: **mg/Kg**

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

Sample ID: **LCS-51972** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **51972** RunNo: **68286**
Prep Date: **4/20/2020** Analysis Date: **4/20/2020** SeqNo: **2362384** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.0	90	110			

Sample ID: **MB-51968** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **51968** RunNo: **68287**
Prep Date: **4/20/2020** Analysis Date: **4/20/2020** SeqNo: **2362456** Units: **mg/Kg**

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

Sample ID: **LCS-51968** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **51968** RunNo: **68287**
Prep Date: **4/20/2020** Analysis Date: **4/20/2020** SeqNo: **2362457** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.3	90	110			

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#: **2004755**
23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **LCS-51907** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51907** RunNo: **68199**
Prep Date: **4/17/2020** Analysis Date: **4/18/2020** SeqNo: **2359692** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	105	70	130			
Surr: DNOP	4.3		5.000		86.2	55.1	146			

Sample ID: **MB-51907** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51907** RunNo: **68199**
Prep Date: **4/17/2020** Analysis Date: **4/18/2020** SeqNo: **2359694** 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		99.6	55.1	146			

Sample ID: **MB-51904** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51904** RunNo: **68236**
Prep Date: **4/17/2020** Analysis Date: **4/18/2020** SeqNo: **2359844** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		116	55.1	146			

Sample ID: **LCS-51904** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51904** RunNo: **68236**
Prep Date: **4/17/2020** Analysis Date: **4/18/2020** SeqNo: **2359846** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	62	10	50.00	0	123	70	130			
Surr: DNOP	5.9		5.000		118	55.1	146			

Sample ID: **2004755-006AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS6** Batch ID: **51904** RunNo: **68236**
Prep Date: **4/17/2020** Analysis Date: **4/18/2020** SeqNo: **2360015** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	59	9.8	49.12	0	120	47.4	136			
Surr: DNOP	5.6		4.912		114	55.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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#: **2004755**

23-Apr-20

Client: Devon Energy

Project: Thistle 33 CTB 1

Sample ID: **2004755-006AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS6** Batch ID: **51904** RunNo: **68236**
Prep Date: **4/17/2020** Analysis Date: **4/18/2020** SeqNo: **2360016** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	9.4	47.17	0	120	47.4	136	4.06	43.4	
Surr: DNOP	5.4		4.717		115	55.1	146	0	0	

Sample ID: **LCS-51908** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51908** RunNo: **68236**
Prep Date: **4/17/2020** Analysis Date: **4/19/2020** SeqNo: **2360040** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.6		5.000		113	55.1	146			

Sample ID: **MB-51908** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51908** RunNo: **68236**
Prep Date: **4/17/2020** Analysis Date: **4/19/2020** SeqNo: **2360063** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		114	55.1	146			

Sample ID: **MB-51938** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51938** RunNo: **68249**
Prep Date: **4/19/2020** Analysis Date: **4/20/2020** SeqNo: **2362082** 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		84.4	55.1	146			

Sample ID: **LCS-51938** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51938** RunNo: **68249**
Prep Date: **4/19/2020** Analysis Date: **4/20/2020** SeqNo: **2362083** 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	91.5	70	130			
Surr: DNOP	4.1		5.000		82.9	55.1	146			

Sample ID: **MB-51943** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **51943** RunNo: **68249**
Prep Date: **4/19/2020** Analysis Date: **4/20/2020** SeqNo: **2362294** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.5		10.00		94.7	55.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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#: **2004755**
23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **LCS-51943** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **51943** RunNo: **68249**
Prep Date: **4/19/2020** Analysis Date: **4/20/2020** SeqNo: **2362295** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.5		5.000		91.0	55.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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#: **2004755**

23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **mb-51893** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361683** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	66.6	105			

Sample ID: **lcs-51893** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361684** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	87.9	80	120			
Surr: BFB	1100		1000		110	66.6	105			S

Sample ID: **2004755-007ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS7** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361687** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	24.95	0	86.3	80	120			
Surr: BFB	1100		998.0		113	66.6	105			S

Sample ID: **2004755-007amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS7** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361688** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.56	0	85.2	80	120	2.80	20	
Surr: BFB	1100		982.3		112	66.6	105	0	0	S

Sample ID: **mb-51914** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **51914** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2361707** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		104	66.6	105			

Sample ID: **lcs-51914** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **51914** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361708** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		110	66.6	105			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
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#: **2004755**
23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **mb-51893** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361729** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID: **LCS-51893** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361730** 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	0.90	0.050	1.000	0	90.0	80	120			
Ethylbenzene	0.91	0.050	1.000	0	91.5	80	120			
Xylenes, Total	2.8	0.10	3.000	0	91.8	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		105	80	120			

Sample ID: **2004755-006ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS6** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361732** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0.01403	82.7	78.5	119			
Toluene	0.90	0.050	1.000	0.03234	86.8	75.7	123			
Ethylbenzene	0.91	0.050	1.000	0.01682	89.4	74.3	126			
Xylenes, Total	2.7	0.10	3.000	0.04478	89.7	72.9	130			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

Sample ID: **2004755-006amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS6** Batch ID: **51893** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361733** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.025	0.9960	0.01403	84.9	78.5	119	2.25	20	
Toluene	0.92	0.050	0.9960	0.03234	89.2	75.7	123	2.25	20	
Ethylbenzene	0.92	0.050	0.9960	0.01682	90.3	74.3	126	0.606	20	
Xylenes, Total	2.8	0.10	2.988	0.04478	91.3	72.9	130	1.34	20	
Surr: 4-Bromofluorobenzene	1.0		0.9960		104	80	120	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
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#: **2004755**
23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **mb-51914** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **51914** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2361753** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

Sample ID: **LCS-51914** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **51914** RunNo: **68276**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2361754** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

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#: **2004755**

23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **mb-51886** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **51886** RunNo: **68251**
Prep Date: **4/17/2020** Analysis Date: **4/19/2020** SeqNo: **2360718** 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	0.46		0.5000		91.7	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.3	70	130			
Surr: Dibromofluoromethane	0.45		0.5000		89.5	70	130			
Surr: Toluene-d8	0.48		0.5000		96.9	70	130			

Sample ID: **lcs-51886** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **51886** RunNo: **68251**
Prep Date: **4/17/2020** Analysis Date: **4/19/2020** SeqNo: **2360719** 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	93.9	80	120			
Toluene	1.1	0.050	1.000	0	108	80	120			
Ethylbenzene	1.1	0.050	1.000	0	108	80	120			
Xylenes, Total	3.2	0.10	3.000	0	106	80	120			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		91.5	70	130			
Surr: Dibromofluoromethane	0.45		0.5000		89.9	70	130			
Surr: Toluene-d8	0.49		0.5000		98.5	70	130			

Sample ID: **lcs-51897** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **51897** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2363812** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		92.3	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		93.3	70	130			
Surr: Dibromofluoromethane	0.47		0.5000		93.1	70	130			
Surr: Toluene-d8	0.49		0.5000		97.1	70	130			

Sample ID: **lcs-51909** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **51909** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2363813** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.4	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.7	70	130			
Surr: Dibromofluoromethane	0.45		0.5000		90.3	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#: **2004755**
23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **lcs-51909** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC** Batch ID: **51909** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2363813** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: Toluene-d8	0.49		0.5000		98.6	70	130			

Sample ID: **mb-51897** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **51897** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2363814** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.5	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.9	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		92.3	70	130			
Surr: Toluene-d8	0.49		0.5000		98.6	70	130			

Sample ID: **mb-51909** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS** Batch ID: **51909** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2363815** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 1,2-Dichloroethane-d4	0.45		0.5000		90.2	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		97.3	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		92.1	70	130			
Surr: Toluene-d8	0.49		0.5000		97.2	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
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#: **2004755**

23-Apr-20

Client: Devon Energy
Project: Thistle 33 CTB 1

Sample ID: **mb-51886** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **51886** RunNo: **68251**
Prep Date: **4/17/2020** Analysis Date: **4/19/2020** SeqNo: **2360781** 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	480		500.0		95.9	70	130			

Sample ID: **lcs-51886** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **51886** RunNo: **68251**
Prep Date: **4/17/2020** Analysis Date: **4/19/2020** SeqNo: **2360782** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	83.0	70	130			
Surr: BFB	480		500.0		96.1	70	130			

Sample ID: **lcs-51897** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **51897** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2363970** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	480		500.0		96.4	70	130			

Sample ID: **lcs-51909** SampType: **LCS** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS** Batch ID: **51909** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2363971** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	490		500.0		98.3	70	130			

Sample ID: **mb-51897** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **51897** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/20/2020** SeqNo: **2363972** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	480		500.0		95.9	70	130			

Sample ID: **mb-51909** SampType: **MBLK** TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS** Batch ID: **51909** RunNo: **68321**
Prep Date: **4/17/2020** Analysis Date: **4/21/2020** SeqNo: **2363973** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	480		500.0		95.9	70	130			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: DEVON ENERGY Work Order Number: 2004755 RcptNo: 1

Received By: Juan Rojas 4/16/2020 9:15:00 AM

Completed By: Isaiah Ortiz 4/16/2020 9:46:24 AM

Reviewed By: DAD 4/16/20

Chain of Custody

1. Is Chain of Custody sufficiently 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: SPA 4/16/20

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	1.2	Good	Not Present			

Chain-of-Custody Record

Client: Devon Energy

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 TAT
☒ Standard ☐ Rush

Project Name: Thistle 33 CTB 1

Project #: 20837274
20E-00141-030

Project Manager: Natalie Gordon

Sampler: Kevin Smith

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 1.0+0.2=1.2 (°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. 2004755	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)
4-15-20		Soil	BS1	4oz jar	Ice	-001	X	X					X			
"			BS2	"	"	-002	X	X					X			
"			BS3	"	"	-003	X	X					X			
"			BS4	"	"	-004	X	X					X			
"			BS5	"	"	-005	X	X					X			
"			BS6	"	"	-006	X	X					X			
"			BS7	"	"	-007	X	X					X			
"			BS8	"	"	-008	X	X					X			
"			BS9	"	"	-009	X	X					X			
"			BS10	"	"	-010	X	X					X			
"			BS11	"	"	-011	X	X					X			
"			BS12	"	"	-012	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4-15-20	2:40	Kevin Smith			4/15	1450
4/15	1900			courier	4/16/20	9:15

Remarks: cc Natalie Gordon

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

Chain-of-Custody Record

Client: Devon Energy

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 TAT
☒ Standard ☐ Rush

Project Name: Thistle 33 CTB 1

Project #: 20837279
20E-00141-030

Project Manager: Natalie Gordon

Sampler:
On Ice: ☑ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 1.0+0.2=1.2 (°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.	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)
4-15-20		Soil	BS13	4oz jar	Ice	-013	X	X					X			
X		X	BS14	X	X	-014	X	X					X			
X		X	BS15	X	X	-015	X	X					X			
X		X	BS16	X	X	-016	X	X					X			
X		X	BS17	X	X	-017	X	X					X			
X		X	BS18	X	X	-018	X	X					X			
X		X	BS19	X	X	-019	X	X					X			
X		X	BS20	X	X	-020	X	X					X			
X		X	BS21	X	X	-021	X	X					X			
X		X	SW1	X	X	-022	X	X					X			
X		X	SW2	X	X	-023	X	X					X			
X		X	SW3	X	X	-024	X	X					X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4-15-20	2:40				4/15	1450
4/15	1900			courier	4/16/20	9:15

Remarks: cc Natalie Gordon

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

May 22, 2020

Natalie Gordon

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

RE: Thistle 33 CTB 1 OrderNo.: 2005737

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 1 sample(s) on 5/16/2020 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 **2005737**
Date Reported: **5/22/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Thistle 33 CTB 1
Lab ID: 2005737-001 **Matrix:** SOIL

Client Sample ID: BS21 0.5'
Collection Date: 5/14/2020 12:30:00 PM
Received Date: 5/16/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/20/2020 5:37:23 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/20/2020 5:37:23 AM
Surr: DNOP	90.7	55.1-146		%Rec	1	5/20/2020 5:37:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/22/2020 12:00:48 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/19/2020 5:15:50 AM
Toluene	ND	0.050		mg/Kg	1	5/19/2020 5:15:50 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/19/2020 5:15:50 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/19/2020 5:15:50 AM
Surr: 1,2-Dichloroethane-d4	94.7	70-130		%Rec	1	5/19/2020 5:15:50 AM
Surr: 4-Bromofluorobenzene	94.1	70-130		%Rec	1	5/19/2020 5:15:50 AM
Surr: Dibromofluoromethane	99.4	70-130		%Rec	1	5/19/2020 5:15:50 AM
Surr: Toluene-d8	103	70-130		%Rec	1	5/19/2020 5:15:50 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/19/2020 5:15:50 AM
Surr: BFB	99.9	70-130		%Rec	1	5/19/2020 5:15:50 AM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2005737**

22-May-20

Client: Devon Energy

Project: Thistle 33 CTB 1

Sample ID: **MB-52637**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **52637**	RunNo: **69084**							
Prep Date: **5/21/2020**	Analysis Date: **5/21/2020**	SeqNo: **2392598**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-52637**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **52637**	RunNo: **69084**							
Prep Date: **5/21/2020**	Analysis Date: **5/21/2020**	SeqNo: **2392599**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.8	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
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#: **2005737**

22-May-20

Client: Devon Energy

Project: Thistle 33 CTB 1

Sample ID: **MB-52538**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **52538**	RunNo: **68994**
Prep Date: **5/18/2020**	Analysis Date: **5/19/2020**	SeqNo: **2390222** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		110	55.1	146			

Sample ID: **LCS-52538**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **52538**	RunNo: **68994**
Prep Date: **5/18/2020**	Analysis Date: **5/19/2020**	SeqNo: **2390223** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	105	70	130			
Surr: DNOP	5.0		5.000		99.0	55.1	146			

Sample ID: **MB-52569**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **52569**	RunNo: **69027**
Prep Date: **5/19/2020**	Analysis Date: **5/20/2020**	SeqNo: **2390565** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.0		10.00		89.8	55.1	146			

Sample ID: **LCS-52569**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **52569**	RunNo: **69027**
Prep Date: **5/19/2020**	Analysis Date: **5/20/2020**	SeqNo: **2390897** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		85.0	55.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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#: **2005737**

22-May-20

Client: Devon Energy

Project: Thistle 33 CTB 1

Sample ID: **mb-52508** SampType: **MBLK** TestCode: **EPA Method 8260B: Volatiles Short List**

Client ID: **PBS** Batch ID: **52508** RunNo: **69005**

Prep Date: **5/16/2020** Analysis Date: **5/18/2020** SeqNo: **2389068** 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	0.46		0.5000		92.8	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.4	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		91.6	70	130			
Surr: Toluene-d8	0.50		0.5000		99.7	70	130			

Sample ID: **lcs-52508** SampType: **LCS4** TestCode: **EPA Method 8260B: Volatiles Short List**

Client ID: **BatchQC** Batch ID: **52508** RunNo: **69005**

Prep Date: **5/16/2020** Analysis Date: **5/18/2020** SeqNo: **2389069** 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	90.0	80	120			
Toluene	1.1	0.050	1.000	0	107	80	120			
Ethylbenzene	1.1	0.050	1.000	0	109	80	120			
Xylenes, Total	3.2	0.10	3.000	0	105	80	120			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		91.2	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		92.0	70	130			
Surr: Dibromofluoromethane	0.46		0.5000		92.2	70	130			
Surr: Toluene-d8	0.50		0.5000		99.3	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#: **2005737**

22-May-20

Client: Devon Energy

Project: Thistle 33 CTB 1

Sample ID: **mb-52508**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **52508**	RunNo: **69005**
Prep Date: **5/16/2020**	Analysis Date: **5/18/2020**	SeqNo: **2389081** 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		98.7	70	130			

Sample ID: **lcs-52508**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **52508**	RunNo: **69005**
Prep Date: **5/16/2020**	Analysis Date: **5/18/2020**	SeqNo: **2389082** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.7	70	130			
Surr: BFB	500		500.0		99.0	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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: www.hallenvironmental.com

Sample Log-In Check List

Client Name: DEVON ENERGY Work Order Number: 2005737 RcptNo: 1

Received By: Leah Baca 5/16/2020 8:00:00 AM Leah Baca
Completed By: Leah Baca 5/16/2020 8:59:52 AM Leah Baca
Reviewed By: MB 5/16/20

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: DAD 5/16/20

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	0.5	Good	Not Present			
2	1.6	Good	Not Present			

Chain-of-Custody Record

Client: Devon Energy

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: Thistle 33 CTB 1

Project #: 20E-00141

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: (2)

Cooler Temp(including CF): 0.7 1.6 -1.6 0.2 = 0.5 1.6 (°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. 2005737	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)						
5/14	12:30	Soil	BS21 0.5'	4 oz	ice	-001	✓	✓					✓									

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
5/15	1300				5/15	1400
5/15	1900		Leah Baca	Courier	5/16/20	0800

Remarks: Direct bill CC: Natalie Gordon
Devon w/o#: 20837279

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.